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ARLINGTON HIGH SCHOOL MODERNIZATION AND NEW CONSTRUCTION MEASURE O PROJECT

Riverside Unified School District

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ABBREVIATIONS AND ACRONYMS

AAQS	ambient air quality standards
AB	Assembly Bill
ACM	asbestos-containing materials
APN	Assessor's parcel number
AQMP	air quality management plan
AR4	Fourth Assessment Report: Climate Change 2007 (Intergovernmental Panel on Climate Change)
bgs	below ground surface
BMP	best management practices
CALGreen	California Green Building Standards Code
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CHBC	California Historical Building Code
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
cy	cubic yards
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
DSA	Division of the State Architect
EIR	environmental impact report
EPA	United States Environmental Protection Agency
FHSZ	fire hazard severity zone
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	greenhouse gases
GWP	global warming potential
IPCC	Intergovernmental Panel on Climate Change

Abbreviations and Acronyms

kBTU	thousand British thermal units
kWh	kilowatt hour
L_{dn}	day-night noise level
L_{eq}	equivalent continuous noise level
LCFS	low-carbon fuel standard
LID	low impact development
LRA	local responsibility area
LST	localized significance thresholds
MATES	Multiple Air Toxics Exposure Study
$\mu g/m^3$	micrograms per cubic meter
MMT	million metric tons
MPO	metropolitan planning organization
MS4	municipal separate storm sewer system
MSHCP	multiple species habitat conservation plan
MT	metric ton
MWD	Metropolitan Water District of Southern California
NAHC	Native American Heritage Commission
NO_X	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
PM	particulate matter
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
RFD	Riverside Fire Department
RMS	root mean square
RPD	Riverside Police Department
RPS	renewable portfolio standard
RTA	Riverside Transit Authority

Abbreviations and Acronyms

RUSD	Riverside Unified School District
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
sf	square foot
SHRC	State Historical Resources Commission
SoCAB	South Coast Air Basin
SO_X	sulfur oxides
SQMP	stormwater quality management plan
SRA	state responsibility area
SWPPP	Storm Water Pollution Prevention Plan
TAC	toxic air contaminants
tpd	tons per day
VMT	vehicle miles traveled
VOC	volatile organic compound
ZE	zero emissions

Abbreviations and Acronyms

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1. Executive Summary

1.1 INTRODUCTION

This draft environmental impact report (Draft EIR) addresses the environmental effects associated with the implementation of the proposed Arlington High School Modernization. The California Environmental Quality Act (CEQA) requires that local government agencies consider the environmental consequences before taking action on projects over which they have discretionary approval authority. An EIR analyzes potential environmental consequences in order to inform the public and support informed decisions by local and state governmental agency decision makers.

This Draft EIR has been prepared pursuant to the CEQA (Public Resources Code [PRC], Division 13, Section 21000 et seq. [CEQA Statute] and the California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, Section 15000 et seq. [CEQA Guidelines. The RUSD, as the lead agency, has reviewed and revised all submitted drafts, technical studies, and reports as necessary to reflect its own independent judgment.

Data for this Draft EIR derive from onsite field observations, analysis of adopted plans, programs and policies, review of available studies, reports, data and similar literature, and specialized environmental assessments.

1.2 ENVIRONMENTAL PROCEDURES

This Draft EIR has been prepared pursuant to CEQA to assess the environmental effects associated with implementation of the proposed project, as well as anticipated future discretionary actions and approvals. CEQA established six main objectives for an EIR:

1. Disclose to decision makers and the public the potential, significant environmental effects of proposed activities.
2. Identify ways to avoid or reduce environmental impacts.
3. Prevent environmental impacts by requiring implementation of feasible alternatives and/or mitigation measures.
4. Disclose to the public reasons for agency approval of projects with significant unmitigable environmental effects.
5. Foster interagency coordination in the review of projects.
6. Enhance public participation in the planning process.

An EIR is the most comprehensive form of environmental documentation in CEQA and the CEQA Guidelines; it is intended to provide an objective, factually supported analysis and full disclosure of the environmental consequences of a proposed project with the potential to result in significant, adverse environmental impacts.

An EIR is one of various decision-making tools used by a lead agency to consider the merits and disadvantages of a project that is subject to its discretionary authority. Before approving a proposed project, the lead agency must consider the information in the EIR; determine whether the EIR was prepared in accordance with CEQA and the CEQA Guidelines; determine that it reflects the independent judgment of the lead agency; adopt findings concerning the project's significant environmental impacts and alternatives; and adopt a statement of overriding considerations if significant impacts cannot be avoided.

1.2.1 EIR Format

Chapter 1. Executive Summary: Summarizes the background and description of the proposed project, the format of this EIR, project alternatives, any critical issues remaining to be resolved, and the potential environmental impacts and any required mitigation measures.

Chapter 2. Introduction: Describes the purpose of this EIR, background on the project, the Notice of Preparation, the use of incorporation by reference, and Final EIR certification.

Chapter 3. Project Description: A detailed description of the project, including its objectives, its area and location, approvals anticipated to be required as part of the project, necessary environmental clearances, and the intended uses of this EIR.

Chapter 4. Environmental Setting: A description of the physical environmental conditions in the vicinity of the project as they existed at the time the Notice of Preparation was published, from local and regional perspectives. These provide the baseline physical conditions from which the lead agency determines the significance of the project's environmental impacts.

Chapter 5. Environmental Analysis: Each environmental topic is analyzed in a separate section that discusses: the thresholds used to determine if a significant impact would occur; the methodology to identify and evaluate the potential impacts of the project; the existing environmental setting; the potential adverse and beneficial effects of the project; the level of impact significance before mitigation; any mitigation measures; the level of significance after mitigation is incorporated; and the potential cumulative impacts of the proposed project and other existing, approved, and proposed development in the area.

Chapter 6. Significant Unavoidable Adverse Impacts: Describes any significant unavoidable adverse impacts of the proposed project.

Chapter 7. Alternatives to the Proposed Project: Describes the alternatives and compares their impacts to the impacts of the proposed project.

Chapter 8. Impacts Found Not to Be Significant: Analyzes the potential impacts of the project that were determined not to be significant and were therefore not discussed in detail Chapter 5 of this EIR.

Chapter 9. Significant Irreversible Changes Due to the Proposed Project: Describes the significant irreversible environmental changes associated with the project.

Chapter 10. Growth-Inducing Impacts of the Project: Describes the ways in which the proposed project would cause increases in employment or population that could result in new physical or environmental impacts.

Chapter 11. Persons Preparing EIR: Lists the people who prepared this EIR for the proposed project.

Chapter 12. Bibliography: Is a compilation of the resources cited in each section and includes the technical reports and other sources used to prepare this EIR.

Appendices: The appendices for this document (in PDF format on a CD attached to the front cover) consist of these supporting documents:

- Appendix A Notice of Preparation and Comments
- Appendix B Lighting and Bleacher Data
- Appendix C Noise Modeling Data
- Appendix D Traffic Impact Analysis
- Appendix E Air Quality and Greenhouse Gas Background and Modeling Data
- Appendix F Cultural Resource Investigation
- Appendix G Geologic and Environmental Hazards Assessment
- Appendix H-1 Geotechnical Investigation (2018)
- Appendix H-2 Geotechnical Investigation (2010)
- Appendix I Health Risk Assessment
- Appendix J Rail Safety Study
- Appendix K Water Pipeline Safety Hazard Assessment
- Appendix L Preliminary Site Assessment
- Appendix M Preliminary Hydrology Study

1.2.2 Type and Purpose of This Draft EIR

This Draft EIR has been prepared as a "Project EIR," defined by § 15161 of the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3). This type of EIR examines the environmental impacts of a specific development project and should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project including planning, construction, and operation.

1.3 PROJECT LOCATION

The project site is within the campus of Arlington High School, at 2951 Jackson Street, City of Riverside, County of Riverside, California (Assessor Parcel Numbers [APN] 233-220-010 and 233-250-001).

1.4 PROJECT SUMMARY

Riverside Unified School District is planning several changes to Arlington High School. The project includes removal of 7 portable buildings and 8 handball courts; construction of a 10,262-square-foot Biomed/Special Education building, 8,755-square-foot Auxiliary Gymnasium, and a 2,000-square-foot concession/restroom building; expansion of the bleachers at the track and field (1,250-seat home-side expansion and new 1,000-seat visitor-side bleachers) and replacement of the existing stadium field sports lighting; modernization (interior layout and façade) of the Media Arts Academy building, Administration Building, and Student Service Building; and upgrades to the outdoor swimming pool and equipment.

1.5 SUMMARY OF PROJECT ALTERNATIVES

CEQA requires that a Draft EIR include a discussion of reasonable project alternatives that would "feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any significant effects of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines Section 15126.6). The following three project alternatives were identified and analyzed for relative impacts as compared to the proposed project:

- No Project Alternative
- Sound Wall Alternative
- Off-Campus Overflow Parking Alternative

These alternatives were developed to address community concerns about project-related effects. Please refer to Chapter 7 of this Draft EIR for a complete discussion of each of the alternatives and their associated impacts.

1.5.1 No Project Alternative

CEQA Guidelines require the analysis of a No Project Alternative. This analysis must discuss the existing site conditions as well as what would be reasonably expected to occur in the foreseeable future based on any current plans if the project were not approved.

Under the No Project Alternative, the improvements to Arlington High School would not occur. The seven portable classrooms would not be demolished, and the Biomed/Special Education building, Auxiliary Gymnasium, and concession/restroom building would not be constructed. The bleachers would not be expanded, and the field lights at the track and field would not be replaced. Also, the interior layouts and façades of the Media Arts Academy building, Administration Building, and Student Service Building would not be modernized, and the outdoor swimming pool and equipment would not be upgraded. The campus would continue to operate in its current condition. Classes would continue in older portable buildings, buildings and equipment would continue to deteriorate, and large events would continue to be held at Ramona HS, three miles to the northeast.

1.5.2 Sound Wall Alternative

Under this alternative, the District would construct a sound wall along the back of the visitor side bleachers. According to the Federal Highway Administration:

- A noise barrier can achieve a 5 dB noise level reduction when it is tall enough to break the line-of-sight from the [stadium bleachers] to the home or receiver.
- Noise barriers can be constructed from earth, concrete, masonry, wood, metal, and other materials. To effectively reduce sound transmission through the barrier, the material chosen must be rigid and sufficiently dense (at least four pounds/square foot). All noise-barrier material types are equally effective, acoustically, if they have this density.[1]

The barrier would most likely be either wood or a noise control curtain (such as outer panels of quilted fiberglass with a solid layer of material such as vinyl between the panels). The wall would block line-of-sight from the homes to the visitor bleachers. Additionally, a noise barrier attached to the back of the bleacher would reduce noise by about 3 dB. However, the sound wall or barrier may increase opportunities for vandalism and graffiti. It may reduce safety by creating blind spots where crime can occur. Police patrols would not have clear line of sight onto the campus from Irving Street.

1.5.3 Off-Campus Overflow Parking Alternative

Under the Off-Campus Overflow Parking Alternative, to reduce traffic and parking in the surrounding neighborhoods, the RUSD would open the Hawthorne Elementary School parking lot at 2700 Irving Street before and after capacity events at the stadium. This alternative parking lot would be included in the TMP where implementation, management methods and monitoring would be outlined. Standards would include publishing and distribution of notices to ensure the public knows about the alternative lot. Personnel would be stationed in locations to direct drivers to the alternative lot.

1.6 ISSUES TO BE RESOLVED

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain issues to be resolved, including the choice among alternatives and whether or how to mitigate significant impacts. With regard to the proposed project, the major issues to be resolved include decisions by the lead agency as to:

1. Whether this Draft EIR adequately describes the environmental impacts of the project.
2. Whether the benefits of the project override the environmental impacts which cannot be feasibly avoided or mitigated to a level of insignificance.
3. Whether the proposed school changes are compatible with the character of the existing area.

[1] Federal Highway Administration. 2001. Keeping the Noise Down, Highway Traffic Noise Barriers. https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/keepdown.cfm.

4. Whether there are any better alternatives to the project that would reduce community concern and achieve most of the basic project objectives.

1.7 AREAS OF CONTROVERSY

One comment letter was submitted to the District in response to the project-related Notice of Preparation. The area of concern was related to impacts on the Native American resources. The District also anticipates that the adjacent residents will be concerned with lights, traffic, and noise from the proposed changes to the stadium.

1.8 SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE AFTER MITIGATION

Table 1-1 summarizes the conclusions of the environmental analysis contained in this EIR.

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
AESTHETICS			
Impact 5.1-1. The proposed project would not have a substantial adverse effect on a scenic vista.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.1-2. The proposed project would not alter scenic resources within a state scenic highway.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.1-3 Located in an urbanized area, the proposed project would not conflict with applicable zoning and other regulations governing scenic quality.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.1-4. The proposed project would not generate significant light and glare.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
NOISE			
Impact 5.2-1. Construction activities would result in a temporary increase in noise that would not exceed thresholds.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.2-2. Project-related long-term operational noise would not exceed local standards.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.2-3. The project would not generate excessive groundborne vibration and groundborne noise.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.2-4. The school is not in the proximity of a private airstrip or an airport.	Less Than Significant	No Mitigation Measures Required	Less Than Significant

1. Executive Summary

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
TRANSPORTATION			
Impact 5.3-1. The project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.3-2. The project would not conflict or be inconsistent with CEQA Guidelines §	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.3-3. The project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Less Than Significant	No Mitigation Measures Required	Less Than Significant
Impact 5.3-4. The project would not result in inadequate emergency access.	Less Than Significant	No Mitigation Measures Required	Less Than Significant

2. Introduction

2.1 PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT

The California Environmental Quality Act (CEQA) requires that all state and local governmental agencies consider the environmental consequences of projects over which they have discretionary authority before taking action on those projects. This draft environmental impact report (Draft EIR) has been prepared to satisfy CEQA and the CEQA Guidelines. The EIR is the public document designed to provide decision makers and the public with an analysis of the environmental effects of the proposed project, to indicate possible ways to reduce or avoid environmental damage and to identify alternatives to the project. The EIR must also disclose significant environmental impacts that cannot be avoided; growth inducing impacts; effects not found to be significant; and significant cumulative impacts of all past, present, and reasonably foreseeable future projects.

The lead agency means "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment" (Guidelines § 21067). The Riverside Unified School District (RUSD or District) has the principal responsibility for approval of the Arlington High School project. For this reason, the District is the CEQA lead agency for this project.

The intent of the Draft EIR is to provide sufficient information on the potential environmental impacts of the proposed Arlington High School Modernization and New Construction Measure O Project to allow the District to make an informed decision regarding approval of the project. Specific discretionary actions to be reviewed by the District are described in Section 3.5, *Intended Uses of the EIR*.

This Draft EIR has been prepared in accordance with requirements of the:

- California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code, §§ 21000 et seq.)
- State Guidelines for the Implementation of the CEQA of 1970 (CEQA Guidelines), as amended (California Code of Regulations, §§ 15000 et seq.)

The overall purpose of this Draft EIR is to inform the lead agency, responsible agencies, decision makers, and the general public about the environmental effects of the development and operation of the proposed Arlington High School project. This Draft EIR addresses effects that may be significant and adverse, and evaluates alternatives to the project.

2.2 NOTICE OF PREPARATION

The Riverside Unified School District determined that an EIR would be required for this project and issued a Notice of Preparation (NOP) on February 17, 2020 (see Appendix A). The NOP process helps determine the

scope of the environmental topics to be addressed in the Draft EIR. The NOP public review period was from February 17, 2020, to March 18, 2020. During the NOP public review period one (1) comment letter was received: Native American Heritage Commission (see Appendix A).

2.3 SCOPE OF THIS DRAFT EIR

The scope of the Draft EIR was determined based on the comments received in response to the NOP (see Appendix A). Pursuant to Sections 15126.2 and 15126.4 of the CEQA Guidelines, the Draft EIR should identify any potentially significant adverse impacts and recommend mitigation that would reduce or eliminate these impacts to levels of insignificance. The information in Chapter 3, *Project Description*, establishes the basis for analyzing future, project-related environmental impacts.

2.3.1 Impacts Considered Less Than Significant

During preparation of the Draft EIR, the District determined that 18 environmental impact topics (shown below) would not be significantly affected by the proposed project. The less than significant findings are substantiated in Chapter 8, *Impacts Found Not to Be Significant*, in this Draft EIR.

- Agriculture & Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology & Soils
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Hydrology & Water Quality
- Land Use & Planning
- Mineral Resources
- Population & Housing
- Public Services
- Recreation
- Tribal Cultural Resources
- Utilities & Service Systems
- Wildfire

2.3.2 Potentially Significant Adverse Impacts

The District determined that three environmental factors have potentially significant impacts. These topics are analyzed in Chapter 5.

- Aesthetics
- Noise
- Transportation

2.3.3 Unavoidable Significant Adverse Impacts

Unavoidable adverse impacts may be considered significant on a project-specific basis, cumulatively significant, and/or potentially significant. This Draft EIR did not identify any significant and unavoidable adverse impacts, as defined by CEQA, that would result from implementation of the proposed project.

2.4 FINAL EIR CERTIFICATION

This Draft EIR will circulate for public review for 45 days. Agencies and interested parties are invited to provide written comments on the Draft EIR to the District address shown on the title page of this document and on the Notice of Availability of a Draft EIR (NOA). Upon completion of the 45-day review period, the District will review all written comments received and prepare written responses for each. A Final EIR will incorporate the written comments, responses to the comments, and any changes to the Draft EIR that result from comments along with the circulated Draft EIR. The Final EIR will be reviewed by the RUSD Board of Education. All persons who comment on the Draft EIR will be notified of the availability of the Final EIR and the date of the RUSD Board of Education public hearing.

The Draft EIR is available to agencies and the public for review on the District's website: http://bit.ly/ArlingtonEIR

2. Introduction

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3. Project Description

3.1 PROJECT LOCATION

The project site is within the campus of Arlington High School, at 2951 Jackson Street, City of Riverside, County of Riverside, California (Assessor Parcel Numbers [APN] 233-220-010 and 233-250-001). The 45-acre campus is bounded by Irving Street to the east, a Burlington Northern Santa Fe Railway Company right-of-way to the north (used by freight, Amtrak, and Metrolink trains), Jackson Street to the west, and Lincoln Avenue to the south. Regional access is provided by State Route 91 (SR-91 or Riverside Freeway) northwest of the school (see Figure 3-1, *Regional Location*, and Figure 3-2, *Local Vicinity*).

3.2 STATEMENT OF OBJECTIVES

Objectives for the Arlington High School Modernization and New Construction Measure O Project will aid decision makers in their review of the project, the project alternatives, and associated environmental impacts.

- **Objective 1:** Increase the safety and security of the staff and students through the campus modifications and improvements.
- **Objective 2:** Replace aging outdated portable buildings.
- **Objective 3:** Upgrade campus to enhance the Biomedical Science Pathway.
- **Objective 4:** Limit the disruption of the educational experience of students during construction of the project by limiting the number and/or duration of phases.
- **Objective 5:** Provide bleachers with adequate capacity to accommodate various spectator events currently held off campus.
- **Objective 6:** Improve school pride by holding home football games at Arlington High School.
- **Objective 7:** Reduce the travel time and vehicle miles traveled to home football games.

3.3 PROJECT DEFINITION

"Project," as defined by the CEQA Guidelines, means:

> ... the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is any of the following: (1)…enactment and amendment of zoning ordinances, and

> the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100–65700. (14 Cal. Code of Reg. § 15378[a])

3.4 PROJECT CHARACTERISTICS

Riverside Unified School District is planning several changes to Arlington High School. The project includes removal of 7 portable buildings and 8 handball courts; construction of a Biomed/Special Education building, Auxiliary Gymnasium, and concession/restroom building; expansion of the bleachers and replacement of field lights at the track and field; modernization (interior layout and façade) of the Media Arts Academy building, Administration Building, and Student Service Building; and upgrades to the outdoor swimming pool and equipment (see Figure 3-3, *Conceptual Site Plan*).

3.4.1 Demolition

Seven portable classroom buildings (6,720 square feet total) would be demolished and removed to accommodate the new Biomed/Special Education building and hardscape/landscape, and the Auxiliary Gymnasium would require the removal of eight handball courts.

3.4.2 New Construction

Biomed/Special Education Building

The one-story, 10,262-square-foot Biomed/Special Education building would be south of the baseball field and west of the Media Arts building. Prior to construction, 7 portable classroom buildings would be removed from the site. The new building would have 7 classrooms (3 special education classrooms, a life skills classroom, 2 science labs, a biomedical lab) and restrooms.

Auxiliary Gymnasium

The one-story, 8,755-square-foot Auxiliary Gymnasium would be west of the Lincoln Avenue student parking lot. Prior to construction, the turf area and 8 handball courts would be removed. The Auxiliary Gym would have a gymnasium, training room, restrooms, and fitness center. An outdoor fitness area with workout stations and shade structures would be to the west of the building.

Concession Building

A new 2,000-square-foot building near the southeast corner of the track would provide ticket concessions and restrooms.

3.4.3 Modernization and Improvements

- **Media Arts Academy** (6,463 square feet). Reconfigure the interior layout; replace the outdoor storage area at the rear of the building with an inspiration garden.

- **Administration Building** (6,394 square feet). Reconfigure the interior layout and upgrade the façade. As part of the exterior modernization of the Administration Building, a new 500-square-foot lobby would span the open area between the Administration Building and the Student Services Building to become the new, single-point security entry for the campus. A covered and decorative walkway would direct people to the new entry point.

- **Student Services Building** (2,592 square feet). Reconfigure the interior layout and upgrade the façade.

- **Outdoor Swimming Pool.** Upgrades to the pool and equipment.

- **Stadium Improvements**

  - Bleachers. New aluminum bleachers would be added to the existing 750-seat bleachers on the west side of the track and football/soccer field for an additional 1,250 seats (home side: 2,000 seats). A press box would be built at the top of the home bleachers. A separate set of aluminum bleachers would be installed on the visitor side (1,000 seats) for a total of 3,000 seats (see Appendix B). Home side would be 66 feet 7 inches to top of press box and visitor side would be 33 feet to top of back rail riser.

  - Lighting. The intent of the new lighting is to meet the 50 foot-candle (fc) average set by the Illuminating Engineering Society (IES) and the California Interscholastic Federation field lighting recommendations (see Appendix B). This light level would be for maximum capacity varsity football games and similar events that require the highest levels of light for players' safety, optimal playing conditions, and good visibility for spectators. All other events would operate at 30 fc or less. The lighting control system would be programmable for various lighting levels for different events.

    Field lighting would consist of four in-ground precast concrete bases with 80-foot-high (visitor side) and 90-foot-high (home side) galvanized steel poles, with spill and glare shielding on each of the luminaires. The four light poles would be installed at approximately the 10-yard line on the outside edge of the bleachers. The 80- and 90-foot heights are important for maintaining the 50 fc average value and minimizing spill light off the school property. The ideal pole height is based on the light beam angles per IES standards, the manufacturer's equipment, and the pole locations (i.e., set back from the field). Higher poles allow lights to be directed to the field with less spill light; shorter poles increase off-site spill light and adversely affect light levels and performance on the field.

    The lighting design would use the Green Generation system on each light pole, which uses nine 1,500-watt LED luminaires at the top to maintain the recommended 50 fc average and two 575-watt LED luminaires at about 16 feet above ground for bleacher safety (egress lights). Green Generation luminaires concentrate more light on the field area, with less light emitted outside the targeted areas compared to other systems. Additionally, the lighting system can be switched to a "dimmed" setting by selecting the upper or lower banks of light fixtures separately, to achieve 30 to 60 percent of full light output. This allows the lights to be turned on to full brightness during a football game and turned down during other events not requiring full brightness. The lights would be dimmed after an athletic event as team members exit the athletic field, spectators vacate the bleachers, and high school staff clean up the area. The proposed lighting system would have a manual keyed switch for on-off control.

The field lights would be in operation for approximately four hours during any single evening. All campus parking lots currently have security lighting.

- **Field Use Changes**
  - Home varsity football games and graduation are currently held at Ramona High School. Upon completion of the project, they would be held at Arlington High School. Varsity games start at 7:00 pm and typically end by 10:00 pm. High school graduation at Ramona HS starts at 6:00 pm and ends at 7:30 pm; gates to the stadium open at 4:00 pm. Future graduation ceremonies at Arlington HS would have the same schedule.
  - Day and nighttime use of the track and field for other school-related events and community-sponsored events and activities would not change. Use by community organizations would continue to be subject to approval by the District. The specific community use of the track and field has not been determined; however, similar to existing events at Arlington HS and other high schools, public events are anticipated to be local sports events and would not draw maximum capacity crowds or require maximum field lighting (50 fc average).
- **Landscape and Outdoor Spaces.** Some trees would be removed to accommodate the new facilities; however, new trees would be planted on campus. Trees would be planted at the appropriate size and maturity for the available space and would be selected from RUSD's Approved Plant List. All new landscaping would be California friendly and drought tolerant with the exception of any new turf.
- **Traffic and Parking Management Plan**. To limit the amount of event parking in surrounding neighborhoods and to ensure orderly pre- and post-event vehicle circulation and parking, the District would prepare a Traffic and Parking Management Plan (TPMP). The TPMP would include temporary traffic management strategies, procedures, and devices to be in place on- and off-campus during maximum capacity events at the stadium, such as varsity football games and graduation ceremonies.

3.4.4 Construction Phase

Project construction is anticipated to start in second quarter (Q2)-2021 and is expected to take 12 months to complete. However, because the project has several components, construction work would be intermittent and conducted in stages. To avoid classroom disruption, some work would be done during instructional breaks when students are off campus. Construction would disturb about two acres of the campus and would consist of the following phases:

- Site preparation and removal of landscape, seven portable buildings, and eight handball courts in construction areas.
- Grading and utility trenching for new buildings.
- Construction of the two new buildings, concession/restroom building, and bleachers.
- Modernization of three buildings and the swimming pool.

- Architectural coating (painting).
- Finishing and landscaping.

3.5 INTENDED USES OF THE EIR

This Draft EIR examines the environmental impacts and addresses various actions by the District and others to adopt and implement the proposed project. It is the intent of this EIR to evaluate the environmental impacts of the proposed project so that the RUSD, other responsible agencies, and interested parties can make informed decisions about project-related actions. The analysis provides environmental review for the whole of the proposed project, including planning of the project; clearance, excavation, and grading of the site; construction, repair, upgrade, and modernization of the proposed facilities; and ongoing operation.

3.5.1 Lead Agency

The RUSD is the lead agency under CEQA and has approval authority over the proposed project. This EIR must be certified by the Board of Education, confirming its adequacy in complying with the requirements of CEQA. The Board would consider the information in the EIR in deciding to approve or deny the proposed project.

3.5.2 Anticipated Approvals

Anticipated approvals required for this project are as follows.

Lead Agency	Action
Riverside Unified School District Board of Education	Certification of the Final EIR
	Adoption of Findings of Fact
	Approval of project
Reviewing Agencies*	**Action**
City of Riverside	Department of Public Works: Approval of drainage improvements and grading plans as they relate to drainage.
City of Riverside Fire Department	Approval of plans for emergency access and emergency evacuation. DSA approval of the fire/life safety portion of a project requires local fire authority review of: elevator/stair access for emergency rescue and patient transport; access roads, fire lane markings, pavers, and gate entrances; fire hydrant location and distribution; and fire flow (location of post indicator valve, fire department connection, and detector check valve assembly).
City of Riverside Police Department	Site plan review for fire, life, safety hazards, access, and visibility.
South Coast Air Quality Management District (SCAQMD)	Review and issue necessary air quality permits to construct: • SCAQMD Rule 403-Large Operation Notification Form: The applicant/applicant's construction contractor is required to file a Large Operation Notification Form with SCAQMD for grading activities and prepare and implement a dust control plan. • SCAQMD Rule 1403-Asbestos Emissions from Demolition/Renovation Activities: Requires that SCAQMD be notified that demolition of buildings containing asbestos would occur within 10 working days prior to activities.
California Department of General Services, Division of State Architect (DSA)	Plan review and construction oversight, including structural safety, fire and life safety, and access compliance.

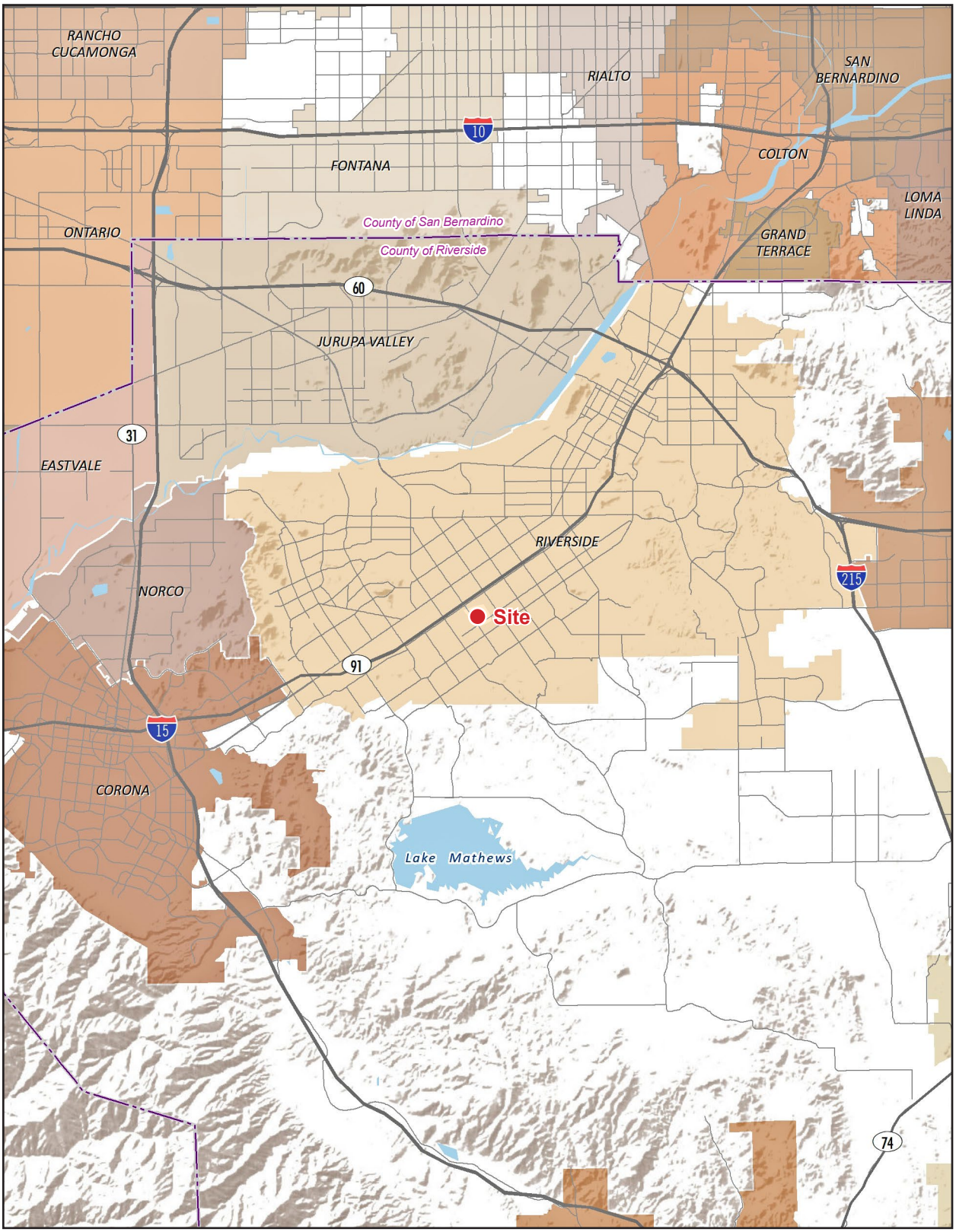
3. Project Description

California Department of Education, School Facilities Planning Division (CDE)	If RUSD is requesting modernization funds from the State Allocation Board, it must have plans reviewed and approved by CDE (Education Code § 17070.50) prior to submitting a funding request. Approval of design for educational appropriateness.
California Department of Transportation (Caltrans)	Transportation permit for oversized vehicles on State highways.
State Water Resources Control Board (SWRCB)	Review of Notice of Intent (NOI) to obtain permit coverage; issuance of general permit for discharges of stormwater associated with construction activity; review of Storm Water Pollution Prevention Plan (SWPPP).
Santa Ana Regional Water Quality Control Board (SARWQCB)	Issue National Pollution Discharge Elimination System (NPDES) permit; Clean Water Act Section 401 Water Quality Certification
California Department of Toxic Substances Control (DTSC)	Approval of Preliminary Environmental Assessment (PEA) Report; issuance of a "No Further Action" determination

* These agencies would have no role in approval process for the project; however, review or coordination would be required.

Figure 3-1 - Regional Location

3. Project Description



Note: Unincorporated county areas are shown in white.

0 3
Scale (Miles)

Source: ESRI, 2020

3. Project Description

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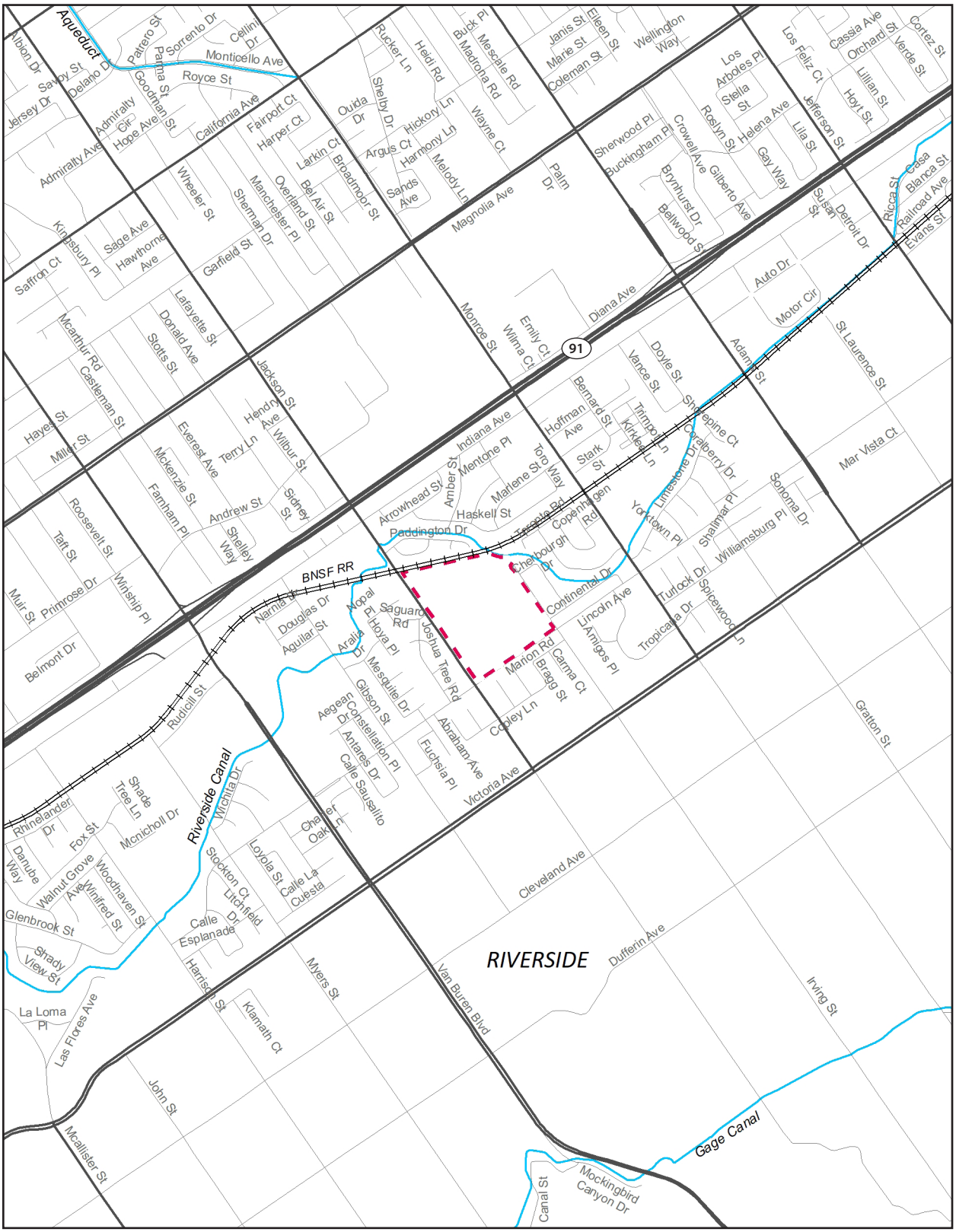
Figure 3-2 - Local Vicinity

3. Project Description



School Boundary

0 2,000
Scale (Feet)

Source: ESRI, 2020

3. Project Description

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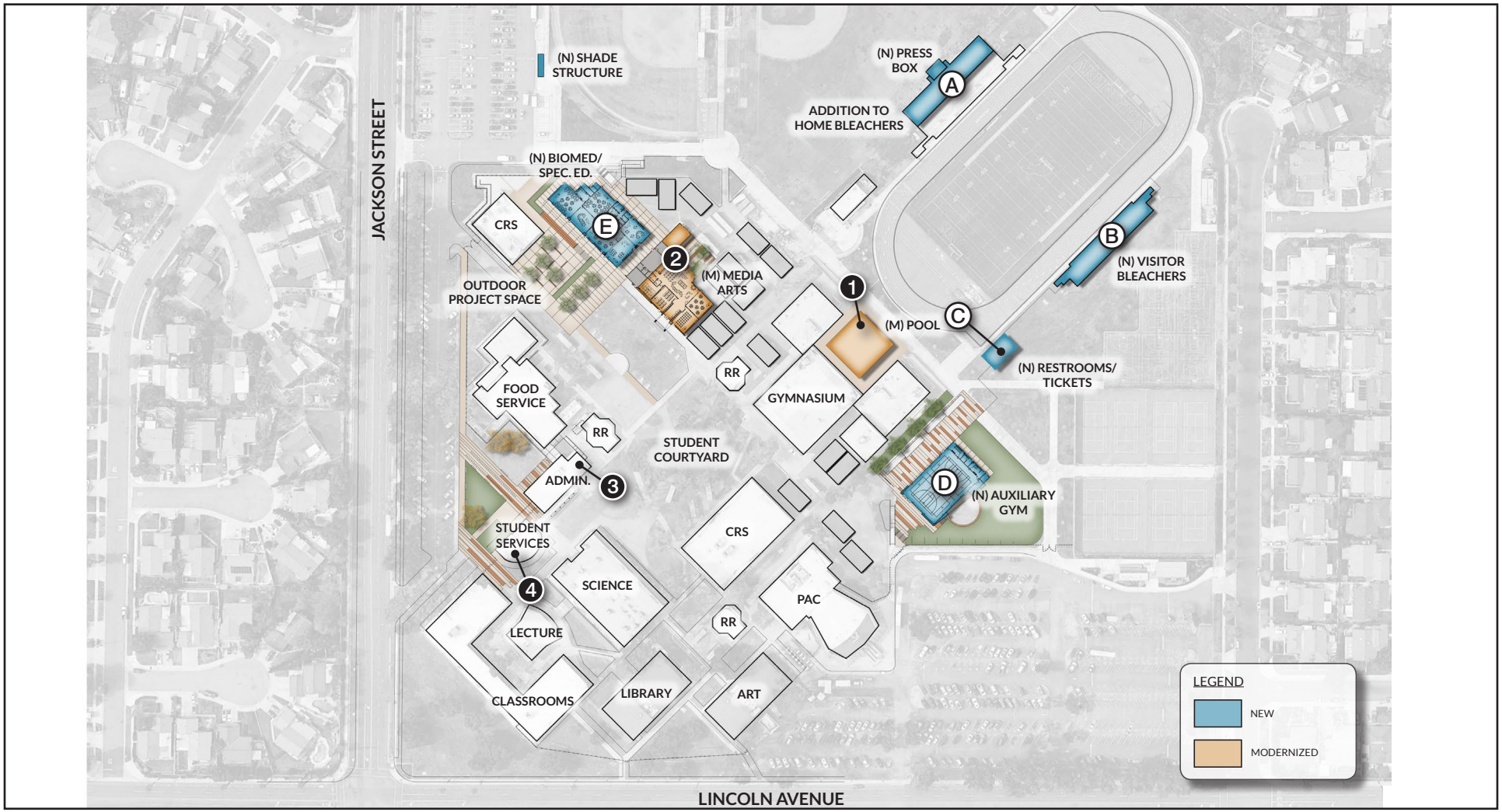
Figure 3-3 - Conceptual Site Plan

3. Project Description



New Construction Ⓐ — Ⓔ

Modernization ❶ — ❹

0 250
Scale (Feet)

Source: Ruhnau Clarke Architects, 2020

3. Project Description

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4. Environmental Setting

4.1 INTRODUCTION

This section provides a "description of the physical environmental conditions in the vicinity of the project, as they existed at the time the notice of preparation was published, ... from both a local and a regional perspective," pursuant to provisions of the California Environmental Quality Act (CEQA) and the CEQA Guidelines (§ 15125[a]). The environmental setting provides the baseline physical conditions from which the lead agency will determine the significance of project-related environmental impacts.

4.2 REGIONAL ENVIRONMENTAL SETTING

The Riverside Unified School District (RUSD or District) encompasses about 92 square miles in western Riverside County—most of the City of Riverside, a small portion of the City of Jurupa Valley, and unincorporated areas of Riverside County (communities of Highgrove and Woodcrest). The District has 47 schools: 29 elementary schools, 1 special education preschool, 6 middle schools (grades 7-8), 5 comprehensive high schools, 2 continuation high schools, 2 alternative schools, and the Riverside Virtual School.[1] Districtwide enrollment was 42,153 for the 2018-19 school year.[2]

The project site is in the southern part of the city of Riverside, about 0.3 mile southeast of State Route 91 (SR-91 or Riverside Freeway); 7.0 miles north of Interstate 15; and about 6.07 mile west of Interstate 215 (see Figure 3-1). The project site is in the Presidential Park neighborhood of Riverside; the neighborhood is bounded by SR-91 to the northwest, Jackson Street to the southwest, Jefferson Street to the northeast, and Arlington Heights Neighborhood to the southwest.[3]

4.3 LOCAL ENVIRONMENTAL SETTING

4.3.1 Project Location

The project site is within the campus of Arlington High School, at 2951 Jackson Street, City of Riverside, County of Riverside, California (Assessor Parcel Numbers [APNs] 233-220-010 and 233-250-001). The 45-acre campus is bounded by Irving Street to the east, a Burlington Northern Santa Fe (BNSF) Railway Company

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1 City of Riverside. 2009. At Home in Riverside. Riverside Unified School District. https://riversideca.gov/athomeinriverside/rusd.asp.

2 California Department of Education (CDE). 2019. 2018-19 Enrollment by Grade. Arlington High Report (33-67215-3330024). Dataquest. https://dq.cde.ca.gov/dataquest/dqcensus/EnrEthGrd.aspx?cds=33672153330024&agglevel=school&year=2018-19.

3 City of Riverside. 2020. Presidential Park Neighborhood. https://www.riversideca.gov/athomeinriverside/neighborhoods-presidentialpark.asp.

right-of-way to the north (used by freight, Amtrak, and Metrolink trains), Jackson Street to the west, and Lincoln Avenue to the south (see Figure 3-2, *Local Vicinity*, and Figure 4-1, *Aerial Photograph*).

4.3.2 Surrounding Land Uses

The project site is on a school campus and surrounded by single-family residential development. An active BNSF double-track railroad right-of-way is adjacent to the north, and the Riverside Canal drainage channel is adjacent to the northeast corner of the campus. Other land uses further from the campus are: retail commercial and a three-screen drive-in theater, approximately 1,500 feet west of the school; Hawthorne Elementary School, approximately 800 feet to the south; agricultural uses (orchards and a nursery) approximately 700 feet south; and Don Derr Park, a neighborhood park approximately 1,300 feet to the east.

4.4 EXISTING CONDITIONS

4.4.1 Site History

The campus was an orchard from approximately 1931 to about 1967. From 1967 to 1973 the site was used for row crops, and in 1973 Arlington High School was constructed. The adjoining properties were used for agricultural purposes from at least 1931 to about 2016. Residential development begins to appear and expand around the school site in 1967.[4]

4.4.2 Existing Land Use

Arlington High School enrollment for the 2018-19 school year is 1,928 students in 9th through 12th grades.[5] The approximately 45-acre campus consists of two main areas: outdoor athletic facilities on the northern end and the campus core on the southern end (see Figure 4-1, *Aerial Photograph*, Figure 4-2, *Photo Location Key*, and Figures 4-3a and 4-3b, *Site Photographs*).[6] The campus core has:

- 3 classroom buildings
- 3 restroom buildings
- Science building
- Art building
- Media arts academy
- Performance arts center
- Gymnasium and outdoor swimming pool
- Food service building with attached lunch shelter
- Administrative building

[4] PlaceWorks. 2019 Preliminary Environmental Assessment Report for Arlington High School, Riverside Unified School District. See Appendix L.

[5] California Department of Education (CDE). 2018-2019 Enrollment by Grade, Arlington High School Report. https://data1.cde.ca.gov/dataquest/dqcensus/EnrGrdLevels.aspx?cds=33672153330024&agglevel=school&year=2018-19&ro=y.

[6] Riverside Unified School District (RUSD). 2016. Long Range Facilities Master Plan. http://www.riversideunified.org/UserFiles/Servers/Server_580721/File/Facilities/RUSD%20-%20Long%20Range%20Facilities%20Master%20Plan%202016_%20Reduced%20File.pdf.

- Library
- Lecture hall
- 21 portable buildings
- Outdoor student courtyard, shade structures with tables, walkways, hardscaping, and landscaping

The athletic facilities in the northern portion of the campus include:

- A football/soccer field, eight-lane track, and 750-seat bleachers on the west side.
- Four 70-foot-tall light poles (two poles on the west and two on the east side of the track and field). Each pole has two speakers.
- 1 soccer field, junior varsity baseball field, and softball field.
- 4 baseball diamonds and a multiuse field.
- 6 basketball, 1 volleyball, and 8 tennis courts.
- A cross-country track with lighting that extends throughout the athletic facilities area and encircles the junior varsity baseball and softball fields.
- One concession and ticket structure near the varsity baseball fields and one near the soccer field.
- Shot put and discus throw turf fields.
- Storage containers and structures in locations around the fields.

4.4.2.1 USE AND SCHEDULING

Maximum-capacity events, such as home varsity football games and graduations, are currently held at Ramona High School at 7675 Magnolia Avenue, Riverside, because of the limited seating in the bleachers at the Arlington High School stadium. Varsity games start at 7:00 pm and typically end by 10:00 pm. High school graduation at Ramona HS starts at 6:00 pm and ends at 7:30 pm; gates to the stadium open at 4:00 pm.

The field and track are used on a regular basis for physical education classes, team sports practices, and a variety of other school-related events. Regularly scheduled events are shown in Table 4-1.

The football/soccer field is used for soccer games more often than football games. When two soccer games are held, one game is on the field between the baseball field and the track and field bleachers. The bleacher seating at baseball and softball fields totals 15 aluminum bleachers; each is about 15 feet long with 5 rows for seating, for a total of about 50 people each.

Table 4-1 Existing Arlington HS Track and Field Programs

Activity/Use	Number of Participants	Number of Spectators		Event Schedule
		Max	Average	
Practices				
V Football	100	300	100	18 hours of practice per week
JV Football	50	300	100	18 hours of practice per week
F Football	50	300	100	18 hours of practice per week
V B Soccer	35	1,000*	100	5 days per week
V G Soccer	35	100	50	5 days per week
JV/FS B Soccer	30	100	50	5 days per week
JV/FS G Soccer	30	100	25	5 days per week
7th & 8th B Soccer	50	100	25	1 day per week
7th & 8th G Soccer	50	100	25	1 day per week
V XC/Track	45	25	5	5 days per week
JV/FS XC/Track	90 (45/45)	25	5	5 days per week
7th & 8th XC/Track	40	25	5	5 days per week
Saturday Practice Use	25–75	25	5	
Games				
V Football	**Currently played at Ramona High School**			
JV Football	80–100	400	100	5 per season
V B Soccer	35	1,000*	100	10-18 per season
V G Soccer	35	400	100	10-18 per season
JV B Soccer	30	100	50	10 per season
JV G Soccer	30	100	50	10 per season
FS B Soccer	30	100	50	10 per season
FS G Soccer	30	100	50	10 per season
7th & 8th grade B Soccer	50	100	50	5 per season
7th & 8th grade G Soccer	50	100	50	5 per season
V/JV/FS XC/Track Meet	200	400	100	5 per season
7th & 8th XC/Track Meet	100	400	150	5 per season

Source: via email from Maurizio G. Dubuisson, Arlington High School Athletic Director and Iris Barrientos, Project Leader, Ruhnau Clark Architects. March 22, 2019
* Existing bleachers provide 750 seats.
V = Varsity; JV = Junior Varsity; FS = Freshman + Sophomore; G = Girls; B = Boys

4.4.2.2 PARKING AND ACCESS

Main vehicular access is along Jackson Road. The campus has four parking lots with about 460 parking spaces: a student lot in the east corner with one access driveway on Lincoln Avenue and two on Irving Street, and three lots along Jackson Street (with three access driveways)—a staff lot in front of the administration building, a staff lot with bus-only lane west of the softball field, and an overflow lot west of the varsity baseball field.

4.4.2.3 DRAINAGE

The campus and its surroundings are relatively flat, with drainage in the vicinity flowing generally toward the northwest. Existing ground surface elevations across the campus range from approximately 870 feet above mean sea level in the southeast corner to approximately 850 feet in the northeastern corner. Two large and three small stormwater detention basins are located on the school campus: #1 large is in the northeast corner of the campus between the Irving Street cul-de-sac and the railroad right-of-way; #2 large is at the northwest corner of the campus near the intersection of Jackson Street and the railroad right-of-way; and the three small basins are adjacent to the west side of the basketball courts (see Figure 4-1). The two large basins are surrounded by a chain-link fence and are not accessible to the public. Stormwater runoff from the campus ultimately flows to the Toronto Road Storm Drains.[7]

4.4.3 General Plan and Zoning

The General Plan land use designation for Arlington HS property is PF (Public Facilities/Institutional),[8] and the zoning designation is R-1-7000 (Residential).[9] The R-1-7000 zone is "established to provide areas for single-family residences with a variety of lot sizes and housing choices," and school uses are permitted under this zoning with a conditional use permit.[10]

Presidential Park Neighborhood. The City of Riverside is divided into 25 neighborhoods. Presidential Park Neighborhood is home to one of the first auto centers in the nation. It is characterized with a mix of automotive-related commercial, light industrial, residential, and public uses. The northeastern portion of the neighborhood is primarily developed with the Riverside Auto Center, government operations facilities, a senior apartment complex, and manufacturing uses. The southwestern portion is primarily developed with single-family residences and institutional uses. Gated planned residential developments and a small number of apartments are also mixed in with single-family residences.[11] The high school is along the southwest edge of the neighborhood.

4.5 ASSUMPTIONS REGARDING CUMULATIVE IMPACTS

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (14 CCR [CA Code of Regulations] § 15355). Cumulative impacts are the change caused by the incremental impact of the project evaluated in the EIR together with the incremental impacts from closely related past, present, and reasonably foreseeable

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7 EPIC Engineers. 2011, February 24. Preliminary Hydrology Study Arlington High School.

8 City of Riverside. 2018, February. City of Riverside General Plan 2025 Land Use and Urban Design Element. https://www.riversideca.gov/planning/gp2025program/GP/04_Land_Use_and_Urban_Design_Element_with%20maps.pdf.

9 City of Riverside. 2007. Zoning Map of the City of Riverside. https://riversideca.gov/planning/pdf/Zoning-Map.pdf.

10 City of Riverside. 2020. Chapter 19.100 - RESIDENTIAL ZONES (RA-5, RC, RR, RE, R-1-½ ACRE, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-4000, R-3-3000, R-3-2500, R-3-2000, R-3-1500, R-4). https://library.municode.com/ca/riverside/codes/code_of_ordinances?nodeId=PTIICOOR_TIT19ZO_ARTVBAZOREUSDEPR.

11 City of Riverside. 2020. Presidential Park Neighborhood. https://www.riversideca.gov/athomeinriverside/neighborhoods-presidentialpark.asp.

probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Section 15130 of the CEQA Guidelines states that cumulative impacts must be discussed when the project's incremental effect is cumulatively considerable.[12] It further states that this discussion must reflect the level and severity of the impact and the likelihood of occurrence, but not in as great a level of detail as for the project.

The information used in an analysis of cumulative impacts comes from one of two sources (per 14 CCR § 15130 [b][1]):

A. A list of past, present, and probable future projects producing related cumulative impacts, including, if necessary, those projects outside the control of the agency.

B. A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact.

The cumulative impact analyses in this EIR use a combination of Sources A and B. Depending on the environmental category, the cumulative impact analysis in each topical section of this EIR may use either source. Some impacts are site adjacent, such as aesthetics, and others may have impacts outside the immediate vicinity, such as traffic.

[12] 14 CCR § 15065 (a)(3) "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

Figure 4-1- Aerial Photograph
4. Environmental Setting

School Boundary

1 Detention Basins (5)

0 700
Scale (Feet)

Source: Google Earth Pro, 2020

4. Environmental Setting

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Figure 4-2- Photograph Location Key

4. Environmental Setting

1 Photo Location and Direction (6)

Site Boundary

0 400
Scale (Feet)

Source: Google Earth Pro, 2020

4. Environmental Setting

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Figure 4-3a - Site Photographs

4. Environmental Setting

1 View looking northwest across basketball courts. Stadium is on left, and residences on right.

2 View looking north toward football field concession and ticket structure.

3 View looking south toward turf area (proposed auxiliary gym location). Student parking lot in background.

4. Environmental Setting

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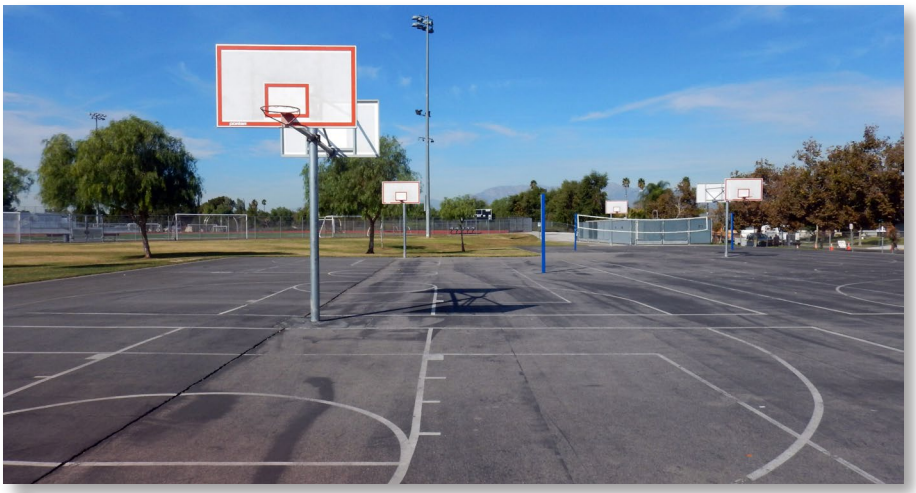
Figure 4-3b - Site Photographs

4. Environmental Setting



4 View looking northwest across basketball courts.

5 View looking northeast across soccer field. Stadium is shown on right.

6 View looking northwest toward double railroad tracks from Jackson Street.

4. Environmental Setting

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5. Environmental Analysis

Chapter 5 examines the environmental setting and impacts associated with the proposed project. This chapter has three sections: Aesthetics, Noise, and Transportation. This scope was determined through public and agency comments received during the NOP comment period from February 17, 2020, to March 18, 2020 (see Appendix A).

Certain environmental topics were determined to not be significantly affected by the project; these topics are discussed in Chapter 8 of this EIR.

Organization of Environmental Analysis

To assist the reader in reviewing the environmental analysis, each topical section of Chapter 5 is organized as follows:

- Environmental Setting
- Thresholds of Significance
- Plans, Programs, and Policies
- Environmental Impacts
- Cumulative Impacts
- Level of Significance Before Mitigation
- Mitigation Measures
- Level of Significance After Mitigation

In addition, at the end of Chapter 1, *Executive Summary*, is a table that summarizes all impacts by environmental issue. Bibliographical references and individuals cited for information sources and technical data are footnoted throughout this document.

Impact Terminology

The level of significance is identified for each impact in this Draft EIR. Although the criteria for determining significance are different for each topical area, the environmental analysis applies a uniform classification of the impacts based on definitions consistent with CEQA and the CEQA Guidelines.

- **No impact.** The project would not change the environment.

- **Less than significant.** The project would not cause any substantial, adverse change in the environment.

- **Less than significant with mitigation incorporated.** The EIR includes mitigation measures that avoid substantial adverse impacts on the environment.

- **Significant and unavoidable.** The project would cause a substantial adverse effect on the environment, and no feasible mitigation measures are available to reduce the impact to a less than significant level.

5.1 AESTHETICS

This section of the Draft Environmental Impact Report (Draft EIR) evaluates the potential for the Arlington High School Modernization and New Construction project to impact aesthetic and visual character of the area. Specifically, this section analyzes changes to the existing visual character and quality of the site and the surrounding area as well as light and glare that may adversely affect views in the area. The analysis in this section is based in part on the lighting plan provided by Musco Lighting, visual simulations, field reconnaissance, and site and aerial photographs.

Aesthetics/Visual Character Analysis

There are no locally designated or defined standards or methodologies for the assessment of aesthetic impacts, and characterizing aesthetics can be highly subjective. The evaluation of aesthetics requires the application of a process that identifies the nearby sensitive receptors and determines their relative views. This analysis attempts to identify and objectively examine factors that contribute to the perception of aesthetics. Nearby residents are considered sensitive viewers. The project-related changes to the aesthetic character of the site and surrounding areas are identified and qualitatively evaluated based on the proposed modifications to the existing setting and the viewer's sensitivity.

Visual impacts are considered potentially significant where they would cause a substantial, demonstrable degradation of the existing visual character or quality of a site. This determination is based on several criteria, including observer position, views, and characteristics of the proposed development.

The key factors are the extent to which the project is compatible with the character, scale, and form of surrounding development that are influenced by grade differences, landform alteration, building setbacks, scale, massing, construction materials, and landscaping associated with the design of the proposed project.

Light and Glare

Nighttime illumination and glare analysis addresses the effects of a project's exterior lighting upon adjoining areas. Light and glare impacts are determined through a comparison of the existing light sources with the proposed stadium lighting plan. The analysis and evaluation of the lighting requirements for the project were conducted by the manufacturer of the lighting equipment—Musco Lighting, using the Illuminating Engineering Society's *The Lighting Handbook* (10th ed.). The following definitions include terms that are found throughout the lighting analysis and the EIR.

Terminology

The foot-candle (fc) is a unit based on English measurements. Although foot-candles are considered obsolete in some scientific circles, they are nevertheless used because many existing light meters are calibrated in foot-candles. Moonlight produces approximately 0.01 fc, and sunlight can produce up to 10,000 fc. The general benchmarks for light levels are shown in Table 5.1-1.

Table 5.1-1 General Light Levels Benchmark

Outdoor Light	Foot-Candles
Direct Sunlight	10,000
Full Daylight	1,000
Overcast Day	100
Dusk	10
Twilight	1
Deep Twilight	0.1
Full Moon	0.01
Quarter Moon	0.001
Moonless Night	0.0001
Overcast Night	0.00001
Gas station canopies	25–30
Typical neighborhood streetlight	1.0–5.0

Source: National Optical Astronomy Observatory (NOAO). 2020 (accessed). Recommended Light Levels. https://www.noao.edu/education/QLTkit/ACTIVITY_Documents/Safety/LightLevels_outdoor+indoor.pdf.

Horizontal foot-candle. The amount of light received on a horizontal surface such as a roadway or parking lot pavement.

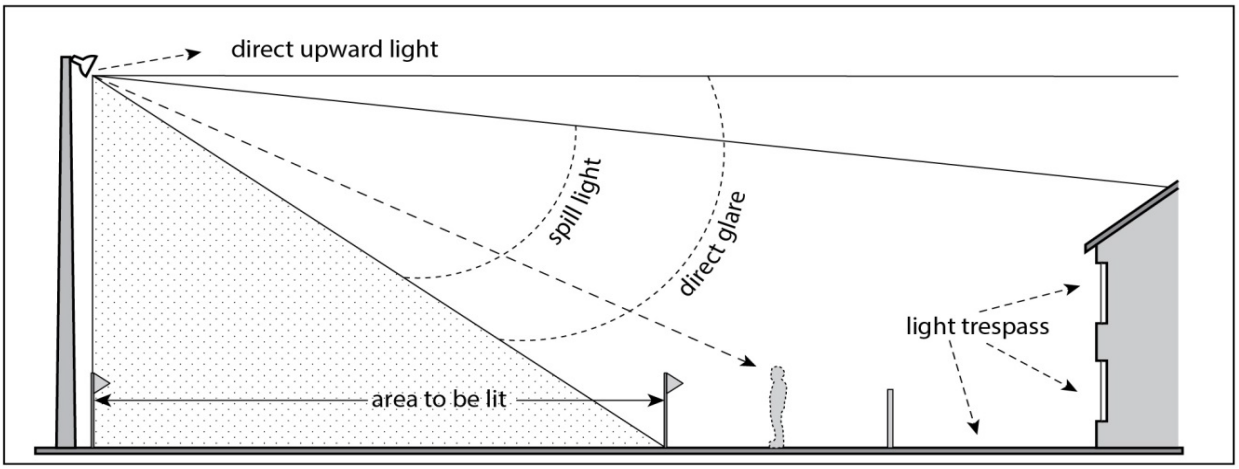
Vertical foot-candle. The amount of light received on a vertical surface such as a billboard or building façade.

Glare means lighting entering the eye directly from a light fixture or indirectly from reflective surfaces that causes visual discomfort or reduced visibility. Glare can be generated by building-exterior materials, surface-paving materials, vehicles traveling or parked on roads and driveways, and stadium lights. Any highly reflective façade material is a concern because buildings can reflect bright sunrays. The concepts of spill light, direct glare, and light trespass are illustrated in Figure 5.1-1, *Spill Light, Direct Glare, and Light Trespass*, adapted from the Institution of Lighting Engineers.[1]

Direct glare is caused by looking at an unshielded lamp or a light at maximum candlepower. Direct glare is dependent on the brightness of the light source, the contrast in brightness between the light source and the surrounding environment, the size of the light source, and its position.

[1] Institution of Lighting Engineers (ILE). 2003, May. Guidance Notes for the Reduction of Light Pollution. https://www.gov.je/SiteCollectionDocuments/Planning%20and%20building/SPG%20Lightpollution%202002.pdf.

Figure 5.1-1 Spill Light, Direct Glare, and Light Trespass



Illuminance is the amount of light on a surface or plane, typically expressed in a horizontal plane (e.g., on the ground) or in a vertical plane (e.g., on the side of a building).

Lumen means the unit of measure used to quantify the amount of visible light produced by a light source or emitted from a luminaire (as distinct from "watt," a measure of power consumption).

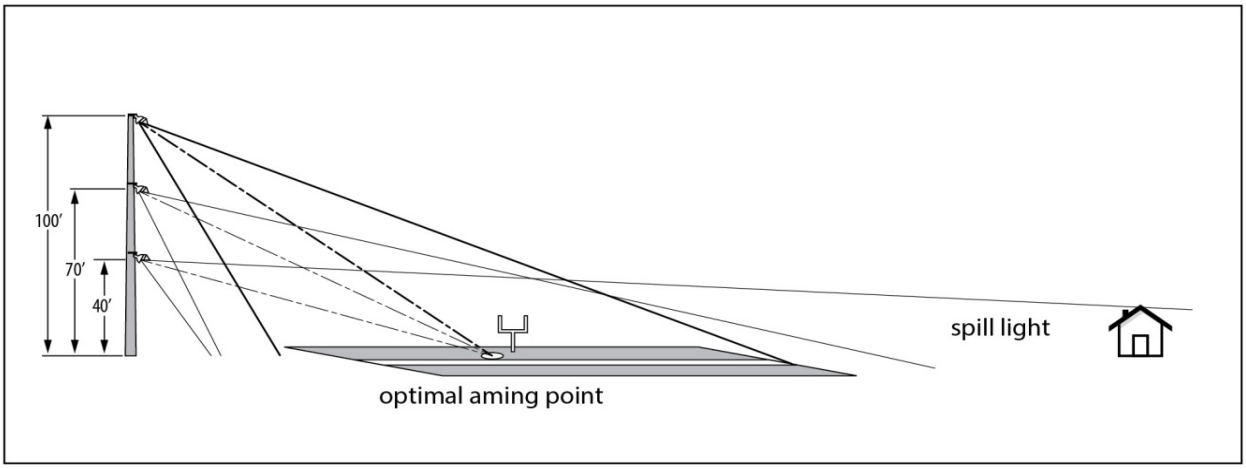
Luminaire means outdoor electrically powered illuminating devices that include a light source, outdoor reflective or refractive surfaces, lenses, electrical connectors and components, and all parts used to mount the assembly, distribute the light, and/or protect the light source, whether permanently installed or portable. An important component of luminaires is their shielding:

- **Fully shielded.** A luminaire emitting no light above the horizontal plane.
- **Shielded.** A luminaire emitting less than 2 percent of its light above the horizontal plane.
- **Partly shielded.** A luminaire emitting less than 10 percent of its light above the horizontal plane.
- **Unshielded.** A luminaire that may emit light in any direction.

Light trespass means light that falls beyond the property on which it originates. The amount of trespass is expressed in foot-candles and is measured in the vertical plane at five feet above grade at the property line of the site on which the light(s) is located. If the adjacent property is a street, alley, or sidewalk, the point at which trespassing light is measured is the center of the street, alley, sidewalk, or right-of-way. Field measurements to determine light trespass compliance do not include the effect of light produced by street lights.

As a general rule, taller poles allow fixtures to be aimed more directly on the playing surface, which reduces the amount of light spilling into surrounding areas. Proper fixture angles ensure even light distribution across the playing area and reduce spill light, as shown in Figure 5.1-2, *Pole Heights and Lighting Angles*.

Figure 5.1-2 Pole Heights and Lighting Angles



Sky Glow is light that reflects into the night sky and reduces visibility of the sky and stars. It is a concern in many jurisdictions, especially those with observatories.

5.1.1 Environmental Setting

5.1.1.1 REGULATORY FRAMEWORK

There are no applicable regulations that govern high school field lighting.

5.1.1.2 EXISTING CONDITIONS

Visual Character

The project site is surrounded by single-family residential development with an active BNSF double-track railroad right-of-way to the north. The project site is visually characterized by one- and two-story school buildings, surface parking, hardcourts, student gathering areas, and ornamental trees and landscaping. The general topography of the project site is flat. The primary character-defining feature of the project site is the flat, rectangular, football/soccer field, which consists of artificial turf field and a synthetic running track that surrounds the field perimeter.

The project site generally consists of two main areas: outdoor athletic facilities on the northern end and the campus core on the southern end (see Figure 4-1 in Chapter 4). The existing football/soccer field is in the northeastern corner of the campus and surrounded by other campus facilities to the east, west, and south. People who can view the campus are in residential areas to the east, south, and west. The nearest residential uses are approximately 50 feet (from property lines) to the east across Irving Street, to the west across Jackson Street, and to the south cross Lincoln Street. One- and two-story single-family homes are located on Lincoln Street and Jackson Street and one-story homes are on Irving Street.

Lighting

The project area is developed with urban uses such as residential and institutional uses, and there are typical urban nighttime lighting sources, including street lights, exterior security and building lights, vehicle headlights, and parking lot lights. There are currently four 70-foot-tall light poles on the football/soccer field, and the existing school generates nighttime light from parking lots and buildings (interior and exterior).

5.1.2 Thresholds of Significance

Appendix G of the CEQA Guidelines states that, "except as provided in Public Resources Code Section 21099," a project would normally have a significant effect on the environment if the project would:

AE-1 Have a substantial adverse effect on a scenic vista.

AE-2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

AE-3 In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality.

AE-4 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

5.1.3 Plans, Programs, and Policies

Light and glare would have a significant impact if the project would create substantial glare or if project lighting would substantially exceed industry lighting standards. According to the City of Riverside Code of Ordinances, Chapter 19, Section 19.556, Outdoor Lighting, the maximum allowable light trespass for residential and nonresidential uses is 0.5 fc of illumination.[2] Therefore, a lighting impact is considered significant if it results in 0.5 horizontal foot-candle at the property line of a sensitive receptor, such as a residence.

- Section 19.556.060, Lighting zones

  A. Lighting zones are defined as follows:

    1. Lighting Zone 0 (Zero) shall include undeveloped areas of parks, recreation areas, and wildlife preserves. These areas are undeveloped or intended to be preserved in a natural state that require little or no exterior light at night.

[2] City of Riverside. 2020. Code of Ordinances. https://library.municode.com/ca/riverside/codes/code_of_ordinances?nodeId=PTIICOOR_TIT19ZO_ARTVIIISIPLGEDEPR_CH19.556OULI_19.556.080DEDEST.

2. Lighting Zone 1 (One), shall include developed portions of parks, recreation areas, wildlife preserves, and the area within the Mt. Palomar Observatory boundary as shown in the General Plan which are suitable for low levels of exterior lighting at night.

3. Lighting Zone 2 (Two) shall include all areas of the City that are zoned RA-5 [Residential Agricultural Zone], RC [Residential Conservation Zone] and RR [Rural Residential Zone] which are suitable for modest levels of exterior lighting at night.(residential areas surrounding the school are zoned R-1 Additional Single-family Residential Zone)

4. Lighting Zone 3 (Three) shall include all other areas of the City not in Lighting Zones 0, 1 or 2 which are suitable for medium to high levels of exterior lighting at night. The school and surrounding areas are in zone 3. School stadium lighting is not regulated by the City; however, the maximum allowable light trespass in Zone 3 is 0.5 fc.

5.1.4 Environmental Impacts

5.1.4.1 IMPACT ANALYSIS

The applicable thresholds are identified in brackets after the impact statement.

Impact 5.1-1: The proposed project would not have a substantial adverse effect on a scenic vista. [Threshold AE-1]

Vistas provide visual access or panoramic views to a large geographic area. The field of view from a vista location can be wide and extend into the distance. Panoramic views are usually associated with vantage points looking out over a section of urban or natural areas that provide a geographic orientation not commonly available. Examples of panoramic views include an urban skyline, valley, mountain range, the ocean, or other water bodies.

The campus and surrounding area are flat and developed with residential, commercial, recreational, and institutional uses. The campus includes one to two-story buildings, surface parking, hardcourts, student gathering areas, and ornamental trees and landscaping. Although the project would include new buildings, there are no protected or designated scenic vistas or views in the project vicinity. New buildings would have an overall height similar to existing buildings. The new buildings would not obscure any scenic vistas. Therefore, no impact to scenic vistas would occur.

Impact 5.1-2: The proposed project would not alter scenic resources within a state scenic highway. [Threshold AE-2]

The only officially designated state scenic highways in Riverside County are State Route 74 (SR-74 or Palms to Pines Highway, part of Palms to Pines Scenic Byway) approximately 35 miles east of the campus, and State Route 243 (SR-243 or Banning-Idyllwild Panoramic Highway, also part of the Palms to Pines Scenic Byway)

approximately 37 miles east of the campus.[3] The new buildings would not be visible from these highways. Additionally, the campus is not visible from the eight eligible state scenic highways in Riverside County[4] or any city-designated scenic boulevards.[5] Project development would not result in impacts to scenic resources within a designated state scenic highway. Therefore, no impact would occur.

Impact 5.1-3: Located in an urbanized area, the proposed project would not conflict with applicable zoning and other regulations governing scenic quality. [Threshold AE-3]

The campus is in a developed area that qualifies as an "urbanized area" and is surrounded by residential, commercial, recreational, and institutional uses.[6] The school property is zoned R-1-7000 (single-family residential zone; schools are allowed).

The proposed facilities are not uncommon to a high school campus and would not be inconsistent or out of scale with the other school facilities. Arlington HS was constructed in 1973 and has been a part of the community for the last 46 years. The improvements would be constructed within the confines of the existing high school campus, and no new property would be acquired. No changes to any zoning code or general plan land use designation would be required. The project would not conflict with residential zoning or regulations governing scenic quality.

Impact 5.1-4: The proposed project would not generate significant light and glare. [Threshold AE-4]

Light and glare are determined to have a significant impact if the project would create substantial glare or if project lighting would substantially exceed established lighting standards typical in the area. See Appendix B for field lighting and bleacher data.

Light

Field lighting currently consists of four 70-foot-tall poles, each with 8 metal halide medium-beam parabolic flood lamps. The light poles at the home side also have four lights at about 40 feet pointed west toward the soccer fields. Each pole also has egress lights at about 20 feet above the ground, that are turned on in the event of stadium light failure to safely evacuate the stadium. All campus parking lots and walkways currently have security lighting (see Figure 5.1-3, *Existing Campus Lights*). Additionally, along Irving Street are seven street lights: on the cul-de-sac, at the corner of Irving Street and Cherbourg Drive, midblock across from 2979 Irving Street, near the school parking lot driveway, two at the corner of Continental Drive, and at the corner of Lincoln Avenue.

[3] California Department of Transportation (Caltrans). 2020, February 13. California Highway System. https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=026e830c914c495797c969a3e5668538.

[4] California Department of Transportation (Caltrans). 2020, February 13. California Highway System. https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=026e830c914c495797c969a3e5668538.

[5] City of Riverside. 2012, November. City of Riverside General Plan 2025 Transportation Element. https://www.riversideca.gov/planning/gp2025program/GP/05_Circulation_and_Community_Mobility_Element.pdf.

[6] PRC § 21071/CEQA Guidelines § 15191(m)(1). For an incorporated city, "urbanized area" means a city that either by itself or in combination with two contiguous incorporated cities has a population of at least 100,000 persons. The city of Riverside has a population of about 321,570. (U.S. Census Bureau. 2017 ACS 5-Year Population Estimate. https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml.)

The project would include the replacement of field lights to provide better illumination for evening events and activities. Use of the track and football/soccer field lighting system may reduce nighttime light-intensity levels at neighboring receptors.

The intent of the new lighting is to meet the 50 fc average set by the Illuminating Engineering Society (IES) and the California Interscholastic Federation field lighting recommendations. This light level would be for maximum capacity varsity football games and similar events that require the highest levels of light for players' safety, optimal playing conditions, and good visibility for spectators. All other events would operate at 30 fc average or less. The lighting control system would be programmable for various lighting levels for different events.

Field lighting would consist of four in-ground precast concrete bases with 80-foot-high (visitor side) and 90-foot-high (home side) galvanized steel poles, with spill and glare shielding on each of the luminaires. The four light poles would be installed at approximately the 10-yard line on the outside edge of the bleachers. The 80- and 90-foot pole heights are important for maintaining the 50 fc average value and minimizing spill light off the school property. The ideal pole height is based on the light beam angles per IES standards, the manufacturer's equipment, and the pole locations (i.e., set back from the field).

The lighting design would use the Green Generation system on each light pole, which uses nine 1,500-watt LED luminaires at the top to maintain the recommended 50 fc average and two 575-watt LED luminaires at about 16 feet above ground for bleacher safety. Green Generation luminaires concentrate more light on the field area, with less light emitted outside the targeted areas compared to other systems. Additionally, the lighting system can be switched to a "dimmed" setting by selecting the upper or lower banks of light fixtures separately to achieve 30 to 60 percent of full light output. This allows the lights to be turned on to full brightness during a football game and turned down during other events not requiring full brightness. The lights would be dimmed after an athletic event as team members exit the athletic field, spectators vacate the bleachers, and high school staff clean up the area. Similar to the existing lights, the replacements would have lights on each pole, called egress lights, that would be turned on in the event of stadium light failure to safely evacuate the stadium. The proposed lighting system would have a manual, keyed switch for on-off control. The field lights would be in operation for approximately four hours during any single evening.

The 80-foot-tall light poles provide the minimum height required to effectively illuminate the field area with an average maximum of 50 fc. It is not possible to eliminate all spill light, but the pole height allows the best control for focusing the lights to minimize spillover light. Higher mounting heights are more effective in controlling spill light, because a narrower light beam may be used, making it easier to confine the light to the field area. Lower mounting heights increase the spill light beyond the property boundaries. Lower mounting heights make bright parts of the floodlights more visible from positions outside the field boundary, which can increase glare. The 90-foot-tall lights are on the home side facing the residential properties along Irving Street to better control spill light (see Appendix B for information, illustrations, simulations, and schematics on the replacement field lighting).

The highest levels of nighttime light are anticipated during a varsity football game, when all of the 56 top-of-pole field lights are turned on to generate an average 50 fc level on the field. Light levels along the residential

side of Irving Street (at the street curb) would range from 0.12 to 0.00 horizontal fc and 0.36 to 0.00 vertical fc (see Figure 5.1-4, *Photometric Study*).

Light levels would not exceed 0.5 fc at sensitive residential receptor property lines. Following installation, each light would be calibrated and adjusted to ensure that spill light does not occur at residences, and the lighting engineer would take field measurements to demonstrate that actual spill light levels at residential property lines do not exceed 0.5 fc. Field lighting impacts would be less than significant.

Glare

Field lighting would include high intensity lamps, which, if not installed properly, could cause glare impacts for people in the residential areas. The design elements for glare control include mounting height, visors and shielding, and reflective housing around the lamp. The proposed lighting incorporates all of these elements, and each element can be arranged individually to control and minimize any potential glare impacts. The luminaires are equipped with large hoods and shields and are specially designed to direct the light onto the track and field with minimum glare. Precise position of the fixtures, accurate focusing of the light beams, and the shielding of the arc of the beams would eliminate glare impacts at surrounding residential uses and roadways. As part of the project, the lighting engineer that installs the lights would ensure that the lights are properly adjusted and maintained so that glare would not impact the surrounding community. Therefore, glare impacts would be less than significant.

5.1.5 Cumulative Impacts

Impacts related to aesthetic and visual resources are generally localized and affect the immediate vicinity of the project site. The project would make improvements on the existing Arlington HS campus, and the surrounding area is fully developed without any protected views or unique visual resources. Therefore, the proposed project would be compatible with the existing uses and would not result in an individually significant visual impact. Therefore, no adverse cumulative impacts related to views are anticipated.

The replacement nighttime field lighting would not substantially increase the cumulative lighting and glare levels in the area. Maximum-capacity events, such as home varsity football games and graduations for Arlington HS, are currently held at the Ramona High School (at 7675 Magnolia Avenue). The events at Ramona HS would be reduced, and Arlington HS events would increase. Actual light levels within the city would not change. Furthermore, with the highly evolved sports lighting technology used by the manufacturer, the proposed lighting would not add considerably to the present light conditions outside the field. In consideration of the preceding factors, the project's contribution to cumulative aesthetic impacts would be rendered less than considerable, and therefore less than cumulatively significant.

5.1.6 Level of Significance Before Mitigation

The following impacts would be less than significant: 5.1-1, 5.1-2, 5.1-3, and 5.1-4.

5.1.7 Mitigation Measures

No mitigation measures are required.

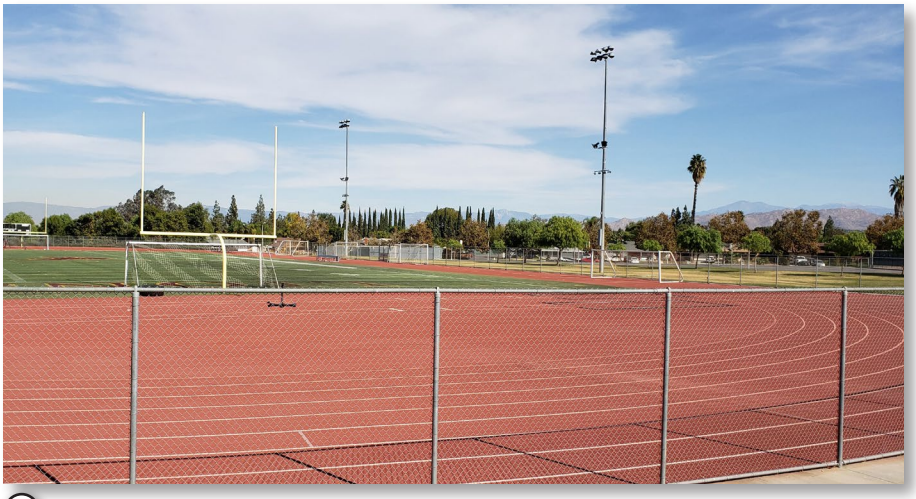
5.1.8 Level of Significance After Mitigation

Aesthetic impacts would be less than significant.

Figure 5.1-3 - Existing Campus Lights

5. Environmental Analysis

1 View looking north toward bleachers and field lighting. Future home side bleacher expansion.



2 View looking northeast toward field lights and adjacent neighborhood. Future visitor side bleachers.

3 View looking east northeast toward tennis courts and adjacent neighborhood. Note pathway lighting.

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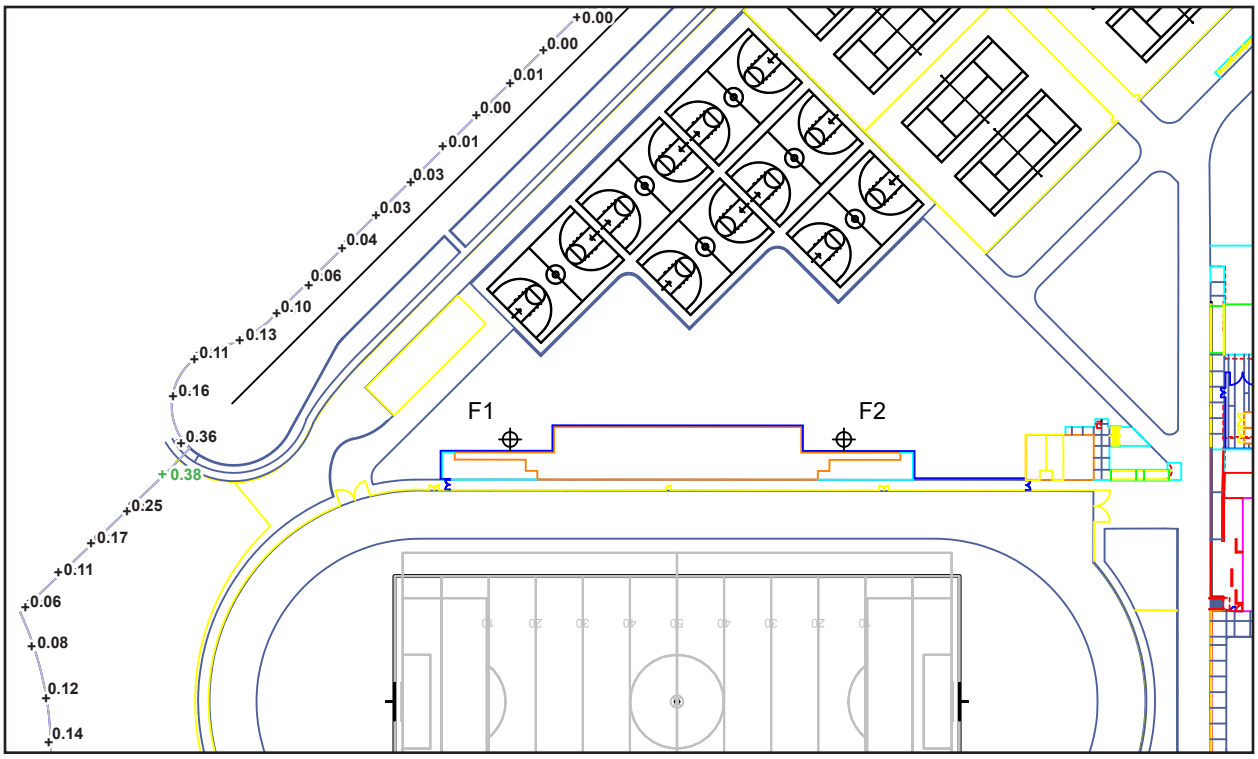
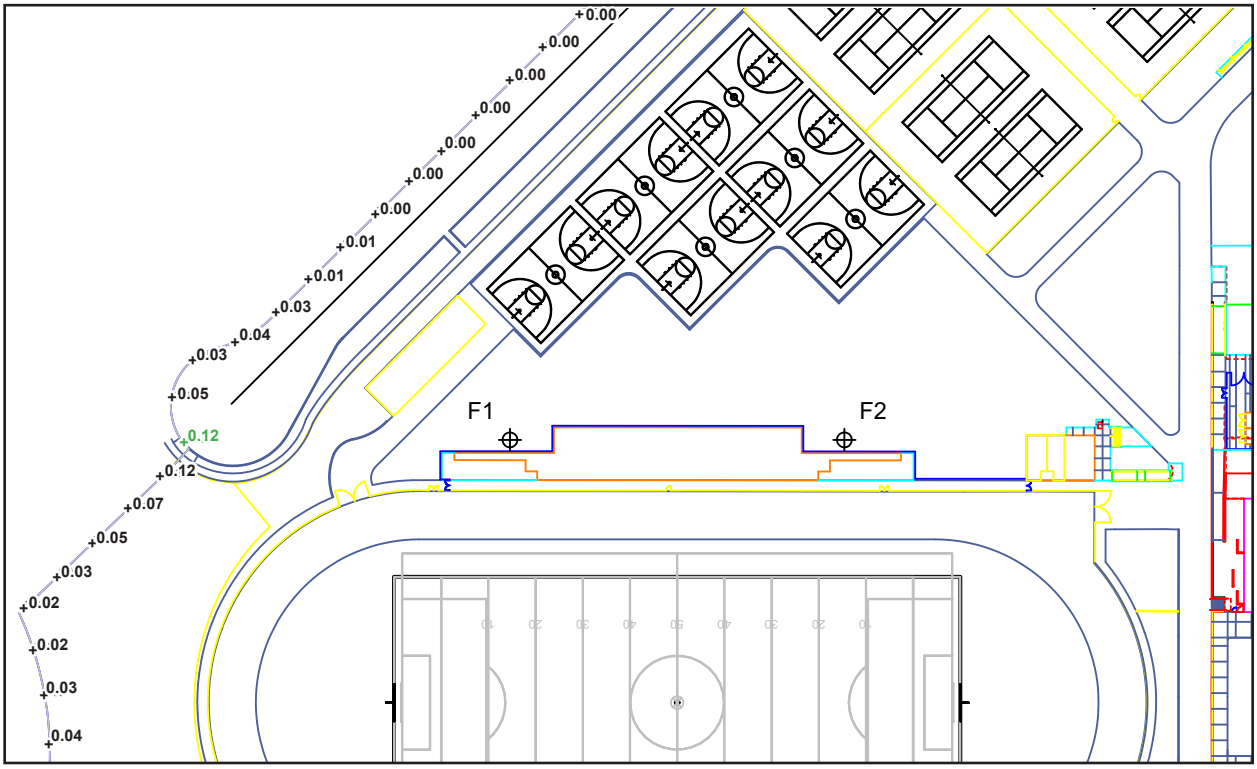
Figure 5.1-4 - Photometric Study

5. Environmental Analysis



Vertical foot-candles along Irving Street



Horizontal foot-candles along Irving Street

0 120
Scale (Feet)

Source: MUSCO Lighting, 2020

5. Environmental Analysis
AESTHETICS

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5.2 NOISE

This section of the Draft Environmental Impact Report (Draft EIR) evaluates the potential for the Arlington High School Modernization and New Construction project to impact the noise environment in the local vicinity. Specifically, this section summarizes relevant federal, state, and local noise guidelines, policies, and standards; reviews noise levels at existing receptor locations; and evaluates potential noise impacts. This evaluation uses procedures and methodologies specified by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The analysis in this section is based in part on the noise modeling data in Appendix C of this Draft EIR.

TERMINOLOGY

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound on a logarithmic scale.

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 pm to 10:00 pm and 10 dB from 10:00 pm to 7:00 am. For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than

1 dB (with the CNEL being only slightly more restrictive, that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as equivalent in this assessment.

- **Peak Particle Velocity (PPV).** The peak signal value of an oscillating vibration velocity waveform usually expressed in inches per second (in/sec).
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Noise and Vibration Fundamentals

Noise is defined as unwanted sound and is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness." Based on these known adverse effects of noise, the federal government, the State of California, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

Sound Fundamentals

Sound is a pressure wave transmitted through the air. It is described in terms of loudness or amplitude (measured in decibels), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel (dB). Changes of 1 to 3 dBA are detectable under quiet, controlled conditions, and changes of less than 1 dBA are usually indiscernible. A 3 dBA change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dBA is readily discernable to most people in an exterior environment, and a 10 dBA change is perceived as a doubling (or halving) of the sound.

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all and are "felt" more as a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise is defined as unwanted sound and is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, the federal government, the State of California, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

Sound Measurement

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies.

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. On a logarithmic scale, an increase of 10 dBA is 10 times more intense than 1 dBA, while 20 dBA is 100 times more intense, and 30 dBA is 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than 0 dBA. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single point source, sound levels decrease by approximately 6 dBA for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dBA for each doubling of distance in a hard site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases by 4.5 dBA for each doubling of distance.

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. These "L" values are typically used to demonstrate compliance for stationary noise sources with a city's noise ordinance, as discussed below. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, an artificial dB increment is added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment of 5 dBA be added to the actual noise level for the hours from 7:00 AM. to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 p.m. and 10:00 p.m. Both descriptors give roughly the same 24-hour level with the CNEL being only slightly more restrictive (i.e., higher).

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, and thereby affecting blood pressure, functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA could result in permanent hearing damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 190 dBA will rupture the eardrum and permanently damage the inner ear.

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium, such as the ground or a building. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers.

Amplitude

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal, and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage. The units for PPV are normally inches per second (in/sec). Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration.

The way in which vibration is transmitted through the earth is called propagation. As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 5.2-1 shows the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 5.2-1 Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity	Human Reaction	Effect on Buildings
0.006–0.019 in/sec	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08 in/sec	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10 in/sec	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e., not structural) damage to normal buildings
0.20 in/sec	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6 in/sec	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2013, September. Transportation and Construction Vibration Manual.

5.2.1 Environmental Setting

5.2.1.1 REGULATORY FRAMEWORK

To limit population exposure to physically and/or psychologically damaging and intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

State

California Code of Regulations

Title 24, Part 11. The State of California's noise insulation standards for nonresidential uses are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 11, California Green Building Standards Code (CALGreen). CALGreen noise standards are applied to new or renovation construction projects in California to control interior noise levels resulting from exterior noise sources. Proposed projects may use either the prescriptive method (Section 5.507.4.1) or the performance method (5.507.4.2) to show compliance. Under the prescriptive method, a project must demonstrate transmission loss ratings for the wall and roof-ceiling assemblies and exterior windows when located within a noise environment of 65 dBA CNEL or higher. Under the performance method, a project must demonstrate that interior noise levels do not exceed 50 dBA $L_{eq(1hr)}$.

Title 5, Section 14040(q). Under Title 5, the California Department of Education (CDE) regulations require the school district to consider noise in the site selection process. As recommended by CDE guidance, if a school district is considering a potential school site near a freeway or other source of noise, it should hire an acoustical engineer to determine the level of sound that the site is exposed to and to assist in designing the school should that site be chosen.

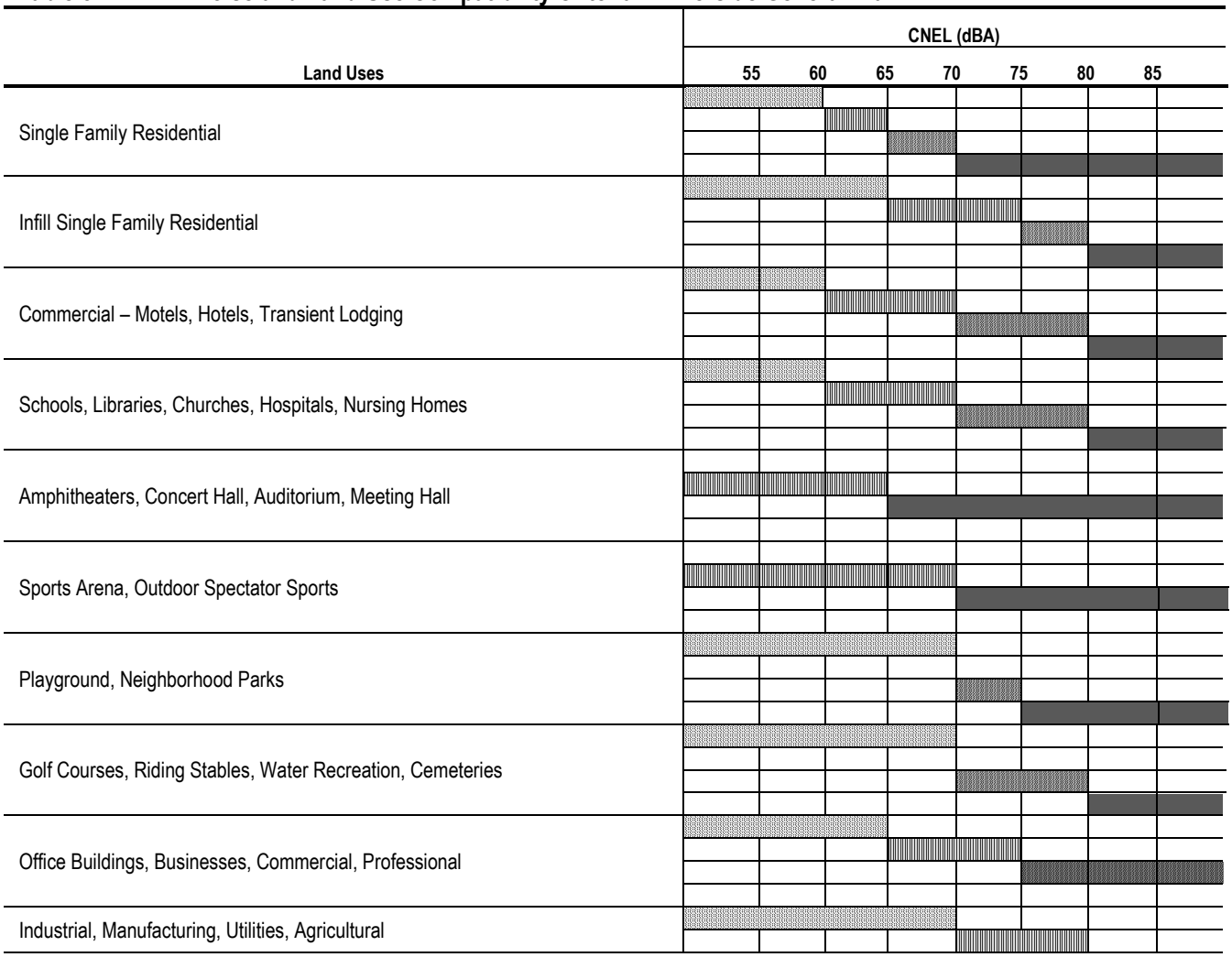
Local

City of Riverside General Plan

Principal noise sources in the city of Riverside are from transportation, specifically from major arterial roadways; SR-91, SR-60, and I-215; train movement along railroad lines; and aircraft overflight noise from Riverside Municipal Airport, Flabob Airport, and March Air Reserve Base.

The City of Riverside's General Plan Noise Element has set forth land use guidelines to protect residential neighborhoods and noise-sensitive receptors such as schools and hospitals from potentially harmful noise sources.[1] The noise and land use compatibly criteria are shown in Table 5.2-2.

Table 5.2-2 Noise and Land Use Compatibility Criteria – Riverside General Plan



[1] Riverside, City of. February 2018. Riverside General Plan 2025. https://www.riversideca.gov/planning/gp2025program/general-plan.asp

Table 5.2-2 Noise and Land Use Compatibility Criteria – Riverside General Plan

Land Uses	CNEL (dBA) 55	60	65	70	75	80	85
Freeway Adjacent Commercial, Office, and Industrial Uses							

Explanatory Notes

Normally Acceptable:
Specific land use is satisfactory, based on the assumption that any building is of normal conventional construction without any special noise insulation requirements.

Normally Unacceptable:
New construction or development should generally be discouraged. If new construction or development does not proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Conditionally Unacceptable:
New construction or development should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level if new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

Source: State Department of Health, as modified by the City of Riverside. Riverside, City of. February 2018. Riverside General Plan 2025. https://www.riversideca.gov/planning/gp2025program/general-plan.asp
* For properties located within airport influence areas, acceptable noise limits for single-family residential uses are established by the Riverside County Airport Land Use Compatibility Plan.

City of Riverside Municipal Code

Where the intruding noise source is an air-conditioning unit or refrigeration system, the exterior noise level when measured at the property line must not exceed 60 dBA for units installed before January 1, 1980, and 55 dBA for units installed after January 1, 1980. Exterior noise standards are summarized in Table 5.2-3.

Table 5.2-3 Exterior Noise Standards

Land Use Category	Time Period	Noise Level in dBA
Residential	Night: 10:00 pm to 7:00 am	45
	Day: 7:00 am to 10:00 pm	55
Office/Commercial	Any time	65
Industrial	Any time	70
Community support	Any time	60
Public recreation facility	Any time	65
Nonurban	Any time	70

Source: City of Riverside Code of Ordinances, Title 7, Noise Control. https://library.municode.com/ca/riverside/codes/code_of_ordinances
Note: If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

The City of Riverside noise regulations are enforced through its code of ordinances. The code provides decibel corrections that shall not exceed the following:

- The exterior noise standard of the applicable land use category, up to 5 decibels, for a cumulative period of more than 30 minutes in any hour (L_{50}).
- The exterior noise standard of the applicable land use category, plus 5 decibels, for a cumulative period of more than 15 minutes in any hour (L_{25}).
- The exterior noise standard of the applicable land use category, plus 10 decibels, for a cumulative period of more than five minutes in any hour (L_8).
- The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour (L_2).
- The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level (L_{max}), for any period of time.

Construction Noise

Per section 7.35.010 of the municipal code, it is unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive, or offensive noise that causes discomfort or annoyance to reasonable persons of normal sensitivity, including conducting construction activities between the hours of 7:00 pm and 7:00 am on weekdays and between 5:00 pm and 8:00 am on Saturdays, or at any time on Sunday or federal holidays.

Exemptions

Sounds from authorized school bands, school athletic and school entertainment events conducted between the hours of 7:00 am and 10:00 pm are exempt from the provisions of the municipal code per section 7.35.020.

Vibration Standards

The City of Riverside does not have specific limits or thresholds for vibration. The Federal Transit Administration (FTA) provides criteria for acceptable levels of ground-borne vibration for various types of buildings. The FTA criteria are used for this analysis. Structures amplify groundborne vibration, and wood-frame buildings, such as typical residential structures, are more affected by ground vibration than heavier buildings. The level at which groundborne vibration is strong enough to cause architectural damage has not been determined conclusively. The most conservative estimates are reflected in the FTA standards shown in Table 5.2-4.

Table 5.2-4 Groundborne Vibration Criteria: Architectural Damage

Building Structural Category	PPV, in/sec
I. Reinforced-concrete steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Engineered concrete and masonry (no plaster)	0.2
IV. Engineered concrete and masonry (no plaster)	0.12

Source: Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual. September.
PPV = peak particle velocity

5.2.1.2 EXISTING CONDITIONS

The project is in a predominantly residential area in Riverside. The noise environment surrounding the school is influenced primarily by roadway traffic from Jackson Street and Lincoln Avenue. According to the City of Riverside 2025 General Plan Noise Element, the high school and immediate vicinity are mostly within the 65 and 60 dBA CNEL freeway noise contours, which places the school in the Normally Acceptable and Conditionally Acceptable land use compatibility categories.

Intermittent noise from the high school (students talking, bells/buzzers, and evening sports) and from the BNSF railroad tracks that service commuter and freight trains north of the school contributes to the ambient noise environment.

Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. These uses include residences, schools, hospital facilities, houses of worship, open space, and recreation areas where quiet environments are beneficial to the enjoyment, public health, and safety of the community. The nearest sensitive receptors are the surrounding residential uses.

Ambient Noise Measurements

Ambient noise monitoring was conducted in the vicinity of the school by PlaceWorks from Wednesday, June 19, through Saturday, June 22, of 2019. Measurements were taken from 7:00 pm to 10:00 pm to capture high-

school sports times. Long-term (48-hour) measurements were conducted at two locations, and short-term (15-minute) measurements were conducted at four locations.

The primary noise sources were traffic, aircraft overflights, and rail noise. Urban and rural activity noise (such as dogs barking and crickets) also contributed to the overall noise environment at some locations. Meteorological conditions during the measurement periods were favorable for outdoor sound measurements and were noted to be typical for the season. Generally, conditions were clear skies with daytime temperatures from 64 to 72 degrees Fahrenheit (°F), and average wind speeds between 1 to 3 miles per hour (mph). All sound level meters were equipped with a windscreen during measurements.

All sound level meters used for noise monitoring satisfy the American National Standards Institute (ANSI) standard for Type 1 instrumentation. The sound level meters were set to "slow" response and "A" weighting (dBA). The meters were calibrated prior to and after the monitoring period. All measurements were at least five feet above the ground and away from reflective surfaces. Noise measurement locations are shown in Figure 5.2-1, *Noise Monitoring Locations*.

The following describes individual noise monitoring locations and observations made during measurements.

Long-Term Location 1 (LT-1) was off Jackson Street, north of Lincoln Avenue, approximately 35 feet east of the northbound centerline. A 48-hour noise measurement was conducted, beginning at 7:37 pm on Wednesday, June 19, 2019. The noise environment of this site is characterized primarily by Jackson Street traffic and train noise from a nearby rail crossing.

Long-Term Location 2 (LT-2) was across 3059 Irving Street, near the school's existing stadium. A 48-hour noise measurement was conducted, beginning at 8:15 pm on Wednesday, June 19, 2019. The noise environment of this site is characterized primarily by neighborhood activity such as dogs barking, pedestrians talking, school activities, and train noise from nearby tracks to the north.

Short-Term Location 1 (ST-1) was near 8870 Haskell Street, which is north of the railroad tracks. The measurement was approximately 30 feet south of the eastbound centerline. A 15-minute noise measurement was conducted, beginning at 9:43 pm on Wednesday, June 19, 2019. The noise environment of the site is primarily characterized by distinctly audible and continuous traffic noise originating from the north, presumably SR-91. The ambient was dominated by SR-91 traffic and steadily ranged from 50 dBA to 53 dBA. Secondary noise sources, such as pass-by vehicles and dogs barking, ranged from 58 dBA to 70 dBA. Pass-by vehicles were observed to be 58 dBA to 62 dBA, and dog barks were observed to be 68 dBA to 70 dBA. The ambient noise level captured was as low as 44 dBA near the last couple of minutes of the measurement, when noise from SR-91 dropped below 50 dBA.

Short-Term Location 2 (ST-2) was near 9119 Nopal Place at the end of the cul-de-sac. A 15-minute noise measurement was conducted, beginning at 9:21 pm on Wednesday, June 19, 2019. The noise environment of the site is primarily characterized by neighborhood activity; dogs barking, neighbors conversing outside, vehicles pulling in and out of driveways, and aircraft overflights. Noise levels ranged from 63 dBA to 45 dBA. The ambient noise level captured was as low as 46 dBA.

Figure 5.2-1 - Noise Monitoring Locations

5. Environmental Analysis

School Boundary

ST-1 Short-Term Noise Measurement Locations (4)

LT-1 Long-Term Noise Measurement Locations (2)

0 700
Scale (Feet)

Source: Google Earth Pro, 2019

PlaceWorks

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Short-Term Location 3 (ST-3) was near 2895 Cascabel Way at the end of the cul-de-sac. A 15-minute noise measurement was conducted, beginning at 8:51 pm on Wednesday, June 19, 2019. The noise environment of the site is primarily characterized by traffic on Lincoln Avenue. Traffic noise ranged from 57 dBA to 65 dBA. Secondary noise sources, such as airplanes and crickets, ranged between 49 dBA to 57 dBA. The ambient noise level captured was as low as 45 dBA.

Short-Term Location 4 (ST-4) was near 3009 Irving Street. The measurement was approximately 35 feet east of the southbound centerline. A 15-minute noise measurement was conducted, beginning at 8:27 pm on Wednesday, June 19, 2019. The noise environment of the site is primarily characterized by distant traffic noise originating from the north, presumably SR-91. Traffic noise ranged from 48 dBA to 52 dBA. Secondary noise sources, such as dogs barking and people talking, ranged from 50 dBA to 64 dBA. The ambient noise level captured was as low as 46 dBA. At 9:58 pm, shortly after concluding ST-4, a freight train passed by and a spot measurement was taken. The train locomotive measured 79 dBA as it passed by the measurement location; train noise ranged from 67 dBA to 70 dBA after the passing of the locomotive.

Ambient Noise Results

Field noise measurements were conducted over about three hours, and throughout that time an average of two freight trains per hour were observed. The BNSF railroad tracks north of the campus add to the overall noise environment; however, not every measurement took place during the passing of a train.

During the ambient noise survey, the CNEL noise levels at monitoring locations ranged from 67 to 70 dBA CNEL. The long-term noise measurement results are summarized in Table 5.2-5, and short-term measurements are summarized in Table 5.2-6. A graphical summary of the daily trend during long-term noise measurements is provided Appendix C.

Table 5.2-5 Long-Term Noise Measurements Summary in A-Weighted Sound Levels

Monitoring Location	Description	CNEL	Lowest $L_{eq, 1\text{-}hr}$	Highest $L_{eq, 1\text{-}hr}$
LT-1	Jackson Street, north of Lincoln Avenue	70	51.9	79
LT-2	Across from 3059 Irving Street	67	51.0	74.6

Note: Highest 24-hour measurement data used for CNEL, Lowest and Highest $L_{eq\ 1\text{-}hr}$

Table 5.2-6 Short-Term Noise Measurements Summary in A-Weighted Sound Levels

Monitoring Location	Description	15-minute Noise Level, dBA						
		Leq	Lmax	Lmin	L2	L8	L25	L50
ST-1	8870 Haskell Street, 9:43 pm, 6/19/2019	52.4	70.2	44.2	60.9	53.2	51.3	50.1
ST-2	9119 Nopal Place, 9:21 pm, 6/19/2019	47.9	62.7	41.8	56.0	51.1	46.5	44.8
ST-3	2895 – 2890 Cascabel, 8:51 pm, 6/19/2019	57.7	72.9	45.3	64.7	62.1	57.6	55.4
ST-4	3009 Irving Street, 8:27 pm, 6/19/2019	53.4	68.5	46.3	63.0	55.9	49.9	48.8

5.2.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would result in:

N-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

N-2 Generation of excessive groundborne vibration or groundborne noise levels.

N-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

5.2.2.1 CONSTRUCTION NOISE

The City does not have established noise limits for temporary construction activities. The FTA recommends a noise level limit of 90 dBA L_{eq} for residential receptors. The FTA noise threshold is used in this analysis to assess construction noise impacts that occur in the daytime hours when people are less sensitive to noise.

5.2.2.2 TRANSPORTATION NOISE

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions, and changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is readily discernible to most people in an exterior environment. Based on this, traffic noise impacts are considered significant if sensitive receptor locations experience 3 dBA or greater noise increases with implementation of the project.

5.2.2.3 STATIONARY NOISE

The City's noise ordinance establishes noise level standards for air-conditioning units of 55 dBA at receiving residential property lines for units installed after January 1, 1980.

5.2.2.4 VIBRATION

Per the FTA criteria, the threshold for architectural damage to buildings with reinforced concrete, steel, or timber (i.e., concrete industrial buildings) is 0.5 in/sec PPV, and to buildings with nonengineered timber and masonry (i.e., residential buildings) is 0.2 in/sec PPV.

5.2.3 Plans, Programs, and Policies

PPP N-1 Stationary noise will comply with the Riverside Municipal Code, Section 7.25.010, *Exterior Sound Level Limits* for residential land uses:

- 45 dBA 10:00 pm to 7:00 am
- 55 dBA 7:00 am to 10:00 pm

PPP N-2 Construction-related activities will comply with Riverside Municipal Code, Section 7.35.010, Part B, 5-Construction.

PPP N-3 Construction of new or renovation of existing buildings will be built to the State of California's noise insulation standards for nonresidential uses codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 11, California Green Building Standards Code.

5.2.4 Environmental Impacts

5.2.4.1 METHODOLOGY

Construction Noise. To calculate construction noise as it affects sensitive receptors, the FHWA Rowadway Construction Noise Model (RCNM) was used.[2] The RCNM includes reference noise levels for numerous equipment pieces and estimates construction noise levels at a distance from the source.

Traffic Noise. Traffic noise increases were estimated using the average daily segment volumes provided by Garland Associates[3] and the following formula: 10*LOG(Existing + Project/Existing).

[2] Federal Highway Administration (FHWA). 2006, January. FHWA Roadway Construction Noise Model (RCNM) User's Guide. FHWA-HEP-05-051. DOT-VNTSC-FHWA-05-01. Prepared by US Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center (Acoustics Facility).

[3] Garland Associates. 2019. Traffic Impact Analysis for the Proposed Arlington High School Expanded and New Bleachers. See Appendix D.

Vibration. The FTA's general assessment procedure has procedures to identify areas of potential impacts with potential exposure to high levels of groundborne vibration. The procedures are discussed in detail in Section 7 of the FTA's Transit Noise and Vibration Impact Assessment.[4]

5.2.4.1 IMPACT ANALYSIS

The applicable thresholds are identified in brackets after the impact statement.

Impact 5.2-1: Construction activities would result in a temporary increase in noise that would not exceed thresholds. [Threshold N-1 part]

Two types of short-term noise could occur: (1) mobile-source noise from transport of workers, material deliveries, and debris and soil haul, and (2) stationary-source noise from construction equipment. Construction equipment may include items such as graders, excavators, tractors, loaders, backhoes, forklifts, air compressors, bulldozers, and trucks.

Construction Vehicles

The transport of workers and materials to and from the construction site would incrementally increase noise levels along school access roadways. Individual construction vehicle pass-bys may create momentary noise levels of up to approximately 85 dBA L_{max} at 50 feet from worker and vendor vehicles and haul trucks. Most of the haul trips would occur during demolition debris hauling. However, these occurrences would generally be infrequent (approximately five per day) and short lived. Therefore, noise impacts from construction vehicles and haul trips would be less than significant.

Construction site access is from Jackson Street and Lincoln Avenue. Existing average daily traffic (ADT) on Jackson Street and Lincoln Avenue is 1,900 ADT and 11,500 ADT, respectively.[5] Maximum worker and vendor trips would be about 23 daily trips during building construction.[6] This would result in a temporary noise increase of less than 0.1 dBA, which would not be a perceptible increase. Noise impacts from worker and vendor trips would be less than significant.

Construction Equipment

Noise generated during construction is based on the type of equipment used, the location of the equipment relative to sensitive receptors, and the timing and duration of the noise-generating activities. Each phase of construction involves the use of different kinds of construction equipment and therefore has its own distinct noise characteristics. Noise levels from construction activities are dominated by the loudest piece of equipment. The dominant noise source is typically the engine, although work noise (such as dropping of materials) may also be noticeable. Noise levels from project-related construction activities were calculated from the simultaneous use of all applicable construction equipment at spatially averaged distances (i.e., from the center of the general construction site) to the property line of the closest sensitive receptors. Although construction

[4] Federal Transit Administration (FTA). 2018, September. Transit Noise and Vibration Impact Assessment.
[5] Traffic data provided by Garland Associates. 2019. Traffic Impact Analysis for the Proposed Arlington High School Expanded and New Bleachers. See Appendix D.
[6] Based on CalEEmod air quality modeling program in Appendix E.

may occur across the entire site, the center of the site best represents the potential average construction-related noise levels at sensitive receptors during the overall construction phase.

The noise generated is determined by combining the Leq contributions from each piece of equipment used at a given time. Construction activities would not require blasting or pile driving. Demolition and grading typically generate the highest noise levels because they require the largest pieces of equipment. Construction noise can exhibit a high degree of variability because factors such as noise attenuation due to distance, the number and type of equipment, and the load and power requirements to accomplish tasks at each construction phase result in different noise levels at a given sensitive receptor.

Construction equipment typically moves around the site and has variable power levels. Noise from construction equipment decreases by approximately 6 dB with each doubling of distance from the source. For example, the noise levels from a bulldozer that generates 85 dBA at 50 feet would attenuate to 79 dBA at 100 feet, 73 dBA at 200 feet, 67 dBA at 400 feet, and 61 dBA at 800 feet. Also, noise levels are reduced by the amount of use as well as barrier effects provided by buildings. Construction work would be intermittent and conducted in stages over 12 months; some work would be done during school breaks when students are off campus.

To calculate construction noise as it affects sensitive receptors, the FHWA RCNM calculation methodology was used. The RCNM includes reference noise levels for numerous equipment pieces. Since the RCNM calculations do not account for shielding due to intervening buildings and structures, ground effects, or air absorption, the results of these calculations are conservative (that is, they represent a "worst case" scenario). Using information provided by the District and methodologies and computer modeling inputs used for the air quality assessment, the expected construction equipment mix was estimated and categorized by construction activity. The associated, aggregate sound levels—grouped by construction activity—are summarized in Table 5.2-7.

Table 5.2-7 Project-Related Construction Noise Levels

Construction Activity Phase	Sensitive Receptors	
	Off Campus Residential Units (700 feet), dBA L_{eq}	On Campus Media Arts Academy Classrooms (75 feet), dBA L_{eq}
Demolition	63	82
Grading/Trenching	62	81
Building Construction	60	79
Asphalt Paving	63	82
Architectural Coating	51	70

Source: FHWA's RCNM software. Distance measurements were taken using Google Earth (2020) from the acoustical center of the project site.
dBA L_{eq} = Energy-Average (Leq) Sound Levels.

The Riverside Municipal Code limits construction activities to the hours of 7:00 am to 7:00 pm on weekdays and 8:00 am to 5:00 pm Saturdays. No construction activities are allowed on Sundays or federal holidays. In the

absence of quantified construction noise level standards from the City, the Federal Transit Administration's recommended threshold of 90 dBA L_{eq} is used in this analysis.[7]

Off Campus Receptors

As shown in Table 5.2-7, construction-related noise levels are estimated to reach up to 63 dBA, and therefore would not exceed the 90 dBA L_{eq} threshold at the nearest sensitive receptors (residential units 700 feet to the east, south, and west). Because average noise levels would be well below 90 dBA L_{eq}, off-campus construction noise impacts would be less than significant.

On Campus Receptors

The nearest on-campus sensitive receptors would be students and instructors in media arts academy classrooms at approximately 75 feet from the center of the construction area for the biomedical/special education building. At that distance, exterior noise levels could reach up to 82 dBA. Typical exterior-to-interior noise attenuation is 25 dBA with windows and doors closed, resulting in interior noise levels of approximately 57 dBA. Speech interference is considered intolerable when background noise levels exceed 60 dBA. However, average construction noise levels are not expected to exceed 60 dBA. In addition, to avoid classroom disruption, some work would be done during instructional breaks when students are off campus. On-campus construction noise impacts would be less than significant.

Impact 5.2-2 Project-related long-term operational noise would not exceed local standards. [Threshold N-1 part]

No new traffic trips due to students or staff would occur because the numbers of students and staff would not increase.

Stationary-Source Noise

Mechanical Equipment

HVAC equipment would be installed on top of the two new buildings—the biomedical / special education building and the auxiliary gym building. This analysis takes a conservative approach and analyzes HVAC noise by measuring the edge of the closest new building to the nearest sensitive receptor property line. The nearest sensitive receptors are residences approximately 330 feet to the west. Typical HVAC equipment generates noise levels up to 72 dBA at a distance of 3 feet. At 330 feet, noise levels would attenuate to 31 dBA or less. This would not exceed the municipal code standard of 55 dBA for air conditioners installed after January 1, 1980, and impacts would be less than significant.

Stadium Noise

New aluminum bleachers would be added to the existing bleachers on the home side (west) of the track and football/soccer field. A separate set of aluminum bleachers would be installed on the visitor side (east).

[7] Federal Transit Administration (FTA). 2018, September. Transit Noise and Vibration Impact Assessment.

Home varsity football games and graduation are currently held at Ramona High School. Upon completion of the project, they would be held at Arlington High School. Late varsity games typically start around 7:00 pm and end around 10:00 pm. High school graduation at Ramona HS starts at 6:00 pm and ends between 9:00 pm and 10:00 pm. Future graduation ceremonies at Arlington HS would have the same schedule.

Other day and nighttime use of the track and field for school-related and community-sponsored events and activities would not change.

Use of the track and football/soccer field bleachers generates noise from people and an amplified public address system (PA would not change from existing). Noise from a maximum-capacity varsity football game (3,000 seats) was modeled in SoundPLAN (sound propagation software) and compared with noise levels for existing games (maximum of 750 seats). The bleachers and PA noise were modeled based on the existing and proposed bleacher configuration and geometry. Speakers were modeled as individual point sources, and both sets of bleachers were modeled as area sources.

Future noise levels from a maximum-capacity varsity football game would increase hourly average noise levels by up to 0.3 dBA Leq at the closest residential property line. This increase is based on the PA speakers being the dominant noise source during games. Speaker volume is typically louder than noise from the bleachers so that the crowd can hear the announcements. Therefore, noise impacts would be less than significant.

School band, athletic, and entertainment events conducted between the hours of 7:00 am and 10:00 pm are exempted from the regulations in the City municipal code. Therefore, the project would not exceed standards established in the Riverside general plan or noise ordinance.

Traffic Noise

Noise increases are divided into three categories: audible, potentially audible, and inaudible. "Audible" increases are perceptible to humans. They generally refer to a change of 3 dBA or more since this level has been found to be the threshold of perceptibility in exterior environments. "Potentially audible" refers to a change in noise level between 1 and 3 dBA. Changes in noise level of less than 1 dBA are typically "inaudible" to humans except under quiet conditions in controlled environments. Only audible changes in noise levels at sensitive receptor locations (i.e., 3 dBA or more) are considered potentially significant. An increase of 3 dBA CNEL is used as a threshold for a substantial traffic noise increase. A doubling of traffic flows (i.e., 10,000 vehicles per day to 20,000 per day) would be needed to create a 3 dBA CNEL increase in traffic-generated noise levels.

No new daytime traffic trips due to students or staff would occur because the numbers of students and staff would not increase. The average daily traffic volumes along roadways were used to determine the periodic noise increase from events when operating at maximum capacity. This analysis compares the existing plus project traffic volumes to the existing traffic volumes to estimate the increase due to the project, shown in Table 5.2-8.

Table 5.2-8 Project-Related Increases in Traffic Noise

Roadway Segment	Average Daily Traffic Volumes				Traffic Noise Increase		
	Existing	Existing With Project	Future No Project	Future With Project	Project Noise Increase	Cumulative Noise Increase	Project's Cumulative Contribution
Indiana Ave - W of Jackson Street	9,600	9,780	9,980	10,160	0.08	0.25	0.08
Indiana Ave - E of Monroe Street	10,600	1,0780	11,020	11,200	0.07	0.24	0.07
Lincoln Ave - W of Jackson Street	8,900	9,080	9,260	9,440	0.09	0.26	0.08
Lincoln Ave - E of Jackson Street	7,400	8,240	7,700	8,540	0.47	0.62	0.45
Lincoln Ave - W of Irving Street	7,400	8,360	7,700	8,660	0.53	0.68	0.51
Lincoln Ave - E of Irving Street	7,400	8,250	7,700	8,550	0.47	0.63	0.45
Lincoln Ave - E of Monroe Street	8,100	8,370	8,420	8,690	0.14	0.31	0.14
Victoria Ave - W of Jackson Street	7,000	7,090	7,280	7,370	0.06	0.22	0.05
Victoria Ave - W of Monroe Street	7,000	7,140	7,280	7,420	0.09	0.25	0.08
Victoria Ave - E of Monroe Street	5,700	5,880	5,930	6,110	0.14	0.30	0.13
Jackson St - N of Indiana Avenue	11,500	11,680	11,960	12,140	0.07	0.24	0.06
Jackson St - S of Indiana Avenue	8,100	8,460	8,420	8,780	0.19	0.35	0.18
Jackson St - N of Lincoln Avenue	8,100	8,820	8,420	9,140	0.37	0.52	0.36
Jackson St - S of Lincoln Avenue	3,800	3,980	3,950	4,130	0.20	0.36	0.19
Jackson St - S of Victoria Avenue	1,900	1,990	1,980	2,070	0.20	0.37	0.19
Irving St - N of Lincoln Avenue	1,700	2,300	1,770	2,370	1.31	1.44	1.27
Irving St - S of Lincoln Avenue	1,000	1,230	1,040	1,270	0.90	1.04	0.87
Irving St - S of Victoria Avenue	1,000	1,090	1,040	1,130	0.37	0.53	0.36
Monroe St - N of Indiana Avenue	9,500	9,770	9,880	10,150	0.12	0.29	0.12
Monroe St - N of Lincoln Avenue	7,600	8,050	7,900	8,350	0.25	0.41	0.24
Monroe St - S of Lincoln Avenue	3,900	4,030	4,060	4,190	0.14	0.31	0.14
Monroe St - S of Victoria Avenue	2,400	2,490	2,500	2,590	0.16	0.33	0.15

Source: Traffic data provided by Garland Associates. 2019. Traffic Impact Analysis for the Proposed Arlington High School Expanded and New Bleachers. See Appendix D.

The noise level increase along study roadway segments is estimated to be 1.3 dBA CNEL or less, which would not exceed the threshold of 3 dBA CNEL. Therefore, traffic noise related impacts would be less than significant.

Impact 5.2-3: The project would not generate excessive groundborne vibration and groundborne noise. [Threshold N-2]

Potential vibration impacts associated with development projects are usually related to the use of heavy construction equipment.

Operational Vibration

Typically, land uses that result in vibration impacts are industrial businesses that use heavy machinery, or operation of large trucks over uneven surfaces. The operation of the project would not include any substantial long-term vibration sources. No vibration impacts from operations sources would occur.

Construction Vibration

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The effects from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures.

Damage from vibrational energy is typically a one-time event and is most likely to occur when the source and receptor are very close. The threshold for the assessment of risk of architectural damage is 0.2 inches per second peak particle velocity (in/sec PPV) for nonengineered timber and masonry buildings (which would apply to the school and surrounding structures).[8] Table 5.2-9 summarizes vibration levels for typical construction equipment at the nearest sensitive receptors. At 25 feet, typical construction equipment produces vibration levels of less than 0.2 in/sec PPV; at a distance greater than 25 feet, even vibratory roller vibration levels would attenuate to less than the 0.2 in/sec PPV.

Table 5.2-9 Typical Construction Equipment Vibration Levels

Equipment	PPV (in/sec) at 25 Feet	PPV (in/sec) at 200 Feet
Vibratory Roller	0.210	0.009
Large Bulldozer/Hoe Ram	0.089	0.004
Loaded Trucks	0.076	0.003
Jackhammer	0.035	0.002
Small Bulldozer	0.003	<0.001

Source: Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment, September.
PPV = peak particle velocity measured in inches/second

The nearest structures to construction activities are residences approximately 200 feet east of the new visitor bleachers. At that distance, vibration levels would attenuate to approximately 0.009 in/sec PPV or less, well below 0.2 in/sec PPV. Impacts would be less than significant.

[8] Federal Transit Administration (FTA). 2018, September. Transit Noise and Vibration Impact Assessment.

Groundborne Noise

Construction-related groundborne noise occurs mainly from the powered mechanical equipment for rock breaking/drilling works (such as hydraulic breaker, rock drill, pile driving rig, etc.) and tunnel boring machine.

Operation-related groundborne noise occurs when trains operate in tunnels that are close to occupied structures. Vibrations associated with train pass-bys can be transmitted through the ground and structure and be radiated as noise in the occupied spaces within the structure. The transmitted noise through structures may have potential impacts on the noise-sensitive receivers.

The project does not include activities or equipment that would generate substantial construction or operational groundborne noise. No impacts would occur.

Impact 5.2-4: The school is not in proximity to a private airstrip or an airport. [Threshold N-3]

The city of Riverside has two local airports, Riverside Municipal Airport and Flabob Airport. The closest airport to the school is Riverside Municipal Airport, approximately 2.5 miles to the north. Flabob Airport is approximately 5.3 miles away.[9] The project would not expose people residing or working in the project area to excessive noise levels, and no impact would occur.

5.2.5 Cumulative Impacts

There are no nearby planned and approved projects that would result in a cumulative construction noise at the same time as the proposed project. The project would not result in an increase of staff or students; therefore, no new trips would be generated. The cumulative traffic noise increase (project traffic plus future increase in overall traffic) was estimated to be up to 1.4 dBA CNEL above existing conditions. As discussed above, this would periodically occur during special events. In consideration of the preceding factors, the project's contribution to cumulative noise impacts would be less than significant; therefore, project impacts would not be cumulatively considerable.

5.2.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements, the following impacts would be less than significant: 5.2-1, 5.2-2, 5.2-3, and 5.2-4.

5.2.7 Mitigation Measures

No mitigation measures are required.

5.2.8 Level of Significance After Mitigation

Impacts would be less than significant.

[9] Airnav.com. 2019, July 1. Airport Information. http://www.airnav.com/airports/.

5.3 TRANSPORTATION

This section of the Draft Environmental Impact Report (Draft EIR) evaluates the potential for implementation of the Arlington High School Modernization and New Construction Measure O Project to impact transportation facilities and traffic in the city of Riverside. This section also discusses regulations; plans, policies, and programs from the City of Riverside; and existing major transportation facilities throughout the study area. The project's three new campus buildings and modernization of existing buildings and outdoor pool would not increase student enrollment or on-campus population and would not increase traffic on local roadways. Therefore, this section focuses on traffic analysis for the expanded bleachers.

The analysis in this section is based in part on the following technical studies:

- *Traffic Impact Analysis for the Proposed Arlington High School Stadium*, Garland Associates, June 2019 (see Appendix D)
- *Rail Safety Study*, PlaceWorks, January 2019 (see Appendix J)

Complete copies of these technical studies are included in the appendixes of this Draft EIR.

TERMINOLOGY

Roadway capacity is generally limited by the ability to move vehicles through intersections. A level of service is a standard performance measurement to describe the operating characteristics of a street system in terms of the level of congestion or delay experienced by motorists. The level of service (LOS) corresponds to the delay calculated. Service levels range from A through F, that is, from the best traffic conditions (uncongested, free-flowing conditions) to the worst (total breakdown with stop-and-go operation).

The methodology used to assess the operation of signalized intersections is based on the Highway Capacity Manual 2000. The intersection LOS analysis uses traffic volumes observed during the peak hour conditions. The peak hours selected for analysis are the highest volumes that occur in four consecutive 15-minute periods from 7:00 am to 9:00 am and from 4:00 pm to 6:00 pm on weekdays. Per the HCM 2000 methodology, overall average intersection delay at signalized intersections was calculated, and the worst-case approach delay was calculated at unsignalized intersections. Table 5.3-1 describes the operating conditions expected under each level of service for signalized and unsignalized intersections. The HCM 2000 methodology presents LOS in terms of control delay at intersections (in seconds per vehicle).

Table 5.3-1 Intersection Level of Service Descriptions

LOS	Description	Average Delay per Vehicle (seconds)	
		Signalized	Unsignalized
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 10.00	0 to 10.00
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average total delay.	10.01 to 20.00	10.01 to 15.00
C	Level of Service C generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.01 to 35.00	15.01 to 25.00
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.01 to 55.00	25.01 to 35.00
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	55.01 to 80.00	35.01 to 50.00
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	80.01 and up	50.01 and up

Source: Highway Capacity Manual, Transportation Research Board, 2000.

5.3.1 Environmental Setting

5.3.1.1 REGULATORY FRAMEWORK

State and local laws, regulations, plans, and guidelines are summarized below.

Federal

Federal rules and regulations govern many facets of the City of Riverside traffic and circulation system including: transportation planning and programming; funding; design, construction and operation of facilities; and others. The City complies with all applicable rules and regulations of the Federal Highway Administration, the Urban Mass Transit Administration, the Federal Railroad Administration, the Federal Aviation Administration, and other federal agencies. In addition, the City coordinates with federal resource agencies where needed in the environmental clearance process for transportation facilities.

State

California Manual of Uniform Traffic Control Devices, Part 7: Traffic Control for School Areas

The California Manual on Uniform Traffic Control Devices, issued by Caltrans, provides uniform standards and specifications for all official traffic control devices in California, pursuant to the provisions of California Vehicle Code, Section 21400. Part 7 of the manual sets standards for traffic control for school areas, including standards for signs, road markings, and crossing supervision.

California Vehicle Code

California law requires the city or county to implement traffic control devices requested by a school district if they are meant to mitigate safety risks for students traveling to and from school, as described below.

California Vehicle Code, Division 11, Chapter 2, Article 1, Section 21372, Guidelines for Traffic Control Devices near Schools

> The Department of Transportation and local authorities shall, with respect to highways under their respective jurisdictions, establish and promulgate warrants to be used as guidelines for the placement of traffic control devices near schools for the purpose of protecting students going to and from school. Such devices may include flashing signals. Such warrants shall be based upon, but need not be limited to, the following items: pedestrian volumes, vehicle volumes, width of the roadway, physical terrain, speed of vehicle traffic, horizontal and vertical alignment of the roadway, the distance to existing traffic control devices, proximity to the school, and the degree of urban or rural environment of the area.[1]

California Vehicle Code, Division 11, Chapter 2, Article 1, Section 21373, School Board Request for Traffic Control Devices

> The governing board of any school district may request the appropriate city, county, city and county, or state agency to install traffic control devices in accordance with the warrants established pursuant to Section 21372. Within 90 days thereafter, the city, county, city and county, or state agency involved shall undertake an engineering and traffic survey to determine whether the requested crossing protection meets the warrants established pursuant to Section 21372. The city, county, city and county, or state agency involved may require the requesting school district to pay an amount not to exceed 50 percent of the cost of the survey. If it is determined that such requested protection is warranted, it shall be installed by the city, county, city and county, or state agency involved.[2]

California Vehicle Code, Division 11, Chapter 2, Article 1, Section 21368, Crosswalks near Schools

> Whenever a marked pedestrian crosswalk has been established in a roadway contiguous to a school building or the grounds, it shall be painted or marked in yellow. Other established marked pedestrian crosswalks may be painted or marked in yellow if either (a) the nearest point of the crosswalk is not more than 600 feet from a school building or the grounds thereof, or (b) the nearest point of the crosswalk is not more than 2,800 feet from a school building or the grounds thereof, there are no intervening crosswalks other than those contiguous to the school grounds, and it appears that the facts and circumstances require special painting or marking of the crosswalks for the protection and safety

[1] Amended Ch. 545, Stats. 1974. Effective January 1, 1975.
[2] Amended Ch. 1061, Stats. 1969. Effective November 10, 1969.

> of persons attending the school. There shall be painted or marked in yellow on each side of the street in the lane or lanes leading to all yellow marked crosswalks the following words, "SLOW-SCHOOL XING," except that such words shall not be painted or marked in any lane leading to a crosswalk at an intersection controlled by stop signs, traffic signals, or yield right-of-way signs. A crosswalk shall not be painted or marked yellow at any location other than as required or permitted in this section.

Division 11, Chapter 2, Article 2, Section 21400, Official Traffic Control Devices

This code authorizes Caltrans to adopt rules and regulations for uniform standards and specifications for all official traffic control devices, including, but not limited to, stop signs, yield right-of-way signs, speed restriction signs, railroad warning approach signs, street name signs, and lines and markings on the roadway.

Senate Bill 743

The legislature found that with the adoption of the SB 375, the state had signaled its commitment to encourage land use and transportation planning decisions and investments that reduce vehicle miles traveled (VMT) and thereby contribute to the reduction of greenhouse gas emissions (GHG), as required by the California Global Warming Solutions Act of 2006 (Assembly Bill [AB 32]). Additionally, AB 1358 (Complete Streets Act) requires local governments to plan for a balanced, multimodal transportation network that meets the needs of all users.

On September 27, 2013, SB 743 was signed into law. SB 743 started a process that could fundamentally change transportation impact analysis as part of CEQA compliance. These changes include the elimination of auto delay, level of service, and similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts in many parts of California (if not statewide). As part of the new CEQA Guidelines, the new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses" (Public Resources Code Section 21099(b)(1)). OPR developed alternative metrics and thresholds based on VMT. The guidelines were certified by the Secretary of the Natural Resources Agency in December 2018, and automobile delay, as described solely by level of service of similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment. There is an opt-in period until July 1, 2020, for agencies to adopt new VMT-based criteria. As of this writing, the city of Riverside has not adopted VMT thresholds. Therefore, automobile delay is still used for analysis, and the City is using the established LOS criteria for determining significance thresholds.

California Fire Code

The 2016 California Fire Code (California Code of Regulations, Title 24, Part 9) sets requirements pertaining to fire safety and life safety, including for building materials and methods, fire protection systems in buildings, emergency access to buildings, and handling and storage of hazardous materials.

Regional

SCAG's 2016 RTP/SCS

Every four years, the Southern California Association of Governments (SCAG) updates the Regional Transportation Plan (RTP) for the six-county region that includes Los Angeles, San Bernardino, Riverside,

Orange, Ventura, and Imperial counties.[3] On April 7, 2016, SCAG's Regional Council adopted the 2016-2040 Regional Transportation Plan / Sustainable Communities Strategy (2016 RTP/SCS). The SCS outlines a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement). Current and recent transportation plan goals generally focus on balanced transportation and land use planning that:

- Maximize mobility and accessibility for all people and goods in the region.
- Ensure travel safety and reliability for all people and goods in the region.
- Preserve and ensure a sustainable regional transportation system.
- Maximize the productivity of our transportation system.
- Protect the environment and health of residents by improving air quality and encouraging active transportation (e.g., bicycling and walking).
- Encourage land use and growth patterns that facilitate transit and active transportation.

Through implementation of the strategies in the RTP/SCS, SCAG anticipates lowering GHG emissions below 2005 levels by 8 percent by 2020, 18 percent by 2035, and 22 percent by 2040. Land use strategies to achieve the region's targets include planning for new growth around high quality transit areas and "livable corridors" and creating neighborhood mobility areas to integrate land use and transportation and plan for more active lifestyles.

Riverside County Transportation Commission

The Riverside County Transportation Commission (RCTC) plans and implements transportation and transit improvements and assists local governments with funding for local streets and roads.

Riverside County Congestion Management Program

The County's Congestion Management Plan (CMP) was prepared by the RCTC in consultation with the County and the cities in Riverside County.[4] It is an effort to align land use, transportation, and air quality management efforts; promote reasonable growth management programs that effectively use statewide transportation funds; and ensure that new development pays a fair share of needed transportation improvements.

The focus of the CMP is the development of an "enhanced traffic monitoring system," in which real-time traffic count data can be accessed by RCTC to evaluate the condition of the Congestion Management System (CMS) as well as meet other monitoring requirements at the state and federal levels. Per the adopted LOS

[3] On July 9, 2018, the Southern California Association of Governments (SCAG) Executive Administration Committee approved release of the Draft 2019 Federal Transportation Improvement Program (Draft 2019 FTIP) in compliance with the adopted 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS).

[4] Riverside County Transportation Commission. 2011, December. 2011 Riverside Country Congestion Management Plan.

standard of "E," when a CMS segment falls to "F," a deficiency plan is required. Preparation of a deficiency plan is the responsibility of the local agency where the deficiency is located. Other agencies identified as contributors to the deficiency will also be required to coordinate with the development of the plan. The plan must contain mitigation measures, including transportation demand management (TDM) strategies, transit alternatives, and a schedule for mitigating the deficiency. To ensure that the CMS is appropriately monitored to reduce CMP deficiencies, it is the responsibility of local agencies, when reviewing and approving development proposals, to consider the traffic impacts on the CMS.

Additionally, under the Riverside County CMP, LOS A through E represent acceptable conditions, and LOS F represents unacceptable conditions. The CMP indicates that a project may have a significant impact and that a traffic study would be required if the project would adversely affect the morning or afternoon peak periods on a designated CMP arterial roadway or freeway.

County of Riverside Transportation Uniform Mitigation Fee

The County of Riverside's transportation uniform mitigation fee is administered by the Western Riverside Council of Governments. Under this fee, the council collects fees from new development to fund transportation improvements, such as roadway widening, new roadways, intersection improvements, traffic signalization, etc., for the purpose of mitigating future growth through 2035. Public schools are exempt from this fee.

Local

City of Riverside General Plan 2025

The Circulation and Community Mobility Element of the City of Riverside General Plan 2025 outlines the goals, recommendations, objectives, guidelines, and standards required to improve and enhance Riverside's local and regional transportation system. The following General Plan policies are related to the proposed project and aim to minimize adverse conditions for traffic and transportation in the city.

Policy CCM-2.3: Maintain LOS D or better on Arterial Streets wherever possible. At key locations, such as City Arterials that are used by regional freeway bypass traffic and at heavily traveled freeway interchanges, allow LOS E at peak hours as the acceptable standard on a case by-case basis.

Policy CCM-6.1: Encourage the reduction of vehicle miles, reduce the total number of daily peak hour vehicular trips, increase the vehicle occupancy rate and provide better utilization of the circulation system through the development and implementation of TDM programs contained in the SCAQMD [South Coast Air Quality Management District] and County of Riverside TDM Guidelines.[5]

[5] City of Riverside. 2018, February. Circulation and Community Mobility Element. https://www.riversideca.gov/planning/gp2025program/GP/12_Circulation_&_Community%20Mobility_Element_with%20maps.pdf.

City of Riverside Traffic Impact Analysis Preparation Guide

The City's Traffic Impact Analysis (TIA) Preparation Guide prescribes methods for traffic studies in the city, including intersection analysis and segment analysis, and the area and scenarios to be studied. The Preparation Guide also has guidelines for the format of a TIA report and for the types of projects that may require a TIA.

The definition of intersection deficiency is based on the City of Riverside standards, which state that peak-hour intersection operations of LOS D or better are generally acceptable. Therefore, any intersection operating at LOS E or F is considered deficient. A significant impact would occur at a study intersection when the addition of project-generated trips causes the peak-hour LOS to degrade from an acceptable LOS (A through D) to an unacceptable LOS (E or F). The guidelines also state that a significant impact would occur when the project causes the peak-hour delay to increase by:

- 10.0 seconds for roads operating at LOS A/B
- 8.0 seconds for LOS C
- 5.0 seconds for LOS D
- 2.0 seconds for LOS E
- 1.0 second for LOS F[6]

5.3.1.2 EXISTING CONDITIONS

Roadways

The traffic study evaluated the following streets based on the attendance area for Arlington High School, a review of the circulation network, and the potential for traffic impacts with the proposed project.

- **Jackson Street.** Two- to four-lane north-south street that abuts the west side of the school campus (four lanes between Lincoln Avenue and Indiana Avenue, two lanes north of Indiana Avenue, and two lanes south of Lincoln Avenue). The Circulation and Community Mobility Element of the Riverside General Plan 2025 (amended February 2018) shows that Jackson Street is classified as an arterial street north of Victoria Avenue and a collector street south of Victoria Avenue. The speed limit on Jackson Street is 40 miles per hour (mph) north of Victoria Avenue and 45 mph south of Victoria Avenue.

- **Lincoln Avenue.** Four-lane east-west street that abuts the south side of the school campus. It is classified as an arterial street and has a 45 mph speed limit.

- **Irving Street.** Two-lane north-south street that abuts the east side of the school campus. It is classified as a local street and terminates at a cul-de-sac adjacent to the track and field. The speed limit on Irving Street is 25 mph north of Victoria Avenue and 45 mph south of Victoria Avenue.

[6] City of Riverside Public Works Department. 2017, December. Traffic Impact Analysis Preparation Guide. https://www.riversideca.gov/traffic/pdf/traffic-impact-analysis.pdf.

- **Monroe Street.** Two-lane north-south street that is one-quarter mile east of the school campus. It is classified as a collector street south of Indiana Avenue and an arterial street north of Indiana Avenue. The speed limit on Monroe Street is 40 mph.

- **Victoria Avenue.** Two-lane east-west street one-quarter mile south of the school campus. The eastbound and westbound lanes are divided by a wide median, which is essentially a linear park between the two travel lanes. Victoria Avenue is classified as a parkway and has a 40 mph speed limit.

- **Indiana Avenue.** Two- to four-lane east-west street located one-quarter mile north of the school campus. It runs parallel to the Riverside Freeway (SR-91) on the south side of the freeway and has two lanes west of Monroe Street and four lanes east of Monroe Street. Indiana Avenue is classified as an arterial street and has a 40 mph speed limit.

Intersections

Based on the hourly traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the average vehicle delay values and corresponding levels of service have been determined at each intersection for the existing conditions scenario, as summarized in Table 5.3-2.

Table 5.3-2 Existing Intersection Levels of Service

Intersection	Delay Value (seconds/vehicle) and Level of Service Friday Evening Pre-event Peak Hour
Signalized Intersections	
Indiana Avenue/Jackson Street	22.8 – C
Indiana Avenue/Monroe Street	17.7 – B
Lincoln Avenue/Jackson Street	16.1 – B
Unsignalized Intersections	
Lincoln Avenue/Irving Street	8.52 – A
Lincoln Avenue/Monroe Street	10.46 – B
Victoria Avenue Westbound/Jackson Street	8.54 – A
Victoria Avenue Eastbound/Jackson Street	8.15 – A
Victoria Avenue Westbound/Irving Street	8.13 – A
Victoria Avenue Eastbound/Irving Street	7.87 – A
Victoria Avenue Westbound/Monroe Street	8.23 – A
Victoria Avenue Eastbound/Monroe Street	8.10 – A

Source: Traffic data provided by Garland Associates. 2019. Traffic Impact Analysis for the Proposed Arlington High School Expanded and New Bleachers. See Appendix D.

All 11 of the study area intersections currently operate at acceptable levels of service (LOS A through D) during the Friday evening peak hour.

Pedestrian and Bicycle Facilities

The streets in the school vicinity north of Victoria Avenue have paved sidewalks along both sides of the street, except for parts of Jackson Street and Irving Street adjacent to undeveloped and agricultural parcels. The south

side of Victoria Avenue and the streets that extend south of Victoria Avenue do not have sidewalks. All of the study area intersections are equipped with painted crosswalks, and the signalized intersections also have pedestrian signals and pedestrian push buttons to activate the signals. Striped (Class II) bike lanes are provided on both sides of Lincoln Avenue and Victoria Avenue.

Public Transit

The Riverside Transit Agency (RTA) operates public transit bus services in the City of Riverside. RTA Route 10 runs on Lincoln Avenue adjacent to the school, and Route 14 runs along Indiana Avenue approximately 0.25 mile north. The nearest bus stops are on Lincoln Avenue near the Jackson Street intersection.

5.3.2 Thresholds of Significance

According to CEQA Guidelines Appendix G, a project would normally have a significant effect on the environment if it would:

T-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

T-2 Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b).

T-3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

T-4 Result in inadequate emergency access.

5.3.3 Plans, Programs, and Policies

PPP T-1 The proposed project's construction activities will be conducted in accordance with the provision of traffic-control devices in compliance with the California Manual for Uniform Traffic Control Devices to ensure traffic safety on public streets, highways, pedestrian walkways, and bikeways.

PPP T-2 The proposed project's construction contractor will be required to comply with all City of Riverside standard conditions pertaining to construction, including work hours, traffic control plan, haul route, and access. Where possible, construction-related trips will be restricted to off-peak hours.

PPP T-3 The proposed project's construction contractor will be required to obtain an oversized-vehicle transportation permit, if necessary, from Caltrans.

5.3.4 Environmental Impacts

5.3.4.1 METHODOLOGY

The traffic impact analysis fully complies with the City of Riverside Traffic Impact Analysis Preparation Guide. The analysis of the traffic impacts from the expanded and new bleachers was based on an evaluation of the existing and forecast traffic conditions in the vicinity of the school without and with the project. The following analysis scenarios were considered:

- Existing Conditions (2019)
- Existing plus Project[7]
- Future Year (2021) without project
- Future Year (2021) with project

Manual traffic counts were taken at the 11 study area intersections during the Friday evening peak period on April 19, 2019. The peak hour for this analysis refers to the one-hour time period prior to the beginning of an event when people are traveling to the school. The traffic analysis addresses the pre-event period because the ambient traffic volumes are substantially higher during that period (generally between 6:00 pm and 7:00 pm) compared to the post-event period (after 9:00 pm). Most high school football games in RUSD begin at 7:00 pm.

IMPACT ANALYSIS

The applicable thresholds are identified in brackets after the impact statement.

Impact 5.3-1: The project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. [Threshold T-1]

LOS D or better is acceptable at all study roadway segments and intersections. Based on the City of Riverside Traffic Impact Analysis Preparation Guide, a project would have a significant impact under CEQA when the addition of project traffic causes an intersection that operates at an acceptable LOS (A through D) under existing traffic conditions to fall to an unacceptable LOS (E or F).

Project Trip Generation

The project includes the expansion of the existing 750-seat bleachers on the west side of the track and football/soccer field and installation of a new 1,000-seat bleachers on the visitor side for a total of 3,000 seats. The most widely recognized source to estimate the number of trips generated by a land use or project is the Institute of Transportation Engineers' (ITE) Trip Generation manual. The manual is a compilation of results from surveys performed at several land-use types across the United States. However, it does not have trip generation rates for high school stadiums, football events, or athletic complexes. Therefore, trip generation

[7] For informational purposes only, included in Appendix D.

rates for the project were based on the parking requirement for "assemblies of people" in the City of Riverside Municipal Code, which is one space per four fixed seats (for vehicles that remain parked at the school).

Table 5.3-3 shows the trip rates and project trip generation for the project during the pre-event peak hour. During the Friday evening peak hour, prior to a maximum-capacity stadium event, up to 900 vehicle trips would be generated, with 825 inbound and 75 outbound trips. The estimated daily traffic volume for a maximum-capacity event would be 1,800 vehicle trips per day.

Table 5.3-3 Project-Generated Traffic

Facility	Evening Hour – Pre-event			Daily Traffic
	Inbound	Outbound	Total	
Bleachers (vehicle trips per seat) Trip Rates	0.275	0.025	0.30	0.60
Bleachers (3,000 seats) Traffic Volumes	825	75	900	1,800

Source: Traffic data provided by Garland Associates. 2019. Traffic Impact Analysis for the Proposed Arlington High School Expanded and New Bleachers. See Appendix D.

Notes: The trip generation rates are based on one vehicle for every four seats (for vehicles that remain parked at the site) = 750 vehicles would arrive and park. An additional 10 percent of the vehicles arriving would drop off passengers = 75 inbound and 75 outbound = 150 additional vehicle trips. 750 parked vehicles plus 150 drop-off/pick-up vehicle trips = 900 total trips.

Trip Distribution and Assignment

Project-generated trips were distributed onto the study area roadway network based on layout of the existing street network, the school attendance boundaries, and the anticipated geographical distribution of the event patrons.

Future Traffic Conditions

Since the project is expected to be completed and occupied in 2021, the existing (2019) traffic volumes were expanded by a growth factor of 1.04 to account for general regional growth and the cumulative impacts of traffic associated with other development projects in the area. This growth factor represents a 2 percent annual growth rate for two years.

The intersection operations for year 2021 with and without project traffic conditions for Friday evenings are shown in Table 5.3-4. Under both scenarios, all intersections would operate at acceptable LOS. The project would not have a significant impact at any of the study area intersections. Six intersections would operate at LOS A, four intersections would operate at LOS B, and one intersection would operate at LOS C, which represents acceptable traffic conditions according to the City of Riverside's significance criteria.

It should be noted that the project-related traffic would not occur on a daily basis but only when a major event is held at the stadium, such as a varsity football game or graduation. Such events would typically occur on a Friday evening, but could also occur on a Thursday evening or a Saturday afternoon. The analysis addressed the Friday evening scenario because the ambient traffic volumes would typically be higher on Friday than on Thursday evening or Saturday afternoon. The new and expanded bleachers would not conflict with any City of Riverside plans, programs, and policies addressing the roadway circulation system. Project-related traffic impacts would be less than significant.

Table 5.3-4 Year 2021 with Project Levels of Service

Intersection	Delay Value (seconds/vehicle) and Level of Service		Increase in Delay (sec)	Significant Impact?
	2021 Without Project	2021 With Project		
Signalized Intersections				
Indiana Avenue/Jackson Street	23.8 – C	24.4 – C	0.6	No
Indiana Avenue/Monroe Street	18.0 – B	19.9 – B	1.9	No
Lincoln Avenue/Jackson Street	16.2 – B	19.9 – B	3.7	No
Unsignalized Intersections				
Lincoln Avenue/Irving Street	8.61 – A	13.57 – B	4.96	No
Lincoln Avenue/Monroe Street	10.71 – B	13.45 – B	2.74	No
Victoria Avenue Westbound/Jackson Street	8.66 – A	9.10 – A	0.44	No
Victoria Avenue Eastbound/Jackson Street	8.22 – A	8.71 – A	0.49	No
Victoria Avenue Westbound/Irving Street	8.21 – A	8.67 – A	0.46	No
Victoria Avenue Eastbound/Irving Street	7.92 – A	8.06 – A	0.14	No
Victoria Avenue Westbound/Monroe Street	8.32 – A	9.12 – A	0.80	No
Victoria Avenue Eastbound/Monroe Street	8.18 – A	8.39 – A	0.21	No

Source: Garland Associates, 2019

Construction Traffic

Construction of the entire project—new Biomed/Special Education building, auxiliary gym, and concession/restroom building; expansion of the bleachers at the track and field; and modernization of the Media Arts Academy building, Administration Building, Student Service Building, and outdoor swimming pool—would generate various levels of truck and automobile traffic throughout the construction period. As required by the City of Riverside Municipal Code Title 7, Noise Control, construction activities are only permitted from 7:00 am to 7:00 pm on weekdays and 8:00 am to 5:00 pm Saturdays. No construction activities are allowed on Sundays or federal holidays.

Construction staging (i.e., storage of equipment and materials) would be on the school campus. The construction-related traffic would include construction workers traveling to and from the school as well as trucks hauling equipment, materials, and demolition materials to and from the campus. Parking for workers would be provided in the staging areas and existing campus parking lots during all phases of construction.

The maximum number of the haul trips would occur during demolition debris hauling, with about 5 trips per day. The truck trips would be spread out throughout the workday and would generally occur during nonpeak traffic periods and outside of student drop-off and pick-up. This level of construction-related traffic would not result in a significant traffic impact on the study area roadway network.

The maximum number of worker and vendor trips would occur during building construction, with about 23 trips per day.[8] Current site access is from Jackson Street and Lincoln Avenue. Existing average daily traffic (ADT) on Jackson Street and Lincoln Avenue are 1,900 ADT and 11,500 ADT, respectively. Compared to the

[8] Based on California Emissions Estimator Model (CalEEMod), Version 2016.3.2, and are based on the project's preliminary construction schedule, phasing, and CalEEMod default equipment list. Modeling sheets are in Appendix E.

existing traffic from the 1,928 high school students (3,296 trips)[9] and ADT, the number of worker trips would be negligible.

Congestion Management Program

According to the Riverside County CMP, the designated arterial roadways closest to the school are Van Buren Boulevard, approximately 0.50 mile west, and Magnolia Avenue, 1.0 mile north. The nearest freeway, which is also included in the CMP roadway network, is the Riverside Freeway (SR-91), approximately 0.25 mile north, which has an interchange with Van Buren Boulevard.

Because the project would generate traffic primarily during times that are outside the commuter peak periods (i.e., 7:00 to 9:00 am and 4:00 to 6:00 pm), it would not typically impact the traffic conditions that are the focus of the CMP. The heaviest project-related traffic volumes are anticipated for the stadium between 6:30 and 7:00 pm and between 9:00 and 9:30 pm. The project's peak traffic flows would therefore not coincide with the commuter peak periods on the CMP roadway network, and the peak-hour traffic conditions on the CMP roadway network would not be substantially affected by the proposed project.

The project would not conflict with the congestion management program or a level of service standard established by the congestion management agency, and the impacts would be less than significant.

Transit, Bicycle, and Pedestrian

The project may slightly increase transit riders a few times a year but would not adversely affect the performance of these transit lines or conflict with any transit-related plans or policies.

The project would likely generate an increase in pedestrians and bicycles. Although the expanded bleachers would increase pedestrians and bicycles on roadways a few times a year, it would not adversely affect the performance of sidewalks or bike lanes, or conflict with any transit-related plans or policies.

Conclusion

Based on the preceding, the project would not conflict with City or County of Riverside, plans, programs, or policies addressing the circulation system. Impacts to transit, roadway, bicycle, and pedestrian facilities would be less than significant.

Impact 5.9-2: The project would not conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b). [Threshold T-2]

On December 28, 2018, the California Natural Resources Agency adopted revised CEQA Guidelines. One revision was the removal of vehicle delay and LOS from consideration under CEQA. Transportation impacts will instead be evaluated based on a project's effect on VMT. Lead agencies are allowed to opt into the revised transportation guidelines, but the new guidelines must be used starting July 1, 2020. The City has not adopted revised traffic impact analysis guidelines, and analysis of vehicle LOS remains the appropriate method for

[9] Based on the ITE Trip Generation Manual, 9th edition. Public school daily trip rates: High School with 1,928 students at 1.71 = 3,296 trips.

determining the project's transportation impact. However, VMT is anticipated to be reduced following completion of the bleacher project. Most participants and spectators associated with Arlington High School that currently travel to Ramona High School for large events would have a shorter drive to Arlington High School. Therefore, VMT would be reduced, and impacts would be less than significant.

Impact 5.9-3: The project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). [Threshold T-3]

Access to the campus is provided by existing driveways on Jackson Street, Lincoln Avenue, and Irving Street. The increased levels of traffic, pedestrians, and vehicular turning movements at the school entrances and at the nearby intersections a few times per year may result in an increased number of traffic conflicts and a corresponding increase in the probability of an accident occurring. However, hazards would not be significant because the streets, intersections, and driveways are designed to accommodate the anticipated levels of vehicular and pedestrian activity and have historically accommodated school-related traffic on a daily basis.

Also, the project would not increase hazards at the Jackson Street at-grade railroad crossing. The crossing has appropriate safety devices, including quad crossing gates, which minimize the potential for vehicle/train or pedestrian/train conflicts. The potential for trespass as a route to school is low due to the presence of a crossing guard during typical school commuting hours, fencing around the tracks in the vicinity of the school site, and limited access to the tracks at other locations. There is a concrete block wall on the north side of the track adjacent to the residential development to the north that limits the potential for short-cutting across the track in these areas near the school.[10]

The school project (classroom and gym buildings, modernizations, and expanded bleachers) would be compatible with the design and operation of a high school and would not result in any major modifications to the existing access or circulation features at the school. The project would not, therefore, substantially increase hazards due to a design feature or incompatible uses.

Impact 5.9-4: The project would not result in inadequate emergency access. [Threshold T-4]

School access is provided via the driveways on Jackson Street, Lincoln Avenue, and Irving Street that lead to the parking lots and drop-off/pick-up zones. The existing access and internal circulation at the school, including the fire lanes, currently accommodate emergency ingress and egress by fire trucks, police units, and ambulance/paramedic vehicle. The project would not impact the campus emergency access.

Parking for a maximum capacity event could be accommodated on campus parking lots and along portions of the surrounding streets after 4:00 pm on weekdays. To limit the amount of event parking in surrounding neighborhoods and to ensure orderly pre- and post-event vehicle circulation and parking, as part of the project, the District would prepare a Traffic and Parking Management Plan (TPMP). The TPMP would include temporary traffic management strategies, procedures, and devices to be in place during maximum capacity events at the stadium, such as varsity football games and graduation ceremonies. The District will work with

[10] PlaceWorks. 2019, January. Rail Safety Study. See Appendix J.

the City of Riverside Public Works Department, and Riverside Police Department to prepare and implement the TPMP.

The District, the City of Riverside Public Works Department, and Riverside Police Department will meet following the first maximum capacity event at the stadium and thereafter on an as needed basis to review the traffic and parking control measures to confirm elements that are performing correctly and elements that need refinement to ensure efficient traffic and parking management for such events. The District will post the calendar of Arlington HS stadium events on the District website the beginning of each athletic season, so it is available to the public. The District will also notify Riverside Police Department directly about the event schedule. The project would not impact emergency access to the surrounding neighborhoods.

5.3.5 Cumulative Impacts

Cumulative traffic impacts are created when the project, combined with other future developments, contributes to the overall traffic impacts, requiring additional improvements to maintain acceptable LOS operations. A significant cumulative impact is identified when a facility is projected to operate below the LOS standards due to cumulative future traffic and project-related traffic. Cumulative development projects were assumed in the traffic analysis to evaluate potential impacts at 2021 conditions. The project's incremental effect on congested intersections would not be significant at study area intersections. In consideration of the preceding factors, the project's contribution to cumulative traffic impacts would be rendered less than significant, and therefore, project impacts would not be cumulatively considerable.

5.3.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and PPPs, the following impacts would be less than significant: 5.3-1, 5.3-2, 5.3-3, and 5.3-4.

5.3.7 Mitigation Measures

No significant impacts related to transportation were identified, and no mitigation is required.

5.3.8 Level of Significance After Mitigation

Transportation impacts would be less than significant.

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6. Significant Unavoidable Adverse Impacts

At the end of Chapter 1, *Executive Summary*, is a table that summarizes the environmental impacts. The California Environmental Quality Act (CEQA) Guidelines, § 15126.2(b), requires a discussion of any significant impacts that cannot be reduced to levels of insignificance. Analysis in this Draft EIR did not identify any CEQA-related significant unavoidable adverse impacts.

6. Significant Unavoidable Adverse Impacts

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7. Alternatives to the Proposed Project

7.1 INTRODUCTION

7.1.1 Purpose and Scope

The California Environmental Quality Act (CEQA) requires that an environmental impact report (EIR) include a discussion of reasonable project alternatives that would "feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any significant effects of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines § 15126.6[a]). As required by CEQA, this chapter identifies and evaluates potential alternatives to the proposed project.

Section 15126.6 of the CEQA Guidelines explains the foundation and legal requirements for the alternatives analysis in an EIR. Key provisions are:

- "[T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." (15126.6[b])
- "The specific alternative of 'no project' shall also be evaluated along with its impact." (15126.6[e][1])
- "The no project analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." (15126.6[e][2])
- "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." (15126.6[f])
- "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries…, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent)" (15126.6[f][1]).

- "Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR." (15126.6[f][2][A])
- "An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative." (15126.6[f][3])

For each development alternative, this analysis:

- Describes the alterative.
- Analyzes the impact of the alternative as compared to the proposed project.
- Identifies the impacts of the project that would be avoided or lessened by the alternative.
- Assesses whether the alternative would meet most of the basic project objectives.
- Evaluates the comparative merits of the alternative and the project.

According to § 15126.6(d) of the CEQA Guidelines, "[i]f an alternative would cause…significant effects in addition those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed."

7.1.2 Project Objectives

As described in Section 3.2, the following objectives have been established for the proposed project and will aid decision makers in their review of the project, the project alternatives, and associated environmental impacts.[1]

- **Objective 1:** Increase the safety and security of the staff and students through the campus modifications and improvements.
- **Objective 2:** Replace aging outdated portable buildings.
- **Objective 3:** Upgrade campus to enhance the Biomedical Science Pathway.
- **Objective 4:** Limit the disruption of the educational experience of students during construction of the project by limiting the number and/or duration of phases.
- **Objective 5:** Provide bleachers with adequate capacity to accommodate various spectator events currently held off campus.
- **Objective 6:** Improve school pride by holding home football games at Arlington High School.
- **Objective 7:** Reduce the travel time and vehicle miles traveled to home football games.

[1] The objectives are numbered for ease of reference; the order does not indicate any priority.

7.2 POTENTIALLY SIGNIFICANT IMPACTS OF THE PROJECT

A primary consideration in defining project alternatives is their potential to reduce or eliminate significant impacts and to meet most of the objectives. Pursuant to CEQA Guidelines Section 15126.6[b], alternatives to the proposed project include those that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede attainment of the project objectives to some degree or would be more costly.

In accordance with the thresholds of significance required by CEQA, the proposed Arlington High School Modernization and New Construction Measure O Project was found to result in no significant impacts. Therefore, this chapter considers alternatives to address anticipated residents' concerns about the proposed project. Although the alternatives would not avoid or lessen any significant impacts pursuant to CEQA because none were identified, they may help to address some of the anticipated concerns about the project.

7.3 ALTERNATIVES SELECTED FOR FURTHER ANALYSIS

Three alternatives were determined to represent a reasonable range of alternatives that have the potential to feasibly attain most of the basic project objectives. Aside from the No Project Alternative, two alternatives were developed. The proposed project would generate no significant impacts under CEQA, but the community has expressed concerns about the project that relate to parking (not a CEQA topic), so these alternatives attempt to reduce potential effects of parking during a full-capacity event at the stadium.

The community has also expressed concerns about the project that relate to CEQA topics (lighting, noise, and traffic), so these alternatives attempt to reduce these effects of a full-capacity event at the stadium even though they are already determined to be less than significant under CEQA. The lighting proposed is state of the art and the most up to date available to ensure regulation compliance for field lighting and to minimize spill light. No alternatives are available to reduce temporary nighttime light.

- No Project Alternative
- Sound Wall Alternative
- Off-Campus Overflow Parking Alternative

An EIR must also identify an "environmentally superior" alternative, and where the No Project Alternative is identified as environmentally superior, the EIR is must identify as environmentally superior an alternative from the others evaluated. Each alternative's environmental impacts are compared to the proposed project and determined to be environmentally superior, neutral, or inferior. Only impacts found significant and unavoidable are used in making the determination of whether an alternative is environmentally superior or inferior to the proposed project; however, without significant impacts the determination is based on whether the alternative would have an adverse or a mitigating effect. Section 7.5, *Environmentally Superior Alternative*, identifies the alternative that was determined to be environmentally superior. The proposed project is analyzed in detail in Chapter 5 and Chapter 8 of this Draft EIR.

7.3.1 No Project Alternative

The CEQA Guidelines require the analysis of a No Project Alternative. This analysis must discuss the existing site conditions as well as what would be reasonably expected in the foreseeable future based on any current plans if the project were not approved. The No Project Alternative must be consistent with available infrastructure and community services. This discussion compares the environmental effects of the campus and school program remaining in their existing condition against the environmental effects if the project were approved.

Under the No Project Alternative, the improvements to Arlington High School would not occur. The seven portable classrooms would not be demolished, and the Biomed/Special Education building, Auxiliary Gymnasium, and concession/restroom building would not be constructed. The bleachers would not be expanded, and the field lights at the track and field would not be replaced. Also, the interior layouts and façades of the Media Arts Academy building, Administration Building, and Student Service Building would not be modernized, and the outdoor swimming pool and equipment would not be upgraded. The campus would continue to operate in its current condition. Classes would continue in older portable buildings, buildings and equipment would continue to deteriorate, and large events would continue to be held at Ramona HS, three miles to the northeast.

7.3.2 Sound Wall Alternative

Under this alternative, the District would construct a sound wall along the back of the visitor side bleachers. According to the Federal Highway Administration:

- A noise barrier can achieve a 5 dB noise level reduction when it is tall enough to break the line-of-sight from the [stadium bleachers] to the home or receiver.
- Noise barriers can be constructed from earth, concrete, masonry, wood, metal, and other materials. To effectively reduce sound transmission through the barrier, the material chosen must be rigid and sufficiently dense (at least four pounds/square foot). All noise-barrier material types are equally effective, acoustically, if they have this density.[2]

The barrier would most likely be either wood or a noise control curtain (such as outer panels of quilted fiberglass with a solid layer of material such as vinyl between the panels). The wall would block line-of-sight from the homes to the visitor bleachers. Additionally, a noise barrier attached to the back of the bleacher would reduce noise by about 3 dB. However, the sound wall or barrier may increase opportunities for vandalism and graffiti. It may reduce safety by creating blind spots where crime can occur. Police patrols would not have clear line of sight onto the campus from Irving Street.

[2] Federal Highway Administration. 2001. Keeping the Noise Down, Highway Traffic Noise Barriers. https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/keepdown.cfm.

7.3.3 Off-Campus Overflow Parking Alternative

Under the Off-Campus Overflow Parking Alternative, to reduce traffic and parking in the surrounding neighborhoods, the RUSD would open the Hawthorne Elementary School parking lot at 2700 Irving Street before and after capacity events at the stadium. This alternative parking lot would be included in the TMP where implementation, management methods, pedestrian safety, and monitoring would be outlined. Standards would include publishing and distribution of notices to ensure the public knows about the alternative lot. Personnel would be stationed in locations to direct drivers to the alternative lot.

7.4 ALTERNATIVES ANALYSIS

7.4.1 No Project Alternative

Under the No Project Alternative, the high school construction and modernization project and the stadium bleacher and lighting project would not be completed, and the campus would remain in its current condition. No physical changes would occur on the campus. This alternative would not incorporate any of the building upgrades with the exception of standard ongoing maintenance. The existing buildings and equipment would deteriorate (most noticeably cosmetically as nonessential maintenance and repairs are deferred). Only critical repairs needed for health and safety would be addressed on an as-needed basis. Students would travel to Ramona HS for full-capacity events.

7.4.1.1 ABILITY TO REDUCE ENVIRONMENTAL IMPACTS

No changes would be made to the campus or the surrounding neighborhood. This alternative would reduce effects of the construction and operation on the surrounding neighborhood; therefore, the No Project Alternative would be superior to the project.

7.4.1.2 ABILITY TO ACHIEVE PROJECT OBJECTIVES

The No Project Alternative would meet one of the project objectives. Because this alternative would not involve any construction, there would be no possibility of classroom disruption.

- **Objective 4:** Limit the disruption of the educational experience of students during construction of the project by limiting the number and/or duration of phases.

This alternative would not meet seven of the eight project objectives because no improvements or new building construction would occur on campus.

- **Objective 1:** Increase the safety and security of the staff and students through the campus modifications and improvements.
- **Objective 2:** Replace aging outdated portable buildings.
- **Objective 3:** Upgrade campus to enhance the Biomedical Science Pathway.

- **Objective 5:** Provide bleachers with adequate capacity to accommodate various spectator events currently held off campus.
- **Objective 6:** Improve school pride by holding home football games at Arlington High School.
- **Objective 7:** Reduce the travel time and vehicle miles traveled to home football games.

7.4.2 Sound Wall Alternative

Under the Sound Wall Alternative, the District would construct a permanent sound wall behind the visitor side bleachers to reduce stadium noise at residential homes. The wall may increase opportunities for vandalism and graffiti. Also, it may reduce safety by creating blind spots where crime could occur. Police patrols would not have clear line of sight onto the campus from Irving Street.

Other project components would be implemented similar to the proposed project, including removal of portables, construction of the three buildings, modernization of the three buildings, pool upgrades, and stadium improvements.

7.4.2.1 ABILITY TO REDUCE ENVIRONMENTAL IMPACTS

Under this alternative the District noise from stadium events would be reduced; therefore, it is superior to the project. However, other safety and aesthetic issues would occur.

7.4.2.2 ABILITY TO ACHIEVE PROJECT OBJECTIVES

The Sound Wall Alternative would meet 7 of the 8 objectives.

- **Objective 2:** Replace aging outdated portable buildings.
- **Objective 3:** Upgrade campus to enhance the Biomedical Science Pathway.
- **Objective 4:** Limit the disruption of the educational experience of students during construction of the project by limiting the number and/or duration of phases.
- **Objective 5:** Provide bleachers with adequate capacity to accommodate various spectator events currently held off campus.
- **Objective 6:** Improve school pride by holding home football games at Arlington High School.
- **Objective 7:** Reduce the travel time and vehicle miles traveled to home football games.

Because of the blind spots created by a solid wall, this alternative would not meet Objective 1.

- **Objective 1:** Increase the safety and security of the staff and students through the campus modifications and improvements.

7.4.3 Off-Campus Overflow Parking Alternative

Under the Off-Campus Overflow Parking Alternative, to reduce traffic and parking in the surrounding neighborhoods, the RUSD would open the Hawthorne Elementary School parking lot at 2700 Irving Street before and after capacity events at the stadium. This alternative parking lot would be included in the TMP where implementation, management methods, pedestrian safety, and monitoring would be outlined. Standards would include publishing and distribution of notices to ensure the public knows about the alternative lot. Personnel would be stationed in locations to direct drivers to the alternative lot.

7.4.3.1 ABILITY TO REDUCE ENVIRONMENTAL IMPACTS

This alternative would reduce traffic at the school and would be superior to the proposed project.

7.4.3.2 ABILITY TO ACHIEVE PROJECT OBJECTIVES

The Off-Campus Overflow Parking Alternative would meet all of the objectives.

7.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires a lead agency to identify the "environmentally superior alternative." In cases where the "No Project" Alternative is environmentally superior to the proposed project; the environmentally superior development alternative must be identified. The Off-Campus Overflow Parking Alternative has been identified as "environmentally superior" to the proposed project. This alternative would reduce traffic around the school and would meet all 7 objectives.

7. Alternatives to the Proposed Project

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8. Impacts Found Not to Be Significant

California Public Resources Code § 21003 (f) states: "…it is the policy of the state that…[a]ll persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical, and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment." This policy is reflected in the California Environmental Quality Act Guidelines (CEQA Guidelines) § 15126.2(a), which states that "[a]n EIR [environmental impact report] shall identify and focus on the significant environmental impacts of the proposed project" and § 15143, which states that "[t]he EIR shall focus on the significant effects on the environment." Guidelines § 15128 requires that an EIR contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the Draft EIR (Chapter 5).

This chapter includes the analysis for the environmental topics where the project would have either no impact of a less than significant impact, as show below. Aesthetics, Noise, and Transportation are fully analyzed in Chapter 5 of this EIR.

- Agriculture & Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology & Soils
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Hydrology & Water Quality
- Land Use & Planning
- Mineral Resources
- Population & Housing
- Public Services
- Recreation
- Tribal Cultural Resources
- Utilities & Service Systems
- Wildfire

8.1 AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

Would the project:

8. Impacts Found Not to Be Significant

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The project would not convert farmland to no-agricultural uses. There is no agricultural or farm use on or adjacent to the campus; therefore, no project-related farmland conversion would occur. The campus is fully developed and is not mapped as important farmland on the California Important Farmland Finder. The school property is mapped as Urban and Built-up Land.[1] No impact would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The project would not conflict with agricultural zoning or a Williamson Act contract. The zoning for the school property is R-1-7000 (Residential; school uses are permitted).[2] The campus is not zoned for agriculture use, and project development would not conflict with such zoning. Williamson Act contracts restrict the use of privately owned land to agriculture and compatible open-space uses under contract with local governments; in exchange, the land is taxed based on actual use rather than potential market value. There is no Williamson Act contract in effect on-site.[3] No impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. Project development would not conflict with existing zoning for forest land, timberland, or timberland production. Forest land is defined as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits."[4] Timberland is defined as "land….which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees."[5]

The school property is zoned Residential and permits school uses; it is not zoned for forest land or timberland use.[6] No impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. Construction of the project would not result in the loss or conversion of forest land. No vegetation on-site is cultivated for forest resources. Vegetation is limited to ornamental trees, shrubs, and turf. No forest land would be affected by the project. No impact would occur.

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1 Division of Land Resource Protection (DLRP). 2016. California Important Farmland Finder. http://maps.conservation.ca.gov/ciff/ciff.html.
2 City of Riverside. 2007. Zoning Map of the City of Riverside. https://riversideca.gov/planning/pdf/Zoning-Map.pdf
3 City of Riverside. 2012, November. City of Riverside General Plan 2025, Open Space and Conservation Element. https://www.riversideca.gov/planning/gp2025program/GP/12_Open_Space_and_Conservation_Element.pdf.
4 California PRC Section 12220(g).
5 California PRC Section 4526.
6 City of Riverside. 2007. Zoning Map of the City of Riverside. https://riversideca.gov/planning/pdf/Zoning-Map.pdf

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non- forest use?

No Impact. There is no mapped important farmland or forest land on and near the campus, and project development would not indirectly cause conversion of such land to nonagricultural or nonforest use. No impact would occur.

8.2 AIR QUALITY

Air quality regulations, meteorological conditions, existing ambient air quality in the vicinity of the school, and air quality modeling are included as Appendix E to this Initial Study. The analysis in this section is also based in part on:

- *Health Risk Assessment*, PlaceWorks, May 2019

The HRA is included as Appendix I to this Initial Study.

The primary air pollutants of concern for which ambient air quality standards (AAQS) have been established are ozone (O_3), carbon monoxide (CO), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). Areas are classified under the federal and California Clean Air Act as either in attainment or nonattainment for each criteria pollutant based on whether the AAQS have been achieved. The South Coast Air Basin (SoCAB), which is managed by the South Coast Air Quality Management District (SCAQMD), is designated nonattainment for O_3, and $PM_{2.5}$ under the California and National AAQS, nonattainment for PM_{10} under the California AAQS, and nonattainment for lead (Los Angeles County only) under the National AAQS as of May 4, 2016.[7]

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The most recently adopted comprehensive plan is the 2016 air quality management plan (AQMP), adopted on March 3, 2017 (see Appendix E to this Initial Study for a description of the 2016 AQMP).

Regional growth projections are used by SCAQMD to forecast future emission levels in the SoCAB. For southern California, these regional growth projections are provided by the Southern California Association of Governments (SCAG) and are partially based on land use designations in city and county general plans.[8] Typically, only large, regionally significant projects have the potential to affect the regional growth projections.

The proposed project involves demolition and removal of some school facilities, construction of three buildings, expansion of bleachers and new field lights, and modernization of existing buildings and outdoor

[7] California Air Resources Board (CARB). 2016, May 4. Ambient Air Quality Standards. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

[8] Southern California Association of Governments (SCAG). 2016, April 7. Final 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. . http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx.

pool. Because on-campus facilities would be replaced with upgraded and new facilities, the project is not considered a project of statewide, regional, or areawide significance that would require intergovernmental review under Section 15206 of the CEQA Guidelines. The project would not have the potential to substantially affect SCAG's demographic projections. As discussed in item (b) below, operation of the proposed project is not anticipated to generate emissions that would exceed the SCAQMD emissions thresholds. According to SCAQMD methodology the project is not a substantial source of air pollutant emissions that could affect the attainment designations in the SoCAB. The project would not impact the regional emissions inventory or conflict with strategies in the AQMP, and impacts are less than significant.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. Any project that produces a significant project-level regional air quality impact in an area that is in nonattainment adds to the cumulative impact. Due to the extent of the SoCAB area and the large number of cumulative project emissions, a project would be cumulatively significant if project-related emissions exceed the SCAQMD regional significance emissions thresholds.[9]

The SCAQMD has identified regional thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including VOC, CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$. Development projects below the regional significance thresholds are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation. The following describes changes in regional emissions from short-term construction activities and long-term operation of the proposed project.

Short-Term Construction-Related Air Quality Impacts

Construction activities would result in the generation of air pollutants. These emissions would primarily be 1) exhaust from off-road diesel-powered construction equipment; 2) dust generated by construction activities; 3) exhaust from on-road vehicles; and 4) off-gassing of volatile organic compounds (VOCs) from paints and asphalt.

Construction activities are anticipated to disturb about two acres. The project would involve demolition, grading, building construction and modernization, architectural painting, and paving, and is anticipated to start in Q3-2020 and finish in Q3-2021. Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2, and are based on the project's preliminary construction schedule, phasing, and CalEEMod default equipment list. Table 8-1 shows the results of construction emissions modeling and the maximum daily emissions for VOC, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ from construction-related activities. Emissions would be less than their respective SCAQMD regional significance threshold values. Short-term air quality impacts from project-related construction activities would be less than significant.

[9] South Coast Air Quality Management District (SCAQMD). 1993. California Environmental Quality Act Air Quality Handbook.

Table 8-1 Maximum Daily Construction Emissions

Construction Activity	Maximum Daily Emissions (lbs/Day)[a]					
	VOC	NO_x	CO	SO_2	PM_{10}[b]	$PM_{2.5}$[b]
Year 2020						
Demolition	2	22	15	<1	2	1
Grading/Trenching	2	22	13	<1	3	2
Building Construction	2	16	14	<1	1	1
Year 2021						
Building Construction	2	14	14	<1	1	1
Architectural Coating	19	2	2	<1	<1	<1
Paving	1	8	9	<1	1	<1
Maximum Daily Emissions	19	22	15	<1	3	2
SCAQMD Regional Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Source: CalEEMod Version 2016.3.2. Highest winter or summer emissions are reported.
Notes: lbs = pounds
[a] Based on information provided or verified by the District. Where specific information regarding project-related construction activities or processes was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by the SCAQMD.
[b] Includes implementation of fugitive dust control measures required by SCAQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Long-Term Operation-Related Air Quality Impact

Typical long-term air pollutant emissions are generated by area sources (e.g., landscape fuel use, aerosols, and architectural coatings), energy use (natural gas), and mobile sources (i.e., on-road vehicles). The new buildings would, at minimum, be designed and built to meet the 2019 Building Energy Efficiency Standards and California Green Building Standards Code (CALGreen), which would minimize emissions. In addition, while the proposed project would result in new buildings on the campus, there would not be an increase in student capacity. Relocation of the full-capacity varsity football games and graduation ceremonies from the Ramona High School stadium to the new and expanded bleachers would not result in an increase in trips or vehicle miles traveled (VMT). The existing Ramona High School stadium currently has 5,000-seat capacity compared to the proposed 3,000-seat bleachers at Arlington HS. While relocation of varsity football games and graduation to Arlington HS might increase the average vehicle trip distance traveled by up to two miles for some people, the average vehicle distance traveled for the majority of people would be shortened based on the Arlington HS attendance boundaries. The proposed project would reduce VMT and mobile-source emissions compared to existing conditions.

As shown in Table 8-2, the maximum daily emissions for VOC, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ from operation-related activities would be less than their respective SCAQMD regional significance threshold values. Impacts to the regional air quality associated with operation of the project would be less than significant.

8. Impacts Found Not to Be Significant

Table 8-2 Regional Operation Emissions

Source	Maximum Daily Emissions (lbs/Day)					
	VOC	NO_x	CO	SO_2	PM_{10}	PM_2
Summer						
Area	1	<1	<1	0	<1	<1
Energy[a]	<1	<1	<1	<1	<1	<1
Total	**1**	**<1**	**<1**	**<1**	**<1**	**<1**
Winter						
Area	1	<1	<1	0	<1	<1
Energy[a]	<1	<1	<1	<1	<1	<1
Mobile	0	0	0	0	0	0
Total	**1**	**<1**	**<1**	**<1**	**<1**	**<1**
Max Daily						
Area	1	<1	<1	0	<1	<1
Energy[a]	<1	<1	<1	<1	<1	<1
Total	**1**	**<1**	**<1**	**<1**	**<1**	**<1**
Maximum Daily Emissions	1	<1	<1	<1	<1	<1
SCAQMD Regional Threshold	**55**	**55**	**550**	**150**	**150**	**550**
Exceeds Threshold?	No	No	No	No	No	No

Source: CalEEMod Version 2016.3.2.
Note: lbs = pounds
[a] Buildings would be designed and built to meet the 2019 Building Efficiency Standards and CALGreen based on the anticipated construction schedule.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The proposed project could expose sensitive receptors to elevated pollutant concentrations if it causes or significantly contributes to elevated pollutant concentration levels. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Construction LSTs

Localized significance thresholds (LSTs) are based on the California AAQS, which are the most stringent AAQS that have been established to provide a margin of safety in the protection of public health and welfare. They are designated to protect sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The screening-level construction LSTs are based on the size of the project site, distance to the nearest sensitive receptor, and Source Receptor Area (SRA). To provide the most conservative screening-level LSTs for the analysis, Arlington High School students on campus during construction activities were considered the nearest sensitive receptor.

Air pollutant emissions generated by construction activities would cause temporary increases in air pollutant concentrations. Table 8-3 shows that the maximum daily construction emissions (pounds per day) for NO_x, CO, PM_{10}, and $PM_{2.5}$ construction emissions would be less than their respective SCAQMD screening-level

LSTs. Thus, project-related construction activities would not have the potential to expose sensitive receptors to substantial pollutant concentrations and localized air quality impacts would be less than significant.

Table 8-3 Localized Construction Emissions

Construction Activity	Pollutants(lbs/day)[a]			
	NO_X	CO	PM_{10}[b]	$PM_{2.5}$[b]
SCAQMD ≤1.00 Acre LST	118	602	4.00	3.00
Building Construction (2020)	15	13	1	1
Building Construction (2021)	14	13	1	1
Architectural Coating (2021)	2	2	<1	<1
Paving (2021)	8	9	<1	<1
Exceeds LST?	No	No	No	No
SCAQMD 1.19-Acre LSTs	128	655	4.56	3.19
Grading	21	12	3	2
Exceeds LST?	No	No	No	No
SCAQMD 1.89-Acre LSTs	164	852	6.67	3.89
Demolition	21	15	2	1
Exceeds LST?	No	No	No	No

Sources: CalEEMod Version 2016.3.2.
South Coast Air Quality Management District (SCAQMD). 2008, July. Final Localized Significance Threshold Methodology.
South Coast Air Quality Management District (SCAQMD). 2011. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds.
Notes: In accordance with SCAQMD methodology, only on-site stationary sources and mobile equipment are included in the analysis. The screening-level LSTs are based on receptors within 82 feet (25 meters) of the project site in SRA 23. Highest winter or summer emissions are reported in SRA 23.
[a] Where specific information for project-related construction activities or processes was not available modeling was based on CalEEMod defaults. These defaults are based on construction surveys conducted by the SCAQMD.
[b] Includes fugitive dust control measures required by SCAQMD under Rule 403, such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Construction Health Risk

Emissions from construction equipment primarily consist of diesel particulate matter (DPM). In 2015, the Office of Environmental Health Hazards Assessment (OEHHA) adopted guidance for preparation of health risk assessments, which included the development of a cancer risk factor and noncancer chronic reference exposure level for DPM over a 30-year time frame.[10] The proposed project is anticipated to be completed in approximately 12 months, which would limit the exposure of on-site and off-site receptors. Furthermore, construction activities would not generate on-site exhaust emissions that would exceed the screening-level construction LSTs. Currently, SCAQMD does not require the evaluation of long-term excess cancer risk or chronic health impacts for a short-term project. Thus, construction emissions would not pose a health risk to on-site and off-site receptors, and project-related construction health impacts would be less than significant.

[10] Office of Environmental Health Hazard Assessment (OEHHA). 2015, February. Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments: Appendix D. https://oehha.ca.gov/media/downloads/crnr/2015gmappendices.pdf.

8. Impacts Found Not to Be Significant

Operation LSTs

Operation of the proposed project would not generate substantial emissions from on-site stationary sources. Land uses that have the potential to generate substantial stationary sources of emissions include industrial land uses, such as chemical processing and warehousing operations where truck idling would occur on-site and would require a permit from SCAQMD. The proposed project does not fall within these categories of uses. While operation of the new buildings would use standard mechanical equipment such as for heating, ventilation, and air conditioning, air pollutant emissions would be nominal.

A health risk assessment was prepared to evaluate the potential long-term (chronic) exposure to air toxic emissions generated by vehicles traveling along SR-91 (between mile posts 14.079 and 15.627) and by diesel locomotives on the BNSF-Metrolink rail lines. No stationary emission sources were identified within a quarter-mile radius (1,320 feet) of the school. Based on a comparison to the carcinogenic and noncarcinogenic thresholds established by OEHHA and SCAQMD, hazardous air emissions generated from the emission sources within a quarter-mile radius of Arlington High School are not anticipated to pose an actual or potential endangerment to students and staff.[11] Impacts would be less than significant.

Localized air quality impacts related to operation-related emissions would be less than significant.

Carbon Monoxide Hotspots

Vehicle congestion has the potential to create pockets of CO called hotspots. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles are backed up and idle for longer periods and are subject to reduced speeds. These pockets may exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations.

The SoCAB has been designated in attainment under both the national and California AAQS for CO. Under future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact.[12] While the proposed project would not increase student capacity, it would add new and expanded bleachers, for an increase of 2,250 seats. The implementation of this project would relocate about varsity football games and graduation ceremonies from the Ramona High School stadium to the Arlington High School. A maximum-capacity event at Arlington HS would generate 900 peak hour trips, which would be less than the traffic volumes required to generate a significant CO impact. The proposed project would not substantially increase CO hotspots at intersections in the vicinity, and impacts would be less than significant.

[11] PlaceWorks. 2019, May. Health Risk Assessment for Arlington High School Modernization.
[12] Bay Area Air Quality Management District (BAAQMD). 2017, May. California Environmental Quality Act Air Quality Guidelines.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. The proposed project would not result in objectionable odors. The threshold for odor is if a project creates an odor nuisance pursuant to SCAQMD Rule 402, Nuisance, which states:

> A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The proposed project involves renovations at an existing school, and schools do not fall within the objectionable odors land uses. Emissions from construction equipment, such as diesel exhaust and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be low in concentration, temporary, and would not affect a substantial number of people. Odor impacts would be less than significant.

8.3 BIOLOGICAL RESOURCES

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less than Significant Impact. The campus is fully developed, with most of the school property consisting of buildings, concrete, and asphalt. Vegetation on-site is limited to ornamental trees and shrubs, turf, and potted plants. Two large and three small stormwater detention basins are located on the school campus: #1 large is in the northeast corner of the campus between the Irving Street cul-de-sac and the railroad right-of-way; #2 large is at the northwest corner of the campus near the intersection of Jackson Street and the railroad right-of-way. The three small basins are adjacent to the west side of the basketball courts and consist of mostly turf. These basins were constructed in 2012 as part of the sports field project and the trees were planted from nursery stock. The two large basins are surrounded by a chain-link fence and are not accessible to the public. These large constructed basins may have plant or animal species; however, the closest project components (bleachers) are at least 250 feet away, would involve very little ground disturbance, and would not have short- or long-term impacts. Additionally, the basins are located between an active railroad track and a high school and are continually exposed to disturbance from this activity. The school property is identified as

Residential/Urban/Exotic and is not identified as having habitat areas.13 There is no identified native habitat and no suitable habitat for threatened, endangered, or rare species on the developed campus. Impacts would be less than significant.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less than Significant Impact. Sensitive natural communities are natural communities that are known to provide habitat for sensitive animal or plant species. Riparian habitats occur along the banks of rivers and streams. No locally designated natural communities or riparian habitats exist on the campus. The campus is not within an adopted habitat conservation plan, natural community conservation plan, or similar biological plan. The campus is northeast of the northernmost point of the Mockingbird Canyon arroyo, which has a seasonal stream.[14] There is no direct connection between the campus and the designated arroyo; therefore, construction at the school would not affect the arroyo. Impacts would be less than significant.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. The campus is fully developed, and there are no protected wetlands on-site. The adjacent detention basins are not identified as a wetlands.[15] Although there is a channelized drainage about 750 feet southwest of the campus that is identified as riverine habitat, the campus does not drain to this channel. The project would be confined to the campus and would not impact any off-site protected wetland areas. No impact would occur.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant Impact. The campus is surrounded by fencing and developed with buildings, hardscape, and maintained landscaped surfaces. The campus does not have any native habitat or wildlife corridors and is not available for overland wildlife movement. However, trees of various species, sizes, and maturity are spread throughout the campus and may provide nesting sites for resident or migratory birds. Several trees would be removed as part of the project. Additionally, project construction near trees and structures may result in disturbances to birds during nesting season (February 1 through August 31, and as early as January 1 for some raptors).

Migratory nongame native bird species are protected by the California Fish and Game Code, Sections 3503, 3503.5, and 3513, which prohibit the take of all birds and their active nests. The District would comply with

[13] City of Riverside. 2012, November. City of Riverside General Plan 2025.Figure OS-5, Habitat Areas and Vegetation Communities. https://www.riversideca.gov/planning/gp2025program/GP/12_Open_Space_and_Conservation_Element.pdf.

[14] City of Riverside. 2012, November. City of Riverside General Plan 2025. Figure OS-4 Arroyos. https://www.riversideca.gov/planning/gp2025program/GP/12_Open_Space_and_Conservation_Element.pdf.

[15] U.S. Fish and Wildlife Service (FWS) 2018. National Wetlands Inventory. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

the California Fish and Game Code, which would ensure that if construction occurs during the avian breeding season, appropriate measures would be taken to avoid impacts to nesting birds. Compliance with the Code requires that the District conduct pre-construction surveys prior to demolition if it occurs during nesting season. Impacts to nesting birds would be less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The school has trees of various species, sizes, and maturity that are spread throughout the campus. The City of Riverside Municipal Code Section 13.25.020 prohibits removal, trimming, and trenching around trees and shrubs on public streets without lawful authority.[16] There are no street trees that would be affected by the project. Several trees would be removed to accommodate the new buildings on campus. The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. No impacts would occur.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The campus is within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).[17,18,19] However, it is not within the MSHCP conservation areas.20 Additionally, the school property is not within the Stephens' Kangaroo Rat Habitat Conservation Plan area or any other habitat conservation plan area.21 No impact would occur.

8.4 CULTURAL RESOURCES

The analysis in this section is based in part on:

- *A Summary Report on the Proposed Improvements at the Arlington High School Campus in the City of Riverside, Riverside County, California*, McKenna et al., August 16, 2010.

[16] City of Riverside. 2019. Code of Ordinances. https://library.municode.com/ca/riverside/codes/code_of_ordinances?nodeId=PTIICOOR_TIT13STSITRTR_CH13.25TRSHSU_13.25.020RETRTRAR.

[17] Western Riverside County Regional Conservation Authority (RCA). RCA MSHCP Information Map. http://wrcrca.maps.arcgis.com/apps/webappviewer/index.html?id=2ba3285ccc8841ed978d2d825e74c5fa; and City of Riverside. 2012, November. City of Riverside General Plan 2025. Figure OS-6, Stephens' Kangaroo Rat (SKR) Core Reserves and Other Habitat Conservation Plans (HCP), and Figure OS-7 and OS-8, MSHCP figures. https://www.riversideca.gov/planning/gp2025program/GP/12_Open_Space_and_Conservation_Element.pdf.

[18] City of Riverside. 2012, November. City of Riverside General Plan 2025, Open Space and Conservation Element. https://www.riversideca.gov/planning/gp2025program/GP/12_Open_Space_and_Conservation_Element.pdf.

[19] California Department of Fish and Wildlife. 2019, April. California Natural Community Conservation Plans. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline.

[20] Western Riverside County Regional Conservation Authority (RCA). RCA MSHCP Information Map. http://wrcrca.maps.arcgis.com/apps/webappviewer/index.html?id=2ba3285ccc8841ed978d2d825e74c5fa

[21] City of Riverside. 2012, November. City of Riverside General Plan 2025, Open Space and Conservation Element. https://www.riversideca.gov/planning/gp2025program/GP/12_Open_Space_and_Conservation_Element.pdf.

8. Impacts Found Not to Be Significant

This report is included as Appendix F to this Initial Study. [22]

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

No Impact. Section 15064.5 defines historic resources as resources listed or determined to be eligible for listing by the State Historical Resources Commission, a local register of historical resources, or the lead agency.

Federal

The National Historic Preservation Act of 1966, as amended, defines the criteria to be considered eligible for listing in the National Register of Historic Places (National Register):

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
>
> A that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B. that are associated with the lives of persons significant in our past; or
>
> C. that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D. that have yielded, or may be likely to yield, information important in prehistory or history (36 Code of Federal Regulations [CFR] Section part 63).

State

Section 5024.1(c), Title 14 CCR, Section 4852 of the California Public Resources Code defines the criteria to be considered eligible for listing in the California Register of Historical Resources (California Register):

> A resource may be listed as an historical resource in the California Register if it meets any of the following [National Register] criteria:
>
> 1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
>
> 2. Is associated with the lives of persons important in our past;

[22] The 2010 Cultural Resource Report was prepared as part of the Arlington High School Athletic Facilities Master Plan MND (SCH No. 2011031041), adopted by the Riverside USD Board of Education on May 16, 2011.

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

The school was built in 1973 and is not considered a significant cultural resource due to its age. Additionally, the campus has no historic structures, buildings, or other resources.[23] No impact would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less Than Significant Impact. Archaeological resources are cultural resources of prehistoric or historic origin that reflect human activity. Archaeological resources include both structural ruins and buried resources. The term Unique Archaeological Resources is defined in PRC Section 21083.2(g) as:

> … 'unique archaeological resources' means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> (1) Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
>
> (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
>
> (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The soil on campus was previously disturbed by construction of the original school as well as demolition and construction of buildings and grounds over the past 46 years.

Ten archaeological resources have been identified within 0.5 mile of the school, including the historic Upper and Lower Riverside Canals, a canal system developed between 1870 and 1875. The alignment of these canals crossed the northern corner of the campus, immediately north of the athletic fields. The canal structures no longer exist. The previous 2011 CEQA document found that there was a possibility of buried archaeological resources associated with the historic canal system.[24] However, since that determination was made, the entire northern half of the campus was demolished, graded, trenched, and constructed with new athletic facilities. Therefore, if there had been resources, they would have been recovered during the construction project. Installation of new and expanded bleachers are not likely to uncover new resources. Impacts would be less than significant.

[23] McKenna et al. 2010, August 16. "A Summary Report on the Proposed Improvements at the Arlington High School Campus in the City of Riverside, Riverside County, California."

[24] McKenna et al. 2010, August 16. "A Summary Report on the Proposed Improvements at the Arlington High School Campus in the City of Riverside, Riverside County, California."

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant Impact. The campus has undergone extensive earthwork (excavation and grading): grading and planting of orchards around 1931, grading and tilling for row crops from 1967 to 1973, grading and construction of Arlington High School in 1973, and most recently the extensive grading during reconstruction of the northern half of the campus. Therefore, human remains are not anticipated. In the unlikely event that human remains are uncovered during project demolition, grading, or excavation, Government Code Sections 27460 et seq. mandate that there shall be no further excavation or soil disturbance until the Riverside County Coroner has determined that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner, and cause of death, and the required recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in PRC Section 5097.98.

Pursuant to California Health and Safety Code Section 7050.5, the coroner shall make his or her determination within two working days of notification of the discovery of the human remains. If the coroner determines that the remains are not subject to his or her authority and recognizes or has reason to believe that they are those of a Native American, he or she shall contact the Native American Heritage Commission within 24 hours. Compliance with existing regulations would ensure that impacts to human remains would be less than significant.

8.5 ENERGY

Would the project:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant Impact.

Short-Term Construction

Construction of the project would require energy use to power the construction equipment. The energy use would vary during different phases of construction—the majority of construction equipment during demolition and grading would be gas or diesel powered, and the later construction phases would require electricity-powered equipment for interior construction and architectural coatings. Construction activities would be subject to applicable regulations such as anti-idling measures (SCAQMD), limits on duration of activities (city municipal code), and the use of alternative fuels if possible (SCAQMD), thereby reducing energy consumption.

Transportation energy use depends on the type and number of trips, vehicle miles traveled, fuel efficiency of vehicles, and travel mode. Transportation energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel and gasoline. Impacts related to transportation energy use during construction would be

temporary and would not require expanded energy supplies or the construction of new infrastructure. Impacts would not be significant.

Long-Term Operation

The project site is already developed as a high school and consumes electrical and natural gas energy. The project would not change the land use of the school.

The school consumes electricity for various purposes, including heating, cooling, and ventilation of buildings; water heating; operation of electrical systems; lighting; use of on-site equipment and appliances, etc. Southern California Edison provides electric service to the City of Riverside. The project would be required to comply with the current Building Energy Efficiency Standards so that it would not result in wasteful or unnecessary energy demands. Based on the CalEEMod air quality modeling, the project would increase the electricity consumption by about 139,620 kilowatt-hours per year.

Southern California Gas Company provides gas service in the City of Riverside. There is extensive and reliable infrastructure and gas services in the area. Based on the CalEEMod air quality modeling, the project would increase gas consumption by about 144,004 kilo–British Thermal Units per year.

California's Building Energy Efficiency Standards are updated on a three-year cycle to incorporate new energy efficiency technologies.[25] The 2019 Building Energy Efficiency Standards were adopted on May 9, 2018, and go into effect for new construction starting January 1, 2020. The 2019 standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements.[26] Under the 2019 standards, nonresidential buildings (which include school buildings) will be 30 percent more energy efficient compared to the 2016 standards.[27] The new buildings would be significantly more energy efficient than the existing buildings on campus.

Because the project would not result in an increase in students or staff, it would not result in an increase in motor vehicle transportation energy during operation over what is currently used.

There are no aspects of the project that would foreseeably result in the inefficient, wasteful, or unnecessary consumption of energy during construction activities. For example, there are no unusual characteristics that would directly or indirectly cause construction activities to be any less efficient than would otherwise occur elsewhere (restrictions on equipment, labor, types of activities, etc.). The project would not result in the inefficient, wasteful, or unnecessary consumption of energy during construction activities. Impacts would be less than significant.

[25] The California Energy Code, part 6 of the California Building Standards Code which is title 24 of the California Code of Regulations, also titled The Energy Efficiency Standards for Residential and Nonresidential Buildings.

[26] California Energy Commission (CEC). 2018. News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. http://www.energy.ca.gov/releases/2018_releases/2018-05-09_building_standards_adopted_nr.html.

[27] California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The state's electricity grid is transitioning to renewable energy under California's Renewable Energy Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. Electricity production from renewable sources is generally considered carbon neutral. Executive Order S-14-08, signed in November 2008, expanded the state's renewable portfolios standard (RPS) to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Senate Bill 350 (de Leon) was signed into law September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. Senate Bill 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures. On September 10, 2018, Senate Bill 100 (SB 100) was signed and raised California's RPS requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also established a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under SB 100 the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Also, the new buildings would comply with the Building Energy Efficiency Standards and CALGreen and would be significantly more energy efficient than the existing buildings on campus. The project would be reviewed by DSA for compliance with design and construction and energy compliance. The project would not conflict with state or local plans for renewable energy or energy efficiency. No impacts would occur.

8.6 GEOLOGY AND SOILS

The analysis in this section is based in part on the following technical studies:

- *A Summary Report on the Proposed Improvements at the Arlington High School Campus in the City of Riverside, Riverside County, California*, McKenna et al., August 16, 2010 (in Appendix F)
- *Geologic and Environmental Hazards Assessment, Arlington High School Modernization*, PlaceWorks, April 2019 (in Appendix G)
- *Geotechnical Investigation for Proposed Classroom, Restroom, Bleachers and Fitness-Training Building, 2951 Jackson Street, Riverside, CA*, RMA Group, September 20, 2018 (in Appendix H-1)
- *Geotechnical Investigation, Proposed Football Stadium and Athletic Facilities, Arlington High School, 2951 Jackson Street, City of Riverside, California*, Leighton Consulting, June 17, 2010 (in Appendix H-2)

Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning map, issued by the State Geologist for the area or based on other

substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less than Significant Impact. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazards of surface faulting and fault rupture on habitable buildings. Fault rupture generally occurs within 50 feet of an active fault line and is limited to the immediate area of the fault. Active earthquake faults are faults where surface rupture has occurred within the last 11,000 years. The campus is not within or immediately adjacent to (i.e., within a few hundred feet) a designated Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards. The closest active fault to Arlington HS is the Chino-Central Avenue (Elsinore) fault, located approximately 11 miles southwest.[28] Fault rupture impacts would be less than significant.

ii) Strong seismic ground shaking?

Less Than Significant Impact. The project would not increase exposure of people or structures to earthquake impacts. Southern California is a seismically active region and ground shaking occurs many miles from an earthquake epicenter. The potential severity of ground shaking depends on many factors, including the distance from the originating fault, the earthquake magnitude, and the nature of the earth materials beneath a given site. There are several known faults in the Riverside region. The closest historically active surface fault is the Chino-Central Avenue (Elsinore) fault, approximately 11 miles southwest of the school.[29] Because of the proximity to known faults and because the entire southern California region is considered seismically active, there is a potential for people and structures to experience strong ground shaking in the future from local and regional faults.

The new school buildings would be designed in accordance with the California Building Code, the California Geological Survey's "Guidelines for Evaluating and Mitigating Seismic Hazards in California,"[30] and "Checklist for the Review of Geologic/Seismic Reports for California Schools, Hospitals, and Essential Services Buildings."[31] Additionally, the geotechnical investigation report provided recommendations for site operation and construction to minimize hazards from seismic ground shaking. The project also requires review from the DSA for compliance with design and construction and accessibility standards and codes, including seismic requirements. Seismic ground shaking impacts would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction refers to loose, saturated sand, or gravel deposits that lose their load-supporting capability when subjected to intense shaking. Liquefaction potential varies based

[28] RMA Group. 2018, September 20. Geotechnical Investigation for Proposed Classroom, Restroom, Bleachers and Fitness-Training Building. 2951 Jackson Street, Riverside, CA.

[29] RMA Group. 2018, September 20. Geotechnical Investigation for Proposed Classroom, Restroom, Bleachers and Fitness-Training Building. 2951 Jackson Street, Riverside, CA.

[30] California Geological Survey, "Guidelines for Evaluating and Mitigating Seismic Hazards in California," September 11, 2008, California Department of Conservation.

[31] California Geological Survey. October 2013. http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_48/Documents/Note_48.pdf

upon three main contributing factors: 1) cohesionless, granular soils having relatively low densities (usually of Holocene age);[32] 2) shallow groundwater (generally less than 50 feet); and 3) moderate to high seismic ground shaking.

The campus is mapped in an area designated as having a low liquefaction potential in the Riverside County Land Information System.[33] Additionally, groundwater was not encountered in the upper 50 feet during subsurface explorations; therefore, liquefaction is unlikely.[34] Project development would not subject people or structures to substantial hazards from liquefaction, and impacts would be less than significant.

iv) Landslides?

No Impact. Landslides are a type of erosion in which masses of earth and rock move downslope as a single unit. Susceptibility of slopes to landslides and lurching (earth movement at right angles to a cliff or steep slope during ground shaking) depend on several factors, which are usually present in combination—steep slopes, condition of rock and soil materials, the presence of water, formational contacts, geologic shear zones, and seismic activity. The overall down-gradient of the property is about 1 percent to the north. Elevations within the proposed development areas range from approximately 850 to approximately 870 feet above sea level. The relatively flat topography at the school precludes both stability problems and the potential for lurching. The property is not susceptible to landslides, including seismically induced landslides.[35] There are no known landslides near Arlington HS, nor is the school in the path of any known or potential landslides or seismic slope instability. The project would not expose people or the new school buildings to adverse effects from landslides. No impact would occur.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact.

Construction Phase

The native topsoil was removed and replaced with stable fill material during development of the campus; therefore, the project would not result in the loss of topsoil.[36]

Erosion is a normal and inevitable geologic process whereby earthen materials are loosened, worn away, decomposed, or dissolved, and moved from one place to another. Precipitation, running water, waves, and wind are all agents of erosion. Ordinarily, erosion proceeds imperceptibly, but when the natural equilibrium of the environment is changed, the rate of erosion can be greatly accelerated. This can create aesthetic as well as engineering problems on undeveloped sites. Accelerated erosion in an urban area can cause damage by

[32] The Holocene epoch began 12,000 to 11,500 years ago.
[33] Leighton Consulting, Inc. 2010, June 17. Geotechnical Investigation, Proposed Football Stadium and Athletic Facilities, Arlington High School, 2951 Jackson Street, City of Riverside, California.
[34] RMA Group. 2018, September 20. Geotechnical Investigation for Proposed Classroom, Restroom, Bleachers and Fitness-Training Building. 2951 Jackson Street, Riverside, CA.
[35] Leighton Consulting, Inc. 2010, June 17. Geotechnical Investigation, Proposed Football Stadium and Athletic Facilities, Arlington High School, 2951 Jackson Street, City of Riverside, California.
[36] Topsoil is the thin, rich layer of soil where most nutrients for plants are found and where most land-based biological activity takes place. The loss of topsoil through erosion is a major agricultural problem.

undermining structures; blocking storm drains; and depositing silt, sand, or mud on roads and in tunnels. Eroded materials can eventually be deposited in local waters, where the carried silt remains suspended in the water for some time, constituting a pollutant and altering the normal balance of plant and animal life.

Project-related construction activities would expose soil through excavation, grading, and trenching, and thus could cause erosion during heavy winds or rain storms. Construction projects of one acre or more are regulated under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) issued by the State Water Resources Control Board. RUSD would obtain coverage by preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP), estimating sediment risk from construction activities to receiving waters, and specifying best management practices (BMPs) that would be incorporated into the construction plan to minimize stormwater pollution. Categories of BMPs used in SWPPPs are described in Table 8-4. The project would disturb approximately 2 acres of the 45-acre campus; thus, construction would be subject to the Statewide Construction General Permit and implementation of BMPs specified in the SWPPP. Construction-phase soil erosion impacts would be less than significant.

Table 8-4 Construction BMPs

Category	Purpose	Examples
Erosion Controls and Wind Erosion Controls	Cover and/or bind soil surface, to prevent soil particles from being detached and transported by water or wind.	Mulch, geotextiles, mats, hydroseeding, earth dikes, swales.
Sediment Controls	Filter out soil particles that have been detached and transported in water.	Barriers such as straw bales, sandbags, fiber rolls, and gravel bag berms; desilting basin; cleaning measures such as street sweeping.
Tracking Controls	Minimize the tracking of soil off-site by vehicles.	Stabilized construction roadways and construction entrances/exits; entrance/outlet tire wash.
Non-storm Water Management Controls	Prohibit discharge of materials other than stormwater, such as discharges from the cleaning, maintenance, and fueling of vehicles and equipment. Conduct various construction operations, including paving, grinding, and concrete curing and finishing, in ways that minimize non-stormwater discharges and contamination of any such discharges.	BMPs specifying methods for: paving and grinding operations; cleaning, fueling, and maintenance of vehicles and equipment; concrete curing; concrete finishing.
Waste Management and Controls (i.e., good housekeeping practices)	Management of materials and wastes to avoid contamination of stormwater.	Spill prevention and control, stockpile management, and management of solid wastes and hazardous wastes.

Source: California Stormwater Quality Association (CASQA), California Construction Best Management Practices Handbook, January 2015.

Operational Phase

After completion of the project, ground surfaces would be either hardscape or maintained landscaping, and no large areas of exposed soil would be left to erode. The new buildings and other campus improvements would not cause an increase in erosion of soils off campus. Operational phase soil erosion impacts would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less Than Significant Impact. Hazards arising from liquefaction and landslides would be less than significant, as discussed above in Sections a (iii) and (iv).

Lateral spreading. Lateral spreading is the downslope movement of surface sediment due to liquefaction in a subsurface layer. The campus is not prone to lateral spreading because near-surface site sediments are not prone to liquefaction.

Subsidence. The major cause of ground subsidence is withdrawal of groundwater. The project would not withdraw groundwater. Project implementation would not pose substantial hazards to people or structures due to ground subsidence, and impacts would be less than significant.

Seismically Induced Settlement. In contrast to liquefaction, which occurs in saturated sand or gravel, seismically induced settlement occurs in dry sands and is often caused by loose to medium-dense granular soils densified during ground shaking. Seismically induced ground settlement was calculated at between 0.25 and 3.5 inches. The geotechnical investigation report provides recommendations for foundation design to minimize hazards from seismic settlement. To ensure ground settlement does not exceed the typical tolerance for structures, the new building foundations would involve either ground improvement and mat foundation, or other foundations depending on the final engineering geotechnical report. Adherence to final engineering geotechnical recommendations is required by the DSA. Project development would not subject people or structures to substantial hazards arising from seismic settlement, and impacts would be less than significant.

Compressible and Collapsible Soils. Soil compressibility refers to a soil's potential for settlement when subjected to increased loads, as from a fill surcharge or a structure. Collapsible soils are typically geologically young, unconsolidated sediments of low density that may compress under the weight of structures. Loose, porous, and compressible native soils were encountered to depths of about 1 to 3 feet below grade. Any nonengineered fills encountered during grading would be removed down to competent ground along with any underlying compressible native soils. Fill material would be moisture conditioned and compacted to at least 90 percent of the maximum dry density. As part of the DSA review process, RUSD is required to show how the project complies with a final, engineering-level geotechnical report and will include identification of building setbacks, site preparation, specific locations and methods for fill placement, temporary shoring, groundwater seismic design features, excavation stability, foundations, soil stabilization, establishment of any deep foundations, concrete slabs and pavements, surface drainage, cement type and corrosion measures, erosion control, shoring and internal bracing, and plan review.

The project design and development would incorporate all recommended measures in the engineering-level geotechnical report to ensure that safety is not compromised, as required by existing regulations. Compliance with recommendations of the geotechnical investigation would minimize hazards from unstable soils, and impacts would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less Than Significant Impact. Expansive soils possess clay particles that react to moisture changes by shrinking when dry or swelling when wet. These soils have the potential to crack building foundations and, in some cases, structurally distress the buildings themselves. Minor-to-severe damage to overlying structures is possible. Expansion index testing indicates that near-surface soils have a very low expansion potential.[37] Therefore, the project would not expose people or the new school buildings to significant adverse effects associated with expansive soils. Impacts would be less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The existing campus does not use septic tanks or other alternative wastewater disposal systems. No impact would occur.

f) Directly or indirectly destroy unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. A paleontological resource is a natural resource characterized as faunal or floral fossilized remains but may also include specimens of nonfossil material dating to any period preceding human occupation. According to the cultural resource investigation report, the Los Angeles County Museum of Natural History has identified the general area as consisting of Quaternary alluvial deposits ranging in age from the late Pleistocene to the Holocene.

Soil tested during geotechnical investigations encountered artificial fill and older alluvium. The strata of the alluvial soils consisted of silty sand and sand to a depth of 47 feet below ground surface.

Project-related soil cuts and fills would be less than five feet. Shallow excavations are not likely to contain fossil specimens; however, deeper deposits of older Quaternary alluvium may contain fossils or other paleontological resources.[38] The campus has undergone extensive earthwork (excavation and grading): grading and planting of orchards around 1931, grading and tilling for row crops from 1967 to 1973, grading and construction of Arlington High School in 1973, and the recent, extensive grading during reconstruction of the northern half of the campus. Therefore, discovery of paleontological resources is unlikely. Impacts to paleontological resources would be less than significant.

8.7 GREENHOUSE GAS EMISSIONS

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as greenhouse gases (GHGs), into the atmosphere. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four

[37] RMA Group. 2018, September 20. Geotechnical Investigation for Proposed Classroom, Restroom, Bleachers and Fitness-Training Building. 2951 Jackson Street, Riverside, CA.

[38] McKenna et al. 2010, August 16. A Summary Report on the Proposed Improvements at the Arlington High School Campus in the City of Riverside, Riverside County, California.

major GHGs—water vapor, carbon dioxide (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHGs identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[39]

Information on manufacture of cement, steel, and other "life cycle" emissions as a result of the project are not applicable and not included in the analysis.[40] Black carbon emissions are not included because the California Air Resources Board (CARB) does not include this pollutant in the state's Assembly Bill (AB) 32 inventory but treats this short-lived climate pollutant separately.[41] A background discussion on the GHG regulatory setting and GHG modeling can be found in Appendix E to this Initial Study.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. Global climate change is not confined to a specific area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough GHG emissions on its own to significantly influence global climate change; therefore, global climate change is, by definition, a cumulative environmental impact.

The proposed project would generate GHG emissions from construction activities, energy use (directly through fuel consumed for building heating), and area sources (e.g., consumer products, coatings). As discussed in as discussed in Section 8.2, *Air Quality* and Chapter 5.3, *Transportation*, the project would not result in an increase in VMT and mobile source emissions because student capacity would not increase. Varsity football games and graduation ceremonies would be relocated closer to Arlington HS students. The overall average vehicle trip length would be reduced for the majority of people. Additionally, the project would not result in an increase in water demand, wastewater generation, or solid waste generation because student capacity would not increase.

Table 8-5 shows that project-related emissions would total 101 metric tons (MT) of carbon-dioxide-equivalent emissions per year (CO_2e/yr) and would not exceed the proposed SCAQMD bright-line threshold of 3,000

[39] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant; it is part of the feedback loop rather than a primary cause of change.

[40] Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions, found that life cycle analysis was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources, and the possibility of double-counting emissions (California Natural Resources Agency. 2018, November. Final Statement of Reasons for Regulatory Action http://resources.ca.gov/ceqa/docs/2018_CEQA_Final_Statement_of%20Reasons_111218.pdf). Because the amount of materials consumed during the operation or construction of the proposed project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials is also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (Governor's Office of Planning and Research. 2008, June. CEQA and Climate Change: Addressing Climate Change through CEQA Review. Technical Advisory. http://opr.ca.gov/docs/june08-ceqa.pdf).

[41] Particulate matter emissions, which include black carbon, are analyzed in Section 8.2, *Air Quality*. Black carbon emissions have sharply declined due to efforts to reduce on-road and off-road vehicle emissions, especially diesel particulate matter. The state's existing air quality policies will virtually eliminate black carbon emissions from on-road diesel engines within 10 years (California Air Resources Board. 2017, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/shortlived.htm).

$MTCO_2e$/year. The proposed project's cumulative contribution to GHG emissions would be less than significant.

Table 8-5 Project-Related Operation GHG Emissions

Source	GHG ($MTCO_2e$/Year)[b]
Area	<1
Energy	92
Amortized Construction Emissions[a]	9
Total	**101**
SCAQMD Bright-Line Threshold	3,000 $MTCO_2e$/Yr
Exceeds Bright-Line Threshold?	**No**

Source: CalEEMod, Version 2016.3.2; South Coast Air Quality Management District (SCAQMD). 2008. Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold.
Notes: MTons = metric tons; $MTCO_2e$ = metric ton of carbon dioxide equivalent
[a] Total construction emission are amortized over 30 years per SCAQMD methodology.
[b] Totals may not be exact because of rounding.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan and SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). A consistency analysis with these plans is presented below.

CARB Scoping Plan

CARB's Scoping Plan is California's GHG reduction strategy to achieve the state's GHG emissions reduction target established by AB 32, which is to return to 1990 emission levels by year 2020. The CARB Scoping Plan is applicable to state agencies and is not directly applicable to cities/counties and individual projects. Nonetheless, the Scoping Plan has been the primary tool used to develop performance-based and efficiency-based CEQA criteria and GHG reduction targets for climate action planning efforts.

Since adoption of the 2008 Scoping Plan, state agencies have adopted programs identified in the plan, and the legislature has passed additional legislation to achieve the GHG reduction targets. Statewide strategies to reduce GHG emissions include the Low Carbon Fuel Standard, California Appliance Energy Efficiency regulations, California Renewable Energy Portfolio standard, changes in the Corporate Average Fuel Economy standards, and other early action measures as necessary to ensure the state is on target to achieve the GHG emissions reduction goals of AB 32. The new buildings are required to comply with the Building Energy Efficiency Standards and CALGreen. On December 24, 2017, CARB adopted Final 2017 Climate Change Scoping Plan Update to address the new 2030 target to achieve a 40 percent reduction below 1990 levels by 2030, established by SB 32.[42] While measures in the Scoping Plan apply to state agencies and not the school district, the project's

[42] California Air Resources Board (CARB). 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

GHG emissions would be reduced from compliance with statewide measures that have been adopted since AB 32 and SB 32 were adopted. The proposed project would be consistent with the CARB Scoping Plan and no impact would occur.

SCAG's Regional Transportation Plan/Sustainable Communities Strategy

In addition to AB 32, the California legislature passed SB 375 to connect regional transportation planning to land use decisions made at a local level. SB 375 requires the metropolitan planning organizations to prepare a Sustainable Communities Strategy in their regional transportation plans to achieve the per capita GHG reduction targets. For the SCAG region, the SCS was adopted in April 2016.[43] The SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives to governments and developers for consistency. While the implementation of the school improvements would result in an increase in the bleacher capacity, as discussed in Section 8.2, *Air Quality* and Chapter 5.3, *Transportation*, the overall VMT would be reduced. The proposed project would not interfere with SCAG's ability to implement the regional strategies outlined in the RTP/SCS, and no impact would occur.

8.8 HAZARDS AND HAZARDOUS MATERIALS

The analysis in this section is based in part on the following information:

- *Preliminary Environmental Assessment*, PlaceWorks, April 2019 (see Appendix L)
- *Health Risk Assessment*, PlaceWorks, May 2019 (see Appendix I)
- *Water Pipeline Safety Hazard Assessment*, PlaceWorks, February 2019 (see Appendix K)

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?

Less Than Significant Impact.

Recognized Environmental Conditions

A recognized environmental condition is defined as the presence or likely presence of hazardous substances or petroleum products in, on, or at a property due to any release to the environment, under any conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment.[44]

The campus was historically occupied by an orchard from 1931 to 1967, and was used for row crops from 1967 until Arlington HS was built in 1973. Because of the historical agriculture and the potential presence of

[43] Southern California Association of Governments (SCAG). 2016, April 7. Final 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx.

[44] ASTM International (ASTM). 2013. Standard E1527-13: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

hazardous materials from the portable buildings, a Preliminary Environmental Assessment (PEA) was prepared. The PEA evaluated impacts from the potential historical soil contamination as a result of lead from lead-based paint and organochlorine pesticides (OCP) as termiticides on structures, and insecticides and OCPs used in agricultural fields. A total of 36 soil samples were collected from the surface to 0.5 feet below ground surface (bgs) and from 2.0 to 2.5 feet bgs.[45] Analysis results are:

- Arsenic was not detected above the laboratory reporting limits.
- All concentrations detected of OCPs were below residential screening levels.
- All lead concentrations were below the DTSC screening level of 80 milligrams per kilogram.
- The human health risk screening showed that chemical concentrations would not be a risk to human health or the environment.

Existing Hazardous Substances

Hazardous materials that are currently being handled, used, transported, or disposed of include: standard cleaning products; pesticides and herbicides; paints, fuels, and lubricants; and small volumes of hazardous wastes, such as waste paint, batteries, fluorescent lamps, mercury-containing equipment, or unused maintenance products used in association with existing campus janitorial, maintenance, and landscaping.

Most hazardous materials stored on campus present little risk of upset, since they are generally stored in small containers (30 gallons or less) in designated areas. The amounts of hazardous materials that are handled at any one time are likewise small, reducing the potential consequences of an accident during transport, storage, or handling.

Hazardous materials are managed in accordance with standard RUSD policies and practices and regulated by several agencies, including the EPA, the California Department of Toxic Substances Control, California Division of Occupational Safety and Health, County of Riverside Department of Environmental Health, and the Riverside County Fire Department.[46] The requirements of these agencies would be incorporated into the design and operation of the project. These requirements include providing for and maintaining appropriate storage areas for hazardous materials and installing or affixing appropriate warning signs and labels. All materials and substances that would be used after project completion are already being used on the campus; therefore, no change would occur. Hazards to the public, the students, or the environment through the routine transport, use, or disposal of hazardous materials would be less than significant.

[45] PlaceWorks. 2019, June. Preliminary Environmental Assessment Report, Arlington High School. for Riverside Unified School District

[46] The Riverside County Fire Department is the Certified Unified Program Agency (CUPA) for the City of Riverside; the Certified Unified Program coordinates consistent enforcement of several state and federal regulations governing hazardous materials.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. The use, handling, storage, and disposal of hazardous materials in the course of project construction and operation would not pose a substantial hazard to the public or the environment from reasonably foreseeable accidental release. Compliance with the previously discussed regulations is already standard practice at the school, including training school staff to safely contain and clean up hazardous materials spills; maintaining on-site the spill containment and cleanup supplies for hazardous materials; implementing school evacuation procedures as needed; and contacting the appropriate hazardous materials emergency response agency immediately pursuant to requirements of regulatory agencies.

Additionally, several high-volume water pipelines are within 1,500 feet of the school:

- City of Riverside, Public Utilities Department (RPU): 9 pipelines from 12 to 54 inches in surrounding streets
- Metropolitan Water District (MWD): 124-inch Upper Feeder water pipeline easement bisects the northern playfield area.

If a rupture or leak occurs in any of the RPU water mains within 1,500 feet of the school, the results of the flooding analysis indicate that the released water would not result in water depths at the school site that would pose a significant risk to students and staff. However, the analysis also indicates that released water from the MWD water main could result in water depths of 12 inches that could extend 257 feet beyond the pipeline easement at the site. Since the project involves changes to an existing school campus, the District must certify that the project will not create any new significant safety hazards or exacerbate any existing safety hazards to students. There are existing classroom buildings that are approximately 370 feet east from the edge of the MWD easement. No new classroom buildings would be constructed closer to the MWD easement. The MWD pipeline was in place before the school's construction in 1973. The project would not place classroom buildings closer to the easement or within the easement. Therefore, the project would not exacerbate or create new safety hazards.[47] Impacts from reasonably foreseeable upset and accident conditions would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less Than Significant Impact. In addition to the project site, which is an existing school, Hawthorne Elementary School at 2700 Irving Street, and Sherman Indian High School at 9010 Magnolia Avenue are both within a quarter mile of Arlington HS. The project would not emit hazardous emissions or handle significant quantities of hazardous or acutely hazardous materials, substances, or waste. Hazardous materials expected at the existing school would be associated with janitorial, maintenance, and repair activities. These materials would be used in small quantities and would be stored in compliance with established state and federal requirements. Additionally, construction materials and site cleanup would comply with existing regulations. Operation of construction equipment and heavy trucks during project construction would generate diesel emissions, which

[47] PlaceWorks. 2019, February. Water Pipeline Safety Hazard Assessment for Arlington High School Modernization.

are considered hazardous; however, the project construction period would be temporary. Exposure to diesel exhaust during the construction period would not pose substantial hazards to students or staff at Hawthorne Elementary, Sherman Indian High School, or Arlington HS.

A health risk assessment was prepared to evaluate the potential long-term (chronic) exposure to air toxic emissions generated by vehicles traveling along SR-91 (between mile posts 14.079 and 15.627) and by diesel locomotives on the BNSF-Metrolink rail lines. No stationary emission sources were identified within a quarter-mile radius (1,320 feet) of the school. Based on a comparison to the carcinogenic and noncarcinogenic thresholds established by OEHHA and SCAQMD, hazardous air emissions generated from the emission sources within a quarter-mile radius of Arlington High School are not anticipated to pose an actual or potential endangerment to students and staff.[48] Impacts would be less than significant.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less Than Significant Impact. California Government Code Section 65962.5 requires that lists of hazardous materials sites be compiled and available to the public. These lists include:

- Hazardous waste facilities subject to corrective action.
- Hazardous waste discharges for which the State Water Resources Control Board has issued certain types of orders.
- Public drinking water wells containing detectable levels of organic contaminants.
- Underground storage tanks with reported unauthorized releases.
- Solid waste disposal facilities from which hazardous waste has migrated.

The PEA included a regulatory agency environmental database search.[49] The campus is not included on any list compiled pursuant to California Government Code Section 65962.5. The project would not cause a substantial hazard to the public or the environment from listed hazardous materials. Impacts would be less than significant.

[48] PlaceWorks. 2019, May. Health Risk Assessment for Arlington High School Modernization.
[49] PlaceWorks. 2019, June. Preliminary Environmental Assessment Report, Arlington High School. For Riverside Unified School District.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles or a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The nearest airport to the school is Riverside Municipal Airport in the City of Riverside, approximately three miles to the northeast.[50] The campus is not within the airport influence area or the airport land use planning area of Riverside Municipal Airport.[51] The project would not result in a new use that would interfere with air traffic patterns, increase traffic levels, or change traffic patterns. New buildings on campus would be of similar height as the existing buildings and would not interfere with air traffic patterns or create a safety hazard or excessive noise. No impact would occur.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The emergency response plan in effect in the City of Riverside is the City's Emergency Operations Plan (EOP) approved by the City Council in 2011. The EOP identifies city agencies and other agencies that would be involved in emergency responses; threat summaries and assessments; and procedures for responding agencies as well as City agencies that would be involved in coordinating and managing responses. The EOP is focused on emergencies beyond the scope of the daily functions of public safety agencies, such as emergencies requiring multiagency and/or multi-jurisdictional responses.[52]

The City of Riverside also implements a local hazard mitigation plan, which was approved by the Federal Emergency Management Agency in 2018,[53] and the County of Riverside Multi-jurisdictional Local Hazard Mitigation Plan.[54] Emergency preparedness and response planning and coordination would be coordinated through RUSD's Risk Management Department. The existing school currently has a school safety plan in compliance with the District's "safe school plans." Project construction would not interfere with any other existing emergency response plans or emergency evacuation plans. No emergency response impact would occur.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

No Impact. The campus is not in or near state responsibility areas or lands classified as high fire hazard severity zones, and there is no wildland susceptible to wildfire on or near the school, as mapped by the California

[50] California Department of Transportation (Caltrans). 2016, May 5. Caltrans Aviation GIS Data. https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=32c3cbe24491427d872e2fec173a4b22.
[51] City of Riverside. 2012, November. City of Riverside General Plan 2025 Public Safety Element. https://www.riversideca.gov/planning/gp2025program/GP/10_Public_Safety_Element.pdf.
[52] City of Riverside. 2011, January 18. City of Riverside Emergency Operations Plan. https://www.riversideca.gov/fire/oem/pdf/Part-1-Base-Plan-(EOP)-ver-011181.pdf
[53] City of Riverside. 2018. City of Riverside Local Hazard Mitigation Plan. https://www.riversideca.gov/fire/oem/pdf/Riverside%202018%20LHMP%20County%20Revised%20APA.pdf
[54] County of Riverside. 2018, July. County of Riverside Multi-Jurisdictional Local Hazard Mitigation Plan. https://www.rivcoemd.org/Portals/0/FINAL%20PUBLIC%20VERSION%20Riv_Co_%202018%20Multi%20Jurisdictional%20Local%20Hazard%20Mitigation%20Plan.pdf

Department of Forestry and Fire Prevention.[55] The project would not place people or structures at risk from wildfire. No impact would occur.

8.9 HYDROLOGY AND WATER QUALITY

The analysis in this section is based in part on the following technical studies:

- *Geologic and Environmental Hazards Assessment, Arlington High School Modernization*, PlaceWorks, April 2019 (see Appendix G)
- *Geotechnical Investigation for Proposed Classroom, Restroom, Bleachers and Fitness-Training Building. 2951 Jackson Street, Riverside, CA*, RMA Group, September 20, 2018 (see Appendix H-1)
- *Geotechnical Investigation, Proposed Football Stadium and Athletic Facilities, Arlington High School, 2951 Jackson Street, City of Riverside, California*, Leighton Consulting, Inc., June 17, 2010 (see Appendix H-2)
- *Preliminary Hydrology Study*, EPIC Engineers, February 24. 2011 (see Appendix M)

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. A significant impact would occur if the project discharges water that does not meet the quality standards of agencies which regulate surface water quality and water discharge into stormwater drainage systems. A significant impact would also occur if the project does not comply with surface water quality regulations as governed by the State Water Resources Control Board.

New construction projects can result in two types of water quality impacts: (1) short-term impacts from discharge of soil through erosion, sediments, and other pollutants during construction and (2) long-term impacts from impervious surfaces (buildings, roads, parking lots, and walkways) that prevent water from being absorbed into the ground, thereby increasing the pollutants in stormwater runoff. Impervious surfaces can increase the concentration of pollutants in stormwater runoff, such as oil, fertilizers, pesticides, trash, soil, and animal waste. Runoff from short-term construction and long-term operation can flow directly into lakes, local streams, channels, and storm drains and eventually be released untreated into the ocean.

The project would be constructed in an area that is already developed and already producing nonpoint-source pollutants.[56] The campus improvements would not impact groundwater quality.

[55] California Department of Forestry and Fire Prevention (CAL FIRE). 2007, November 7. Western Riverside County Fire Hazard Severity Zones in LRA http://frap.fire.ca.gov/webdata/maps/riverside_west/fhszl_map.60.pdf

[56] **Point source pollution**: The EPA defines point-source pollution as any single identifiable source of pollution from which pollutants are discharged, such as a pipe, ditch, ship, or factory smokestack. Factories and sewage treatment plants are two common types of point sources.
Nonpoint source pollution is caused by broadly distributed and disconnected sources of pollution, such as rain and snowmelt runoff, spills, leaks, and sediment erosion.

Construction Phase

Construction projects of one acre or more are regulated under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) issued by the State Water Resources Control Board. Project applicants obtain coverage by developing and implementing a SWPPP, estimating pollutants from construction activities to receiving waters, and specifying BMPs that would be incorporated into the construction plan to minimize stormwater pollution. Project construction would be subject to the Statewide Construction General Permit and implementation of BMPs specified in the SWPPP. Construction phase impacts would be less than significant.

Operation Phase

After completion of the project, ground surfaces at the campus would be either hardscape or maintained landscaping, and no large areas of exposed soil would be left to erode off the campus. The campus would not discharge increased stormwater runoff or pollutants. Operational phase impacts would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. The campus is part of the Riverside-Arlington Subbasin of the Upper Santa Ana Valley Groundwater Basin.[57] The City of Riverside Public Utilities Department supplies water to the campus and the surrounding community. Riverside extracts its water from three groundwater basins: the Bunker Hill Basin in San Bernardino, the Rialto Colton Basin in Colton, and the Riverside Basin.[58] Groundwater was not encountered in subsurface explorations to 51.5 feet bgs during the geotechnical investigations, and the historical high groundwater level is 50 feet bgs.[59] The project does not include new groundwater wells that would extract groundwater from the aquifer. Construction and operation of the school improvements would not lower the groundwater table or deplete groundwater supplies. Furthermore, the 45-acre school does not provide intentional groundwater recharge. Therefore, the project would not interfere with groundwater recharge. Impacts would be less than significant.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in a substantial erosion or siltation on- or off-site;

Less Than Significant Impact. There are no streams or rivers on the project site. The school is fully developed, and the new buildings and other improvements would not significantly increase impermeable surfaces on campus. All the campus drainage courses ultimately flow into the Toronto Road Storm

[57] Department of Water Resources (DWR). 2019, February. Groundwater Information Center Interactive Map Application. https://gis.water.ca.gov/app/gicima/.

[58] City of Riverside Public Utilities. 2019, April 22. Drought-related FAQ's. https://www.riversideca.gov/utilities/residents/water-conservation-faq.asp.

[59] Leighton Consulting, Inc. 2010, June 17. Geotechnical Investigation, Proposed Football Stadium and Athletic Facilities, Arlington High School, 2951 Jackson Street, City of Riverside, California.

Drain.60 Upon project completion, drainage from the campus would continue to be captured on-site or conveyed to the Toronto Road Storm Drain, and ultimately to the Santa Ana River and out to the Pacific Ocean.

Construction Phase

During construction, erosion and siltation from the disturbed areas may occur. Construction-related activities that expose soils to rainfall/runoff and wind are primarily responsible for erosion. Construction activities would expose soil through excavation, grading, and trenching. Unless adequate erosion controls are installed and maintained during construction, sediment may enter storm drains. The project construction would be subject to the Statewide Construction General Permit and implementation of BMPs specified in the SWPPP. These requirements include provisions for erosion and pollution control measures to ensure water quality in stormwater runoff. Additionally, SCAQMD has regulations that require control of windblown soil. Impacts would be less than significant.

Operation Phase

Upon project completion, drainage from the campus would continue to be captured on-site or conveyed to the Santa Ana River via the same storm drains as with existing conditions. The entire campus would discharge the same amount of stormwater. No areas of exposed soil would be left to erode following project completion. Thus, project development would not cause substantial erosion. Impacts would be less than significant.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Less Than Significant Impact. The drainage pattern and the flow and rate of stormwater runoff from the 45-acre campus after project completion would be the same as existing conditions. Thus, project development would not result in flooding on- or off-campus, and impacts would less than significant.

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

Less Than Significant Impact. Project-related changes to the campus would not result in an increase in runoff. The new buildings and other campus improvements would not increase pollutants in stormwater runoff. Impacts would be less than significant.

iv) Impede or redirect flood flows?

No Impact. The campus is not within any dam inundation zones of any local retained bodies of water according to the City's General Plan Public Safety Element.[61] Additionally, the campus is outside of 100-

[60] EPIC Engineers. 2011, February 24. Preliminary Hydrology Study Arlington High School.
[61] City of Riverside. 2012, November. City of Riverside General Plan 2025 Public Safety Element. https://www.riversideca.gov/planning/gp2025program/GP/10_Public_Safety_Element.pdf

year flood zones mapped by the Federal Emergency Management Agency.[62] The project buildings would not impede or redirect flood flows. No impact would occur.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. The campus is outside of 100-year flood zones mapped by the Federal Emergency Management Agency.[63] A seiche is an oscillating surface wave in a restricted or enclosed body of water, generated by ground motion, usually during an earthquake. Seiches are of concern for water storage facilities because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. There is no adjacent body of water that would pose a flood hazard to the school due to a seiche.

Tsunamis are a type of earthquake-induced flooding produced by large-scale sudden disturbances of the sea floor. Tsunami waves interact with the shallow sea floor when approaching a landmass, resulting in an increase in wave height and a destructive wave surge into low-lying coastal areas. The campus is approximately 34 miles inland from the Pacific Ocean. Therefore, the campus is outside the tsunami hazard zone and would not be affected by a tsunami.

The project would not release pollutants as the result of floods, tsunami, or seiche. No impact would occur.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. The project construction would be subject to the Statewide Construction General Permit and implementation of BMPs specified in the SWPPP. After completion of the project, ground surfaces would be either hardscape or maintained landscape. Additionally, the project would not affect groundwater and would not obstruct implementation of a sustainable groundwater management plan.

8.10 LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

No Impact. The campus and surrounding land are fully developed with urban land uses, including residential, commercial, institutional, and an active railroad. The project would take place within the campus boundaries and would not divide an established community. No impact would occur.

[62] Federal Emergency Management Agency (FEMA). 2008, August 27. FEMA's National Flood Hazard Layer (NFHL) Viewer. https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd

[63] Federal Emergency Management Agency (FEMA). 2008, August 27. FEMA's National Flood Hazard Layer (NFHL) Viewer. https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant Impact. The zoning for the school property is R-1-7000. R-1-7000 is the designation for single-family residential uses, and school uses are permitted under this zoning with a conditional use permit.[64] The City of Riverside General Plan Land Use designation for the school property is "Public Facilities/Institutional."[65]

Land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect cover topics such as biological resources, cultural resources, air quality, etc. As discussed in this Initial Study, the project would not significantly impact the environment and therefore would not conflict with regulations adopted for protecting the environment. The project will be DSA approved, and the District's DSA inspector would perform inspections to ensure the project meets state requirements for construction and safety. The campus improvements do not represent a change in land use and would not conflict with existing plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental effects. Impacts would be less than significant.

8.11 MINERAL RESOURCES

Would the project:

a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

No Impact. The campus is not mapped as Mineral Resource Zone 2 (MRZ-2) or MRZ-3 under the City of Riverside General Plan 2023 Open Space and Conservation Element. MRZ-2 is defined as an area where adequate information indicates that significant mineral deposits are present; MRZ-3 is defined as an area that contains known or inferred mineral occurrences of undetermined mineral resources significance.[66] No active mines are mapped within several miles of the campus.[67] Neither the campus nor the surrounding community is available for mining. No impact would occur.

[64] City of Riverside. 2019. Code of Ordinances. https://library.municode.com/ca/riverside/codes/code_of_ordinances?nodeId=PTIICOOR_TIT19ZO_ARTVBAZOREUSDEPR_CH19.100REZORCRRRE1-2AC1300010500850070004000300025002000150 0R-_19.100.060ADRERERCRRZO

[65] City of Riverside. 2018, February. City of Riverside General Plan 2025 Land Use and Urban Design Element. https://www.riversideca.gov/planning/gp2025program/GP/04_Land_Use_and_Urban_Design_Element_with%20maps.pdf

[66] City of Riverside. 2012, November. City of Riverside General Plan 2025, Open Space and Conservation Element. https://www.riversideca.gov/planning/gp2025program/GP/12_Open_Space_and_Conservation_Element.pdf.

[67] Office of Mine Reclamation (OMR). 2017, March 27. Mines Online. http://maps.conservation.ca.gov/mol/index.html.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The campus is not mapped in a mineral resource area, a surface mining district, an oil drilling district, or in a state-designated oil field.[68] Therefore, development of the project would not cause a loss of availability of a mining site, and no impact would occur.

8.12 POPULATION AND HOUSING

Would the project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The project would make physical changes to an existing campus and would not induce population growth. New roads, expanded utility lines, and housing that could induce population growth would not be constructed or be required as part of the school project. No impacts related to population growth would occur.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. No people or housing would be displaced, and no replacement housing would be required. No housing impacts would occur.

8.13 PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

a) Fire protection?

Less Than Significant Impact. The City of Riverside Fire Department currently provides fire protection and emergency medical services to the school. The fire station assigned to the school area is Station 2 at 9450 Andrew Street, about 0.5-mile west. The second-nearest fire station is Station 12 at 10692 Indiana Avenue, about 2.2 miles south. The project would not increase students at the school and would not cause population growth; therefore, it would not need additional fire protection services. The proposed project would not require construction of new or expanded fire stations. Station 2 can provide fire protection services to the project, as

[68] Division of Oil, Gas, and Geothermal Resources (DOGGR). 2018, November 5. DOGGR Well Finder. http://www.conservation.ca.gov/dog/Pages/WellFinder.aspx.

well as to other existing and projected developments in the station's service area.[69] Impacts would be less than significant.

b) Police protection?

Less Than Significant Impact. The Riverside Police Department is responsible for campus safety and creating safe school passages for students, staff, and the school community. The nearest police station is at 10540 Magnolia Avenue, about 2 miles west. The project may cause a very slight increase in demands for police services during construction from possible trespass, theft, and/or vandalism. Active construction areas would be fenced, and the entire campus is currently fenced and would remain secured outside of work hours. Any increase in police demands would be temporary and would not require construction of new or expanded police facilities. General campus activities are under the supervision of the school administrators and staff. The demand for police protection services generally corresponds to population. Since the project would not increase the student population or intensify use of the campus, project implementation would not increase the demand for police services or generate a need for additional law enforcement facilities. The project would not increase student population or demand and would not result in new adverse impacts on existing police service. Impacts would be less than significant.

c) Schools?

No Impact. School services are related to the size of the residential population, the geographic area served, and community characteristics. The project would not increase the population in the attendance boundary. The project would be a benefit to the students, staff, and the community. No impact would occur.

d) Parks?

No Impact. Impacts to public parks and recreational facilities are generally caused by population or employment growth. The project would not increase population or significantly increase employment. Therefore, physical impacts to parks and recreation from increased population growth would not occur. No impacts to parks would occur.

e) Other public facilities?

No Impact. The project would not result in impacts associated with the provision of other new or physically altered public facilities (e.g., libraries, hospitals, childcare, teen, or senior centers). Physical impacts to public services are usually associated with population in-migration and growth, which increase the demand for public services and facilities. The project would not result in an increase in school enrollment or capacity or induce population growth. Therefore, no impacts to other public facilities would occur.

[69] Questionnaire completed by Michael Moore, Fire Chief, Riverside City Fire Department. Sent via email from Norma Pagan, Sr. Administrative Assistant to Fire Chief, City of Riverside Fire Department, Administration Division. December 18, 2018.

8.14 RECREATION

Would the project:

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. The project would not increase the use of existing neighborhood and regional parks or other recreational facilities. It would not result in an increase in students or staff at the school and would not increase population in the surrounding community. Therefore, it would not cause physical deterioration of neighborhood and regional parks or other recreational facilities. The project would not result in the need for construction of new recreational facilities. No impacts to parks would occur.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

No Impact. The project includes new and expanded bleachers at the football/soccer field. The environmental effects of the construction and operation are considered throughout the environmental analysis in this Initial Study. The project would not require the construction or expansion of additional recreational facilities, which could have an adverse effect on the environment. No impacts to recreational facilities would occur.

8.15 TRIBAL CULTURAL RESOURCES

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

No Impact. AB 52 requires meaningful consultation with California Native American tribes on potential impacts to tribal cultural resources, as defined in PRC Section 21074. Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either eligible or listed in the California Register of Historical Resources or local register of historical resources.

As part of the AB 52 process, Native American tribes must submit a written request to RUSD (lead agency) to be notified of projects within their traditionally and culturally affiliated area. RUSD must provide written, formal notification to those tribes within 14 days of deciding to undertake a project. The tribe must respond to RUSD within 30 days of receiving this notification if they want to engage in consultation on the project, and RUSD must begin the consultation process within 30 days of receiving the tribe's request. Consultation concludes when either 1): the parties agree to mitigation measures to avoid a significant effect

on a tribal cultural resource, or 2) a party, acting in good faith and after reasonable effort, concludes mutual agreement cannot be reached.

No tribal cultural resources on or within one mile of the site are listed in the National Register of Historic Places;[70] as California State Historical Landmarks or Points of Historical Interest;[71] or as City of Riverside Landmarks.[72] The project would not impact tribal cultural resources listed on any of the preceding registers of historic resources. No impacts would occur.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less than Significant Impact. Under subdivision (c) of PRC Section 5024.1, two California Native American tribes requested formal notice of proposed projects—the Gabrieleño Band of the Mission Indians – Kizh Nation and the Pechanga Band of Luiseño Mission Indians.

The District notified these tribes about the proposed project at Arlington Hight School in a letter dated June 24, 2019, and sent via certified mail and email to:

- Andrew Salas, Tribal Chairman, Gabrieleño Band of the Mission Indians – Kizh Nation
- Ebru T. Ozdil, Planning Specialist, Pechanga Band of Luiseño Mission Indians

The Gabrieleño Band did not respond. The Pechanga Band responded on July 1, 2019 and stated that they would "submit our consultation request based on our review." No consultation request was received by the District. The impacts of the project pursuant to criteria in subdivision (c) of PRC Section 5024.1 would be less than significant.

8.16 UTILITIES AND SERVICE SYSTEMS

Would the project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

No Impact. The school is in the City of Riverside, and water, electricity, and wastewater treatment are provided by the City of Riverside Public Utilities. The campus is completely developed, currently using utilities, and

[70] National Park Service (NPS). 2018, October 17. National Register Listed Properties. https://www.nps.gov/subjects/nationalregister/upload/national-register-listed-20181017.xlsx.
[71] Office of Historic Preservation (OHP). 2019, February 1. California Historical Resources. http://ohp.parks.ca.gov/listedresources/.
[72] City of Riverside, 2002. Landmarks of the City of Riverside. January 2002. https://www.riversideca.gov/historic/pdf/landmarks-WEB.pdf

surrounded by development. The school modernization and new construction would serve existing and future students living in the region and would not increase the student population. The project would not require the relocation or construction of new water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, and no impact would occur.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

No Impact. Water would be used on-site during construction for dust suppression and other activities. The small amount of water that would be used for the project construction would not result in the need for new or expanded water entitlements. The school currently serves students living in the region, and the project would not increase the student population or long-term water demands. No impact would occur.

c) Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. The school would continue to serve students currently living in the region and would not generate an increase in the regional student population or the amount of wastewater treatment required. The project would not affect wastewater treatment capacity. No impact would occur.

d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. Demolition and construction waste would be generated and disposed of at local landfills. The excavated soil would be segregated and managed as nonhazardous, non-Resource Conservation and Recovery Act (RCRA) hazardous, or RCRA hazardous waste. The project may require haul and disposal of contaminated soil and material (see Section 8.8, *Hazards and Hazardous Materials*). Contaminated materials would result in an incremental and intermittent increase in solid waste disposal at licensed landfills and other waste disposal facilities within Riverside County.

The two destinations for disposal for solid waste generated at the campus are the Badlands Landfill and El Sobrante Landfill. The Badlands Landfill has a permitted throughput of 4,800 tons per day with a remaining capacity of 15,748,799 cubic yards and an estimated closing date of 2022.[73] El Sobrante Landfill has a permitted throughput of 16,054 tons per day, with a remaining capacity of 143,977,170 cubic yards and an estimated closing date of 2051.[74] The small amount of demolition debris would not impair the attainment of solid waste reduction goals.

[73] CalRecycle. 2015, January 1. SWIS Facility Detail Badlands Sanitary Landfill (33-AA-0006). https://www2.calrecycle.ca.gov/swfacilities/Directory/33-AA-0006/

[74] CalRecycle. 2018, April 1. SWIS Facility Detail El Sobrante Landfill (33-AA-0217). https://www2.calrecycle.ca.gov/swfacilities/Directory/33-AA-0217/

The project would not increase the student population and thus would not increase solid waste generation. Therefore, the project improvements would not adversely impact landfills. Impacts would be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. The District currently complies with or incorporates federal, state, and local statutes and regulations related to solid waste, and would continue this practice. Section 5.408 (Construction Waste Reduction, Disposal, and Recycling) of CALGreen (24 CCR Part 11) requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse. Construction of the project would adhere to these established standards. No impact would occur.

8.17 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. Wildland fire protection in California is the responsibility of either the state, local, or federal government. State Responsibility Areas (SRA) are the areas in the state where the State has the primary financial responsibility for the prevention and suppression of wildland fires. The SRA forms one large area over 31 million acres to which the State Department of Forestry and Fire Protection (CAL FIRE) provides a basic level of wildland fire prevention and protection services.

Local responsibility areas (LRA) include incorporated cities, cultivated agriculture lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government.[75] CAL FIRE uses an extension of the SRA Fire Hazard Severity Zone model as the basis for evaluating fire hazard in LRAs. The LRA hazard rating reflects flame and ember intrusion from adjacent wildlands and from flammable vegetation in the urban area. The City of Riverside Fire Department currently provides fire protection and emergency medical services to the city.

Fire Hazard Severity Zones (FHSZ) are identified by Moderate, High, and Very High in an SRA, and Very High in an LRA. The nearest FHSZ in the SRA and LRA is a Very High about 0.9 mile east in the Arlington Heights neighbor near the California Citrus State Historic Park.[76] Land between the edge of the FHSZ and Arlington HS is a mixture of both urban and rural development. The campus is not located in or adjacent to SRAs or lands classified as High FHSZs.

[75] California Department of Forestry and Fire Prevention (CAL FIRE). Frequently Asked Questions. http://www.fire.ca.gov/firepreventionfee/sra_faqs

[76] CAL FIRE. 2007, November 7. Western Riverside County Fire Hazard Severity Zones in LRA http://frap.fire.ca.gov/webdata/maps/riverside_west/fhszl_map.60.pdf

The emergency response plan in effect in the City of Riverside is the City's EOP, approved by the City Council in 2011. The EOP identifies City agencies and other agencies that would be involved in emergency responses; threat summaries and assessments; procedures for responding agencies; and coordinating and managing responses. The EOP is focused on emergencies beyond the scope of the daily functions of public safety agencies, such as emergencies requiring multiagency and/or multi-jurisdictional responses.[77]

The City of Riverside also implements the City of Riverside Local Hazard Mitigation Plan, which was approved by the Federal Emergency Management Agency in 2018,[78] and the County of Riverside Multi-jurisdictional Local Hazard Mitigation Plan.[79] Emergency preparedness and response planning and coordination would be coordinated through RUSD's Risk Management Department. The existing school has a school safety plan in compliance with the District's "safe school plans." The project would not interfere with any emergency response plans or emergency evacuation plans. No emergency response impact would occur.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact. Arlington HS is in a primarily urban area, and there is no wildland susceptible to wildfire on or near the school campus. Furthermore, CAL FIRE does not classify adjacent areas as a Very High FHSZ. The school has been in its current location since 1973, and the project would not place people or structures at risk from wildfire. No impact would occur.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact. The campus is in a primarily urban area surrounded by development. The campus improvements would not require the installation of new infrastructure that may exacerbate fire risk. No impact would occur.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. The campus is surrounded by development with flat topography. There are no vegetated slopes susceptible to wildfire in the surrounding area. The project would not result in runoff, postfire slope instability, or drainage changes. No impact would occur.

[77] City of Riverside. 2011, January 18. City of Riverside Emergency Operations Plan. https://www.riversideca.gov/fire/oem/pdf/Part-1-Base-Plan-(EOP)-ver-011181.pdf

[78] City of Riverside. 2018. City of Riverside Local Hazard Mitigation Plan. https://www.riversideca.gov/fire/oem/pdf/Riverside%202018%20LHMP%20County%20Revised%20APA.pdf

[79] County of Riverside. 2018, July. County of Riverside Multi-Jurisdictional Local Hazard Mitigation Plan. https://www.rivcoemd.org/Portals/0/FINAL%20PUBLIC%20VERSION%20Riv_Co_%202018%20Multi%20Jurisdictional%20Local%20Hazard%20Mitigation%20Plan.pdf

9. Significant Irreversible Changes Due to the Proposed Project

Section 15126.2(c) of the CEQA Guidelines requires that an Environmental Impact Report (EIR) describe any significant irreversible environmental changes that would be caused by the proposed project should it be implemented.

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highways improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The proposed project would include construction activities that would entail the commitment of nonrenewable and/or slowly renewable energy resources, human resources, and natural resources such as lumber and other forest products, sand and gravel, asphalt, steel, copper, lead, other metals, water, and fossil fuels. Campus improvements would also require the use of natural gas and electricity, petroleum-based fuels, fossil fuels, and water. The commitment of resources required for the construction and operation of the project would limit the availability of such resources for future generations or for other uses during the life of the project. However, the project does not represent an uncommon construction project that uses an extraordinary amount of raw materials in comparison to other urban development projects of a similar scope and magnitude.

Given the low likelihood that the land would revert to lower intensity uses or to its current form, the proposed project would generally commit future generations to these environmental changes.

9. Significant Irreversible Changes Due to the Proposed Project

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10. Growth-Inducing Impacts of the Proposed Project

Pursuant to Sections 15126(d) and 15126.2(d) of the CEQA Guidelines, this section is provided to examine ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also required is an assessment of other projects that would foster other activities which could affect the environment, individually or cumulatively. To address this issue, potential growth-inducing effects will be examined through analysis of the following questions:

- Would this project remove obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area, or through changes in existing regulations pertaining to land development?
- Would this project result in the need to expand one or more public services to maintain desired levels of service?
- Would this project encourage or facilitate economic effects that could result in other activities that could significantly affect the environment?
- Would approval of this project involve some precedent-setting action that could encourage and facilitate other activities that could significantly affect the environment?

Please note that growth-inducing effects are not to be construed as necessarily beneficial, detrimental, or of little significance to the environment. This issue is presented to provide additional information on ways in which this project could contribute to significant changes in the environment, beyond the direct consequences of the campus improvements examined in the preceding sections of this EIR.

Would this project remove obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area, or through changes in existing regulations pertaining to land development?

The project would not remove obstacles to growth. Arlington High School is already served by utilities, and the project would not involve construction or extension of major infrastructure. The project would not involve changes to land use regulations for the site. Therefore, the project would not result in this growth-inducing impact.

10. Growth-Inducing Impacts of the Proposed Project

Would this project result in the need to expand one or more public services to maintain desired levels of service?

The project would not increase enrollment or the student population at Arlington High School. The project would serve the existing high school population and programs and would not necessitate an expansion of other services or facilities (e.g., police and fire protection, parks, schools, and libraries) in order to maintain the current or desired levels of service. Therefore, the project would not result in this growth-inducing impact.

Would this project encourage or facilitate economic effects that could result in other activities that could significantly affect the environment?

During construction, a slight increase in the number of design, engineering, and construction-related jobs would be created. This would last until the project's construction is completed and would be a direct, but temporary, employment increase. The project would serve the existing school programs and would not encourage or facilitate long-term economic effects that could result in other environmental effects. The project would not result in this indirect growth-inducing effect.

Would approval of this project involve some precedent-setting action that could encourage and facilitate other activities that could significantly affect the environment?

The project site and its surrounding area are already developed. The project includes removal of seven portable buildings and eight handball courts; construction of a Biomed/Special Education building, Auxiliary Gymnasium, and concession/restroom building; expansion of the bleachers and replacement of field lights at the track and field; modernization (interior layout and façade) of the Media Arts Academy building, Administration Building, Student Service Building; and upgrades to the outdoor swimming pool and equipment. The campus improvements would not promote growth because they involve the demolition and replacement of buildings within an existing school campus. Pressures to develop other land in the surrounding area would derive from regional economic conditions and market demands for housing, commercial, and industrial land uses that are not directly or indirectly influenced by the project. Approval of the project would not, therefore, involve a precedent-setting action that could be applied to other properties and thereby encourage or facilitate growth that would not otherwise occur.

11. List of Preparers

11.1 LEAD AGENCY

Riverside Unified School District

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Director, Facilities Planning and Development

Gaby Adame
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Eric Walker
Assistant Director, Planning and Development

11.2 CEQA CONSULTANT

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Appendix A Notice of Preparation and Comments

Appendices

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Riverside Unified School District
Operations Division – Planning and Development
3070 Washington Street, Riverside, CA 92504-4697 · (951) 788-7496 · (951) 778-5646

NOTICE OF PREPARATION
OF A DRAFT ENVIRONMENTAL IMPACT REPORT

TO: Agencies, Organizations and Interested Parties

PROJECT TITLE: Arlington High School Modernization and New Construction

SUBJECT: Notice of Preparation of an Draft Environmental Impact Report

NOTICE IS HEREBY GIVEN that the Riverside Unified School District (RUSD or District), as Lead Agency under the California Environmental Quality Act (CEQA), will prepare a Draft Environmental Impact Report (Draft EIR) for the Arlington High School Modernization project pursuant to the California Public Resources Code (PRC), Division 13, Section 21000 et seq. (CEQA Statute) and the California Code of Regulations (CCR), Title 14, Division 6, Chapter 3, Section 15000 et seq. (CEQA Guidelines).

The purpose of the Notice of Preparation is to (1) serve as a public notice of an EIR pursuant to the CEQA Guidelines Section 15082, and (2) advise and solicit comments and suggestions regarding the scope and content of the EIR to be prepared. The District, as Lead Agency, respectfully requests that any Responsible Agencies responding to this notice respond in a manner consistent with CEQA Guidelines Section 15082(b). Comments and suggestions should, at a minimum, identify the significant environmental issues, reasonable alternatives, and mitigation measures that should be explored in the EIR, in addition to whether the responding agency will be a responsible or trustee agency for the proposed project, and any related issues raised by interested parties.

In compliance with CEQA Guidelines Section 15060(d) and 15082, the District will not be preparing an initial study and will begin work directly on the Draft EIR.

PROJECT LOCATION: The project site is within the campus of Arlington High School, at 2951 Jackson Street, City of Riverside, County of Riverside (Assessor's Parcel Numbers 233-220-010 and 233-250-001). The 45-acre campus is bounded by Irving Street to the east, a Burlington Northern Santa Fe (BNSF) Railway Company right-of-way to the north (used by freight, Amtrak, and Metrolink trains), Jackson Street to the west, and Lincoln Avenue to the south.

PROJECT DESCRIPTION: Riverside Unified School District is planning several changes to Arlington High School. The project includes removal of 7 portable buildings and 8 handball courts; construction of a 10,262-sf Biomed/Special Education building, 8,755-sf Auxiliary Gymnasium, a 2,000-sf concession/restroom building; expansion of the bleachers at the track and field (1,250-seat home side expansion and new 1,000-seat visitor side bleachers) and upgrades to the existing stadium field sports lighting; modernization (interior layout and façade) of the Media Arts Academy building, Administration Building, Student Service Building; and upgrades to the outdoor swimming pool and equipment.

POTENTIAL ENVIRONMENTAL EFFECTS: In accordance with Section 15082 of the CEQA Guidelines, the District has prepared this Notice of Preparation to provide agencies, organizations, and interested parties with information describing the proposed project and its potential environmental effects. Environmental factors that will be analyzed in the Draft EIR are:

- ☐ Aesthetics
- ☐ Agriculture & Forestry Resources
- ☐ Air Quality
- ☐ Biological Resources
- ☐ Cultural Resources
- ☐ Energy
- ☐ Geology & Soils
- ☐ Greenhouse Gas Emissions
- ☐ Hazards & Hazardous Materials
- ☐ Hydrology & Water Quality
- ☐ Land Use & Planning
- ☐ Mineral Resources
- ☐ Noise
- ☐ Population & Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Transportation
- ☐ Tribal Cultural Resources
- ☐ Utilities & Service Systems
- ☐ Wildfire

PUBLIC REVIEW PERIOD: The 30-day public review period for the NOP is from **February 17, 2020, to March 18, 2020**. In accordance with the time limits mandated by State law, if there are any concerns about the scope and content of the information to be addressed in EIR, please send written comments to the District, at the address below, at the earliest possible date but not later than **March 18, 2020**. This NOP is also available at:

- RUSD, Facilities Planning and Development Department (address below)
- RUSD website: http://bit.ly/ArlingtonEIR

PUBLIC COMMENTS: Please indicate a contact person and send your comments to:

Riverside Unified School District
Facilities Planning and Development Office
3070 Washington Street, Riverside, CA 92504
ATTN: Eric Walker, Assistant Director, Planning and Development

Comments can also be sent by e-mail to ewalker@riversideunified.org Please include "CEQA Arlington HS" in the subject line. If you require additional information, please contact Eric Walker at (951) 788-7496 ext. 84705.

NATIVE AMERICAN HERITAGE COMMISSION

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February 18, 2020

Eric Walker
Riverside Unified School District
3070 Washington Street
Riverside, CA 92504

Re: 2020029047, Arlington High School Modernization and New Construction Project, Riverside County

Dear Mr. Walker:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).

2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.

3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).

4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:

- **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
- **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:

- **a.** If part or all of the APE has been previously surveyed for cultural resources.
- **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
- **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
- **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

cc: State Clearinghouse

Appendix B Lighting and Bleacher Data

Appendices

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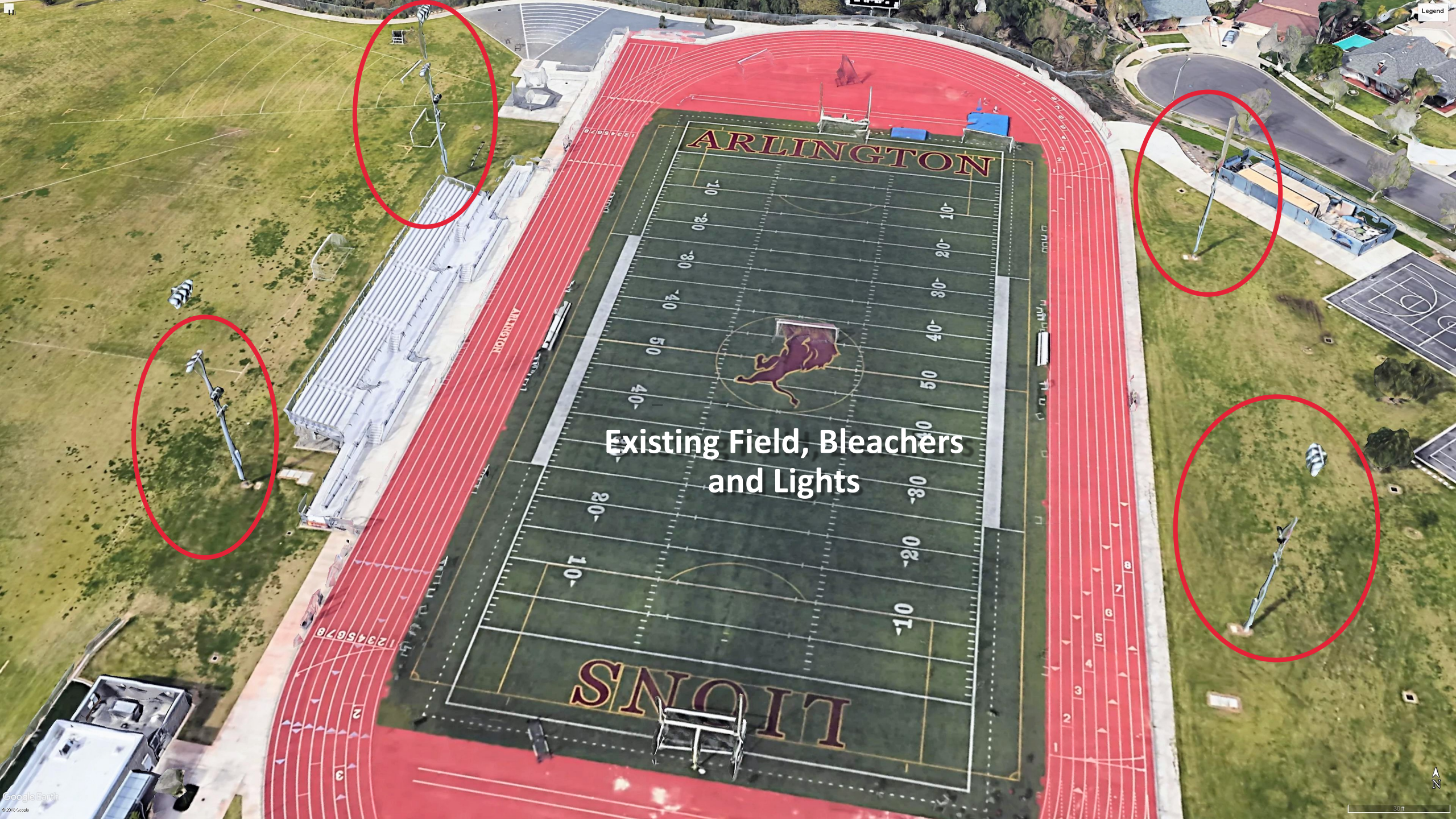
Legend
ARLINGTON
LIONS
Existing Field, Bleachers and Lights
Google Earth
© 2018 Google
30 ft

Control System Summary

Project Specific Notes:

The Control and Monitoring Cabinet will require a dedicated 20A breaker that matches the phasing of the panel (480v/3p) for Powerline communication.

Egress light fixtures controlled by existing emergency power system.

Project Information

Project #:	201717
Project Name:	[DSA] Arlington High School Stadium Relight
Date:	03/24/20
Project Engineer:	Brendon Guler
Sales Representative:	Mike Higgins
Control System Type:	Control-Link™ Control and Monitoring System
Communication Type:	PowerLine-ST
Scan:	201717D
Document ID:	201717P1V3-0324150617
Distribution Panel Location or ID:	Panel FLP
Total # of Distribution Panel Locations for Project:	1
Design Voltage/Hertz/Phase:	480/60/3
Control Voltage:	120

Equipment Listing

DESCRIPTION	APPROXIMATE SIZE
1.Control and Monitoring Cabinet	24 X 72

	QTY	SIZE (AMPS)
Total Contactors	10	30 AMP
Total Off/On/Auto Switches:	3	

Preliminary Plans
Confirm all Details - voltage,
# of distribution panels, etc.

Arlington High School Replacement Field Lights

Materials Checklist

Contractor/Customer Supplied:

- ❑ A dedicated control circuit must be supplied per distribution panel location
  - — If the control voltage is NOT available, a control transformer is required
- ❑ Electrical distribution panel to provide overcurrent protection for circuits
  - — HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- ❑ Wiring
  - — See chart on page 2 for wiring requirements
  - — Equipment grounding conductor and splices must be insulated (per circuit)
  - — Lightning ground protection (per pole), if not Musco supplied
- ❑ Electrical conduit wireway system
  - — Entrance hubs rated NEMA 4, must be die-cast zinc, PVC, or copper-free die-cast aluminum
- ❑ Mounting hardware for cabinets
- ❑ Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present)
- ❑ Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation.

Note: Activation may take up to 1 1/2 hours.

IMPORTANT NOTES

1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements.

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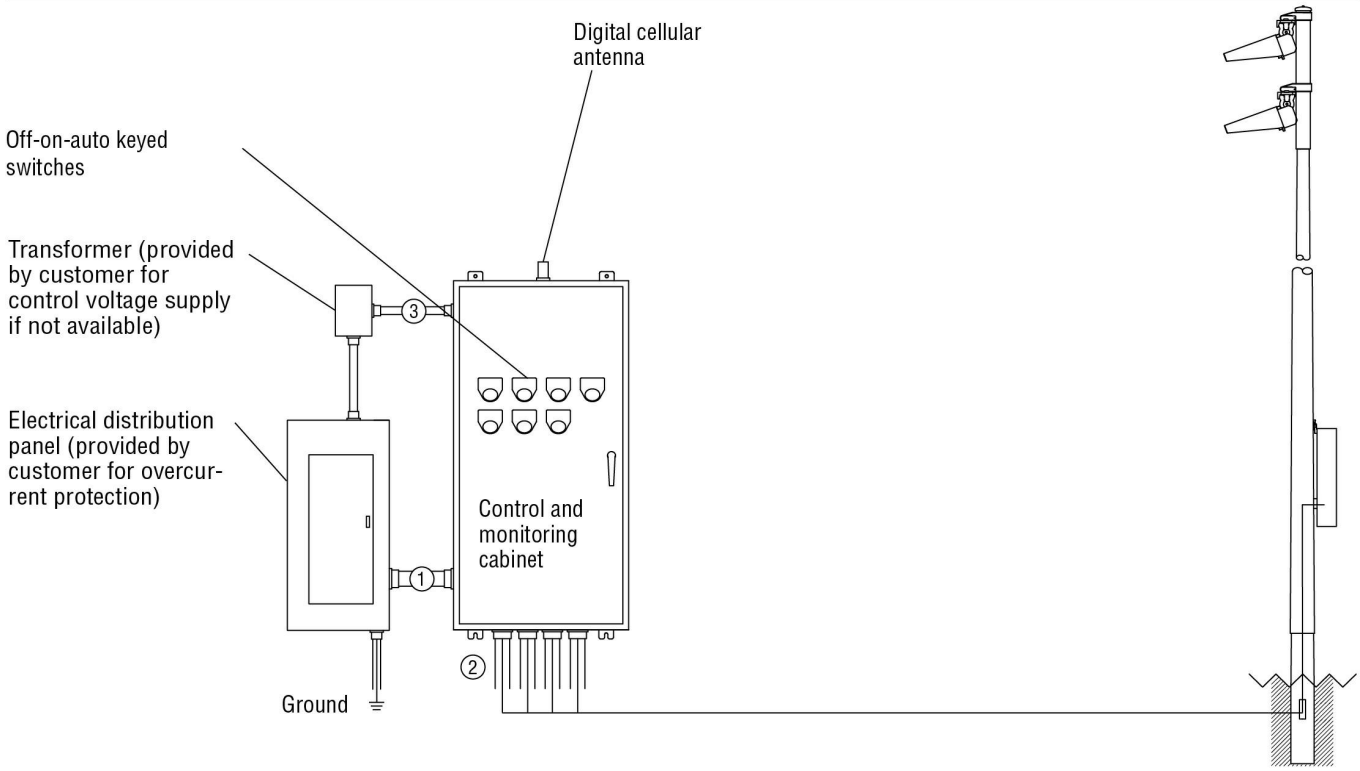
Control System Summary

Control•Link®
Control and Monitoring System



Conduit ID	Description	# of Wires	Wire (AWG)	Conduit (in)	Max. Wire Length (ft)	MUSCO Supplied	Notes
1	Line power to contactors, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
1	Power-line Communication Connection (dedicated, 20A)	*A	12	*C	N/A	No	A-E
2	Load power to lighting circuits, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
3	Control power (dedicated, 20A)	3	12	*C	N/A	No	C,E

R60-100-00_A

* Notes:

A. See voltage and phasing per the notes on cover page.
B. Calculate per load and voltage drop.
C. All conduit diameters should be per code unless otherwise specified to allow for connector size.
D. Equipment grounding conductor and any splices must be insulated.
E. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.

IMPORTANT: Control wires (3) must be in separate conduit from line and load power wires (1, 2).

Control System Summary

[DSA] Arlington High School Stadium Relight / 201717 - 201717D

SWITCHING SCHEDULE

Field/Zone Description	Zones
Football	**1,3**
-Football	1
-Egress	3
Practice	**2**

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 3023.0
	SEALED: 335.8

CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	*FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
F1	Football	11	11	**21.7**	30	C1	1
F2	Football	11	11	**21.7**	30	C2	1
F3	Football	11	11	**21.7**	30	C3	1
F4	Football	11	11	**21.7**	30	C4	1
F3	Practice	2	2	**6.4**	30	C5	2
F4	Practice	2	2	**6.4**	30	C6	2
F1	Egress	2	1	**1.7**	30	C7	3
F2	Egress	2	1	**1.7**	30	C8	3
F3	Egress	2	1	**1.7**	30	C9	3
F4	Egress	2	1	**1.7**	30	C10	3

*Full Load Amps based on amps per driver.

Control System Summary

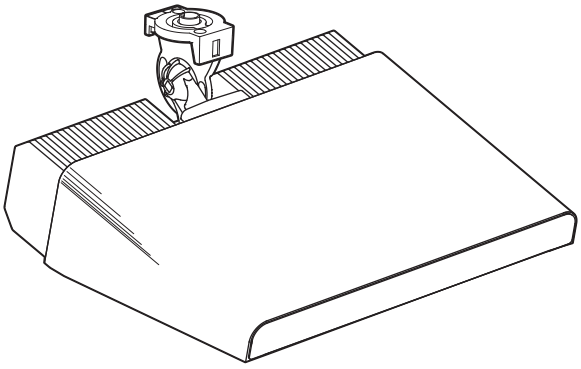
[DSA] Arlington High School Stadium Relight / 201717 - 201717D
Panel FLP - Page 4 of 4

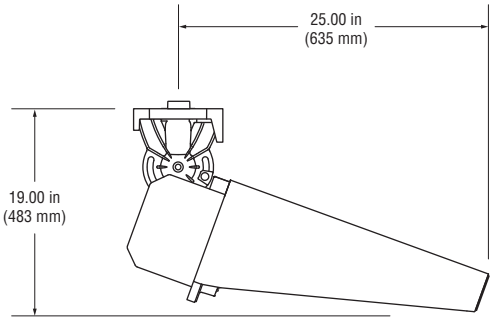
PANEL SUMMARY

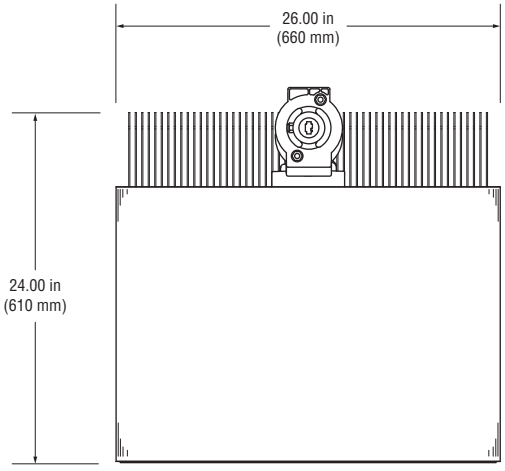
CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole F1	21.74		
1	1	C2	Pole F2	21.74		
1	1	C3	Pole F3	21.74		
1	1	C4	Pole F4	21.74		
1	1	C5	Pole F3	6.41		
1	1	C6	Pole F4	6.41		
1	1	C7	Pole F1	1.73		
1	1	C8	Pole F2	1.73		
1	1	C9	Pole F3	1.73		
1	1	C10	Pole F4	1.73		

ZONE SCHEDULE

			CIRCUIT DESCRIPTION	
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	POLE ID	CONTACTOR ID
Zone 1	1	Football	F1 F2 F3 F4	C1 C2 C3 C4
Zone 2	2	Practice	F3 F4	C5 C6
Zone 3	3	Egress	F1 F2 F3 F4	C7 C8 C9 C10







Luminaire Data

Weight (luminaire)	45 lb (20 kg)
UL listing number	E338094 (pending)
UL listed for USA / Canada	UL1598 CSA-C22.2 No.250.0 (pending)
CE Declaration	LVD, EMC, RoHS
Ingress protection, luminaire	IP65
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL, IEC ambient temperature rating, luminaire	50°C (122°F)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (13.5k)	>81,000 h
L80 (13.5k)	>81,000 h
L70 (13.5k)	>81,000 h
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min
Lumens[1]	132,300

Footnotes:

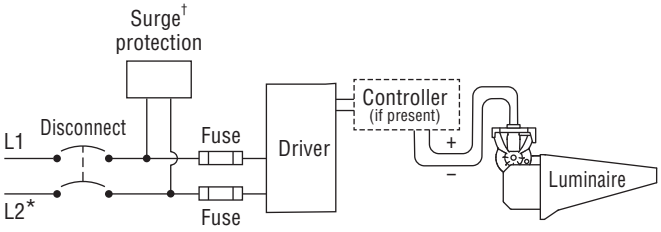
1) Incorporates appropriate dirt depreciation factor for life of luminaire.

Driver Data

Electrical Data

Rated wattage[1]	
Per driver	1230 W
Per luminaire	1230 W
Number of luminaires per driver	1
Starting (inrush) current	<40 A, 256 µs
Fuse rating	15 A
UL, IEC ambient temperature rating, electrical components enclosure	50°C (122°F)
Ingress protection, electrical components enclosure	IP54
Efficiency	95%
Dimming mode	optional
Range, energy consumption	13 – 100%
Range, light output	18 – 100%

Typical Wiring



* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current per luminaire[2]	7.60 A	7.30 A	6.91 A	6.61 A	6.33 A	5.49 A	4.38 A	4.00 A	3.80 A	3.66 A	3.17 A

Footnotes:

1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.

2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.

Arlington High School Stadium Relight

Riverside, CA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
F1-F2	80'	80'	9	TLC-LED-1500	12.87 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
		37'	2	TLC-LED-400	0.80 kW	C
F3-F4	90'	90'	9	TLC-LED-1500	12.87 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
		60'	2	TLC-LED-1500	2.86 kW	B
		37'	2	TLC-LED-400	0.80 kW	C
4			***56***		***65.00 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Football	56.08 kW	44
B	Practice	5.72 kW	4
C	Egress	3.2 kW	8

Fixture Type Summary

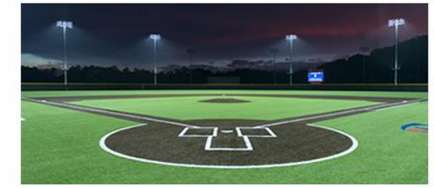
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-400	LED 5700K - 75 CRI	400W	46,500	>120,000	>120,000	>120,000	8
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	40
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	8

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Football	Horizontal Illuminance	50.2	36.1	58	1.60	1.39	A	44
Home Bleacher	Horizontal	8.30	1.10	41.3	37.40	7.55	C	8
Home Egress	Horizontal	4.74	1	21.2	21.54	4.74	C	8
North Ramp	Horizontal	25.2	5.97	36.3	6.08	4.22	C	8
North Ramp	Max Vertical Illuminance Metric	36.3	9.48	49.9	5.26	3.83	C	8
Practice	Horizontal Illuminance	6.70	0.30	24.1	70.98	22.33	B	4
Soccer	Horizontal Illuminance	50.2	35.9	57.9	1.61	1.40	A	44
South Ramp	Horizontal	24.5	7.18	34.4	4.80	3.42	C	8
South Ramp	Max Vertical Illuminance Metric	36.1	11.3	48.2	4.28	3.21	C	8
Spill	Horizontal	0.02	0	0.12	0.00		A,B,C	56
Spill	Max Candela (by Fixture)	4307	11.6	23570	2029.32	370.83	A,B,C	56
Spill	Max Vertical Illuminance Metric	0.06	0	0.38	0.00		A,B,C	56
Visitor Egress	Horizontal	6.31	1.10	19.6	18.54	5.74	C	8

From Hometown to Professional



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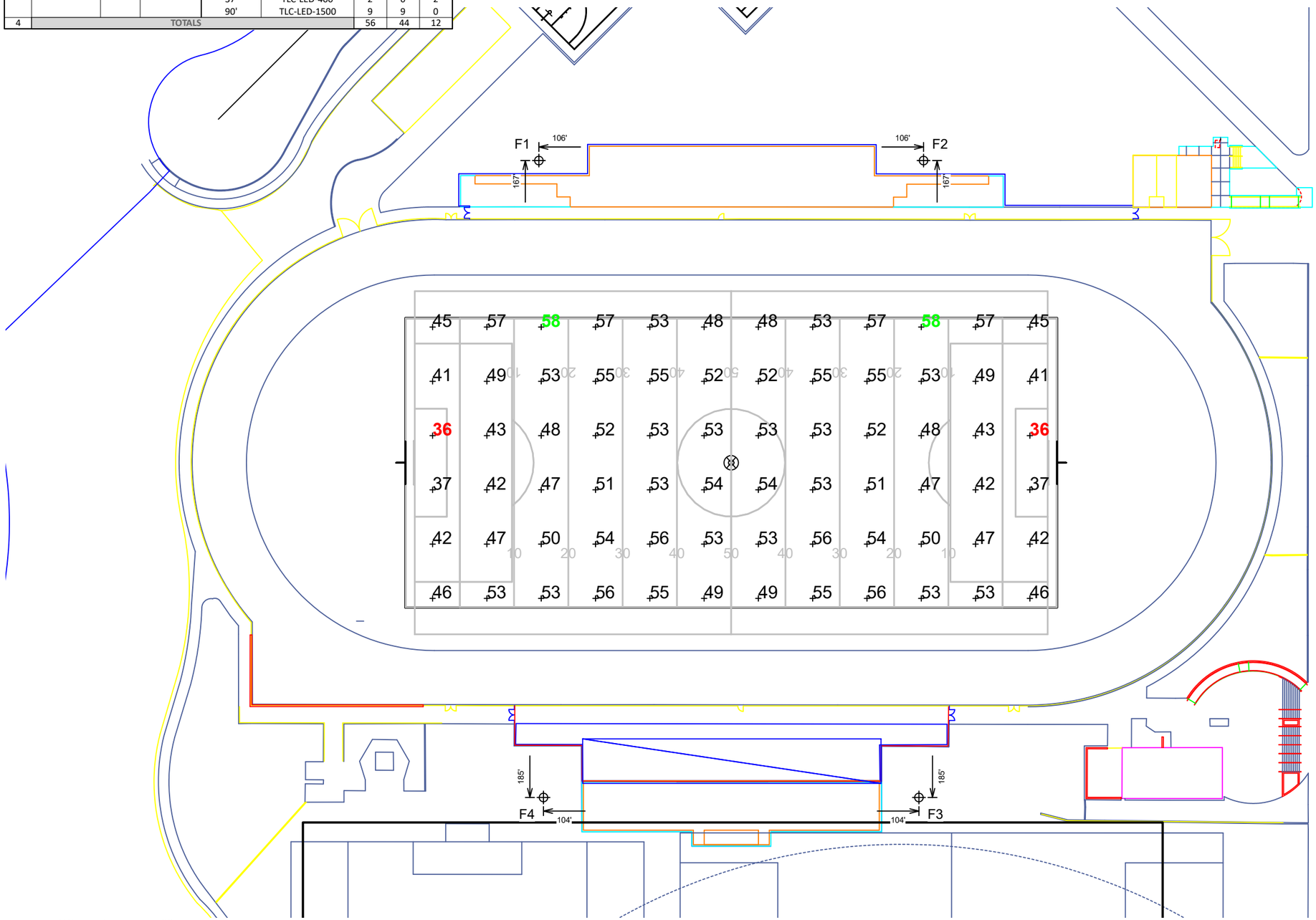
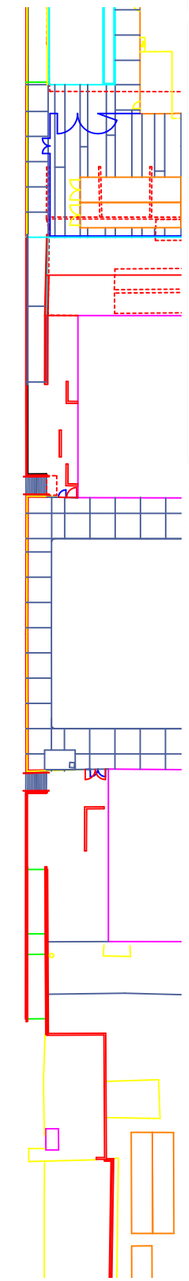
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	2	0
				37'	TLC-LED-400	2	0	2
				80'	TLC-LED-1500	9	9	0
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-1500	2	0	2
				37'	TLC-LED-400	2	0	2
				90'	TLC-LED-1500	9	9	0
4	TOTALS					56	44	12





SCALE IN FEET 1 : 60

0' 60' 120'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Football**
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**50**
Scan Average:	50.15
Maximum:	58.0
Minimum:	36.1
Avg / Min:	1.39
Guaranteed Max / Min:	**2**
Max / Min:	1.60
UG (adjacent pts):	1.27
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 52,000 lumens
No. of Luminaires:	**44**
Total Load:	56.08 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-BT-575	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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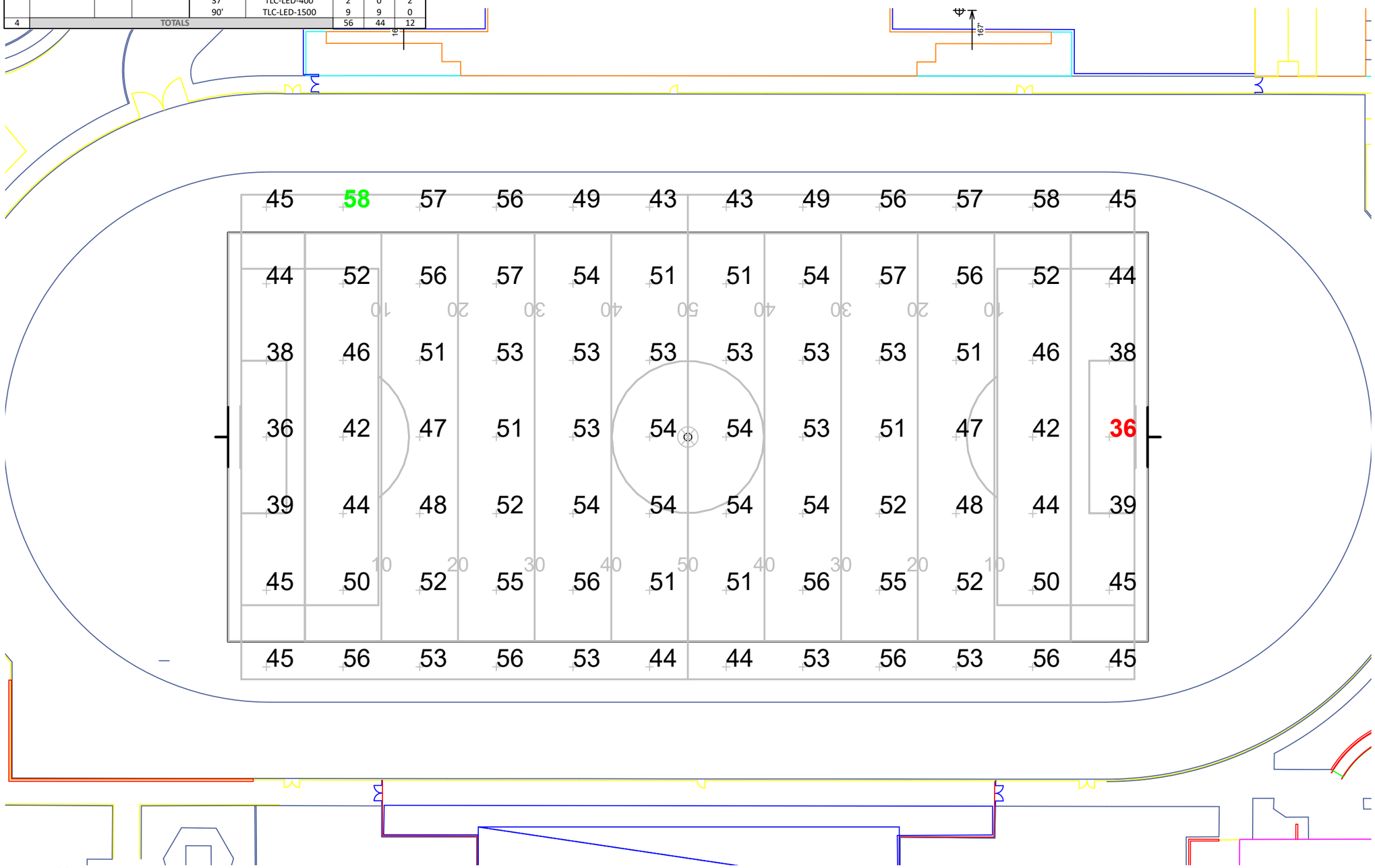
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	2	0
				37'	TLC-LED-400	2	0	2
				80'	TLC-LED-1500	9	9	0
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-1500	2	0	2
				37'	TLC-LED-400	2	0	2
				90'	TLC-LED-1500	9	9	0
4	TOTALS					56	44	12



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ✢ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brendon Guler • File #201717D • 24-Mar-20

Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Soccer**
Size:	350' x 190'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**50.15**
Maximum:	57.9
Minimum:	35.9
Avg / Min:	1.40
Max / Min:	**1.61**
UG (adjacent pts):	1.29
No. of Points:	84

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 / 52,000 lumens
No. of Luminaires:	**44**
Total Load:	56.08 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-BT-575	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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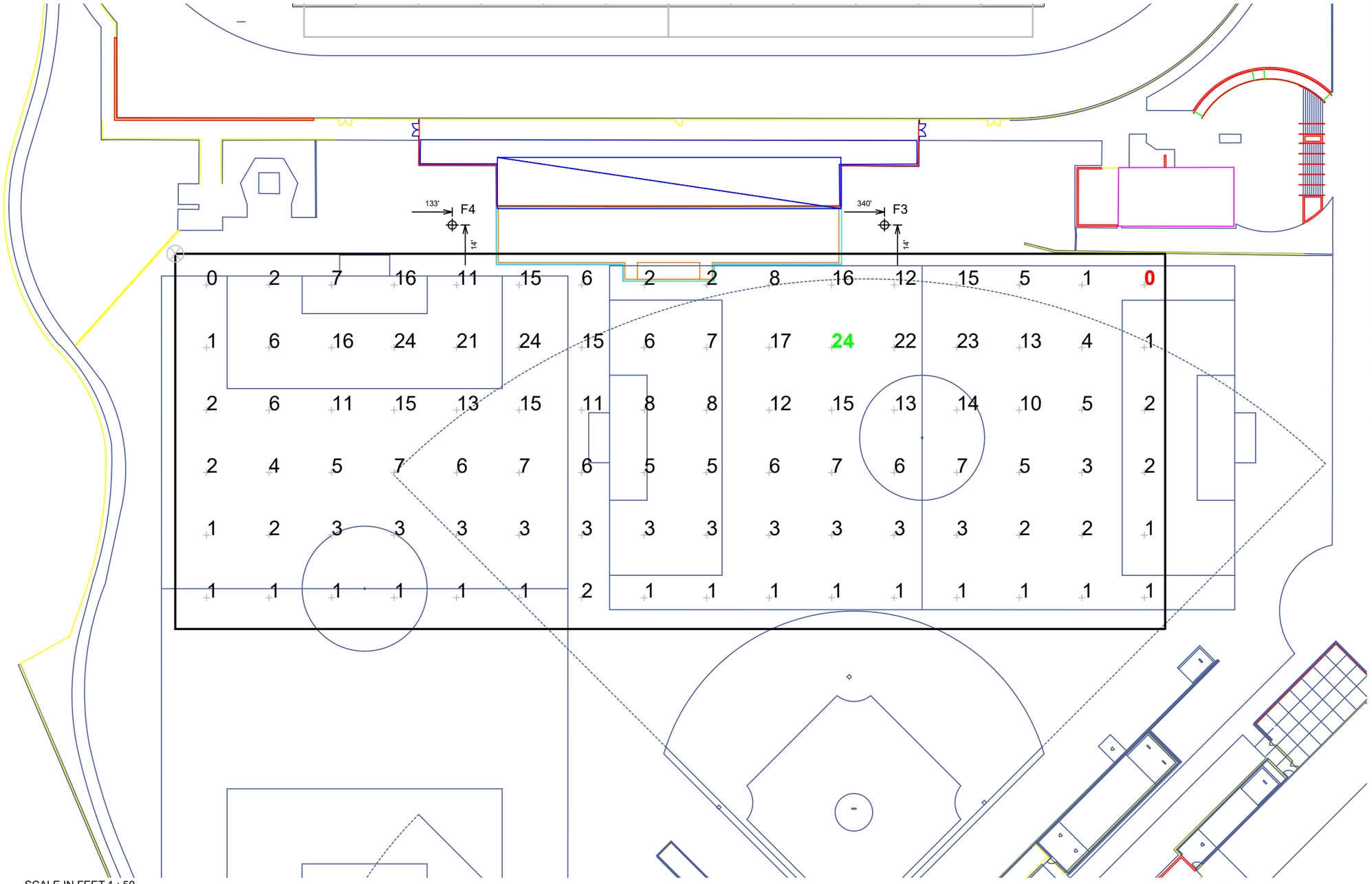
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-1500	2	2	0
				37'	TLC-LED-400	2	0	2
				90'	TLC-LED-1500	9	0	9
2	TOTALS					30	4	26



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Practice**
Size:	475' x 180'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**6.70**
Maximum:	24.1
Minimum:	0.3
Avg / Min:	19.77
Max / Min:	**70.98**
UG (adjacent pts):	4.40
No. of Points:	96

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	160,000 lumens
No. of Luminaires:	**4**
Total Load:	5.72 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1500	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	0	2
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	0	9
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-1500	2	0	2
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	0	9
4	TOTALS					56	8	48

Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Visitor Egress**
Size:	360' x 160'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**6.31**
Maximum:	19.6
Minimum:	1.1
Avg / Min:	5.97
Max / Min:	**18.54**
UG (adjacent pts):	3.18
No. of Points:	214

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 lumens
No. of Luminaires:	**8**
Total Load:	3.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000

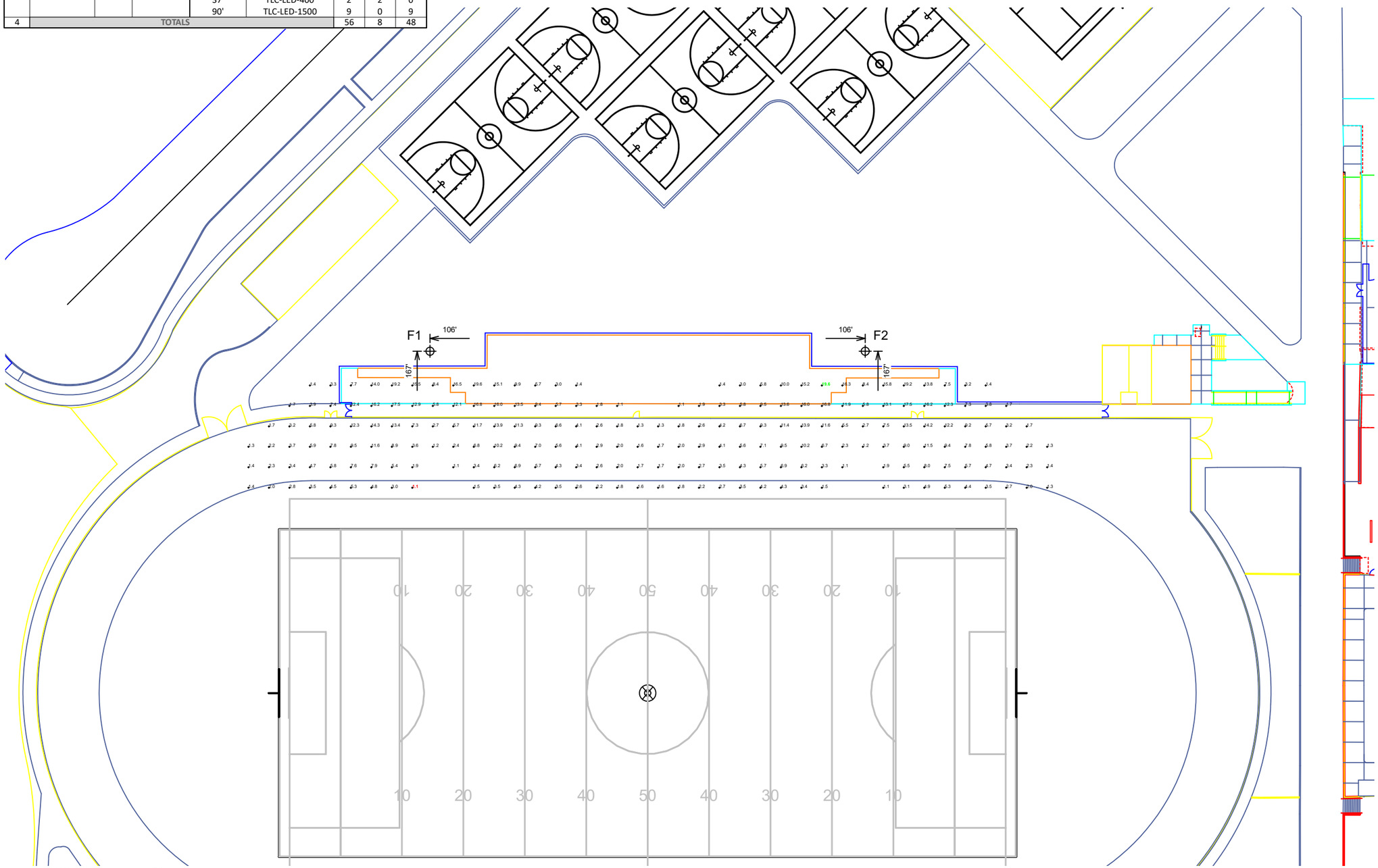
Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



SCALE IN FEET 1 : 50
0' 50' 100'

Pole location(s) ✢ dimensions are relative to 0,0 reference point(s) ⊗

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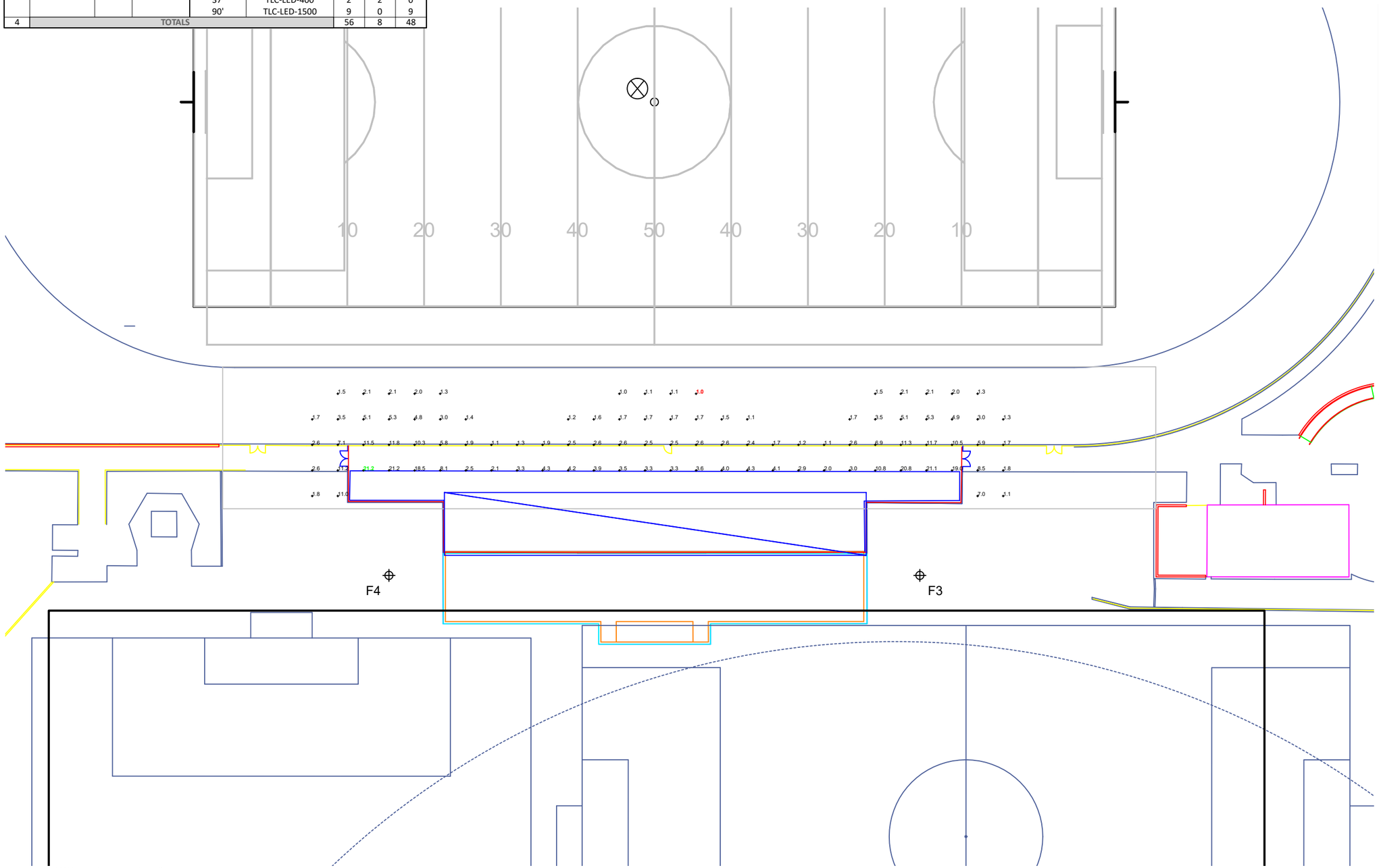
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	0	2
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	0	9
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-1500	2	0	2
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	0	9
4	TOTALS					56	8	48



Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Home Egress**
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**4.74**
Maximum:	21.2
Minimum:	1.0
Avg / Min:	4.81
Max / Min:	**21.54**
UG (adjacent pts):	6.09
No. of Points:	96

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 lumens
No. of Luminaires:	**8**
Total Load:	3.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	0	2
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	0	9
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-1500	2	0	2
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	0	9
4	TOTALS					56	8	48

Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Home Bleacher**
Spacing:	10.0' x 10.0'

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**8.30**
Maximum:	41.3
Minimum:	1.1
Avg / Min:	7.51
Max / Min:	**37.40**
UG (adjacent pts):	2.91
No. of Points:	48

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 lumens
No. of Luminaires:	**8**
Total Load:	3.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000

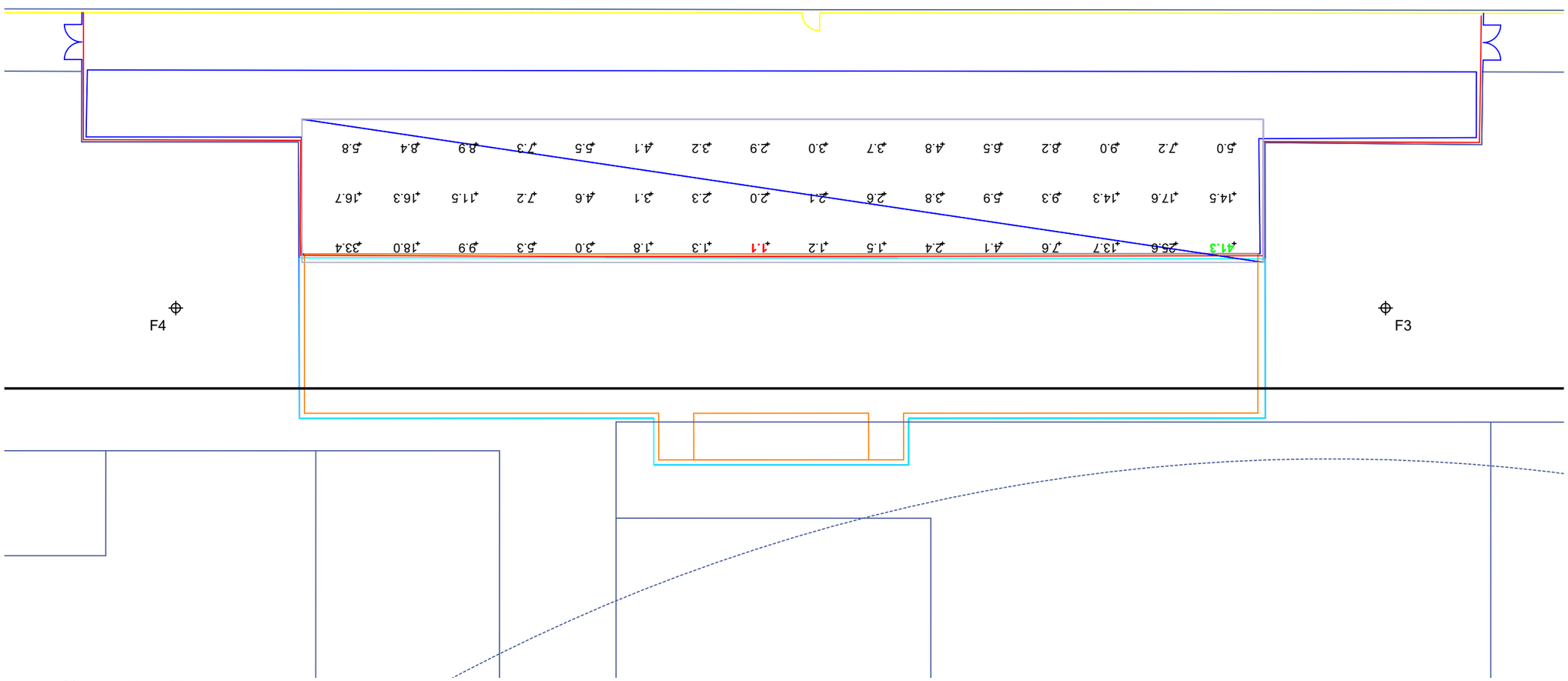
Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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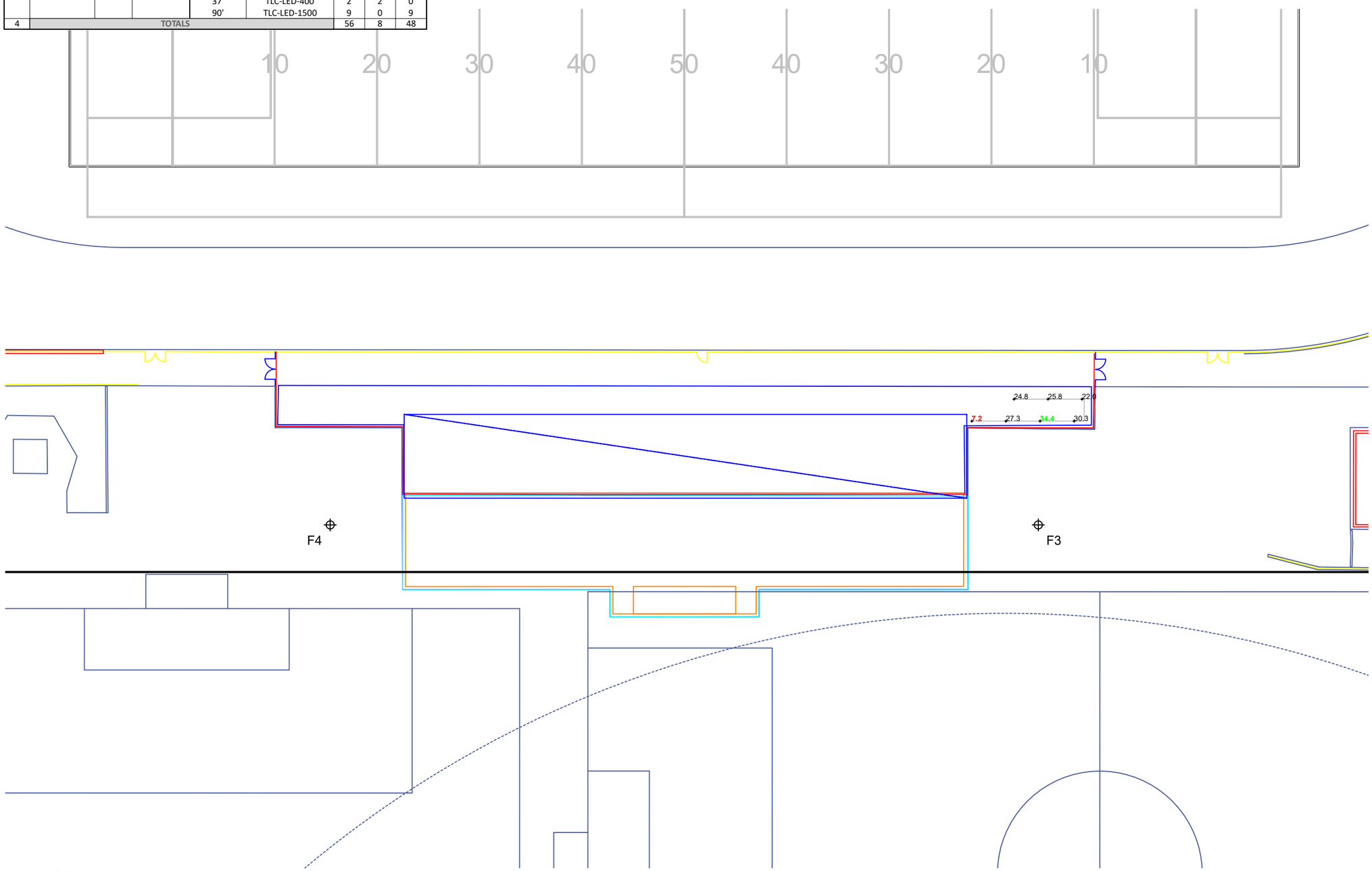
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	0	2
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	0	9
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-1500	2	0	2
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	0	9
4	TOTALS					56	8	48



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**South Ramp**
Spacing:	10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**24.5323**
Maximum:	34.443
Minimum:	7.182
No. of Points:	7

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 lumens
No. of Luminaires:	**8**
Total Load:	3.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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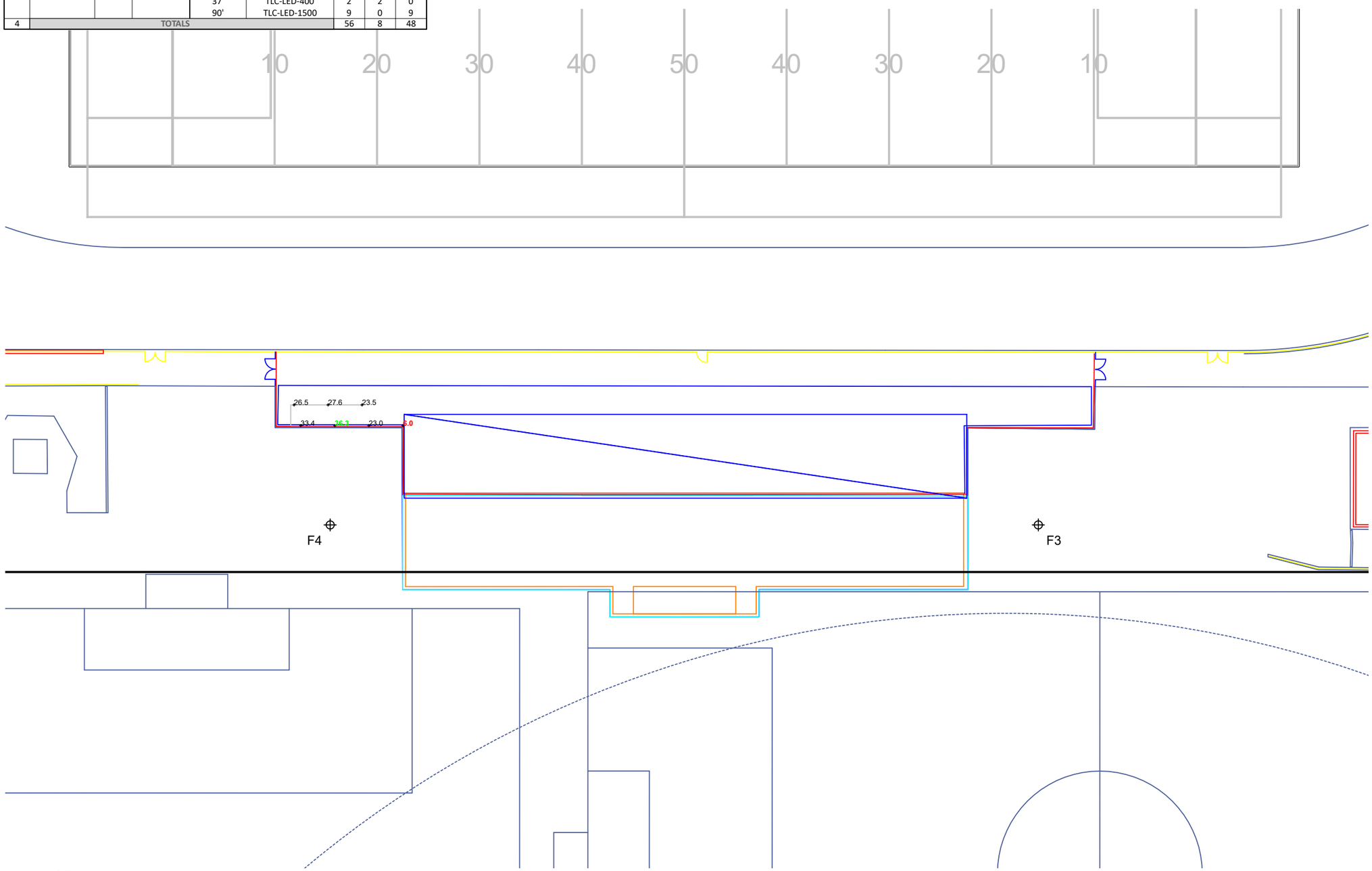
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	0	2
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	0	9
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	0	2
				60'	TLC-LED-1500	2	0	2
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	0	9
4	TOTALS					56	8	48



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**North Ramp**
Spacing:	10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**25.1829**
Maximum:	36.319
Minimum:	5.971
No. of Points:	7

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 lumens
No. of Luminaires:	**8**
Total Load:	3.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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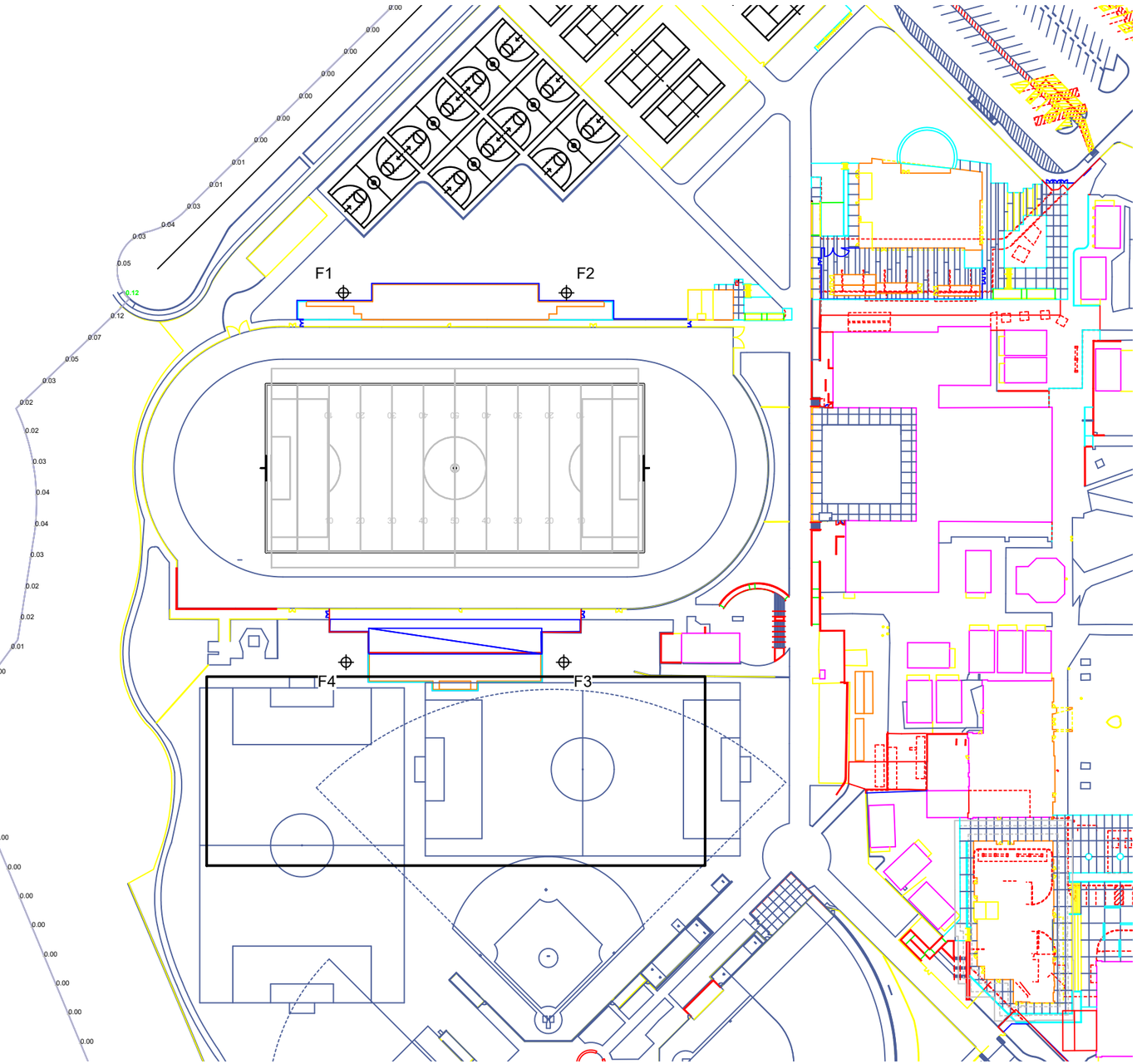
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	2	0
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	9	0
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-1500	2	2	0
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	9	0
4	TOTALS					56	56	0



Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.0179**
Maximum:	0.121
Minimum:	0.000
No. of Points:	45

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 / 160,000 / 52,000 lumens
No. of Luminaires:	**56**
Total Load:	65.0 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-BT-575	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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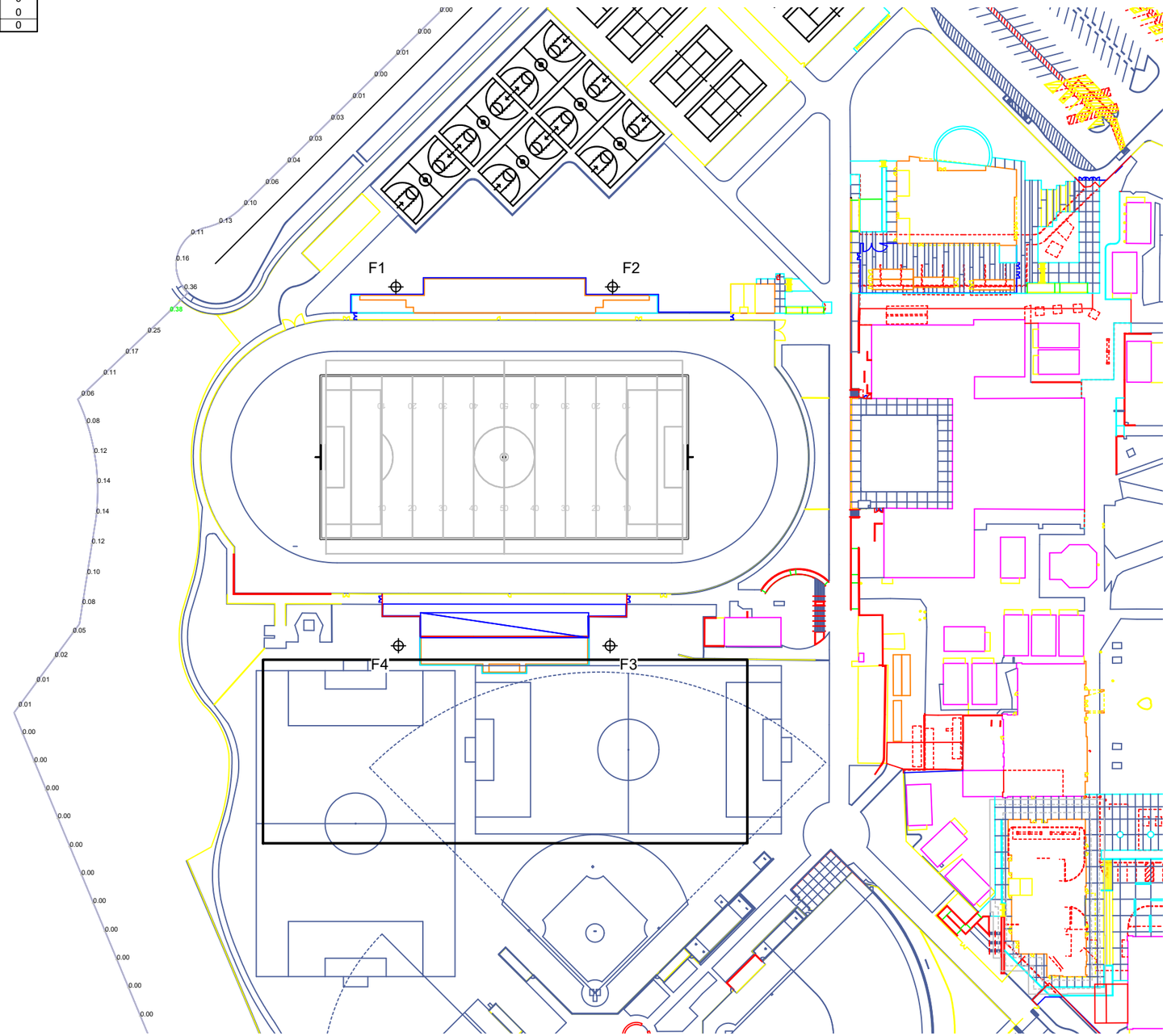
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	2	0
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	9	0
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-1500	2	2	0
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	9	0
4	TOTALS					56	56	0



SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.0646**
Maximum:	0.376
Minimum:	0.000
No. of Points:	45

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 / 160,000 / 52,000 lumens
No. of Luminaires:	**56**
Total Load:	65.0 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-BT-575	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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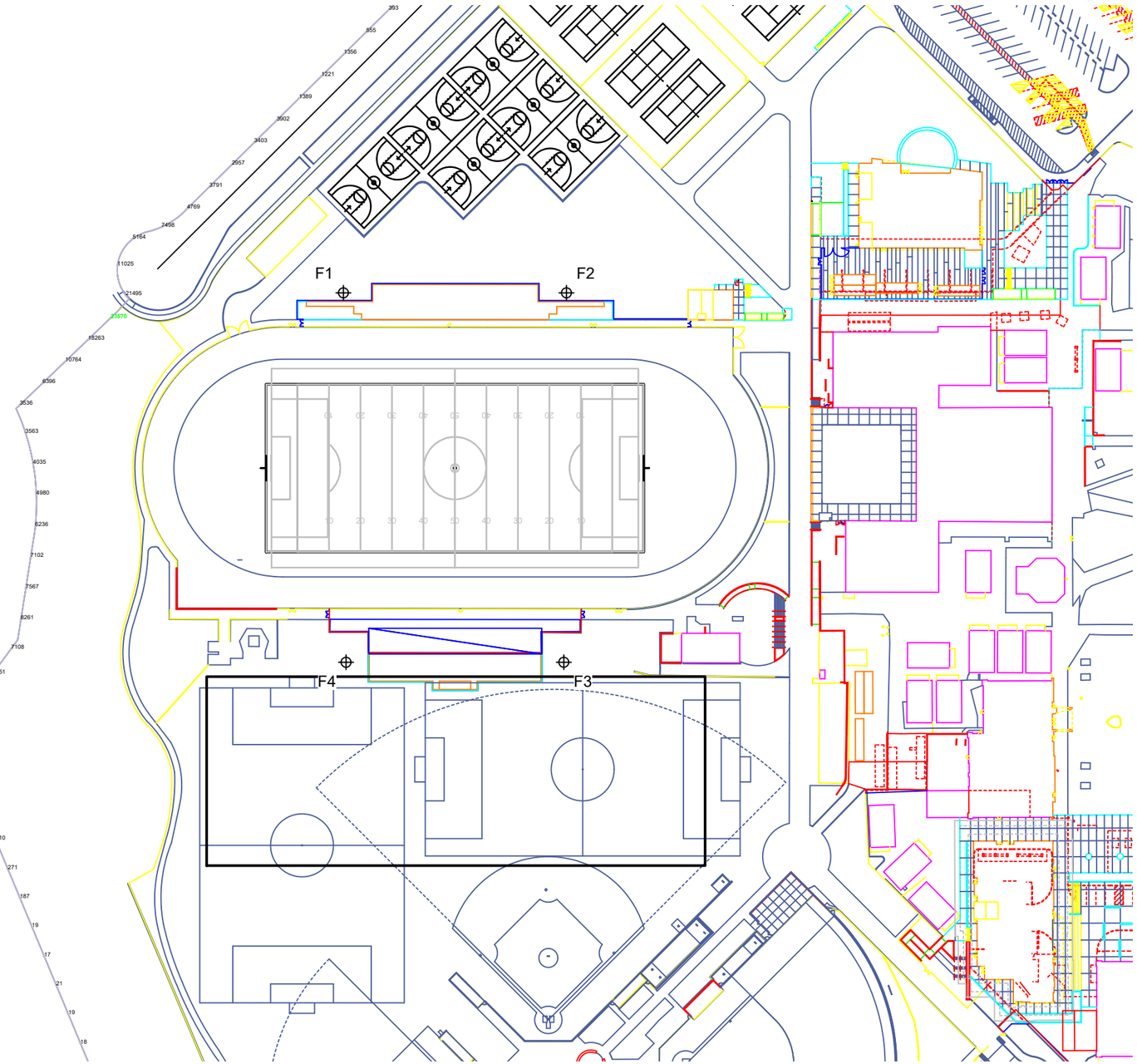
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	15.5'	TLC-BT-575	2	2	0
				37'	TLC-LED-400	2	2	0
				80'	TLC-LED-1500	9	9	0
2	F3-F4	90'	-	15.5'	TLC-BT-575	2	2	0
				60'	TLC-LED-1500	2	2	0
				37'	TLC-LED-400	2	2	0
				90'	TLC-LED-1500	9	9	0
4	TOTALS					56	56	0



Arlington High School Stadium Relight
Riverside, CA

GRID SUMMARY

Name:	**Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

CANDELA (PER FIXTURE)

	Entire Grid
Scan Average:	**4307.2300**
Maximum:	23570.039
Minimum:	11.615
No. of Points:	45

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	46,500 / 160,000 / 52,000 lumens
No. of Luminaires:	**56**
Total Load:	65.0 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-400	>120,000	>120,000	>120,000
TLC-LED-1500	>120,000	>120,000	>120,000
TLC-BT-575	>120,000	>120,000	>120,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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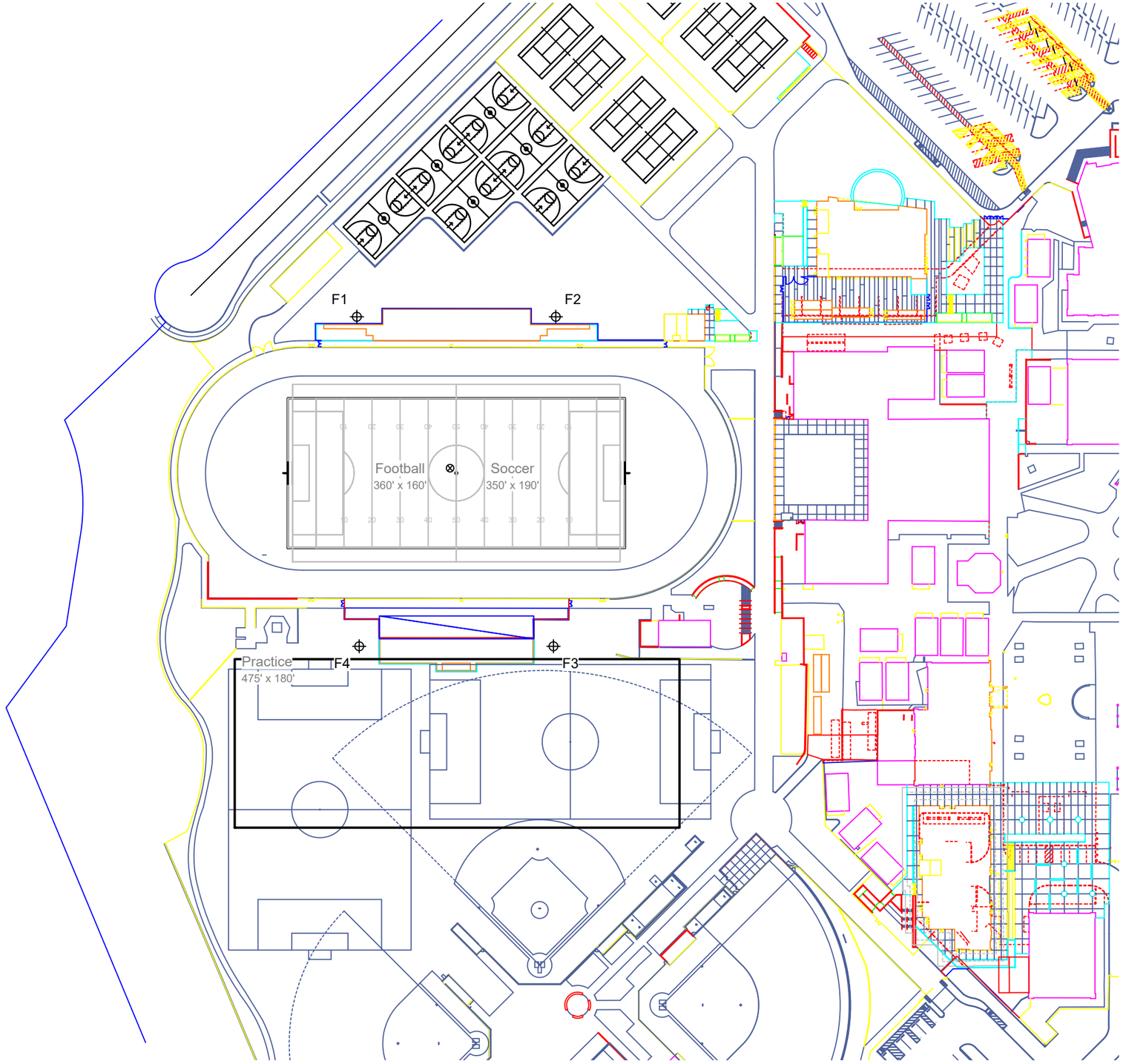
Riverside, CA



EQUIPMENT LAYOUT

INCLUDES:
- Football
- Practice
- Soccer

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
2	F1-F2	80'	-	15.5'	TLC-BT-575	2
				37'	TLC-LED-400	2
				80'	TLC-LED-1500	9
2	F3-F4	90'	-	15.5'	TLC-BT-575	2
				60'	TLC-LED-1500	2
				37'	TLC-LED-400	2
				90'	TLC-LED-1500	9
4	TOTALS					56

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-400	2.3	2.2	2.0	1.7	1.4	1.3	1.0
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5

SCALE IN FEET 1 : 120
0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Brendon Guler • File #201717D • 24-Mar-20

We Make It Happen.

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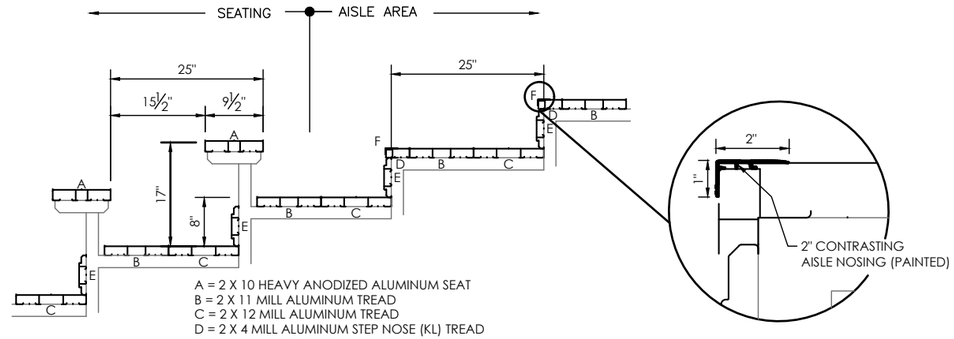
10
10

40
30
20

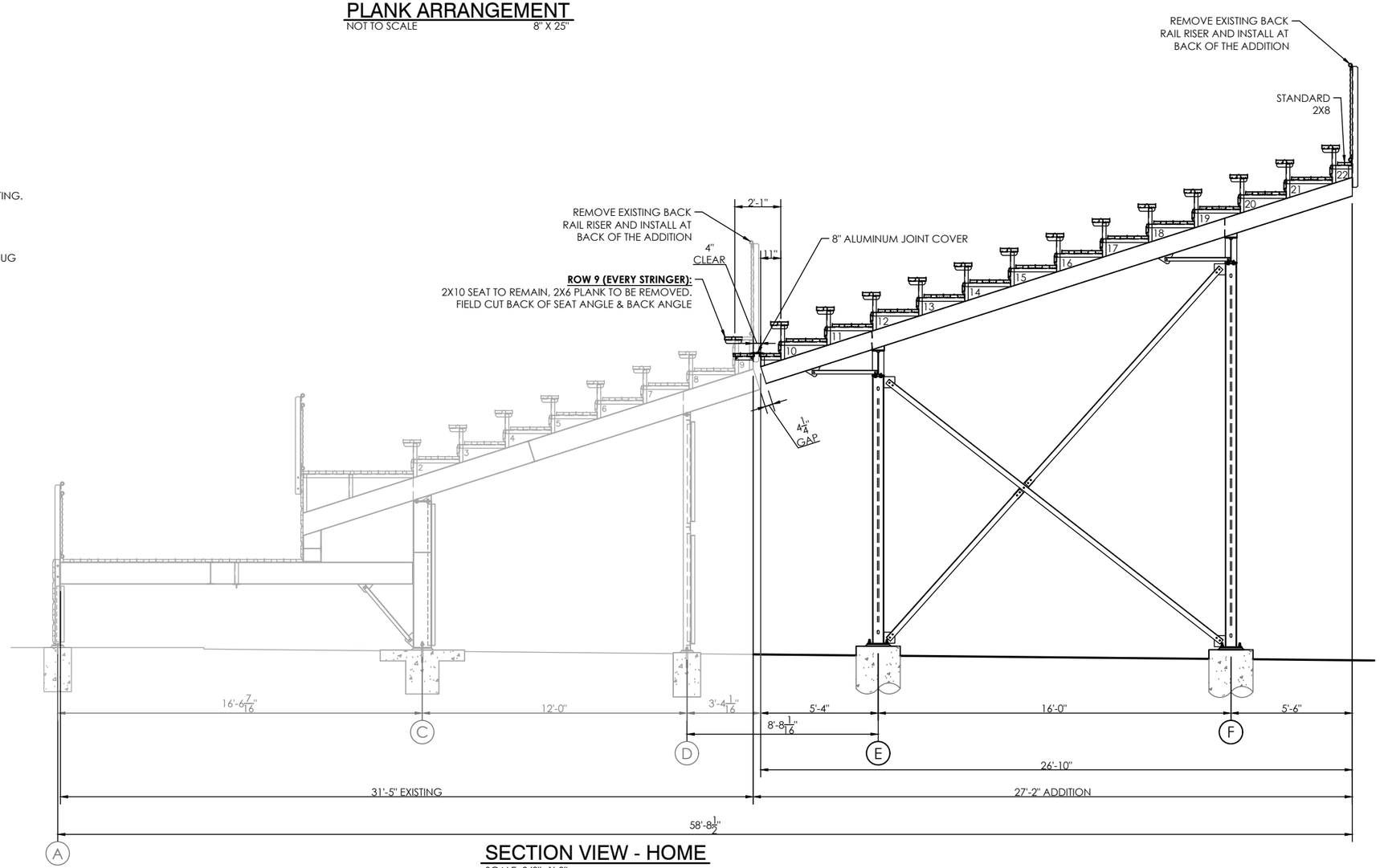
DESIGN LOADING
TREAD & SEAT AREA 100psf UNIFORM LIVE LOAD.
SEAT (VERTICAL) 120 lbs/lf.
SEAT (HORIZONTAL SWAY) 24lbs/lf PARALLEL AND
10lbs/lf PERPENDICULAR TO SEAT.
TREAD - STAIR AND AISLE TREADS - MINIMUM CONCENTRATED
LOAD OF 300LBS ON AN AREA OF 4 SQUARE INCHES
HANDRAIL & GUARDRAIL 50 lbs/lf IN ANY DIRECTION AT THE TOP.
HANDRAIL & GUARDRAIL 200 lbs CONCENTRATED IN ANY DIRECTION.
GUARDS, INFILL COMPONENTS - 50LBS PER SQ.FT. IN HORIZONTAL DIRECTION
SNOW LOADS AS PER STATE ADOPTED CODE
WIND LOADS AS PER STATE ADOPTED CODE
SEISMIC LOADS AS PER STATE ADOPTED CODE

NOTES

1. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO THE FOLLOWING A.I.S.C. STANDARDS
   PLATE UP TO 1/2" THICK = A36
   PLATE U.N.O. = A572 GRADE 50
   ANGLE = A36/A36M GRADE 50
   WIDE FLANGE = A992 Fy=50 ksi
   CHANNEL = A36/A36M GRADE 50
   ROD = A36/A529 GRADE 50
   TUBE = A500 GRADE "B" 46 ksi
2. WELDS ARE ALL AROUND WITH TYPE ER70S-6 WIRE MIG.
3. ALL STEEL TO BE HOT DIPPED GALVANIZED TO A.S.T.M. A-123-89 ae1.
4. STRUCTURAL BOLTS ARE HOT DIPPED GALV. AND ARE EQUAL TO OR GREATER THAN A-307.
5. NO CONNECTIONS UTILIZING HIGH STRENGTH BOLTS ARE CLASSED AS SLIP CRITICAL.
6. ANODIZED ALUMINUM RAIL IS 1 1/4" NOMINAL PIPE SIZE, (1 5/8" O.D.)
7. SOUTHERN BLEACHER COMPANY AS A MANUFACTURER AND INSTALLER OF GRANDSTAND SEATING IS NOT AUTHORIZED TO CERTIFY PLANS AS ADA COMPLIANT. HOWEVER, TO THE BEST OF OUR KNOWLEDGE THESE PLANS MEET OR EXCEED ADA REQUIREMENTS FOR QUANTITY OF ADA SEATING, ACCESS/EGRESS TO ADA SEATING, & DISPERSAL OF ADA SEATING.
8. ALL FIELD CONNECTIONS ARE NON-SLIP CRITICAL U.N.O. ALL CONNECTIONS ARE DESIGNED TO UTILIZE A307 BOLTS, IT IS ACCEPTABLE TO USE A325N BOLTS IN LIEU OF THE A307 BOLTS. THE INSTALLATION OF THESE BOLTS ARE TO BE TIGHTENED A SNUG TIGHT CONDITION AS SPECIFIED BY AISC.



PLANK ARRANGEMENT
NOT TO SCALE 8" X 25"



SECTION VIEW - HOME
SCALE: 3/8"=1'-0"

DETAIL NUMBER
SHEET SHOWN ON
SHEET CUT FROM

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BLEACHER COMPANY
GRANDSTANDS • BLEACHERS • STADIUMS
PO Box One, Graham, Texas 76450
801 Fifth Street.
Phone: 940/549-0733 Fax: 940/549-1365
Established 1946

TITLE: SECTION VIEWS – HOME
ADDITION: 13 ROWS / 8" RISE X 25" TREAD

TITLE: RIVERSIDE UNIFIED SCHOOL DISTRICT
ARLINGTON HIGH SCHOOL
RIVERSIDE, CALIFORNIA

REV. BY	DATE	DESCRIPTION
SMR	05/06/19	NO CHANGES – THIS PAGE

DATE 11/27/18 DRAWN SMR CHECKED EM/DM

JOB NUMBER 18sd270

SHEET 1 OF 6

22" X 34" (11x17 = 1/2 indicated scale)

DESIGN LOADING
TREAD & SEAT AREA 100psf UNIFORM LIVE LOAD.
SEAT (VERTICAL) 120 lbs/lf.
SEAT (HORIZONTAL SWAY) 24lbs/lf PARALLEL AND 10lbs/lf PERPENDICULAR TO SEAT.
TREAD - STAIR AND AISLE TREADS - MINIMUM CONCENTRATED LOAD OF 300LBS ON AN AREA OF 4 SQUARE INCHES
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GUARDS, INFILL COMPONENTS - 50LBS PER SQ.FT. IN HORIZONTAL DIRECTION
SNOW LOADS AS PER STATE ADOPTED CODE
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   ROD = A36/A529 GRADE 50
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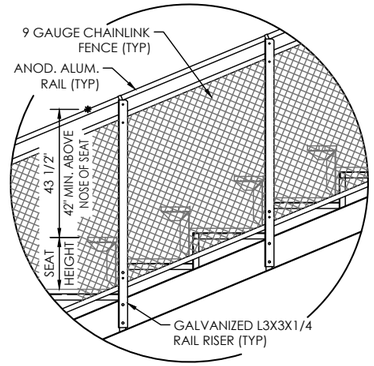
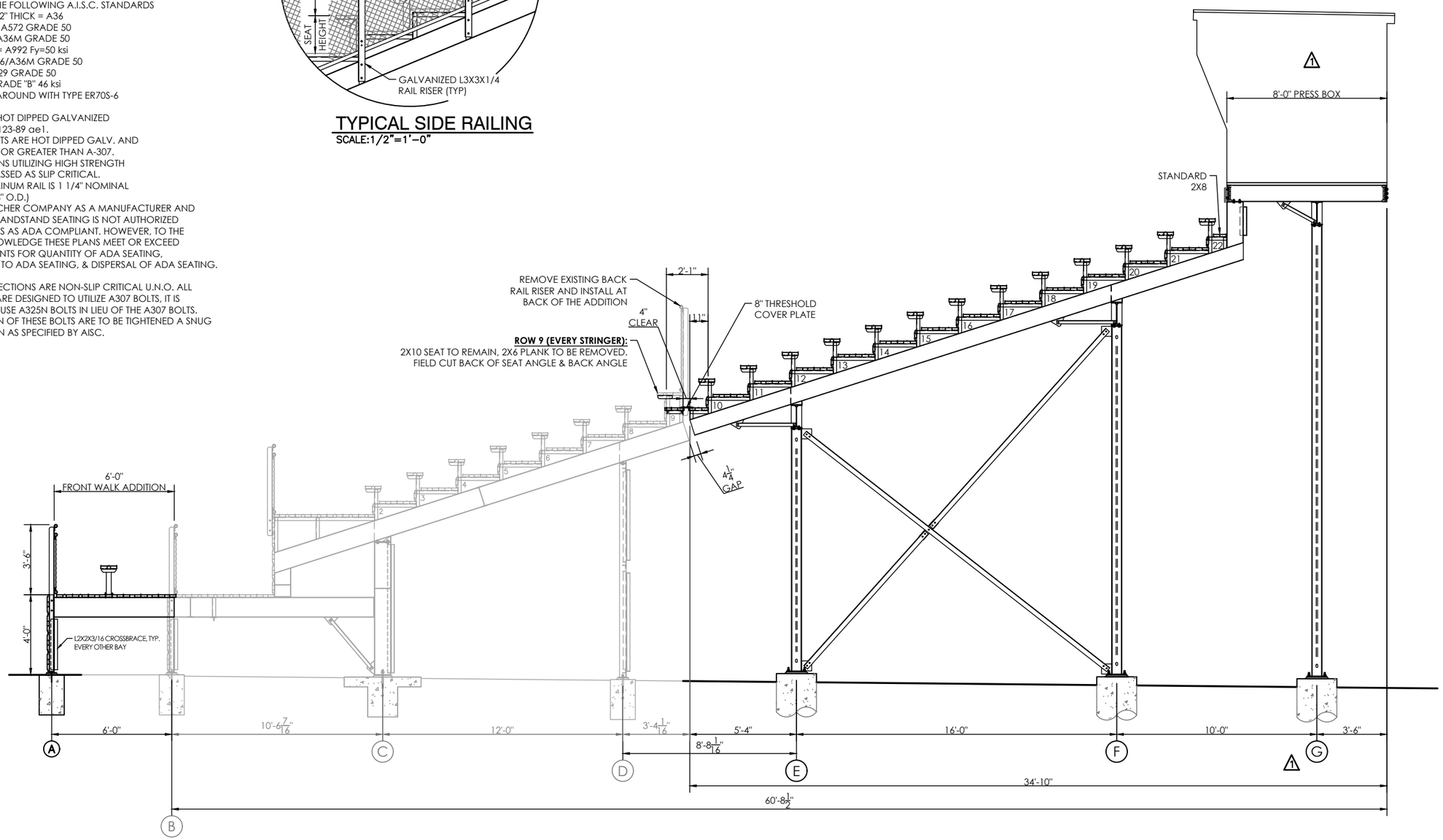


TYPICAL SIDE RAILING
SCALE:1/2"=1'-0"



SECTION VIEW - HOME
SCALE: 3/8"=1'-0"

DETAIL NUMBER
SHEET SHOWN ON
SHEET CUT FROM

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PO Box One, Graham, Texas 76450
801 Fifth Street.
Phone: 940/549-0733 Fax: 940/549-1365
Established 1946

TYPE: SECTION VIEWS – HOME
ADDITION: 13 ROWS / 8" RISE X 25" TREAD

TITLE: *RIVERSIDE UNIFIED SCHOOL DISTRICT*
ARLINGTON HIGH SCHOOL
RIVERSIDE, CALIFORNIA

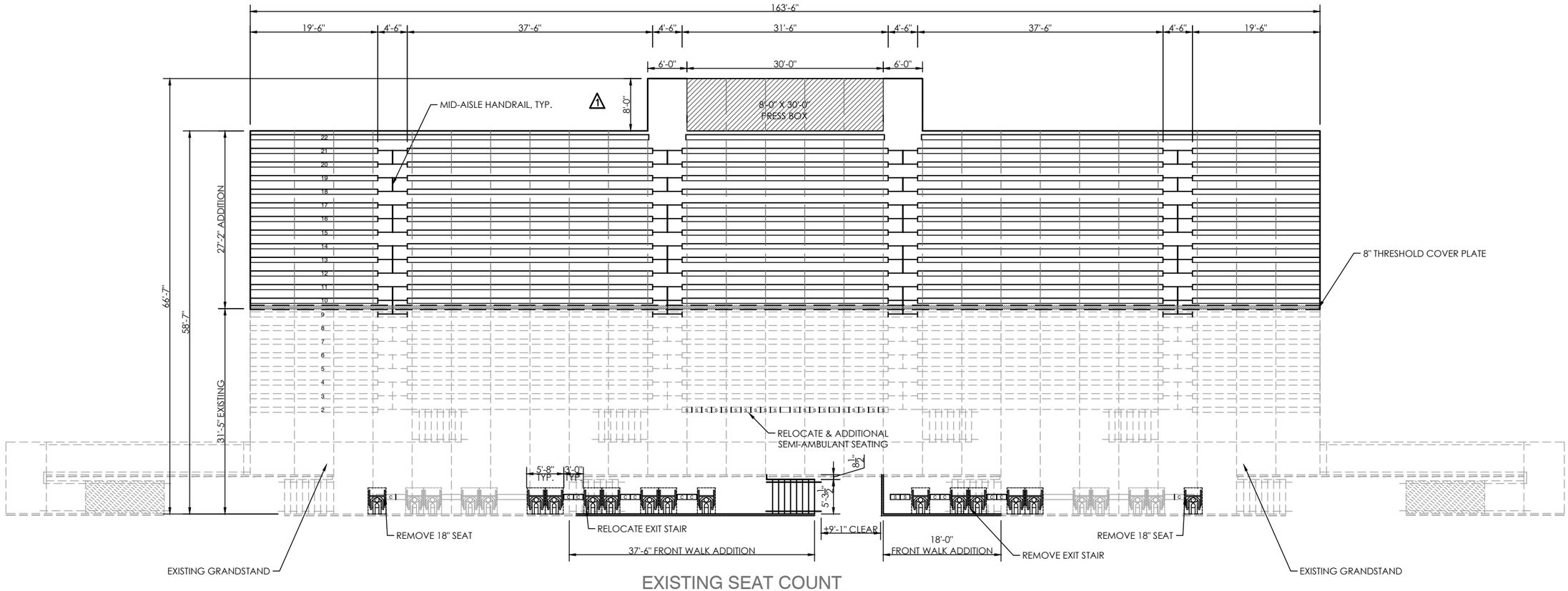
REV. BY	DATE	DESCRIPTION
SMR	05/06/19	ADD. PRESS. BOX

DATE 11/27/18 | DRAWN SMR | CHECKED EM/DM

JOB NUMBER 18sd270

SHEET 1 OF 6

22" X 34" (11"x17" = 1/2 indicated scale)



EXISTING SEAT COUNT

738 TOTAL NET 18" SEATS
8 TOTAL NET WHEELCHAIR SPACES
8 TOTAL NET 18" WHEELCHAIR COMPANION SEATS
8 TOTAL NET 18" SEMI-AMBULATORY SEATS
762 TOTAL SEATING CAPACITY

EXISTING & ADDITION SEAT COUNT

1 1986 TOTAL NET 18" SEATS
18 TOTAL NET 34" WHEELCHAIR SPACES
4 TOTAL NET 36" WHEELCHAIR SPACES
22 TOTAL NET 18" WHEELCHAIR COMPANION SEATS = C
22 TOTAL NET 18" SEMI-AMBULATORY SEATS = S
1 2052 TOTAL SEATING CAPACITY

SEATING LAYOUT - HOME

SCALE: 1/8"=1'-0"

DETAIL NUMBER
SHEET SHOWN ON
SHEET CUT FROM

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801 Fifth Street.
Phone: 940/549-0733 Fax: 940/549-1365
Established 1946

TYPE: SEATING LAYOUT – HOME
ADDITION: 163'-6" / 13 ROWS X 25" TREAD

TITLE: RIVERSIDE UNIFIED SCHOOL DISTRICT
ARLINGTON HIGH SCHOOL
RIVERSIDE, CALIFORNIA

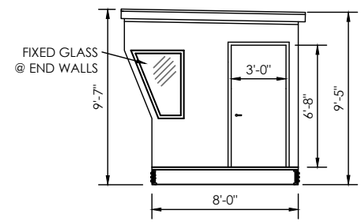
REV	BY	DATE	DESCRIPTION
1	SMR	05/06/19	ADD PRESS BOX

DATE 11/27/18 DRAWN SMR CHECKED EM/DM

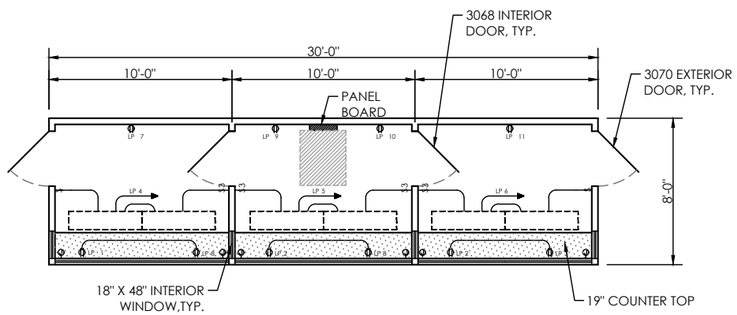
JOB NUMBER 18sd270

SHEET 3 OF 6

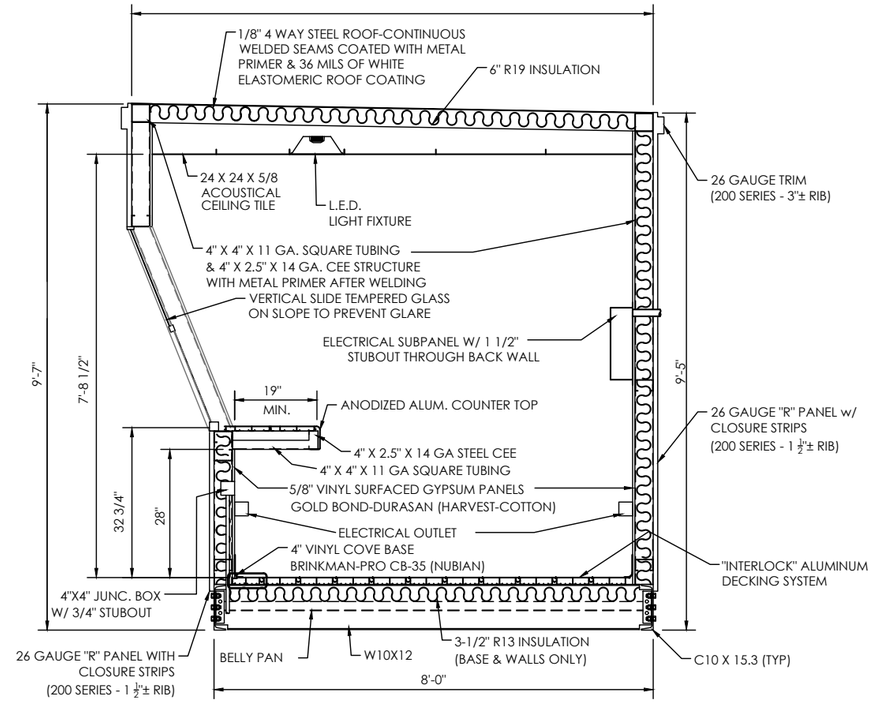
22" X 34" (11x17 = 1/2 indicated scale)



SIDE VIEW
SCALE: 1/4"=1'-0"



PLAN VIEW
SCALE: 1/4"=1'-0"



SECTION VIEW
SCALE: 3/4"=1'-0"

NOTES:
WALL PANELS ARE ATTACHED WITH #12 TEK SCREWS - 6" O.C. AT THE TOP AND BOTTOM OF THE PANELS AND 12" O.C. AT ANY INTERMEDIATE BRACE.

LAP SCREWS ARE PLACED AT EACH END OF THE PANELS, AT THE INTERMEDIATE SUPPORTS AND AT THE MID POINT BETWEEN SUPPORTS (TEK #14)

PANEL BOARD SCHEDULE

PANEL LP — 100 AMP - 16 CIRCUIT W/ EQUIPMENT GROUND — 240/120 VOLTS — 1 PH.

MOUNTING: ☐ FLUSH ☒ SURFACE — 10,000 SYN. A.I.C. MIN. — 100 AMP MAIN BREAKER

	BREAKER SIZE	BREAKER POLE	CIR. #	BUS A	BUS B	CIR. #	BREAKER SIZE	BREAKER POLE	
(1) RECPT. FRONT WALL	20	1	1			2	20	1	(2) RECPT. FRONT WALL
(1)RECPT. FRONT WALL	20	1	3			4	20	1	(2) LED FIXTURES
(2) LED FIXTURES	20	1	5			6	20	1	(2) LED FIXTURES
(1) RECPT. BACK WALL	20	1	7			8	20	1	(2) RECPT. FRONT WALL
(1) RECPT. BACK WALL	20	1	9			10	20	1	(1) RECPT. BACK WALL
(1) RECPT. BACK WALL	20	1	11			12	20	1	SPARE
SPARE	20	1	13			14			SPACE
SPACE			15			16			SPACE

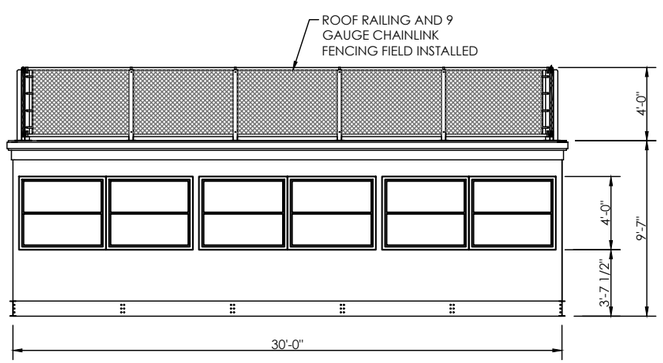
20A. 125V. DUPLEX RECPT.
$3 20A. 125V. 3 POLE SWITCH
$ 20A. 125V. SINGLE POLE SWITCH
J 4X4X2 1/8" JUNCTION BOX W/ 3/4"C STUBOUT

LED FIXTURE: INDY, LOW PROFILE, LAY-IN FIXTURE (S1X48L-S550U-WH3)

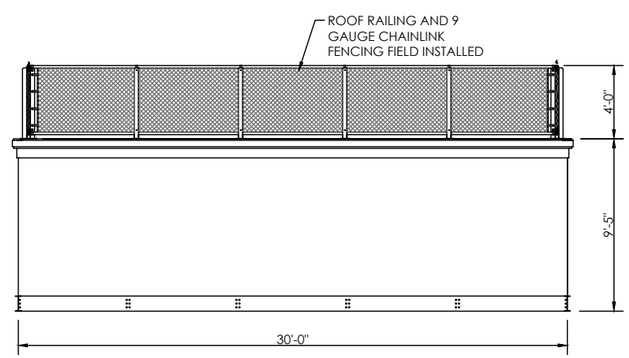
CONDUIT WILL BE 1/2" EMT, 1/2" STEELFLEX, OR SURFACE RACEWAY UNLESS OTHERWISE NOTED

WIRING ON 20A BREAKERS WILL BE #12 = THWN - THHN

EQUIPMENT GROUND RUN IN ALL CONDUITS OR NON-METALLIC SURFACE RACEWAYS



FRONT ELEVATION VIEW
SCALE: 1/4"=1'-0"



REAR ELEVATION VIEW
SCALE: 1/4"=1'-0"

PRESS BOX COLOR SELECTION SCHEDULE

EXTERIOR SHEET METAL COMPONENTS

SIGNATURE 200 STANDARD COLORS FOR PRESS BOX COLOR SELECTION. PLEASE MARK COLOR SELECTIONS FOR EACH MATERIAL ON THIS COLOR SCHEDULE.	MATERIALS: EXTERIOR SIDING	ROOF TRIM	WINDOW / DOOR TRIM	EXTERIOR DOORS
HAWAIIAN BLUE				
CRIMSON RED				
FERN GREEN				
BURNISHED SLATE				
POLAR WHITE				
ASH GREY				
SADDLE TAN				
DESERT SAND				
KOKO BROWN				
SOLAR WHITE				
CHARCOAL GREY				
COBALT BLUE				
RUSTIC RED				
LIGHT STONE				

WINDOW FRAMES	
WHITE	
BRONZE	
TAN	
SILVER	

DETAIL NUMBER / SHEET SHOWN ON / SHEET CUT FROM

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PO Box One, Graham, Texas 76450
801 Fifth Street.
Phone: 940/549-0733 Fax: 940/549-1365
Established 1946

TYPE: PRESS BOX LAYOUT – HOME 8'–0" X 30'–0"

TITLE: RIVERSIDE UNIFIED SCHOOL DISTRICT
ARLINGTON HIGH SCHOOL
RIVERSIDE, CALIFORNIA

REV'S BY	DATE	DESCRIPTION
A	SMR	05/06/19 ADD PRESS BOX

DATE 11/27/18 DRAWN SMR CHECKED EM/DM

JOB NUMBER 18sd270

SHEET 4 OF 6

22" X 34" (11x17 = 1/2 indicated scale)

DESIGN LOADING
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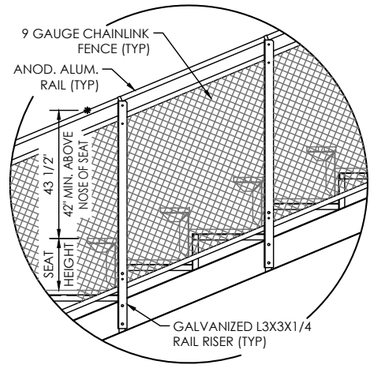
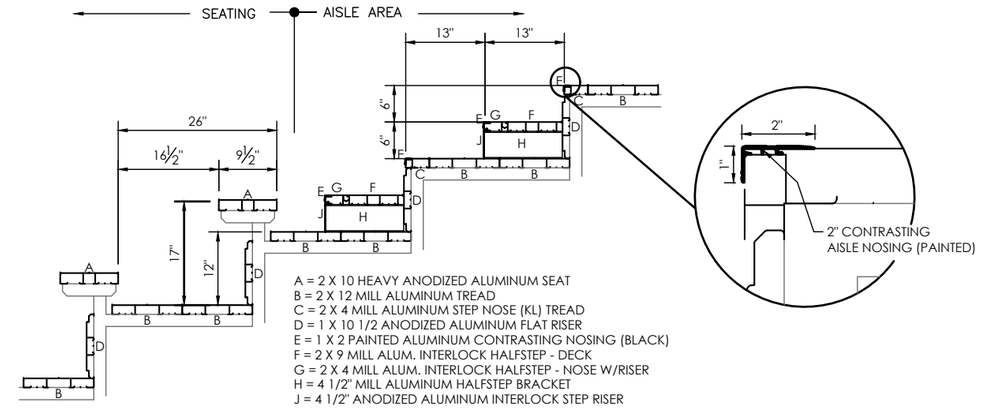
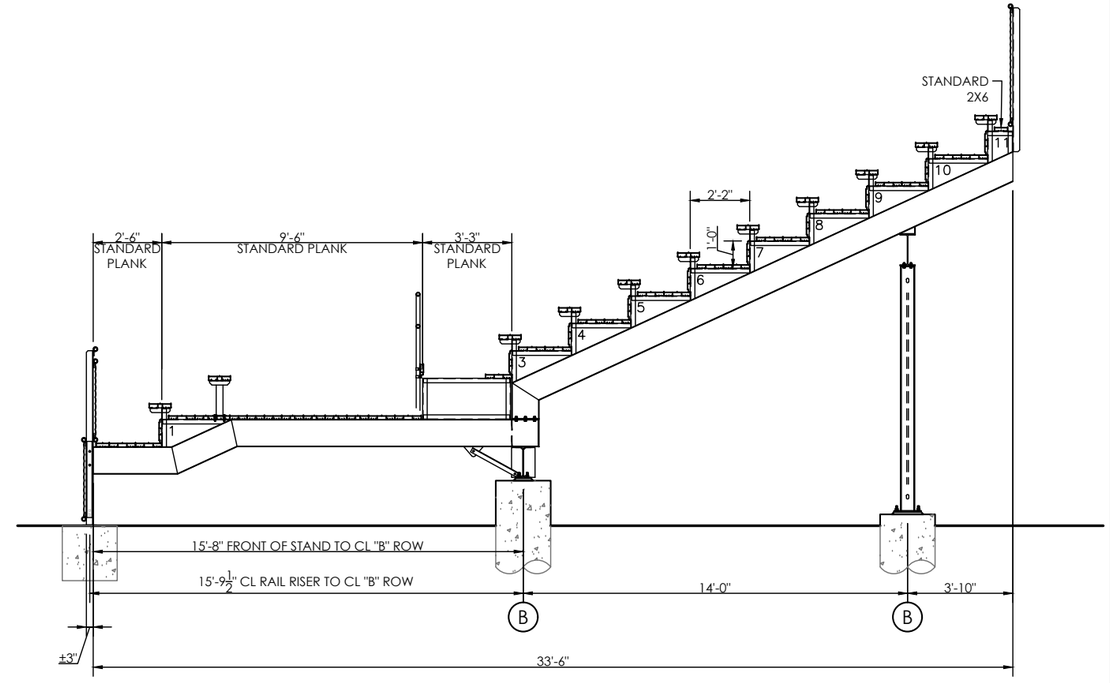


TYPICAL SIDE RAILING
SCALE:1/2"=1'-0"



PLANK ARRANGEMENT
NOT TO SCALE 12" X 26"



SECTION VIEW - VISITOR
SCALE: 3/8"=1'-0"

DETAIL NUMBER
SHEET SHOWN ON
SHEET CUT FROM

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Phone: 940/549-0733 Fax: 940/549-1365
Established 1946

TITLE: SECTION VIEW – VISIOTR
11 ROWS / 12" RISE X 26" TREAD

SITE: RIVERSIDE UNIFIED SCHOOL DISTRICT
ARLINGTON HIGH SCHOOL
RIVERSIDE, CALIFORNIA

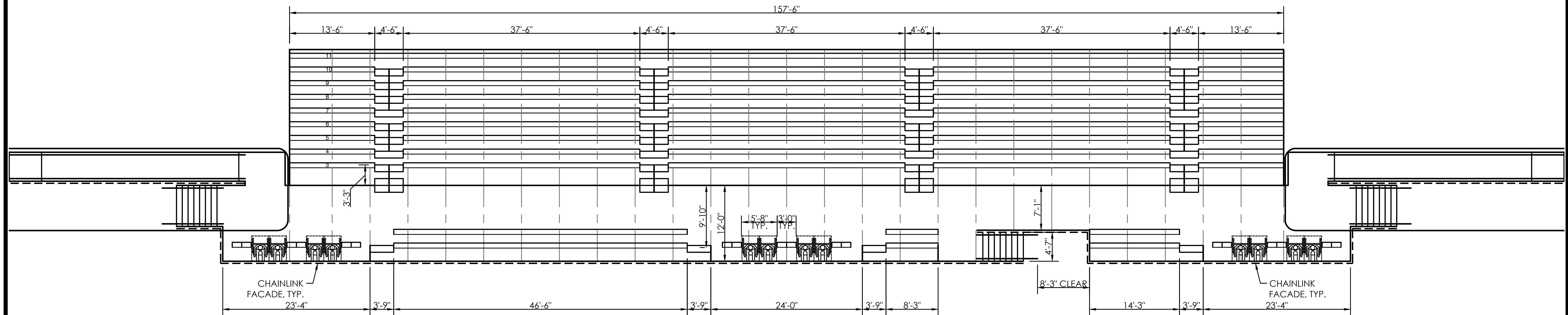
REV. BY	DATE	DESCRIPTION
SMR	05/06/19	ADDED VISITOR

DATE 11/27/18 DRAWN SMR CHECKED EM/DM

JOB NUMBER 18sd270

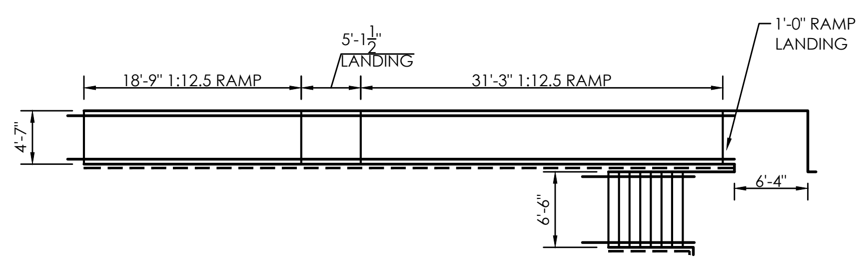
SHEET 5 OF 6

22" X 34" (1 1x17 = 1/2 indicated scale)

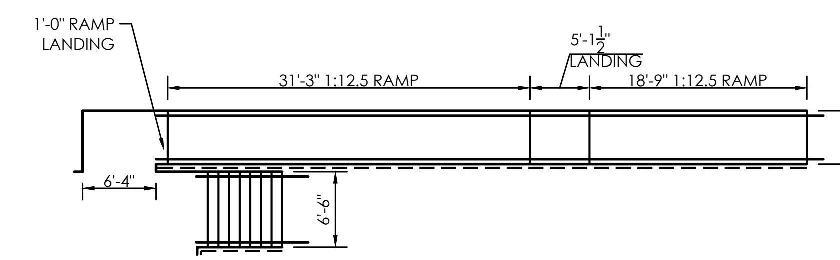


933 TOTAL NET 18" SEATS
12 TOTAL NET 34" WHEELCHAIR SPACES
12 TOTAL NET 18" COMPANION SEATS
12 TOTAL NET 18" SEMI-AMBULANT SEATS
969 TOTAL SEATING CAPACITY

SEATING LAYOUT - VISITOR
SCALE: 1/8"=1'-0"



EXIT LAYOUT - VISITOR
SCALE: 1/8"=1'-0"



EXIT LAYOUT - VISITOR
SCALE: 1/8"=1'-0"

DETAIL NUMBER
SHEET SHOWN ON
SHEET CUT FROM

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PO Box One, Graham, Texas 76450
801 Fifth Street.
Phone: 940/549-0733 Fax: 940/549-1365
Established 1946

TYPE: SECTION VIEW – VISIOTR
157'-6" / 11 ROWS X 26" TREAD

TITLE: RIVERSIDE UNIFIED SCHOOL DISTRICT
ARLINGTON HIGH SCHOOL
RIVERSIDE, CALIFORNIA

REV	BY	DATE	DESCRIPTION
1	SMR	05/06/19	ADDED VISITOR

DATE: 11/27/18 DRAWN: SMR CHECKED: EM/DMG

JOB NUMBER: 18sd270

SHEET 6 OF 6

22" X 34" (11x17 = 1/2 indicated scale)

NOTES:

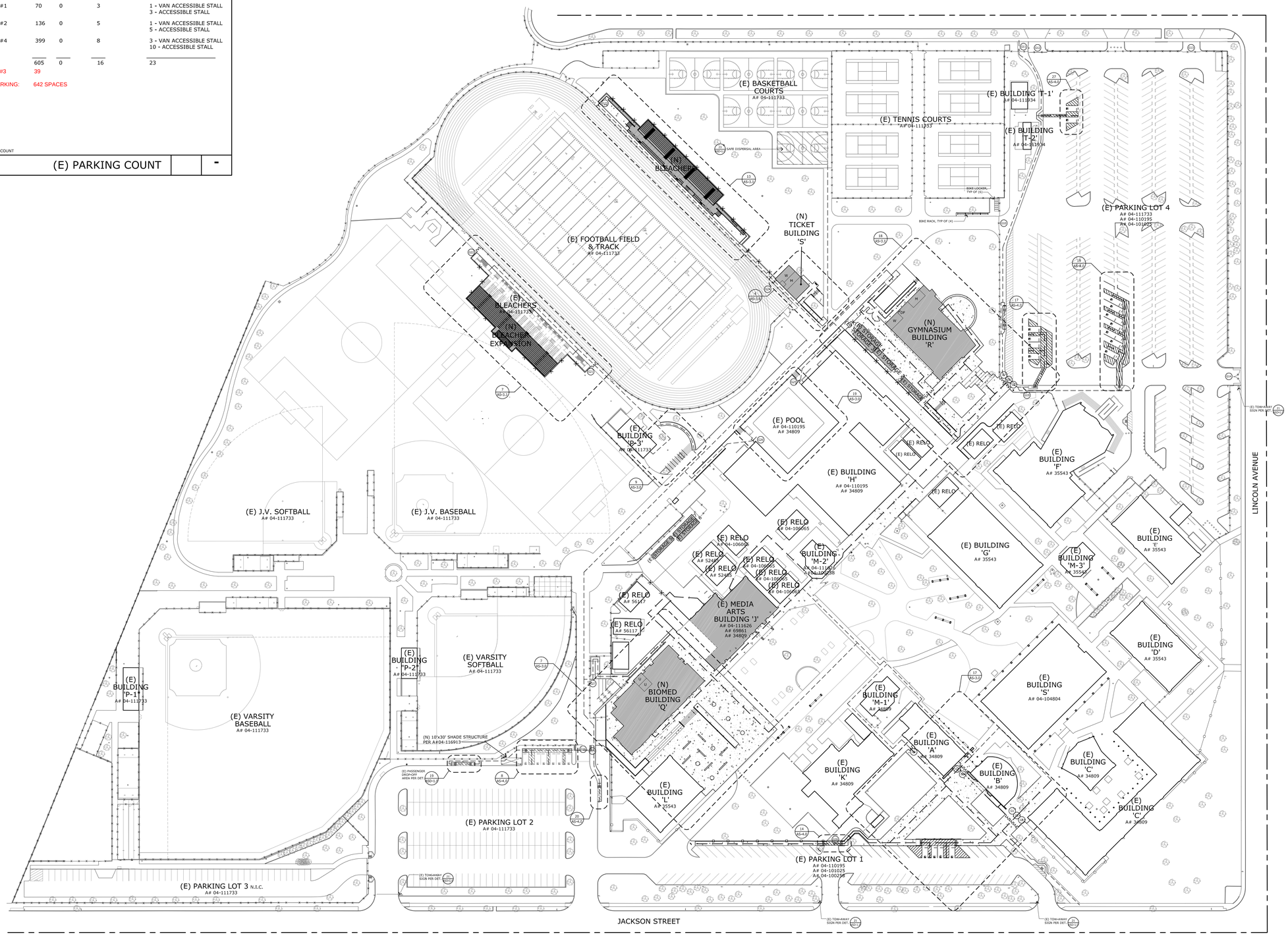
- ACCESSIBLE PARKING REQUIREMENT:

	# OF SPACES AUTO	# OF SPACES TRUCK	MIN. # OF ACCESSIBLE SPACES REQ'D	# OF ACCESSIBLE SPACES PROVIDED
PARKING #1	70	0	3	1 - VAN ACCESSIBLE STALL 3 - ACCESSIBLE STALL
PARKING #2	136	0	5	1 - VAN ACCESSIBLE STALL 5 - ACCESSIBLE STALL
PARKING #4	399	0	8	3 - VAN ACCESSIBLE STALL 10 - ACCESSIBLE STALL
	605	0	16	23
PARKING #3	39			
TOTAL PARKING:	642 SPACES			

17514_PARKING-COUNT

(E) PARKING COUNT

-



OVERALL SITE PLAN

1"=60'-0" | 1

STAMPS

LICENSED ARCHITECT ROGER CLARKE No. C-21340 Exp. 10-31-21 STATE OF CALIFORNIA

CONSULTANT BRANDING

RUHNAU CLARKE ARCHITECTS

(N) BUILDINGS
(E) BUILDINGS TO REMAIN
(N) ASPHALTIC CONCRETE PAVING
(N) CONCRETE PAVING
(N) LANDSCAPE
(N) DG PAVING
(E) CHAIN LINK FENCE TO REMAIN, U.N.O.
(E) METAL FENCE TO REMAIN, U.N.O.
(N) METAL FENCE
(N) CHAIN LINK FENCE
INDICATES PROPERTY LINE
SAFE DISPERSAL AREA

TOILET ROOMS
DF DRINKING FOUNTAIN
W WOMEN'S RESTROOM
M MEN'S RESTROOM
U UNISEX TOILET

SITE LEGEND

-

NO.	SIZE	MATERIAL	FINISH	DETAIL	PH	HDW. GROUP	NOTES
G1	PR 6'-0"x8'-0"	MTL	P	11/ASD-1.1	Y	SG1	-
G2	PR 6'-0"x8'-0"	MTL	P	11/ASD-1.1	Y	SG1	-
G3	PR 6'-0"x8'-0"	MTL	P	11/ASD-1.1	Y	SG1	-
G4	PR 6'-0"x8'-0"	MTL	P	11/ASD-1.1	Y	SG1	-
G5	PR 6'-0"x8'-0"	MTL	P	11/ASD-1.1	Y	SG1	-
G6	PR 6'-0"x8'-0"	MTL	P	11/ASD-1.1	Y	SG1	-
G7	PR 6'-0"x8'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G8	PR 6'-0"x8'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G9	PR 6'-0"x8'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G10	20'-0"x8'-0"	(E)	-	-	-	-	-
G11	3'-0"x8'-0"	(E)	-	3/ASD-1.1	Y	SG3	-
G12	20'-0"x8'-0"	(E)	-	-	-	-	-
G13	20'-0"x8'-0"	(E)	-	-	-	-	-
G14	20'-0"x8'-0"	(E)	-	-	-	-	-
G15	3'-0"x8'-0"	(E)	-	3/ASD-1.1	Y	SG3	-
G16	20'-0"x8'-0"	(E)	-	-	-	-	-
G19	10'-0"x8'-0"	CL	GALV	8/ASD-1.1	-	SG4	-
G20	20'-0"x8'-0"	MTL	P	20/ASD-1.1	-	SG5	-
G21	PR 6'-0"x8'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G22	PR 6'-0"x8'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G23	PR 6'-0"x8'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G24	PR 6'-0"x8'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G25	3'-0"x10'-0"	CL	GALV	3/ASD-1.1	Y	SG6	-
G26	PR 6'-0"x10'-0"	CL	GALV	4/ASD-1.1	Y	SG2	-
G27	PR 3'-0"x8'-0"	(E)	-	-	Y	SG3	-

GATE SCHEDULE ABBREVIATIONS:

PH PANIC HARDWARE
CL GALVANIZED STEEL CHAIN LINK
P PAINT
PR PAIR OF GATES
MF METAL FENCE

GATE SCHEDULE REMARKS: (REFERENCE NOTES COLUMN ON SCHEDULE)
1. PROVIDE KEYED KNOX PADLOCK PER CITY OF RIVERSIDE FIRE DEPARTMENT REQUIREMENTS
2. GATE HEIGHTS TO MATCH HEIGHT OF ADJACENT FENCE OR CMU WALL U.N.O.

17504_GATE SCHEDULE.DWG

GATE SCHEDULE

-

(N) PATH OF TRAVEL (P.O.T.)
(E) PATH OF TRAVEL A# 04-111733

PATH OF TRAVEL (P.O.T.) AS INDICATED IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING ¼" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED ½" VERTICAL AND IS AT LEAST 48" WIDE. SURFACE IS SLIP RESISTANT, STABLE, FIRM AND SMOOTH. CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICTED. (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307.2). CONTRACTOR TO VERIFY THAT ALL BARRIERS IN THE PATH OF TRAVEL HAVE BEEN REMOVED OR WILL BE REMOVED UNDER THIS PROJECT, AND PATH OF TRAVEL COMPLIES WITH CBC 11B-402.

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT: THE PATH OF TRAVEL (P.O.T.) IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISION FOR P.O.T. REQUIREMENTS FOR ALTERATIONS, ADDITIONS, AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NON-COMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NON-COMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.
DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NON-CONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

17514_GATE SCHEDULE.DWG

P.O.T. NOTE

-

BUILDING	OCCUPANCY
MEDIA ARTS	399
BIO-MED	312
GYMNASIUM	466
TICKET	4
TOTAL OCCUPANTS	1181
OCCUPANTS X 3 SF/OCCUPANTS	3543 S.F.

17514_SAFE DISPERSAL AREA CALCS.DWG

SAFE DISPERSAL AREA CALCS.

-

J:\Riverside\USD_75\17514_ArlingtonHS_New & Modernization\DESIGN\17514_AS-1.1_Overall Site Plan.dwg

PROJECT No. : 1-75-14
11/22/2019 2:16 PM

DRAWN BY: CHECKED BY:
ISSUE No.____ DATE____ DESCRIPTION____
REVISION No.____ DATE____ DESCRIPTION____

RUHNAUCLARKE.COM
3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501 (951) 684 4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010 (760) 438 5899

ARLINGTON HS EXPANSION & MODERNIZATION
2951 Jackson Street
Riverside, CA 92503
Riverside Unified School District

OVERALL SITE PLAN

AS-1.1

1-75-14

Appendix C Noise Modeling Data

Appendices

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LOCAL REGULATIONS AND STANDARDS

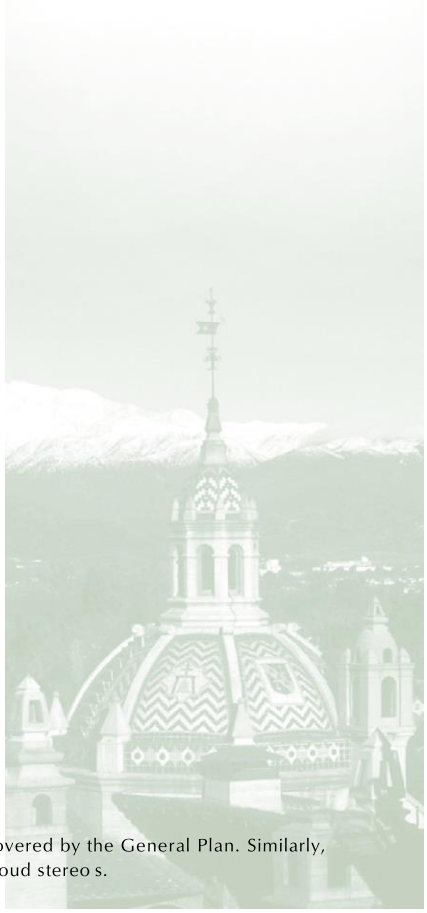
Noise Element

The philosopher Arthur Schopenhauer once remarked: "Noise is the most impertinent of all forms of interruption. It is not only an interruption, but a disruption of thought."[1] While Schopenhauer is known largely for his pessimistic worldview, his comment reflects a common feeling among people accustomed to living in a relatively quiet environment. Noise affects how we think. It affects how we respond to and perceive the quality of the places in which we live, work and play. For these reasons, noise requires careful consideration in the community planning process.

The Noise Element examines noise sources in the City with a view toward identifying and appraising the potential for noise conflicts and problems and identifies ways to reduce existing and potential noise impacts. In particular, the Noise Element contains policies and programs to achieve and maintain noise levels compatible with various types of land uses. The element addresses noise which affects the community at large, rather than noise associated with site-specific conditions.[2] However, the program s in this element do address effective strategies to reduce and limit community exposure to loud noise sources. On the other hand, the City's Noise Control Code (Title 7) prohibits such noise generated within the City and attempts to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment.

Scope and Content of the Noise Element

The State of California, in recognition of the relationship between noise and noise-sensitive uses and the public health concerns associated with noise, has adopted very specific guidelines for Noise Elements in both the Government Code (Section 65302[f]) and the Health and Safety Code (Section 56050.1). These guidelines include a requirement for defining projected future noise conditions in the form of noise exposure contours, which present information in a manner similar to topographic map contours. This noise information serves as the basis for developing guidelines for identifying compatible land uses, identifying the proper distribution of land uses on the General Plan Land Use Policy Map and establishing appropriate development standards.



[1] Arthur Schopenhauer. *Studies in Pessimism.* 1851.

[2] Workplace noise affecting individuals is regulated by State and Federal law and is not covered by the General Plan. Similarly, the Noise Element does not address isolated noise problems, such as barking dog s, leaf blowers or loud stereo s.

Toward these ends, this Noise Element includes the following sections:

- Understanding Noise and How It Affects Us
- Sources of Noise in Riverside
- Future Noise Conditions
- Minimizing Noise Impacts

As noted in the Introduction to this General Plan, several Federal, State and local agencies have adopted legislation and plans intended to minimize exposure of people to loud noise sources. These include:

See the Introduction for more information on these agencies and plans.

- Federal Transit Administration
- Federal Aviation Administration
- U.S. Department of Housing and Urban Development
- California Noise Insulation Standards (Title 24 of the Health and Safety Code)
- City of Riverside Noise Control Code (Title 7 of the Municipal Code)
- Riverside Municipal Airport Master Plan
- March Air Reserve Base AICUZ Study
- March Joint Powers Authority General Plan
- 2004 Riverside County Airport Land Use Compatibility Plan
- 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan

RELATIONSHIP TO OTHER PLAN ELEMENTS

As noted above, policies and plans in the Noise Element work in tandem with the other elements to protect existing and planned land uses from significant noise impacts. Most importantly, the Land Use and Urban Design Element establishes land use patterns that respond to noise conditions, particularly noise associated with industrial areas, the freeways, the many rail lines that traverse the community and Riverside Municipal Airport, Flabob Airport and March Air Reserve Base/March Inland Port. The noise contours for year 2025 will reflect planned roadway configurations and anticipated traffic volumes identified in the Circulation and Community Mobility Element, as traffic noise contributes significantly to high noise levels.

Understanding Noise and How it Affects Us

Noise often is defined as annoying or unwanted sound. Health studies have shown that excessive noise can cause adverse psychological or physiological effects on human beings. Defining noise problems and establishing a regulatory scheme to deal with noise that is both fair and effective requires an understanding of some of the basic characteristics of sound and how it affects people and their activities. Some of the most important characteristics are outlined in Table N–1 (Characteristics of Noise). The figure also provides general comments about how these characteristics affect people. Table N–2 (Noise Levels for Common Noise Sources) describes common noise sources for indoor and outdoor peak noise levels.

While sound levels can be easily measured, the variability in subjective and physical responses to sound complicates the analysis of its impact on people. Sound is created when an object vibrates and radiates part of its energy as acoustic pressure waves through a medium such as air, water or a solid. The ear, the hearing mechanism of humans and most animals, receives these sound pressure waves and converts them to neurological impulses which are transmitted to the brain for interpretation. The interpretation by the auditory system and the brain depends on the characteristics of the sound and on the characteristics of the person hearing it.

Scientists and engineers use two parameters to technically describe the sound environment at any instant in time: amplitude (or sound power) and frequency (or pitch). These two characteristics affect the way people respond to sound.

Amplitude of a sound is a measure of the pressure or force that a sound can exert. Subjectively, we say a sound is louder if it has a greater amplitude than another sound. Thus, the amplitude of sounds can be described either in measurable magnitude or in relative term s of loudness.

Physically, sound pressure is measured in units of decibels (dB). The sound pressure scale is based on the ratio of the sound energy to a reference pressure which is approximately the least sound pressure that people can perceive. Zero dB means the lowest level normally audible, but does not mean zero sound pressure.

Table N-1
Characteristics of Noise

Noise Characteristic	What is Measured and Units of Measurements	Effects on People and Human Activities
Loudness or Sound Pressure	Energy content of sound waves in the air. Unweighted sound pressure level in decibels (dB).	Noise distracts attention from tasks, interferes with verbal communication and prevents or disturbs sleep. At high levels or for long periods, noise causes temporary or permanent hearing loss. At very high levels, noise causes pain. Louder sounds have greater effects, subject to the further considerations below.
Frequency of Pitch	Frequency (cycles per second, or Hertz (Hz) of pressure waves. Frequency distribution by octave or 1/3 octave band. Overall sound pressure level weighted by frequency, such as A-weighting (dB(A)).	The human ear is most sensitive to sounds in the range of human speech, less sensitive to high or low frequencies at the same sound energy.
Tonal content	Pure tones or energy distribution by octave or 1/3 octave frequency band. Special weightings such as Effective Perceived Noise Level in decibels (EPNDB), or simple penalty weightings for pure tones.	High tonal content means identifiable whines or hums, which can be particularly annoying compared to random noise of the same sound energy.
Information content (music, voice, sirens, etc.)	Judgment that sound includes voice, music, etc. No standard measurement scheme or weighting.	Information content draws attention to sounds compared to more random noise of the same sound energy.
Impact noise	Rapid increase in sound pressure or repetitive impacts. Fast response on sound meters used to measure impact noise.	Impact noise (helicopter rotor blade noise, jackhammers, etc.) can be more annoying than other noises of the same sound energy.
Duration of noise events as percentage of 24-hour or other period.	Hourly or other time-averaged energy level (L_{eq}) or statistical sound levels identifying the level exceeded a given percentage of the time (L_{10}, L_{50}).	A noise which lasts longer or is constant has more impact than one of the same sound energy that occurs only occasionally or for a short period of time.
Degree of intrusion of noise events over background noise levels	Difference between peak and ambient noise levels. Statistical sound levels, peak noise levels compared to average or ambient.	Individual distinct noise events such as aircraft overflights or loud vehicle pass-by events of a given noise level are more intrusive if they occur in a quiet environment.
Time of day	24-hour or annual average level with weightings for evening and night noise such as CNEL or L_{dn}.	People and their activities are generally more sensitive to noise during the nighttime hours because (1) background noise is generally lower, making noise of a given noise level more intrusive and (2) sleep is easily interrupted by noise.
Importance of noise source	Judgment of social value of noise source.	People are generally willing to accept more disturbance from noise they consider necessary, such as from trash collection, emergency vehicle sirens, police helicopters, etc.

Source: Noise Existing Conditions Report, Cotton/Bridges/Associates, 2004.

TABLE N–2
REPRESENTATIVE ENVIRONMENTAL NOISE LEVELS

Common Outdoor Activities	*Noise Levels (dbA)*	*Common Indoor Activities*
	110	Rock Band
Jet Fly-over at 1000 feet	105	
	100	
Gas Lawnmower at 3 feet	95	
	90	
	85	Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	80	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime	75	
Gas Lawnmower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area	65	Normal Speech at 3 feet
Heavy Traffic at 300 feet	60	
	55	Large Business Office
Quiet Urban Area during Daytime	50	Dishwasher in Next Room
	45	
Quiet Urban Area during Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime	35	
	30	Library
Quiet Rural Area during Nighttime	25	Bedroom at Night, Concert Hall (background)
	20	
	15	Broadcast/Recording Studio
	10	
	5	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation, Technical Noise Supplement, 1998.

Frequency of a sound is expressed in units of cycles per second or Hertz (Hz), referring to the number of times per second the acoustic pressure wave peaks. Subjectively, a sound that has more cycles per second than another is higher pitched. The human hearing system is not equally sensitive to sound at all frequencies and is most sensitive to sounds in the frequency range of human speech, from four hundred to two thousand cycles per second. The most sensitive people can hear sounds ranging from a little below twenty Hz to somewhat above twenty thousand Hz. As people age, their sensitivity to high frequencies tends to fall. Acoustical energy at frequencies above the range of human hearing is referred to as ultrasonic, or ultrasound. At frequencies below the range of human hearing, acoustical energy is referred to as infrasonic, or infrasound and is experienced as vibration.

Noise-Sensitive Land Uses. The term "noise-sensitive land uses" refers to land uses that are particularly sensitive to noise at levels commonly found in the urban environment. This category includes residential uses, schools, hospitals, churches, outdoor speculative sports facilities, performing arts facilities and hotels and motels.

SOURCES OF NOISE IN RIVERSIDE

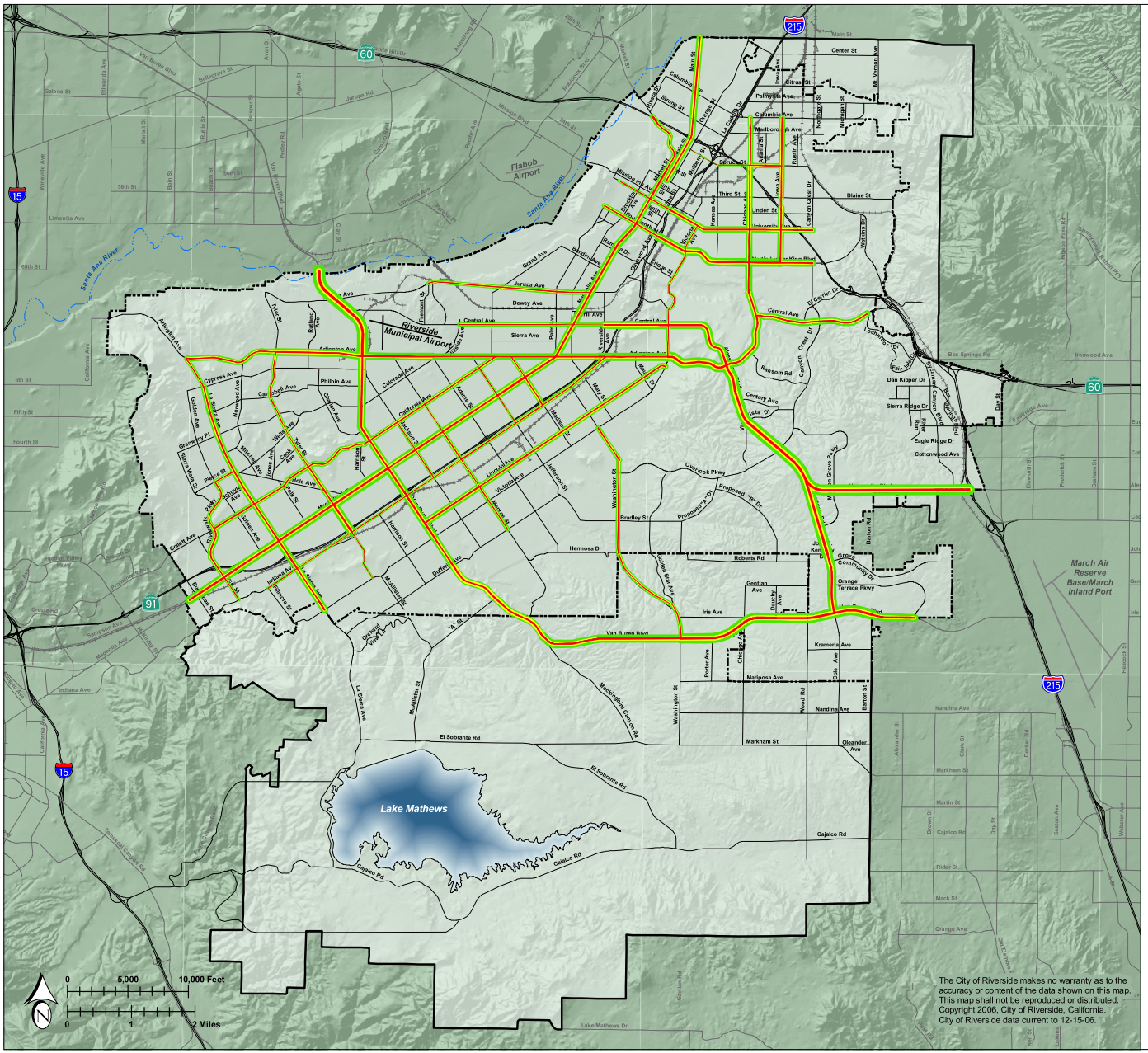
TRANSPORTATION-RELATED NOISE

Transportation activity represents the principal ambient noise source in Riverside. These sources include:

- Traffic on major arterial roadways within the City
- Traffic on the SR-91, SR-60 and I-215 freeways
- Train movement on the railroad lines
- Flight activity associated with Riverside Municipal Airport, Flabob Airport and March Air Reserve Base/March Inland Port

Local Roadway Traffic Noise

During peak travel hours, heavy traffic on Riverside's streets causes higher noise levels compared to noise levels during non-peak hours. The most heavily traveled roadways include Van Buren Boulevard, Alessandro Boulevard, Arlington Avenue, Tyler Street, La Sierra Avenue, Magnolia Avenue, University Avenue, and Martin Luther King Boulevard, among others. These roadways have been designed specifically to carry large volumes, although long-established land use patterns have placed residential uses along some portions of these streets. Other areas where residential neighborhoods are exposed to traffic noise include the Downtown and University of California, Riverside areas, as shown on Figure N–1 (2003 Roadway Noise).



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

EXISTING NOISE

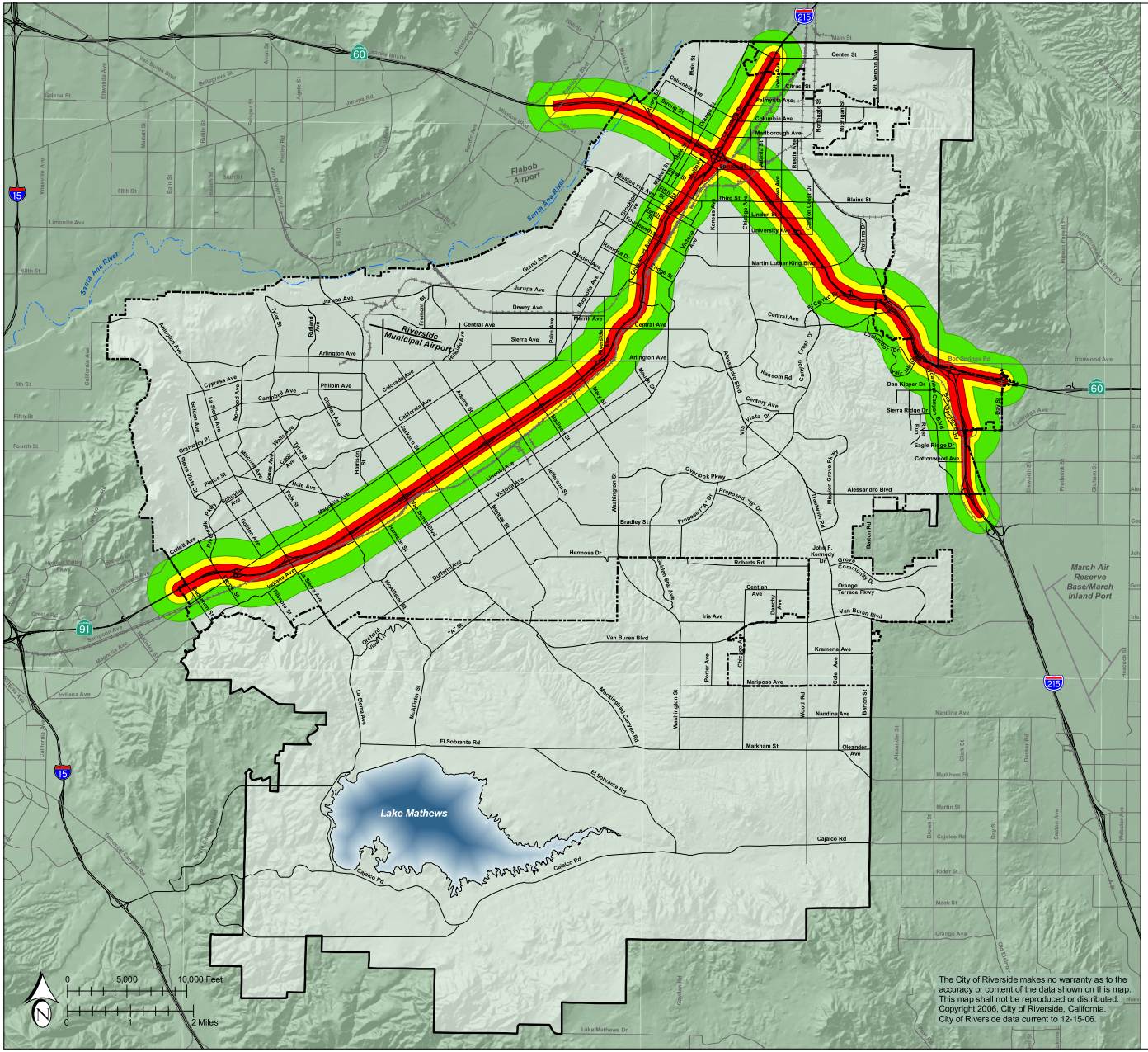
- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-1

2003 ROADWAY NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

EXISTING NOISE

- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-2

2003 FREEWAY NOISE

Freeway Noise

Freeways are a major noise source in many jurisdictions. As shown on Figure N–2 (2003 Freeway Noise), noise contours for the 60 CNEL can extend as far as 3,500 feet from the I-215 Freeway east of the SR-91 /I-215 interchange. More modern freeway design and construction projects integrate sound walls, such as the significant sound walls and depressed configuration of I-210 through eastern Los Angeles and western San Bernardino counties and the I-5 widening through Orange County. To address freeway noise along long-established routes, the California Department of Transportation (Caltrans) has a priority program and a policy to put sound walls adjacent to residential properties. If a jurisdiction wishes to mitigate freeway noise before scheduled and funded Caltrans improvements are planned, that jurisdiction can fund sound walls or other mitigating elements, with Caltrans later providing reimbursement in accordance with its priority plan.

Riverside is traversed by the SR-91, SR-60 and I-215 freeways. Improvements to SR-91 that began in 1998 resulted in significant new sound walls and some relief from the noise associated with increasing regional traffic volumes.

Although sound walls will reduce noise impacts, freeway noise will remain an issue for noise-sensitive land uses, particularly residential development.

Railroad Noise

Both the Union Pacific Railroad (UPRR) and the Burlington Northern Santa Fe Railroad (BNSF) operate rail lines that traverse Riverside, each carrying freight trains. These lines are also shared by Metrolink Commuter Rail and Amtrak Passenger Rail. Train noise, however intermittent, is a significant source of noise due to its magnitude and the associated vibration effects. Train noise incorporates the sounds of the locomotive engine, wheel-on-rail noise and train whistles near at-grade roadway crossings, as shown in Figure N–3, 2003 Railway Noise.

Riverside residents living near rail lines have cited the loud, long train whistles as particularly irksome. State law and the Federal Railroad Administration's code of operating rules and regulations require locomotive engines to sound the train's horn one-quarter mile in advance of the crossing and to continue to sound the horn until the train arrives at the crossing. If a train horn is to be an effective warning device for motorists, it must provide a sound level capable of initiating a response from the driver as the train approaches the crossing. Unfortunately, the sound level required to achieve that response and the location of the train relative to the crossing creates a significant bothersome noise.

An effective alternative to train horns has been developed. The automated horn system is a stationary horn activated by the railroad- highway grade crossing system. It is mounted at the crossing, rather than on the train, to deliver a longer, louder and more consistent audible warning to motorists and pedestrians while eliminating noise pollution in neighborhoods for more than a half a mile along the rail corridor. As of 2004, the City has installed this so-called "horn on a stick" device at six railroad crossings in the City. The streets of these railroad crossings include Streeter Avenue, Palm Avenue, Brockton Avenue, Magnolia Avenue, Riverside Avenue and Panorama Road.

The two noise diagrams in Figure N–4 (Train Horn Comparison) depict the area impacted by the sound of a train horn versus an automated horn system. The comparison shows a dramatic difference between the areas impacted at specific decibel levels. Figure N–4 illustrates that the area impacted by the automated horn system is a fraction of the size of the 80 decibel contour produced by the train horn.

Airport Noise

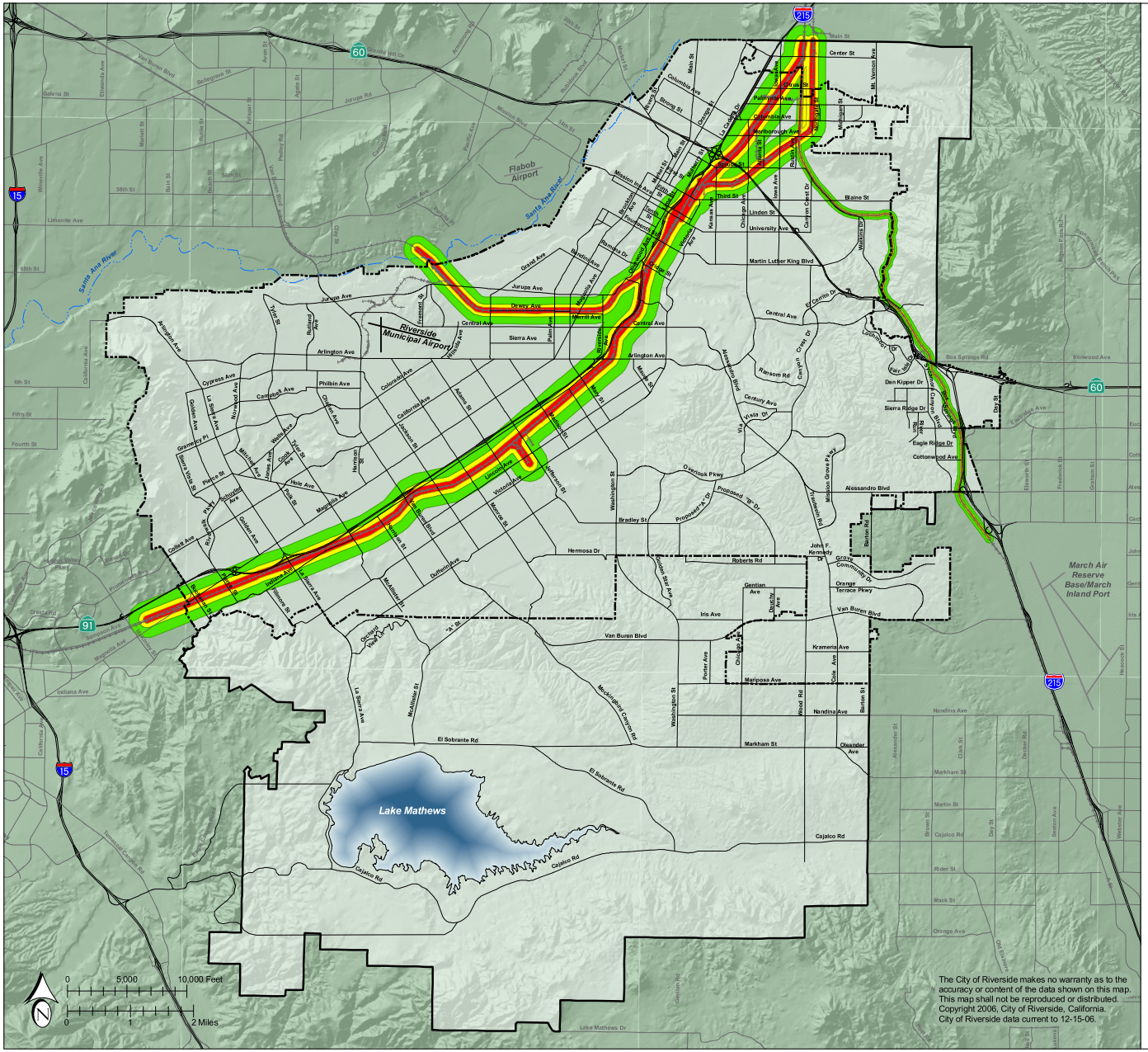
Refer to the Land Use and Urban Design Element for a policy that adds an Airport Protection Overlay Zone to the City's zoning map.

Only one air facility is located within the Planning Area, but operations at two other air facilities just outside City and Planning Area boundaries have local impacts.

Riverside Municipal Airport, a general aviation airport, supports one hundred thousand annual flight operations, including corporate jet activity. The airport covers a total of four hundred fifty-one acres and includes two runways. This is the only air facility located within the Planning Area.

Flabob Airport, a privately operated, primarily recreation-oriented airport, is located just north of the Planning Area across the Santa Ana River in the unincorporated community of Rubidoux.

March Air Reserve Base/March Inland Port, or MARB/MIP, is home to the 452nd Air Mobility Wing of the U.S. Air Force and will expand operations to include the March Inland Port during the early 21st century. Military and civilian aircraft utilizing MARB/MIP produce substantial levels of noise over the southeastern portion of the City and planning area. Plans call for 75,104 annual operations with military aircraft accounting for 54,104 72% of the operations as noted in the 2014 March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan (March ARB/IPA ALUCP).



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

EXISTING NOISE

- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-3

2003 RAILWAY NOISE

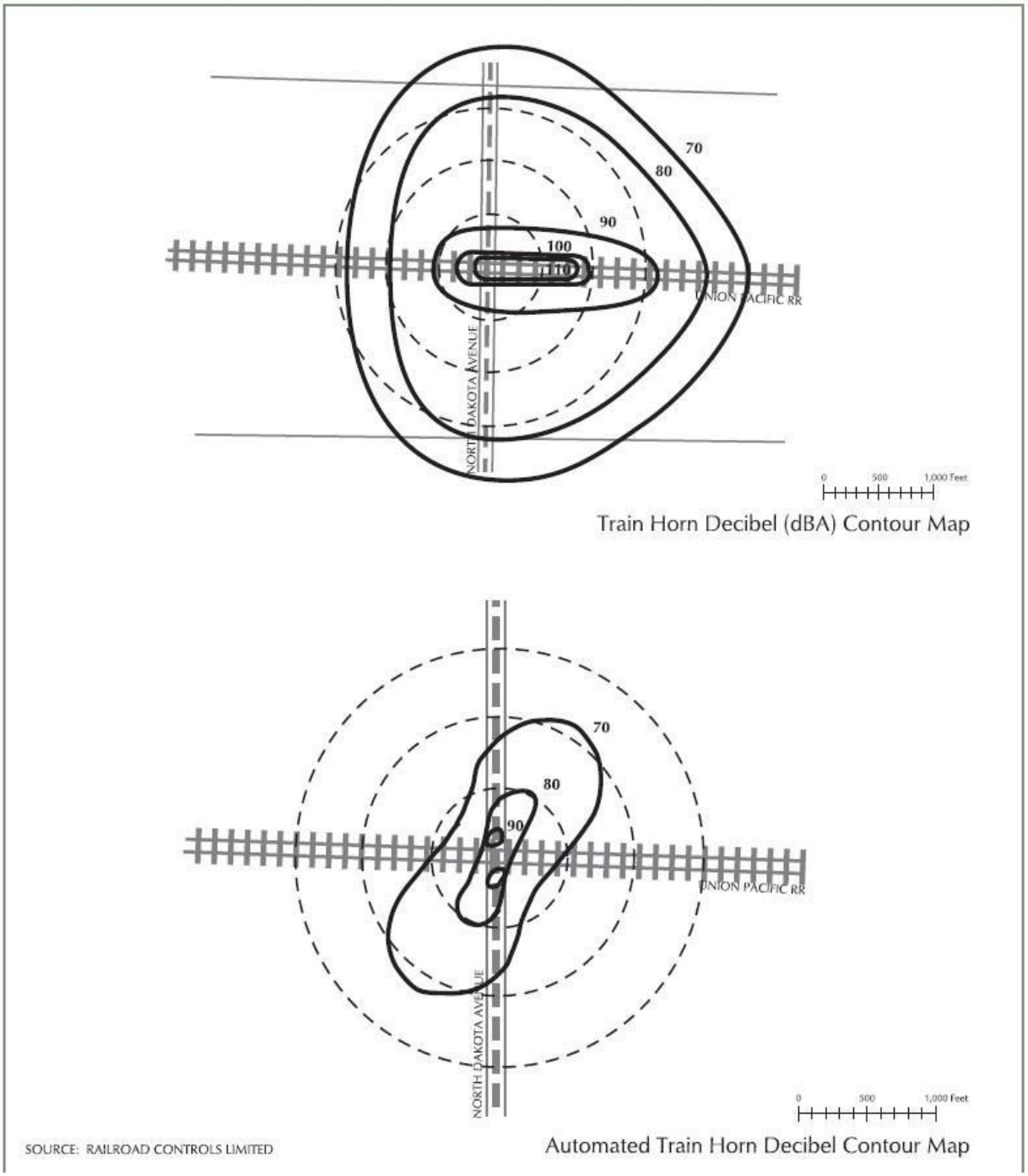


FIGURE N-4
TRAIN HORN COMPARISON

Although MARB/MIP is located outside of the City and its sphere of influence, noise from the facility affects both the City and the sphere.

The Public Safety and Land Use Elements contain additional information on airports in and adjacent to Riverside.

The City has worked with the March Joint Powers Authority to adjust air traffic patterns into and out of the MARB/MIP. Efforts to minimize exposure of sensitive land uses to excessive noise continue; although these must take into consideration topographic conditions surrounding MARB/MIP, which also constrain flight patterns. Established patterns associated with MARB/M IP are anticipated to continue into the future, resulting in ongoing noise levels.

STATIONARY SOURCE NOISE

Industrial Noise

Industrial businesses can have a varying degree of impact on adjacent uses. Industrial operations often involve use of mechanical equipment, generators and vehicles that contribute to noise levels at industrial sites, particularly for outdoor activities. Many of Riverside's neighborhoods have homes in close proximity to industrial uses.

Title 7 of the Riverside Municipal Code establishes noise performance criteria to guard against exposure of residential and other noise-sensitive uses to loud industrial-related noise. The noise/land use compatibility criteria in Table N–1 (Characteristics of Noise) will be used in assessing siting of new industrial uses.

Construction Noise

Construction noise typically involves the loudest common urban noise events associated with building demolition, grading, construction, large diesel engines and truck deliveries and hauling. Construction activity, although temporary at any given location, can be substantially disruptive to adjacent uses during the construction period. Riverside Municipal Code Section 7 .35.010(B)(5) regulates the allowable hours of construction activity to 7:00 A.M. to 7:00 P.M. on weekdays and 8:00 A.M. to 5:00 P.M. on Saturdays, with no construction activities allowed on Sunday or Federal holidays. In addition, the Municipal Code limits noise levels from construction activities to the maximum permitted exterior noise level for the affected land use.

Infrastructure improvements such as street widenings can also be a source of noise. Street improvement projects will incorporate the City's acoustical assessment procedure to minimize noise impacts.

Mechanical Equipment Noise

The motors, pumps and fans that cool and heat our buildings produce point-source noise that most directly affects adjacent land uses. Frequently, this equipment includes components of pure tone noise from the rotational frequency of motors. Although noise levels are generally low from these sources, the fact that such sources may operate continuously and may include pure tones that make them audible at a substantial distance creates potential for conflict. The City's Zoning Code and Municipal Code provisions generally address these conflicts.

Portable Power Equipment

Leaf blowers, lawn mowers, portable generators, electric saws and drills and other similar equipment that people use to maintain their properties create frequent noise during daylight hours. Such disruptions to the ambient sound environment are ubiquitous in the modern city and can produce very high noise levels at the location of the work.

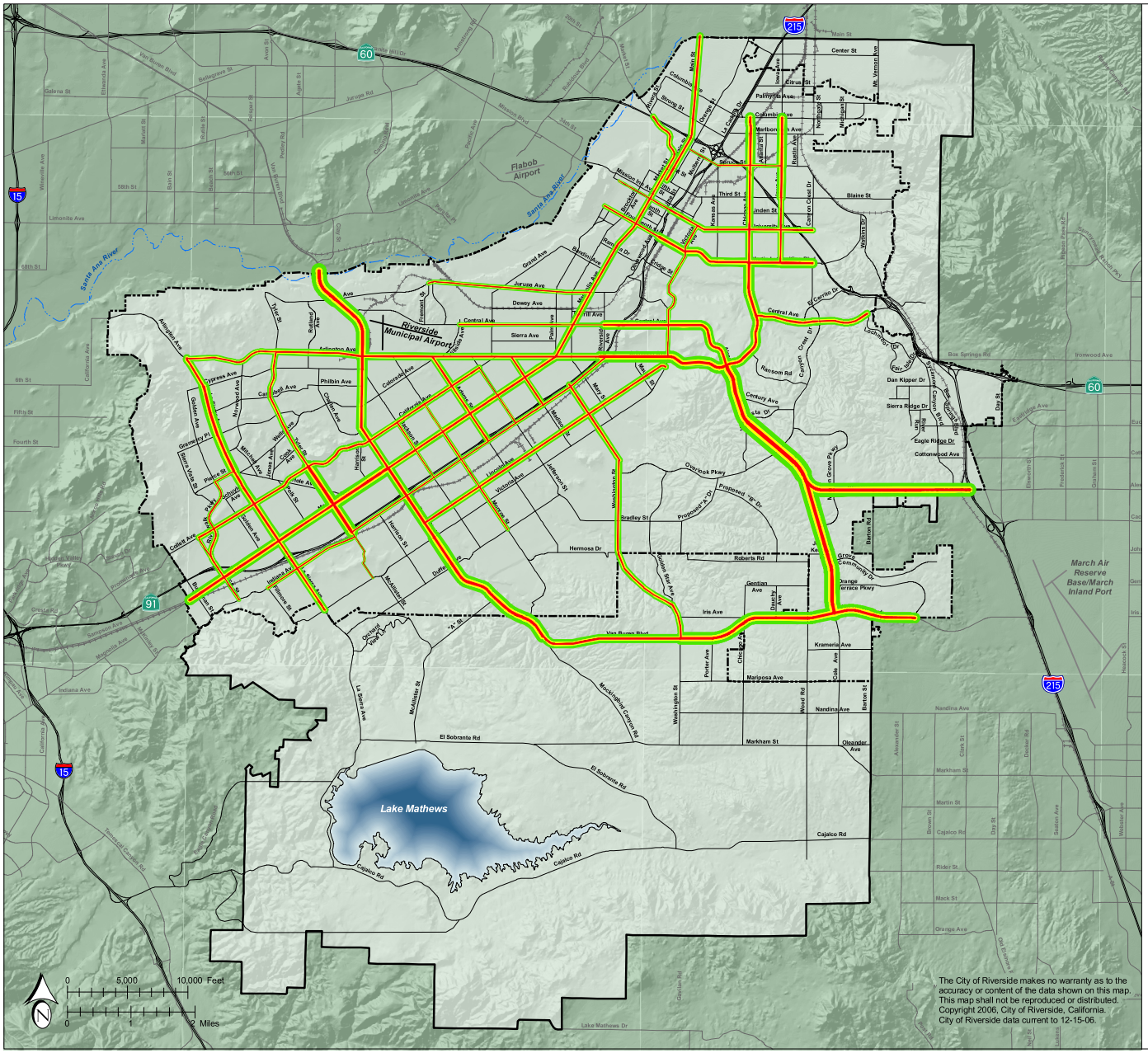
Amplified Sound

Amplified sound includes noise from personal or home audio equipment, automotive audio equipment, outdoor loudspeakers such as those used for paging and amplified sound at music or theatrical performances. Because this sound typically includes music or speech, it is potentially more detectable and more annoying than other sounds of the same noise level. Section 7.35.010 of the Municipal Code establishes limitations on time and magnitude of noise for these sources.

FUTURE NOISE CONDITIONS

Data, including a location map of measurement sites used to create the projected noise contours, can be found in the General Plan EIR.

The most significant noise sources in Riverside — roadways, freeways, railways and air facilities— will continue generating noise into the future. Figure N– 5 (2025 Roadway Noise) identifies the projected noise contours for year 2025 largely attributable to roadway traffic; Figure N–6 (2025 Freeway Noise) identifies noise projected from freeway traffic. Projected noise from railroad activity is shown in Figure N–7 (2025 Railway Noise). Noise levels from these surface sources are expected to increase with increased traffic levels anticipated in the Planning Area by 2025.



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

PROPOSED NOISE

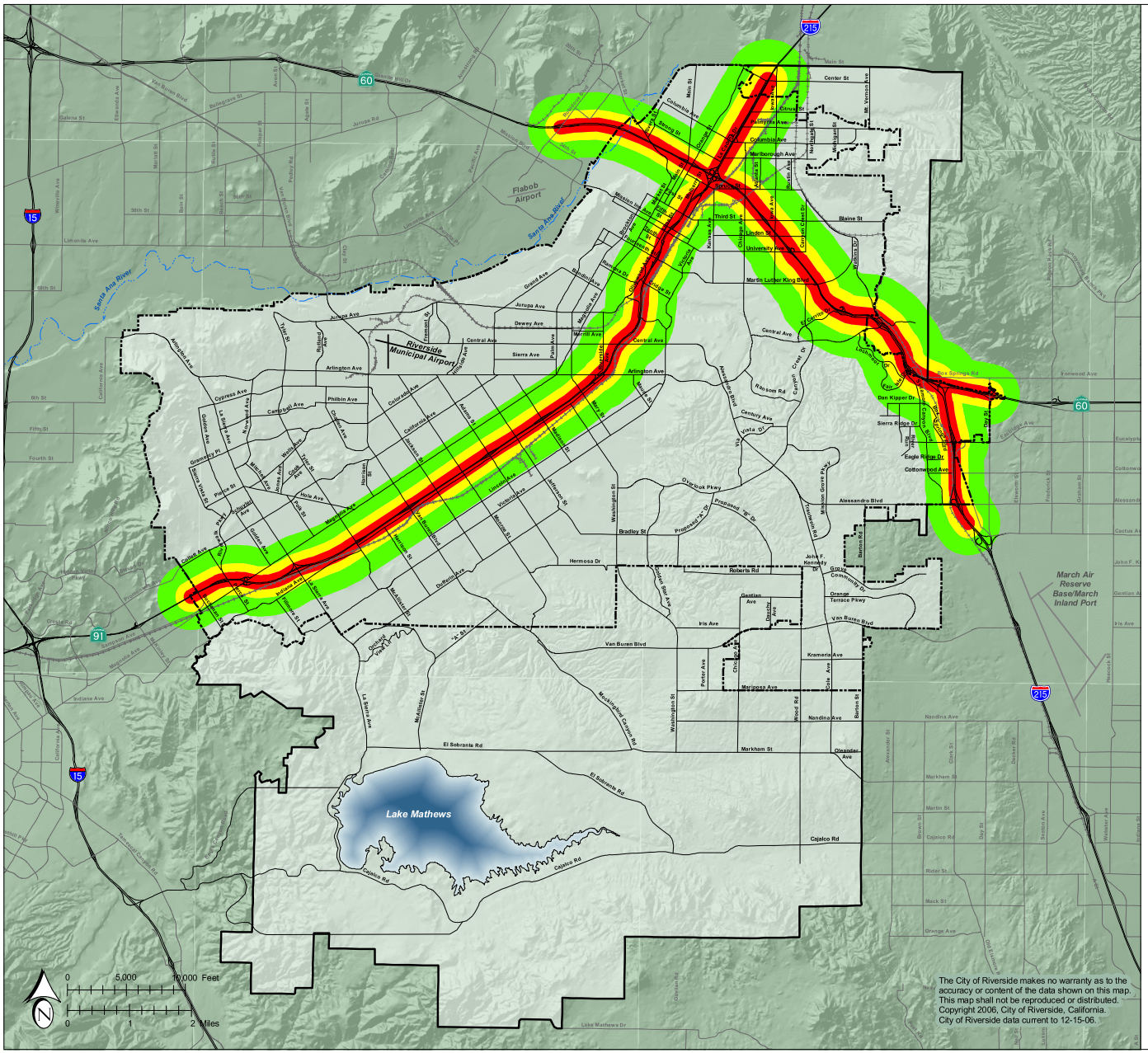
- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-5

2025 ROADWAY NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

PROPOSED NOISE

- 70 CNEL
- 65 CNEL
- 60 CNEL

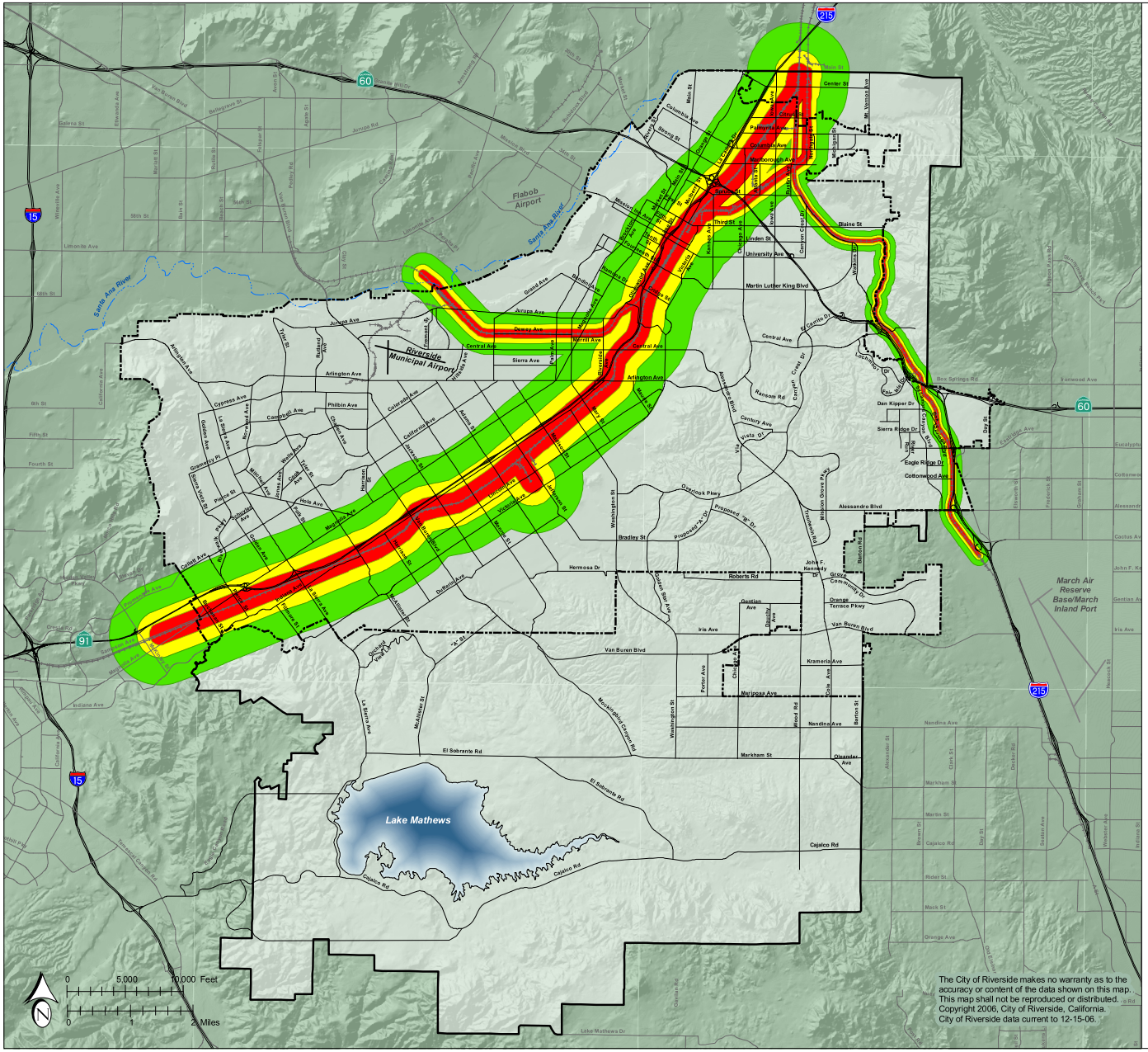
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-6

2025 FREEWAY NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

PROPOSED NOISE

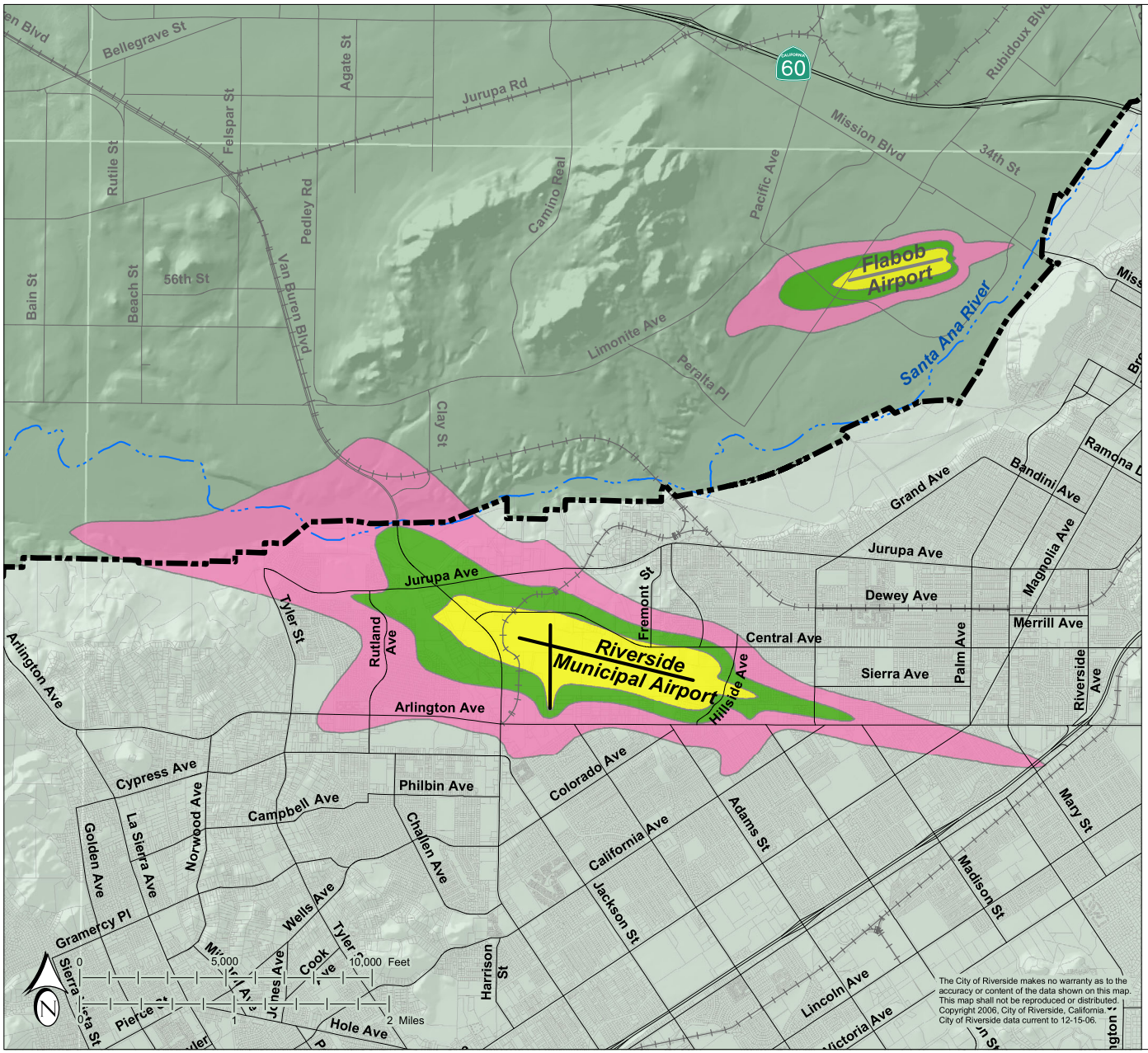
- 70 CNEL
- 65 CNEL
- 60 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

NOTE: FOR AN EXPLANATION OF CNEL METHODOLOGY, PLEASE REFER TO THE NOISE ELEMENT TEXT.

SOURCE: CITY OF RIVERSIDE, AND P&D CONSULTANTS, 2005

Figure N-7

2025 RAILROAD NOISE



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

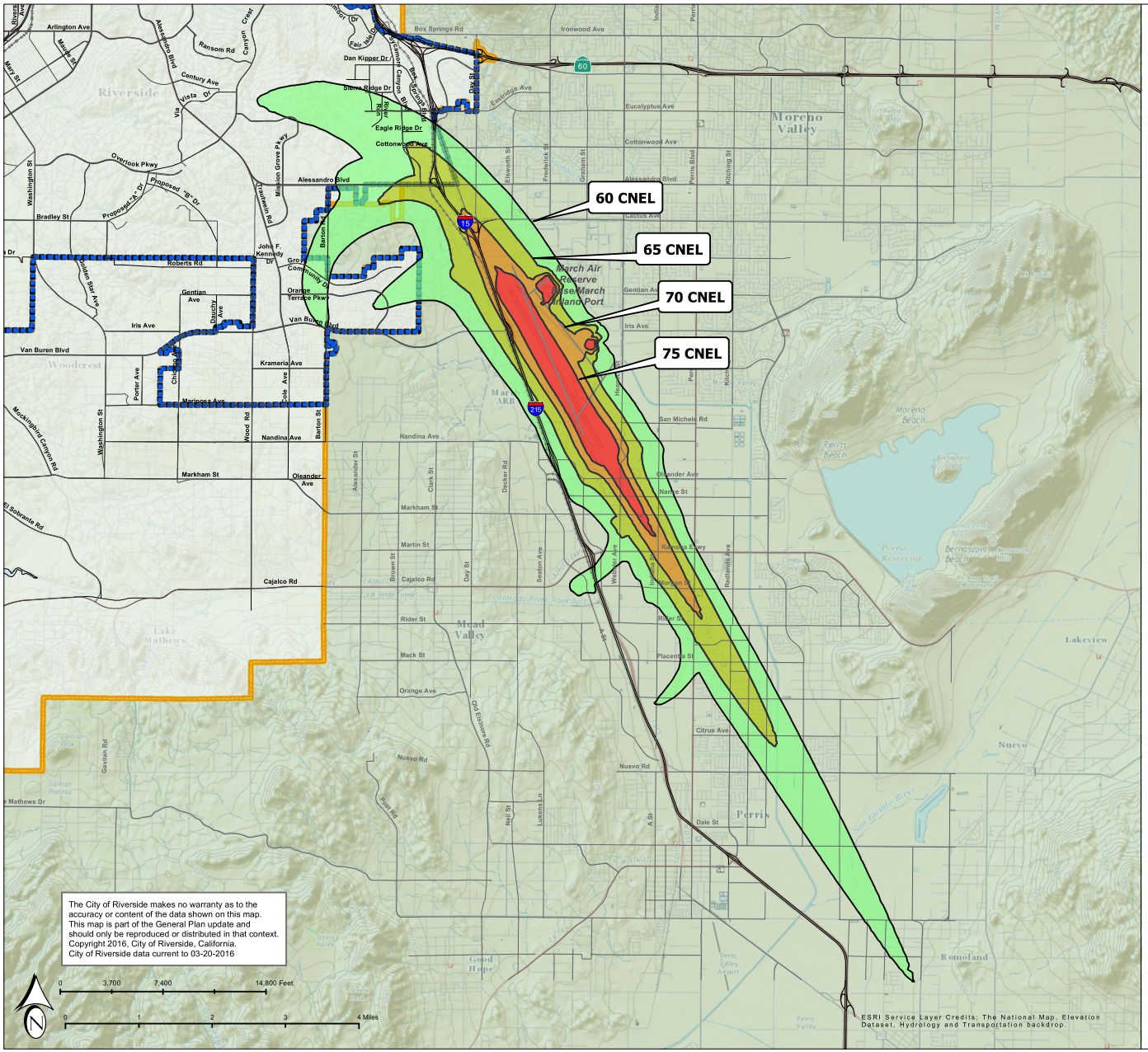
NOISE CONTOURS

- 65 CNEL
- 60 CNEL
- 55 CNEL
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

SOURCE: RIVERSIDE COUNTY AIRPORT LAND USE COMPATIBILITY PLAN, ADOPTED DECEMBER 2004 FOR FLABOB AIRPORT AND MARCH 2005 FOR RIVERSIDE MUNICIPAL AIRPORT.

Figure N-8

RIVERSIDE AND FLABOB AIRPORT NOISE CONTOURS



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

RIVERSIDE COUNTY AIRPORT
LAND USE COMPATIBILITY PLAN

Noise Contours

Decibals

- 60 - 65 dB CNEL
- 65 - 70 db CNEL
- 70 - 75 db CNEL
- 75 + db CNEL

Boundary Lines

- Riverside City Boundary
- Riverside Sphere of Influence

Projected Activity Level

Annual Operations 75,104
Average Annual Day 206

Noise Contour Notes:
Contours represent composite of noise contours from four sources:

Forecasts and noise contours from the Air Installation Compatible Use Study for March Air Researve Base (August 2005).

Environmental Assessment for Proposed Military Construction and Total Air Force Reserve Integration Command at March Air Reserve Base (June 2010)

Environmental Imapct Report for March Inland Port General Aviation Faciities Development (March Joint Powers Authority, August 2012)

F15 Aircrate Conversion Environmental Impact Statement 144th Fighter Wing California Air National Guard Fresno-Yosemite International Airport (National Guard Bureau March 2013)

CNEL = Community Noise Equivelent Levels

Figure N-9

March Air Reserve Base/ Inland Port Airport

AIRPORT NOISE IMPACT AREA

Figure N–8 (2025 Riverside and Flabob Airport Noise) focuses on noise impacts projected for these small facilities by the Riverside County Airport Land Use Commission. Figure N–9 indicates future noise levels associated with March Air Reserve Base/March Inland Port consistent with the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan (March ARB/IPA ALUCP) adopted by the Riverside County Airport Land Use Commission in November, 2014.

The Land Use Policy Map (Figure LU-10 in the Land Use and Urban Design Element) has been developed to avoid placing intensive new uses with the airport-influenced areas. These policies are carried out through congruent zoning regulations. Development controls include limiting development within areas subject to high noise levels and limiting the intensity and height of development within aircraft hazard zones. The Riverside County Airport Land Use Compatibility Plan (CLUP), adopted in October 2004 by the Riverside County Airport Land Use Commission, and the 2014 March ARB/IPA ALUCP designates zones of airport-influenced areas for every airport in Riverside County and proposes a series of policies and compatibility criteria to ensure that both aviation uses and surrounding areas may continue.

The noise contours in Figures N–5 through N–9 assist in setting policies for establishing new land uses and appropriate mitigation for properties that will continue to be exposed to higher noise levels.

Riverside's primary goal with regard to community noise is to minimize the exposure of new residential development, schools, hospitals and similar noise-sensitive uses to excessive or unhealthy noise levels to the greatest extent possible. Toward this end, this Element establishes the noise/land use compatibility guidelines set forth in Figure N–10 (Noise/Land Use Noise Compatibility Criteria) for outdoor noise.

The compatibility guidelines recognize and respond to the many different noise environments in Riverside: the relative quiet within the greenbelt area, the sounds typical in suburban neighborhoods and the higher activity areas such as Downtown and within mixed-use districts. As a matter of policy, the City supports new residential development within already urbanized areas where ambient noise levels may be higher than those experienced in neighborhoods located on the urban periphery. This is in an effort to promote “smart growth,” mixed use development, making more efficient use of land and resources.

Interior noise levels for new residential development, regardless of location within the Planning Area, will be required to comply with standards set forth in Title 24 of the State Health and Safety Code. New construction may need to incorporate special insulation, windows and sealants in order to ensure that interior noise levels meet Title 24 standards.

Minimizing Noise Impacts

Noise and Land Use Planning

Primary noise sources in the City will not go away. The City will utilize the noise/land use compatibility guidelines outlined in Figure N–10 (Noise/Land Use Compatibility Criteria) in making land use decisions. These compatibility guidelines show a range of noise standards for various land use categories. Depending on the ambient environment of a particular community, these basic guidelines m ay be tailored to reflect existing noise and land use characteristics. The matrix defines noise in terms of CNEL and expressed in dB that measure sound intensity. Noise levels occurring during nighttime hours are weighted more heavily than during the daytime. Additionally, the City provides levels of acceptable noise exposure based on the sensitivity of specific land uses (Municipal Code Section 7.25.010). The City will pursue proactive measures to limit additional exposure of sensitive uses and to address longstanding noise issues.

Land uses deemed the most noise sensitive include amphitheaters, concert halls, auditoriums and meeting halls. Many jurisdictions consider residential uses particularly noise sensitive because families and individuals expect to use time in the home for rest and relaxation; intrusive noise can interfere with such pursuits. Some variability in standards for noise sensitivity may apply to different densities of residential development, specifically infill and mixed use developments; single family uses are frequently considered the most sensitive. New construction or development should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

Sensitive receptors must also be protected from excessive noise associated with commercial and industrial businesses and agricultural activities. Application and enforcement of the City Noise Control Code will continue to be the primary means of regulating and controlling so-called point-source noise. During the preliminary stages of the development process, potential noise impacts and appropriate mitigation will be identified.

Similarly, enforcement of the Noise Control Code will address nuisance noise such as loud animals or birds, loud audio equipment, domestic power tools, vehicle repair and testing, powered motor vehicles and construction activities.

Objective N–1:	**Minimize noise levels from point sources throughout the community and, wherever possible, mitigate the effects of noise to provide a safe and healthful environment.**

Policy N–1.1: Continue to enforce noise abatement and control measures particularly within residential neighborhoods.

Policy N–1.2: Require the inclusion of noise-reducing design features in development consistent with standards in Figure N–10 (Noise/Land Use Compatibility Criteria), Title 24 California Code of Regulations and Title 7 of the Municipal Code.

Policy N–1.3: Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.

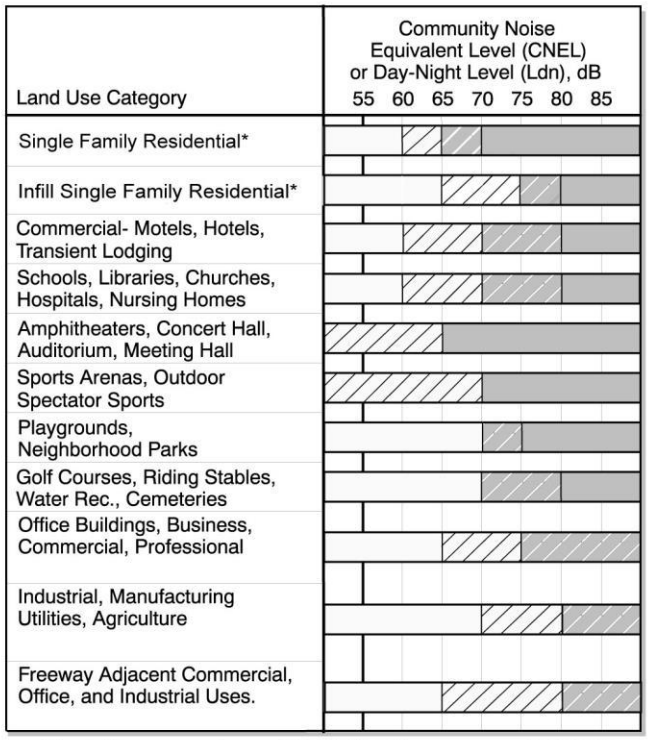
Policy N–1.4: Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

Policy N–1-5: Avoid locating noise-sensitive land uses in existing and anticipated noise-impacted areas.

Policy N–1.6: Educate the public about City noise regulations.

Policy N–1.7: Evaluate noise impacts from roadway improvement projects by using the City's Acoustical Assessment Procedure.

Policy N–1.8: Continue to consider noise concerns in evaluating all proposed development decisions and roadway projects.



Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB
Very noisy urban areas near arterials, freeways or airports.

75+ dB
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

Normally Acceptable
Specific land use is satifactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air condition-ing, will normally suffice.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

Conditionally Unacceptable
New construction or development should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

* For properties located within airport influence areas, acceptable noise limits for single family residential uses are established by the Riverside County Airport Land Use Compatibility Plan.

SOURCE: STATE DEPARTMENT OF HEALTH, AS MODIFIED BY THE CITY OF RIVERSIDE

FIGURE N-10
NOISE/LAND USE NOISE COMPATIBILITY CRITERIA

Objective N–2: **Minimize the adverse effects of airport-related noise through proper land use planning.**

Policy N–2.1: Ensure that new development can be made compatible with the noise environment by using noise/land use compatibility standards (Figure N–10 – Noise/Land Use Noise Compatibility Criteria) and the airport noise contour maps (found in the Riverside County Airport Land Use Compatibility Plans) as guides to future planning and development decisions.

See the Land Use and Urban Design, Circulation and Community Mobilityand Public Safety Elements for more information on Airports.

In particular, review Objectives LU-21, LU-22, CCM-11 and PS-4.

Policy N–2.2: Avoid placing noise-sensitive land uses (e.g., residential uses, hospitals, assisted living facilities, group homes, schools, day care centers, etc.) within the high noise impact areas (over 60 dB CNEL) for Riverside Municipal Airport and Flabob Airport in accordance with the Riverside County Airport Land Use Compatibility Plan.

Policy N–2.3: Support efforts of the Federal Aviation Administration and other responsible agencies to require the development of quieter aircraft.

Policy N–2.4: Work with the Federal Aviation Administration and neighboring airport authorities to minimize the noise impacts of air routes through residential neighborhoods within the City.

Policy N–2.5: Utilize the Airport Protection Overlay Zone, as appropriate, to advise landowners of special noise considerations associated with their development.

Refer to the Land Use and Urban Design Element for additional objectives and policies related to March Air Reserve Base and Inland Port.

In particular, review Objectives LU-21, LU-22.

Objective N–3: **Ensure the viability of March Air Reserve Base/March Inland Port.**

Policy N–3.1: Avoid placing noise-sensitive land uses (e.g., residential uses, hospitals, assisted living facilities, group homes, schools, day care centers, etc.) within the high noise impact areas (over 65 dB CNEL) for March Air Reserve Base/March Inland Port in accordance with the Riverside County 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan.

Policy N–3.2: Work with the Riverside County Airport Land Use Commission and the March Joint Powers Authority to develop noise/land use guidelines and City land use plans that are consistent with ALUC policies.

Policy N–3.3: Carefully consider planned future operations of the March Air Reserve Base and March Inland Port in land use decisions for properties located within the airport-influenced area.

ADDRESSING TRANSPORTATION NOISE

The most efficient and effective means of controlling noise from transportation systems is to reduce noise at the source. However, the City has no direct control over noise produced by trucks, cars and trains because State and Federal regulations preempt local laws. Given that the City cannot control this noise at the source, City noise programs focus on reducing the impact of transportation noise along freeways, arterial roadways and rail corridors.

Site planning, landscaping, topography and the design and construction of noise barriers are the most common and effective method of alleviating vehicular traffic and train noise impacts. Setbacks and buffers can also be used to achieve noise reduction.

Noise-attenuating barriers can and will be incorporated into new development projects to reduce noise exposure. The effectiveness of the barrier will depend upon: 1) the relative height and materials of the barrier; 2) the noise source; 3) the affected area; and 4) the horizontal distance between the barrier and the affected area.

Freeway noise associated with SR-91 has largely been addressed to greatest extent practicable with recent improvements. The SR-60/I-215 upgrade project includes elements to shield freeway noise, particularly along areas of the freeways adjoining residential areas. The City will continue to pursue mitigation with Caltrans for any remaining areas not addressed by freeway enhancement projects.

Mitigating rail noise represents one of the biggest challenges the City will continue to face. Eliminating all at-grade crossings for existing railways would significantly reduce noise impacts and solve road/rail traffic conflicts, but this solution involves costs beyond the collective resources of the City, Federal agencies and railroad owners/operators. Thus, City efforts will focus on minimizing noise associated with train horns, prioritizing grade separations and implementing noise reduction programs.

Objective N–4:	**Minimize ground transportation-related noise impacts.**

Policy N–4.1: Ensure that noise impacts generated by vehicular sources are minimized through the use of noise reduction features (e.g., earthen berms, landscaped walls, lowered streets, improved technology).

Policy N–4.2: Investigate and pursue innovative approaches to reducing noise from railroad sources.

Policy N–4.3: Identify and aggressively pursue funding sources to provide grade separations and sound walls along train routes as noise reduction measures.

See Policies CCM-12.5 and PS–4.8 for additional information relating to road/rail grade separations..

Policy N–4.4: Prioritize locations for implementing road/rail grade separations.

Policy N–4.5: Use speed limit controls on local streets as appropriate to minimize vehicle traffic noise.

Title 7 - NOISE CONTROL

Chapter 7.05 - POLICY AND INTENT

7.05.010 - Policy and intent.

It is determined that certain noise levels are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore, the City Council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

In order to control unnecessary, excessive and/or annoying noise in the City, it is declared to be the policy of the City to prohibit such noise generated by the sources specified in this chapter. It shall be the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment.

(Ord. 6273 § 1 (part), 1996)

Chapter 7.10 - DEFINITIONS

7.10.010 - Definitions generally.

For the purposes of this title, the words and phrases defined in this chapter shall have the meanings respectively ascribed to them by this chapter.

7.10.015 - A-weighted sound level.

"A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighing network. The level is designated dB(A) or dBA.

(Ord. 6273 § 1(part), 1996)

7.10.020 - Agricultural property.

"Agricultural property" means a parcel of real property which is developed for agricultural and incidental residential purposes which is located within any permitted zone.

(Ord. 6273 § 1(part), 1996)

7.10.025 - Ambient noise level.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding an alleged offensive noise, at the location and approximate time at which the comparison with the offensive noise is to be made. The ambient noise level constitutes the normal or existing level of environmental noise at a given location.

(Ord. 6273 § 1(part), 1996)

7.10.030 - Commercial purpose.

"Commercial purpose" means the use, operation or maintenance of any sound amplification equipment for the purpose of advertising any business, goods or services, or for the purposes of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment.

(Ord. 6273 § 1(part), 1996)

7.10.035 - Construction.

"Construction" means any site preparation including grading, building, fabricating, assembly, substantial repair, alteration, or similar action.

(Ord. 6273 § 1(part), 1996)

7.10.040 - Community support land use category.

"Community support land use category" means areas developed with schools, libraries, fire stations, hospitals and similar uses in any zone.

(Ord. 6273 § 1(part), 1996)

7.10.045 - Cumulative period.

"Cumulative period" means a total period of time composed of time segments which may be continuous or discontinuous.

(Ord. 6273 § 1(part), 1996)

7.10.050 - Decibel (dB).

"Decibel (dB)" means a unit for measuring amplitude of a sound, equal to 20 times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

(Ord. 6273 § 1(part), 1996)

7.10.055 - Demolition.

"Demolition" means any dismantling, intentional destruction or removal of structures, site improvements, landscaping or utilities.

(Ord. 6273 § 1(part), 1996)

7.10.060 - Emergency.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

(Ord. 6273 § 1(part), 1996)

7.10.065 - Emergency work.

"Emergency work" means work made necessary to restore property to a safe condition following a physical trauma or property damage caused by an emergency or work necessary to prevent or minimize damage from a potential emergency.

(Ord. 6273 § 1(part), 1996)

7.10.070 - Fixed noise source.

"Fixed noise source" means a stationary device which creates sounds from a fixed location, including residential, agricultural, industrial and commercial machinery and equipment, pumps fans, compressors, air conditioners and refrigeration devices.

(Ord. 6273 § 1(part), 1996)

7.10.075 - Grading.

"Grading" means any excavating and/or filling of earth material to prepare a site for construction or the placement of improvements.

(Ord. 6273 § 1(part), 1996)

7.10.080 - Impulsive sound.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples include explosions, drum beats, drop-forge impacts, fire crackers, discharge of firearms and one object striking another.

(Ord. 6273 § 1(part), 1996)

7.10.085 - Industrial land use category.

"Industrial land use category" means any area occupied by land uses whose primary operation involves warehousing, manufacturing, assembling, distributing, packaging or processing goods in the BMP, I, and AIR zones.

(Ord. 6273 § 1(part), 1996)

7.10.090 - Intrusive noise.

"Intrusive noise" means a noise which intrudes over and above the existing ambient noise. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content as well as its relationship to the prevailing ambient noise level.

(Ord. 6273 § 1(part), 1996)

7.10.095 - Minor maintenance.

"Minor maintenance" means work required to keep property used for residential purposes in an existing state.

(Ord. 6273 § 1(part), 1996)

7.10.100 - Mobile noise source.

"Mobile noise source" means any noise source other than a fixed noise source.

(Ord. 6273 § 1(part), 1996)

7.10.105 - Motor vehicle.

"Motor vehicle" means any self-propelled vehicle as defined in the California Vehicle Code, including all on-highway types of motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code.

(Ord. 6273 § 1(part), 1996)

7.10.110 - Muffler.

"Muffler" or "sound dissapative device" means a device for abating the sound of escaping gases from an internal combustion engine.

(Ord. 6273 § 1(part), 1996)

7.10.115 - Noise.

"Noise" means any sound which exceeds the appropriate actual or presumed ambient noise level or which annoys or tends to disturb humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

(Ord. 6273 § 1(part), 1996)

7.10.120 - Noise Control Officer.

"Noise Control Officer" means the City official(s) or duly authorized representative(s) with the responsibility to enforce the noise ordinance.

(Ord. 6273 § 1(part), 1996)

7.10.125 - Noise disturbance.

"Noise disturbance" means any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person of normal sensitivities or endangers or injures personal or real property.

(Ord. 6273 § 1(part), 1996)

7.10.130 - Noise source.

"Noise source" means a disturbance causing operation which originates from noise generating mechanism. An example of a noise source is the combination of a motor, pump and compressor.

(Ord. 6273 § 1(part), 1996)

7.10.135 - Noise zone.

"Noise zone" means defined areas of generally consistent land use where the ambient noise levels are generally similar within a range of five decibels.

(Ord. 6273 § 1(part), 1996)

7.10.140 - Nonurban land use category.

"Nonurban land use category" means vacant land or land primarily for agricultural production containing ten acres or more.

(Ord. 6273 § 1(part), 1996)

7.10.145 - Office/commercial land use category.

"Office/commercial land use category" means areas developed with office and/or commercial uses in the O, CRC, CR-NC, CR, and CG zones.

(Ord. 6967 § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.150 - Person.

"Person" means any individual, association, partnership or corporation and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State.

(Ord. 6273 § 1(part), 1996)

7.10.155 - Powered model vehicle.

"Powered model vehicle" means airborne, waterborne or land-borne vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power.

(Ord. 6273 § 1(part), 1996)

7.10.160 - Public recreation facility land use category.

"Public recreation facility land use category" means areas developed with public parks and other public recreational facilities.

(Ord. 6273 § 1(part), 1996)

7.10.165 - Public right-of-way.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a government entity.

(Ord. 6273 § 1(part), 1996)

7.10.170 - Public space.

"Public space" means any real property or structures which are owned or controlled by a government entity.

(Ord. 6273 § 1(part), 1996)

7.10.175 - Residential land use category.

"Residential land use category" means areas primarily used for residential purposes in the RE, RA-5, RR, RC, R-1-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, and R-4 zones.

(Ord. 6967, § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.180 - Sound.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

(Ord. 6273 § 1(part), 1996)

7.10.185 - Sound amplifying equipment.

"Sound amplifying equipment" means any device for the amplification of the human voice, or music, or any other sound, excluding devices in motor vehicles when heard only by the occupants of the vehicle, excluding warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

(Ord. 6273 § 1(part), 1996)

7.10.190 - Sound level.

"Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighing network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof. If the frequency weighing method used is not stated, the A-weighing shall apply.

(Ord. 6273 § 1(part), 1996)

7.10.195 - Sound level meter.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighing networks for the measurement of sound levels which satisfies the requirements for S2A meters in American National Standards Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.

(Ord. 6273 § 1(part), 1996)

7.10.200 - Sound pressure.

"Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy.

(Ord. 6273 § 1(part), 1996)

7.10.205 - Sound pressure level in decibels.

"Sound pressure level in decibels" means 20 times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated.

(Ord. 6273 § 1(part), 1996)

7.10.210 - Supplementary definitions of technical terms.

Definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1.1-1961 (R-1971) or the latest revision thereof.

(Ord. 6273 § 1 (part), 1996)

Chapter 7.15 - ADMINISTRATION AND ENFORCEMENT

7.15.005 - Administration and enforcement.

A. The noise regulation shall be enforced by the Code Enforcement Division of the Community & Economic Development Department and/or the Riverside Police Department.
B. It shall be the responsibility of the Code Enforcement Division and/or the Riverside Police Department to enforce the provisions of this title and to perform all other functions required by this title. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations,

and providing evidence to the City Attorney for legal action.

C. A violation of these regulations may be prosecuted as a misdemeanor or as an infraction. Each day a violation occurs shall constitute a separate offense and shall be punishable as such. However, nothing in these regulations shall prevent any code compliance officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or education.

(Ord. 7341 § 6, 2016; Ord. 6959 § 1, 2007; Ord. 6844 § 15, 2006; Ord. 6273 § 1 (part), 1996)

Chapter 7.20 - SOUND LEVEL MEASUREMENT

7.20.010 - Sound level measurement.

Except as provided by Chapter 17.35, General Noise Regulations, any sound or noise level measurement made to enforce this title shall be measured with a sound level meter using the A-weighing scale at slow response. The exterior noise level shall be measured at the position or positions along the complainant's property line closest to the noise source or where the noise level is highest. If the complaint concerns an interior source, noise measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source with windows opened or closed as would be normal for the season.

(Ord. 6273 § 1 (part), 1996)

Chapter 7.23 - AMBIENT NOISE LEVELS

7.23.010 - Ambient sound levels.

Title 7 - Noise Control of the Riverside Municipal Code shall be consistent with Title 24 of the Health and Safety Code of the State of California as may be amended from time to time.

(Ord. 6967 § 3, 2007)

7.23.020 - Mixed use development.

Where a new development proposal includes a mix of residential and nonresidential uses within the same project, the interior ambient noise standard for the residential component of the project may be increased by five decibels.

(Ord. 6967 § 3, 2007)

7.23.030 - Infill single-family residential development.

Where a new development proposal includes an infill single-family residential use, the interior ambient noise standard for the proposal may be increased by five decibels.

(Ord. 6967 § 3, 2007)

Chapter 7.25 - NUISANCE EXTERIOR SOUND LEVEL LIMITS

7.25.010 - Exterior sound level limits.

A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:
   1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or
   2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or
   3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
   4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour; or
   5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this chapter, the exterior noise level when measured at the property line shall not exceed 60 dBA for units installed before 1-1-80 and 55 dBA for units installed after 1-1-80.

Table 7.25.010A

Exterior Noise Standards		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	45 dBA 55 dBA
Office/commercial	Any time	65 dBA

Industrial	Any time	70 dBA
Community support	Any time	60 dBA
Public recreation facility	Any time	65 dBA
Nonurban	Any time	70 dBA

Table 7.25.010.B

Land Use Category/Zoning Matrix	
Land Use Category	**Underlying Zone**
Residential	RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4
Office/commercial	O, CRC, CR-NC, CR, CG
Industrial	BMP, I, AIR
Community support	Any permitted zone
Nonurban	Any permitted zone

(Ord. 6967 § 5, 2007; Ord. 6273 § 1 (part), 1996)

Chapter 7.30 - NUISANCE INTERIOR SOUND LEVEL LIMITS

7.30.015 - Interior sound level limits.

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:
    1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
    2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative

period of more than one minute in any hour;

3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 7.30.015

Interior Noise Standard		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	35 dBA 45 dBA
School	7 a.m. to 10 p.m. (while school is in session)	45 dBA
Hospital	Any time	45 dBA

(Ord. 6273 § 1 (part), 1996)

Chapter 7.35 - GENERAL NOISE REGULATIONS

7.35.010 - General noise regulations.

A. Notwithstanding the sound level meter standards described in this ordinance, it is nonetheless unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The factors which should be considered in determining whether a violation of this section exists, include the following:

1. The sound level of the objectionable noise.
2. The sound level of the ambient noise.
3. The proximity of the noise to residential sleeping facilities.

4. The zoning of the area.
5. The population density of the area.
6. The time of day or night.
7. The duration of the noise.
8. Whether the noise is recurrent, intermittent, or constant.
9. Whether the noise is produced by a commercial or noncommercial activity.
10. Whether the nature of the noise is usual or unusual.
11. Whether the noise is natural or unnatural.

B. It is unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The following acts, among others, are declared to be disturbing, excessive and offensive noises in violation of this section:

1. *Radios, television sets, musical instruments and similar stationary or mobile devices* . Operating, playing or permitting the operation or playing of any radio, television set, audio equipment, drum, musical instrument, or similar device which produces or reproduces sound in such a manner as to disturb the peace, quiet and comfort of neighboring residents or persons of normal sensitivity. The operation of any such set, instrument, audio equipment, television set, machine or similar device between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to be plainly audible at a distance of 50 feet from the building, structure or vehicle in which it is located, shall be prima facie evidence of a violation of this section.
2. *Loud speakers (amplified sound)* . Using, or operating, or permitting to be used or operated, for any purpose, any loud speaker, loudspeaker system, or similar device between the hours of 10:00 p.m. and 7:00 a.m. such that the sound therefrom creates a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category, except for any non-commercial public speaking, public assembly or other activity for which a variance has been issued.
3. *Animals and birds* . Owning, possessing, or permitting to be harbored any animal or bird which frequently or for a continued duration howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial property line.
4. *Loading and unloading* . Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects, or permitting these activities between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential property line or at any time exceeds the maximum permitted noise level for the underlying land use category.
5. *Construction* . Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, grading or demolition work between the hours of 7:00 p.m. and 7:00 a.m. on week days and between 5:00 p.m. and 8:00 a.m. on Saturdays or at any time on Sunday or federal holidays.
6. *Domestic power tools* . Operating or permitting the operation of any mechanically powered saw, sander, drill grinder, lawn or garden tool, or similar tool between 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line. Any motor, machinery,

pump, compressor, generator etc., shall be sufficiently muffled and maintained so as not to create a noise disturbance.

7. *Powered model vehicles* . Operating or permitting the operation of powered model vehicles between the hours of 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category.
8. *Stationary non-emergency signaling devices* . Sounding, or permitting the sounding of any signal from any stationary bell, chime, siren, whistle, or similar device intended primarily for non-emergency purposes, from any place, for more than ten seconds in any hourly period. Houses of worship and the Mission Inn carillons shall be exempt from the operation of this provision. Sound sources covered by this provision and not exempted under this subsection may be exempted by a variance.
9. *Emergency signaling devices* . The intentional sounding or permitting the sounding outdoors of any fire, burglar or civil defense alarm, siren, whistle or similar stationary emergency signaling device, except for emergency purposes or for testing. Testing of a stationary emergency signaling device shall not occur before 7:00 a.m. or after 7:00 p.m. Any such testing shall only use the minimum cycle test time. In no case shall the test time exceed ten seconds or occur more than once each calendar month.
10. *Vehicle, motorcycle, motorboat or aircraft repair and testing* . Repairing, rebuilding, modifying or testing any motor vehicle, motorboat or aircraft, or permitting any these activities, in such a manner as to create a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category shall not be permitted except where said activities are directly related to officially sanctioned events. underlying land use category.
11. For other than noise sources identified in 1—10 above, the following noise disturbance shall be prohibited:
    a. Plainly audible across property boundaries;
    b. Plainly audible through partitions common to two residences within a building;
    c. Plainly audible at a distance of 50 feet in any direction from the source of music or sound between the hours of 7:00 a.m. and 10:00 p.m.; or
    d. Plainly audible at a distance of 25 feet in any direction from the source of music or sound between the hours of 10:00 p.m. and 7:00 a.m.

(Ord. 7341 §6, 2016; Ord. 6959 §2, 2007; Ord. 6328 § 1, 1996; Ord. 6273 § 1 (part), 1996)

7.35.020 - Exemptions.

The following activities shall be exempt from the provisions of this title:

A. *Emergency work* . The provisions of this title shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.
B. *Entertainment events* . The provisions of this title shall not apply to those reasonable sounds

emanating from authorized school bands, school athletic and school entertainment events and occasional public and private outdoor or indoor gatherings, public dances, shows, bands, sporting and entertainment events conducted between the hours of 7:00 a.m. and 10:00 p.m.

C. *Federal or State preempted activities* . The provisions of this Chapter shall not apply to any other activity the noise level of which is regulated by state or federal law.

D. *Minor maintenance to residential property* . The provisions of this title shall not apply to noise sources associated with minor maintenance to property used for residential purposes, provided the activities take place between the hours of 7:00 a.m. and 10:00 p.m.

E. *Right-of-way construction* . The provisions of this title shall not apply to any work performed in the City right-of-ways when, in the opinion of the Public Works Director or his designee, such work will create traffic congestion and/or hazardous or unsafe conditions.

F. *Public health, welfare and safety activities* . The provisions of this title shall not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc.

G. Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

(Ord. 7341 § 6, 2016; Ord. 6917 § 1, 2006; Ord. 6328 § 2, 1996; Ord. 6273 § 1 (part), 1996)

Chapter 7.40 - VARIANCE PROCEDURE

7.40.010 - Variance procedure.

A. The Zoning Administrator is authorized to grant variances for exemption from any provision of this title, and may limit area of applicability, noise levels, time limits, and other terms and conditions determined appropriate to protect the public health, safety, and welfare. The provisions of this section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking a variance pursuant to this section shall file an application with the Zoning Administrator. The application shall be signed by the property owner or owner's representative using forms supplied by the Community & Economic Development Department-Planning Division. The application shall contain information which demonstrates that bringing the source of the sound or activity into compliance with this title would constitute an unreasonable hardship to the applicant, the community, or other persons. The Zoning Administrator may require additional information if it is necessary to make a determination regarding the variance request. The application shall be accompanied by a fee established by resolution of the City Council.

C. A separate application shall be filed for each noise source; provided, however, several mobile sources unde ownership or several fixed sources on a single property may be combined into one application. Any person to be adversely affected by the allowance of the variance may file a statement with the Zoning Administrato containing any information to support his claim. If the Zoning Administrator determines that a sufficient cor exists regarding a variance application, the variance may be set for public hearing before the Planning Comı

D. Public notice of the consideration of a proposed variance from the standards of this chapter shall be provided by the Zoning Administrator by mailing such notice to property owners within 300 feet of the exterior boundaries of the property under consideration. The notice shall invite interested persons to notify the Planning Division of any concerns or comments within ten days of the date of the notice.

E. In determining whether to grant or deny the application, the Zoning Administrator or the Planning Commission shall consider comments received from property owners within 300 feet, hardship on the applicant, the community, or other persons affected and property affected and any other adverse impacts. The requested variance may be granted in whole or in part and upon such terms and conditions as it deems necessary if, from the facts presented on the application, the Zoning Administrator or the Planning Commission finds that:

1. The strict application of the provisions of this title would result in practical difficulties or unnecessary hardships inconsistent with the general purpose of this Title; 2. There are exceptional circumstances or conditions applicable to the property involved or to the intended use or development of the property that do not apply generally to other property in the same zone or neighborhood;
3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the zone or neighborhood in which the property is located;
4. The granting of such variance will not be contrary to the objectives of any part of the adopted General Plan.

F. A variance shall be granted by a notice to the applicant containing all the necessary conditions, including any time limits on the permitted activity. The variance shall not become effective until all the conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this chapter for which the variance was granted.

G. A variance shall be valid for a period not exceeding one year after the date on which it was granted. Applications for extensions of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances.

H. In the event the Zoning Administrator does not approve an application for a variance within ten days after the application is filed it shall be placed on the agenda of the next regularly scheduled Planning Commission, unless the Commission refers the matter to the City Council.

(Ord. 7341 § 6, 2016; Ord. 6967 § 7, 2007; Ord. 6462 § 8-10, 1999; Ord. 6273 § 1 (part), 1996)

7.40.020 - Appeals.

Any person aggrieved by the approval or disapproval of a variance, may appeal the decision of the Zoning Administrator or Planning Commission to the City Council within ten days after the date of such approval or disapproval. The City Council shall hold a hearing thereon, upon notice to the applicant, considering the

same criteria presented to the Zoning Administrator.

(Ord. 6462 § 11, 1999; Ord. 6273 § 1 (part), 1996)

Chapter 7.45 - SEVERABILITY

7.45.010 - Severability.

If any section, subsection, sentence, clause or phrase in this title is for any reason held to be invalid or unconstitutional by decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this title. The City Council hereby declares that it would have passed this title and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more other sections, subsections, clauses or phrases may be declared invalid or unconstitutional.

(Ord. 6328 § 3, 1996)

19.590.090 - Noise.

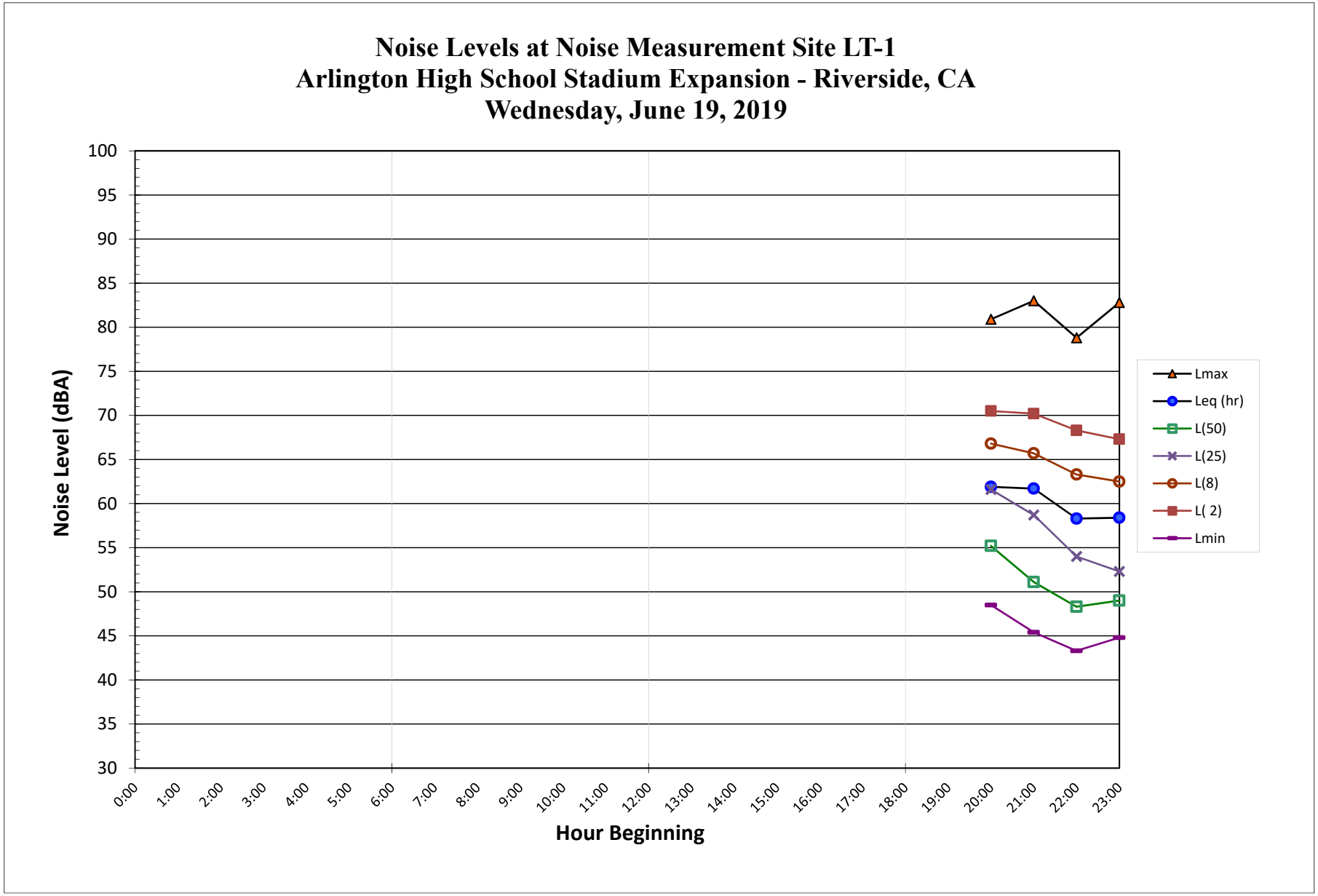
A. These regulations aim to prohibit unnecessary, excessive and annoying noises from all sources, as certain noise levels are detrimental to the health and welfare of individuals. The standards apply to all land uses in all zones unless otherwise specified in the Zoning Code or other applicable law. In addition to the requirements of this chapter, any use or activity within the City shall comply with the noise regulations of Title 7 (Noise Control) of the Riverside Municipal Code.

B. No person shall create nor allow the creation of noise that causes the noise level when measured on any property to exceed the noise standards set forth in Title 7 (Noise Control) of the Riverside Municipal Code.

C. Utilization of compressors or other equipment, including but not limited to vents, ducts, and conduits, but excluding window or wall-mounted air-conditioners, that are located outside of the exterior walls of any building, shall be enclosed within a permanent, noncombustible, view-obscuring enclosure to ensure that the equipment will not emit noise in excess of the American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof.

(Ord. 7331 §95, 2016; Ord. 6966 §1, 2007)

NOISE MONITORING RESULTS


Noise Levels at Noise Measurement Site LT-1
Arlington High School Stadium Expansion - Riverside, CA
Wednesday, June 19, 2019
Noise Level (dBA)
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95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
1:00
2:00
3:00
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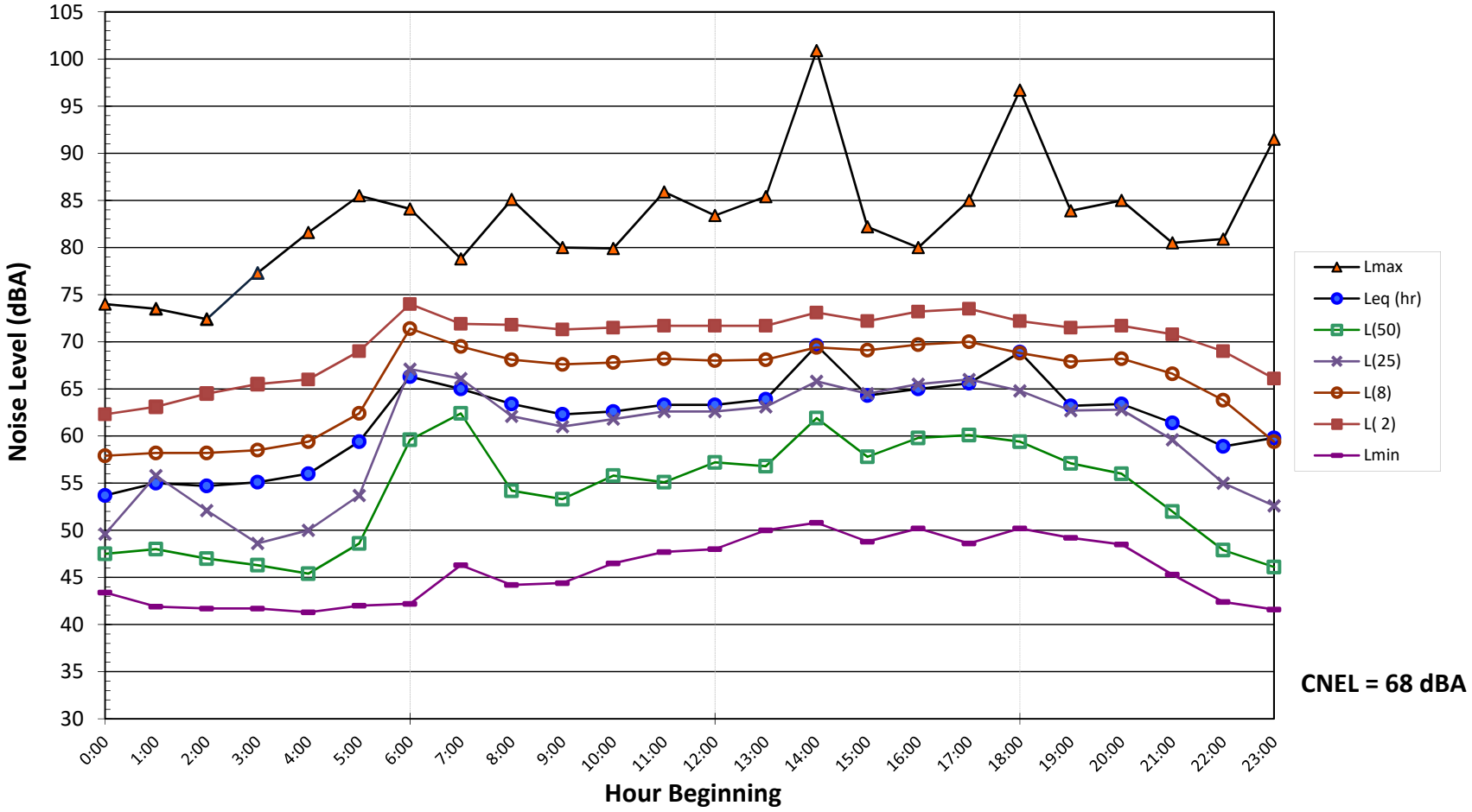
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Hour Beginning
Lmax
Leq (hr)
L(50)
L(25)
L(8)
L(2)
Lmin

Noise Levels at Noise Measurement Site LT-1
Arlington High School Stadium Expansion - Riverside, CA
Thursday, June 20, 2019



CNEL = 68 dBA

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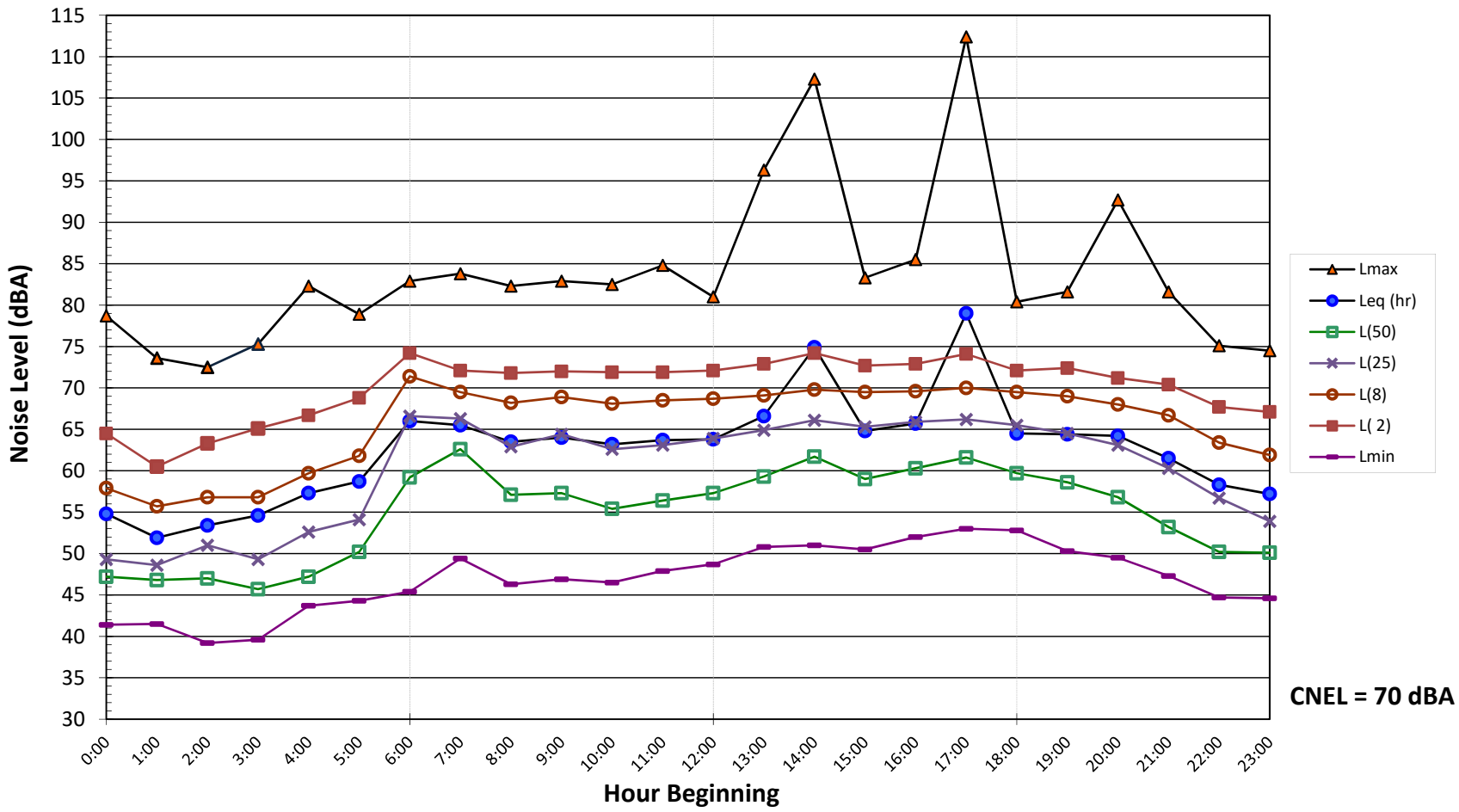
Friday, June 21, 2019



CNEL = 70 dBA

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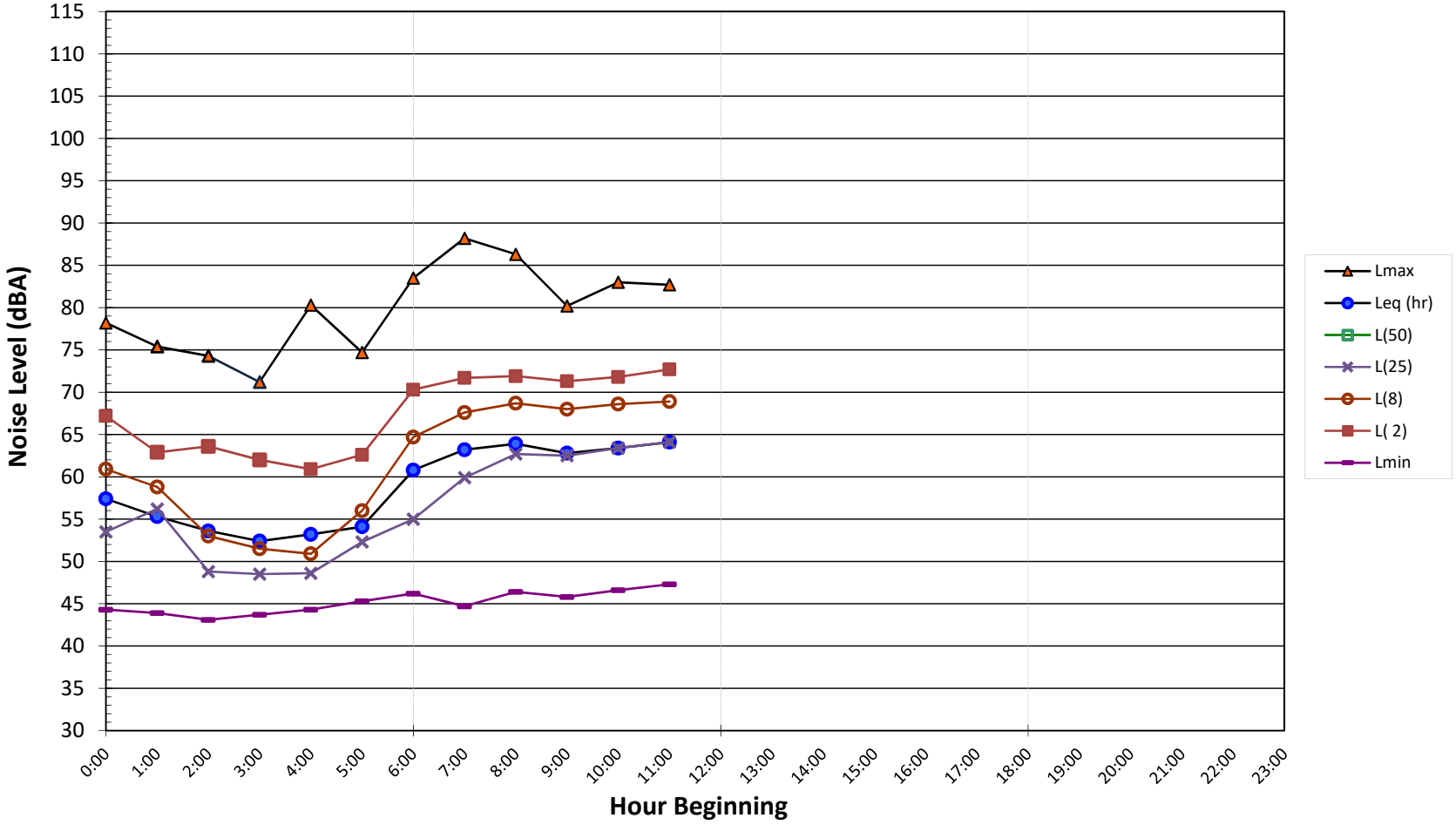

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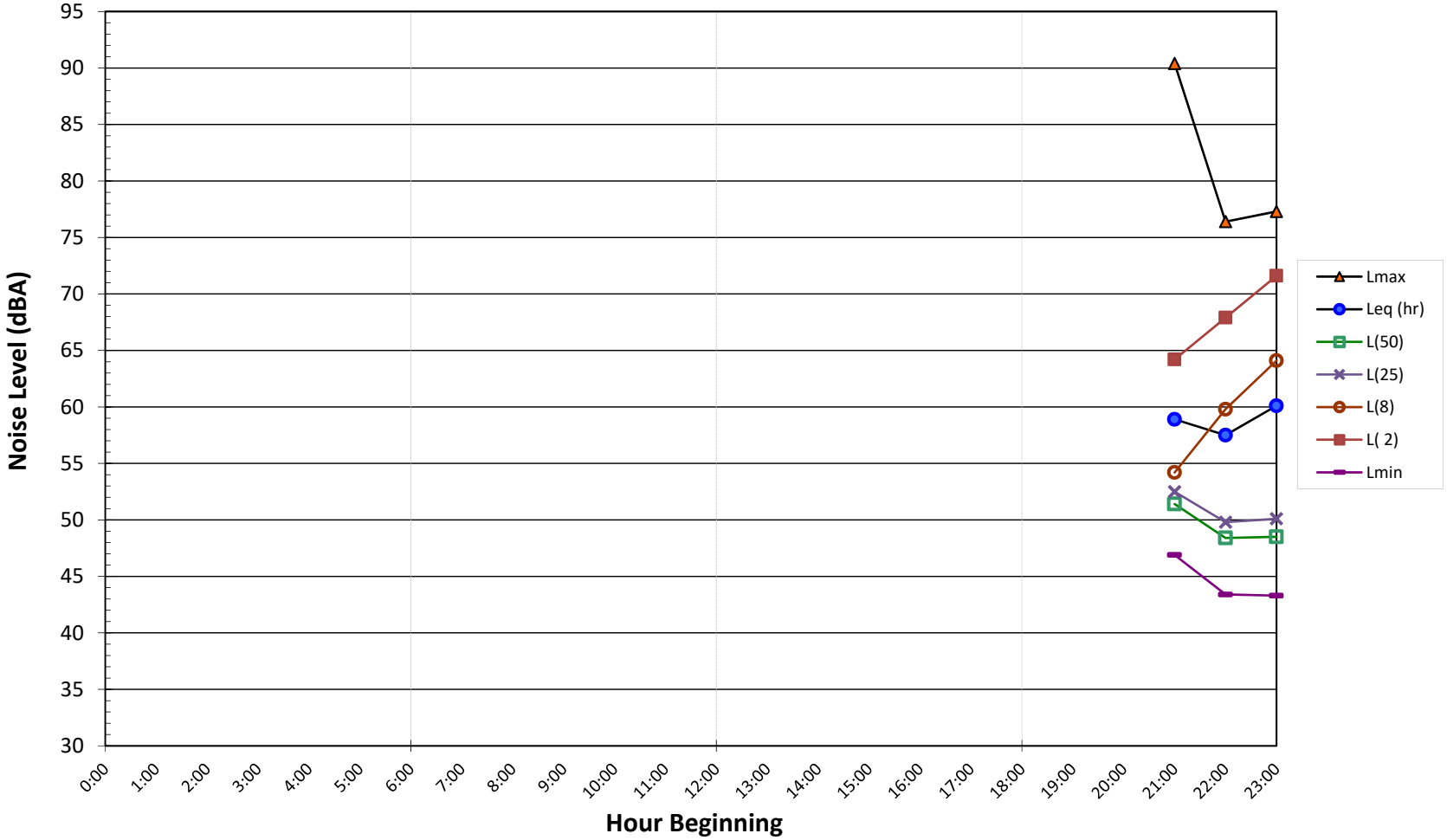

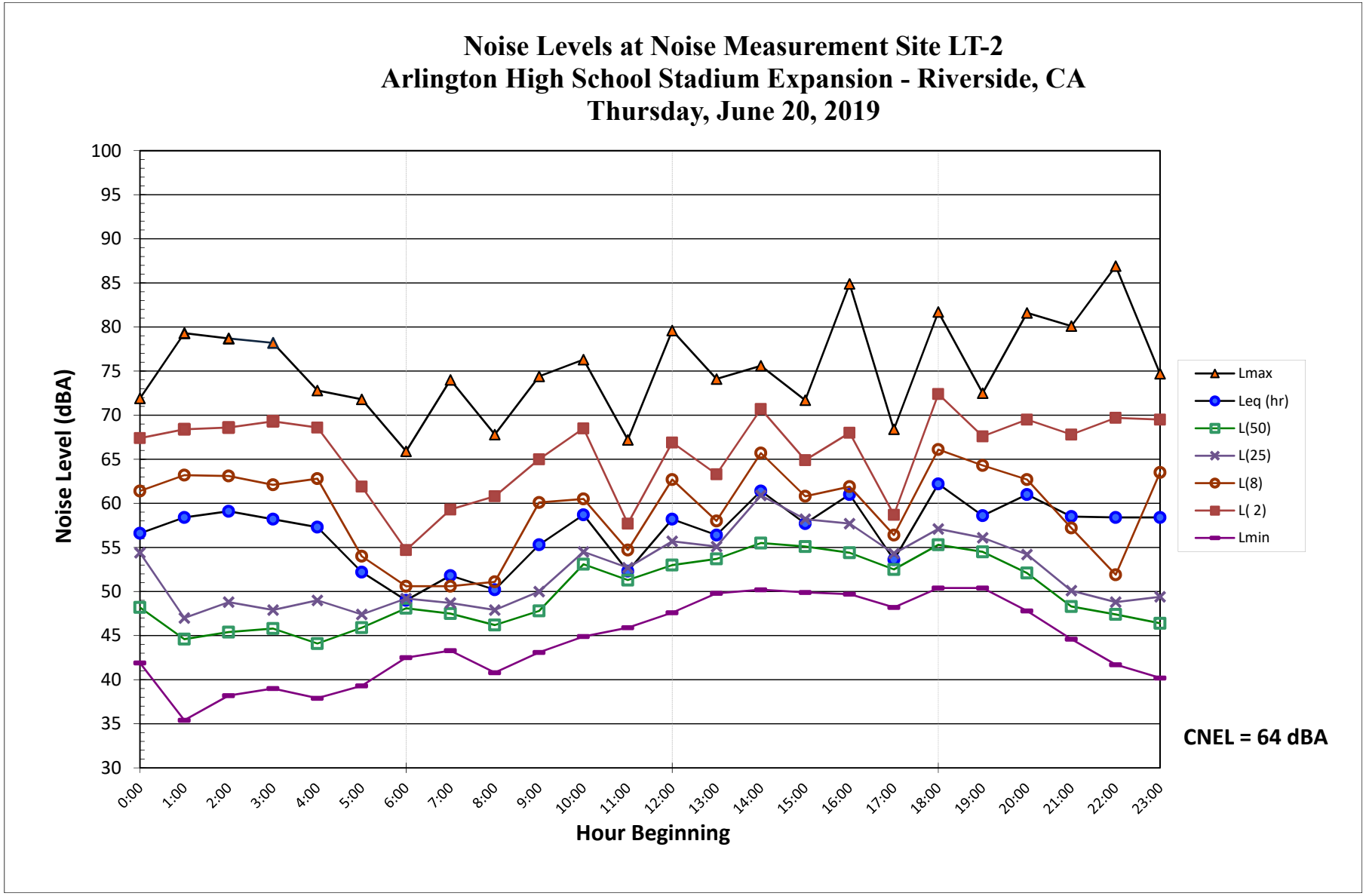
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Thursday, June 20, 2019
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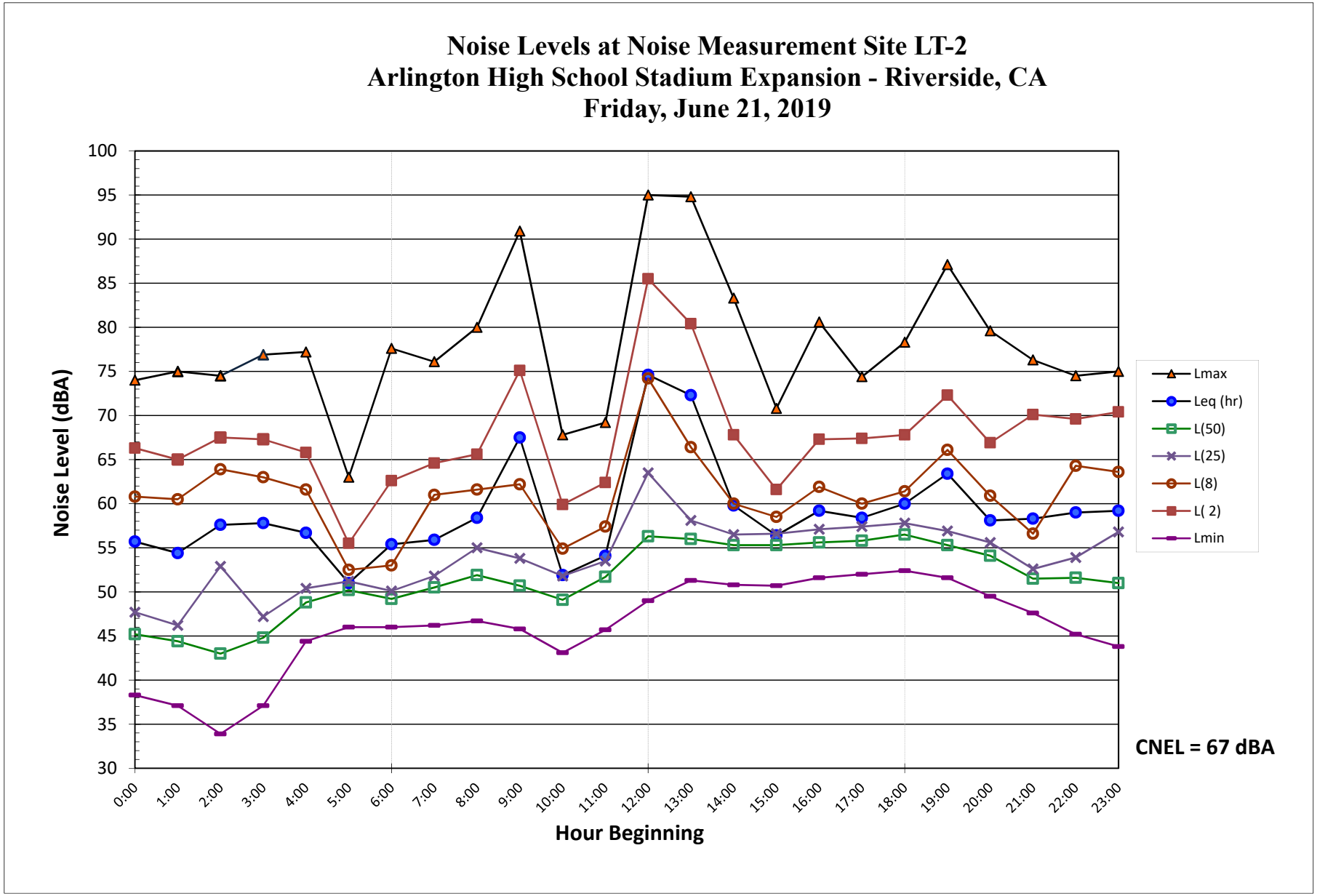
20:00
21:00
22:00
23:00
Hour Beginning
Lmax
Leq (hr)
L(50)
L(25)
L(8)
L(2)
Lmin
CNEL = 64 dBA


Noise Levels at Noise Measurement Site LT-2
Arlington High School Stadium Expansion - Riverside, CA
Friday, June 21, 2019
Noise Level (dBA)
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95
90
85
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40
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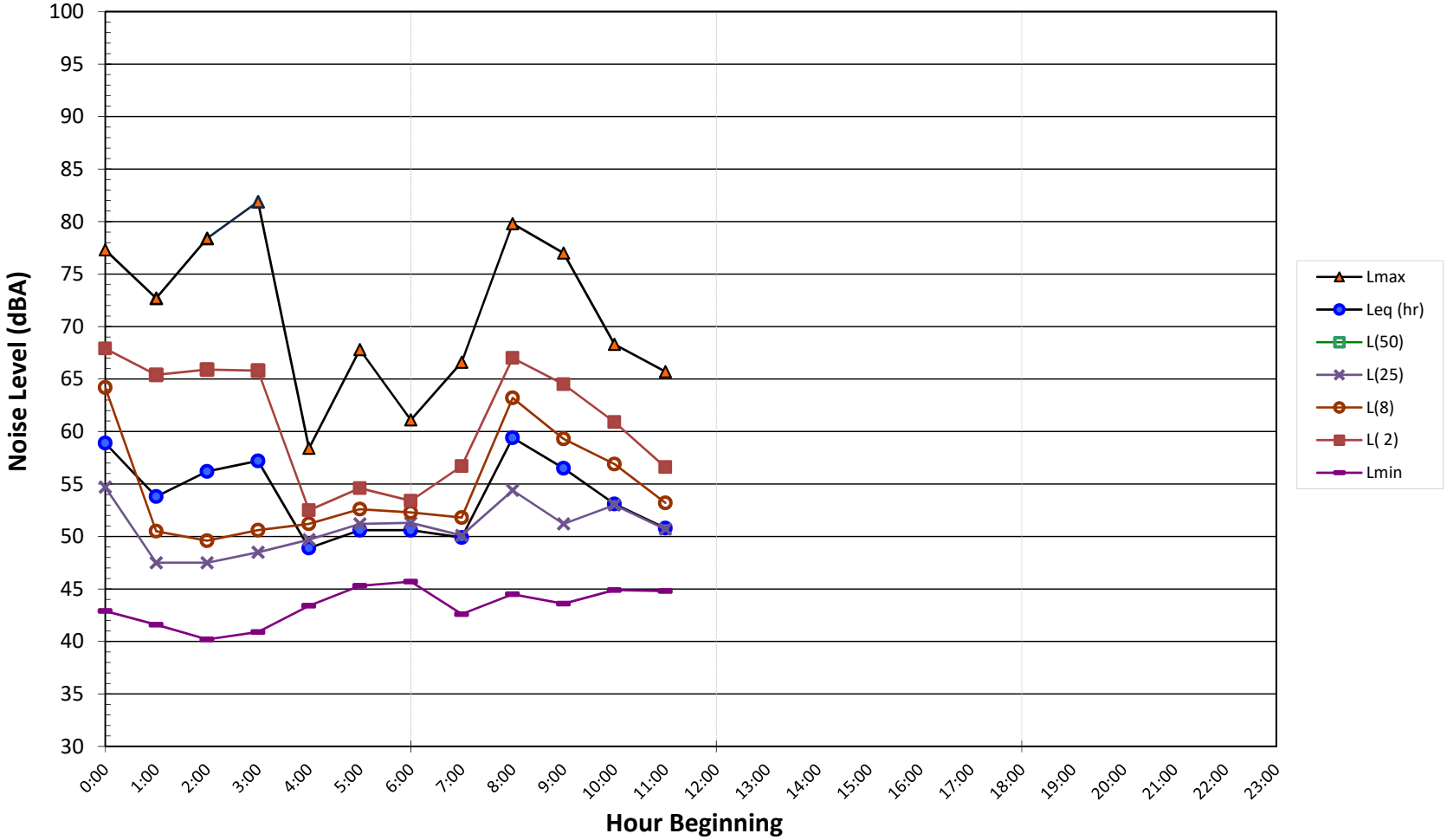
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Hour Beginning
Lmax
Leq (hr)
L(50)
L(25)
L(8)
L(2)
Lmin
CNEL = 67 dBA

Noise Levels at Noise Measurement Site LT-2
Arlington High School Stadium Expansion - Riverside, CA
Saturday, June 22, 2019



CONSTRUCTION NOISE MODELING

Architectural Coating
Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/24/2019
Case Description: RIV-24

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Architectural Coating	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	700.0	0.0

Results

	Calculated (dBA)				Noise Limits (dBA)				Noise Limit Exceedance (dBA)			
	Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	54.7	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.7	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Ashpalt Paving
Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/24/2019
Case Description: RIV-24

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Asphalt Paving	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50		80.0	700.0	0.0
Paver	No	50		77.2	700.0	0.0
Pavement Scarafier	No	20		89.5	700.0	0.0
Roller	No	20		80.0	700.0	0.0
Tractor	No	40	84.0		700.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Day		Evening		Night		Day		Evening		Night			
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Drum Mixer	57.1	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.3	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	66.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Ashpalt Paving

Tractor	61.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.6	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Building Construction
Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/24/2019
Case Description: RIV-24

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Building Construction	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	700.0	0.0
Man Lift	No	20		74.7	700.0	0.0
Generator	No	50		80.6	700.0	0.0
Tractor	No	40	84.0		700.0	0.0
Welder / Torch	No	40		74.0	700.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	57.6	49.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	51.8	44.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	57.7	54.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Building Construction

Welder / Torch	51.1	47.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.1	59.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Demolition
Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/24/2019
Case Description: RIV-24

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Demolition	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Tractor	No	40	84.0		700.0	0.0
Front End Loader	No	40		79.1	700.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Concrete Saw	66.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58.7	54.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	56.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

				Demolition		
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Grading

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/24/2019
Case Description: RIV-24

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Grading	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Gradall	No	40		83.4	700.0	0.0
Dozer	No	40		81.7	700.0	0.0
Tractor	No	40	84.0		700.0	0.0
Excavator	No	40		80.7	700.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Gradall	60.5	56.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58.7	54.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.1	61.8	N/A	N/A	N/A	N/A	N/A							

Grading

N/A	N/A	N/A	N/A	N/A	N/A	N/A

TRAFFIC NOISE INCREASE CALCULATIONS

Segment	Existing No Project	Existing Plus Project	Future No Project	Future + Project	Project Noise Increase	Cumulative Increase	Project Cumulative Contribution
Indiana Ave - W of Jackson Street	9600	9780	9980	10160	0.08	0.25	0.08
Indiana Ave - E of Monroe Street	10600	10780	11020	11200	0.07	0.24	0.07
Lincoln Ave - W of Jackson Street	8900	9080	9260	9440	0.09	0.26	0.08
Lincoln Ave - E of Jackson Street	7400	8240	7700	8540	0.47	0.62	0.45
Lincoln Ave - W of Irving Street	7400	8360	7700	8660	0.53	0.68	0.51
Lincoln Ave - E of Irving Street	7400	8250	7700	8550	0.47	0.63	0.45
Lincoln Ave - E of Monroe Street	8100	8370	8420	8690	0.14	0.31	0.14
Victoria Ave - W of Jackson Street	7000	7090	7280	7370	0.06	0.22	0.05
Victoria Ave - W of Monroe Street	7000	7140	7280	7420	0.09	0.25	0.08
Victoria Ave - E of Monroe Street	5700	5880	5930	6110	0.14	0.30	0.13
Jackson St - N of Indiana Avenue	11500	11680	11960	12140	0.07	0.24	0.06
Jackson St - S of Indiana Avenue	8100	8460	8420	8780	0.19	0.35	0.18
Jackson St - N of Lincoln Avenue	8100	8820	8420	9140	0.37	0.52	0.36
Jackson St - S of Lincoln Avenue	3800	3980	3950	4130	0.20	0.36	0.19
Jackson St - S of Victoria Avenue	1900	1990	1980	2070	0.20	0.37	0.19
Irving St - N of Lincoln Avenue	1700	2300	1770	2370	1.31	1.44	1.27
Irving St - S of Lincoln Avenue	1000	1230	1040	1270	0.90	1.04	0.87
Irving St - S of Victoria Avenue	1000	1090	1040	1130	0.37	0.53	0.36
Monroe St - N of Indiana Avenue	9500	9770	9880	10150	0.12	0.29	0.12
Monroe St - N of Lincoln Avenue	7600	8050	7900	8350	0.25	0.41	0.24
Monroe St - S of Lincoln Avenue	3900	4030	4060	4190	0.14	0.31	0.14
Monroe St - S of Victoria Avenue	2400	2490	2500	2590	0.16	0.33	0.15
				Max	1.31	1.44	1.27

SOUNDPLAN OUTPUTS

Proposed Receiver	Usage	Fl	X m	Y m	Z m	GH m	Leq,d dB(A	Leq,n dB(A)	Existing Receiver	Usage	Fl	X m	Y m	Z m	GH m	Leq,d dB(A	Leq,n dB(A)	DIF
R1	SCR	G	1891129	694710.6	1.5	0	74.9	74.9	R1	SCR	G	1891129	694710.6	1.5	0	74.8	74.8	0.1
R2	SCR	G	1891150	694707.3	1.5	0	73.8	73.8	R2	SCR	G	1891150	694707.3	1.5	0	73.6	73.6	0.2
R3	SCR	G	1891158	694688.7	1.5	0	74.3	74.3	R3	SCR	G	1891158	694688.7	1.5	0	74.1	74.1	0.2
R4	SCR	G	1891185	694649.1	1.5	0	73.6	73.6	R4	SCR	G	1891185	694649.1	1.5	0	73.3	73.3	0.3
R5	SCR	G	1891195	694634	1.5	0	72.8	72.8	R5	SCR	G	1891195	694634	1.5	0	72.5	72.5	0.3
R6	SCR	G	1891206	694616.6	1.5	0	71.9	71.9	R6	SCR	G	1891206	694616.6	1.5	0	71.6	71.6	0.3
R7	SCR	G	1891216	694601.8	1.5	0	71	71	R7	SCR	G	1891216	694601.8	1.5	0	70.7	70.7	0.3
R8	SCR	G	1891227	694585.9	1.5	0	70.1	70.1	R8	SCR	G	1891227	694585.9	1.5	0	69.8	69.8	0.3
R9	SCR	G	1891238	694568.5	1.5	0	69.1	69.1	R9	SCR	G	1891238	694568.5	1.5	0	68.8	68.8	0.3
R10	SCR	G	1891253	694547	1.5	0	68	68	R10	SCR	G	1891253	694547	1.5	0	67.7	67.7	0.3
R11	SCR	G	1891261	694535	1.5	0	67.4	67.4	R11	SCR	G	1891261	694535	1.5	0	67.1	67.1	0.3
R12	SCR	G	1891272	694518.9	1.5	0	66.7	66.7	R12	SCR	G	1891272	694518.9	1.5	0	66.4	66.4	0.3
R13	SCR	G	1891283	694501.5	1.5	0	65.9	65.9	R13	SCR	G	1891283	694501.5	1.5	0	65.7	65.7	0.2
R14	SCR	G	1891309	694461.5	1.5	0	64.4	64.4	R14	SCR	G	1891309	694461.5	1.5	0	64.1	64.1	0.3
R15	SCR	G	1891154	694748	1.5	0	71.3	71.3	R15	SCR	G	1891154	694748	1.5	0	71	71	0.3
R16	SCR	G	1891112	694741.2	1.5	0	73.3	73.3	R16	SCR	G	1891112	694741.2	1.5	0	73.1	73.1	0.2
R17	SCR	G	1891089	694744.2	1.5	0	73.6	73.6	R17	SCR	G	1891089	694744.2	1.5	0	73.5	73.5	0.1
R18	SCR	G	1891078	694802.3	1.5	0	70	70	R18	SCR	G	1891078	694802.3	1.5	0	69.8	69.8	0.2
R19	SCR	G	1891054	694792.8	1.5	0	70.5	70.5	R19	SCR	G	1891054	694792.8	1.5	0	70.3	70.3	0.2
R20	SCR	G	1891026	694785.9	1.5	0	70.7	70.7	R20	SCR	G	1891026	694785.9	1.5	0	70.5	70.5	0.2
R21	SCR	G	1891001	694780.1	1.5	0	70.5	70.5	R21	SCR	G	1891001	694780.1	1.5	0	70.3	70.3	0.2
R22	SCR	G	1890966	694784.8	1.5	0	69.3	69.3	R22	SCR	G	1890966	694784.8	1.5	0	69	69	0.3
R23	SCR	G	1890932	694765.8	1.5	0	68.9	68.9	R23	SCR	G	1890932	694765.8	1.5	0	68.7	68.7	0.2
R24	SCR	G	1890900	694759.6	1.5	0	67.9	67.9	R24	SCR	G	1890900	694759.6	1.5	0	67.7	67.7	0.2
R25	SCR	G	1890856	694749.9	1.5	0	66.5	66.5	R25	SCR	G	1890856	694749.9	1.5	0	66.2	66.2	0.3
R26	SCR	G	1890808	694742.5	1.5	0	64.9	64.9	R26	SCR	G	1890808	694742.5	1.5	0	64.7	64.7	0.2
R27	SCR	G	1890755	694730.1	1.5	0	63.4	63.4	R27	SCR	G	1890755	694730.1	1.5	0	63.1	63.1	0.3
R28	SCR	G	1890705	694720.5	1.5	0	62.1	62.1	R28	SCR	G	1890705	694720.5	1.5	0	61.8	61.8	0.3
R29	SCR	G	1890675	694714.2	1.5	0	61.4	61.4	R29	SCR	G	1890675	694714.2	1.5	0	61.1	61.1	0.3
R30	SCR	G	1890739	694521.3	1.5	0	63.2	63.2	R30	SCR	G	1890739	694521.3	1.5	0	63	63	0.2
R31	SCR	G	1890780	694460.4	1.5	0	63.8	63.8	R31	SCR	G	1890780	694460.4	1.5	0	63.6	63.6	0.2
																		0.3

Appendix D Traffic Impact Analysis

Appendices

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TRAFFIC IMPACT ANALYSIS

FOR THE PROPOSED

ARLINGTON HIGH SCHOOL EXPANDED AND NEW BLEACHERS

Prepared for

RIVERSIDE UNIFIED SCHOOL DISTRICT
&
PLACEWORKS

Prepared by

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I.
INTRODUCTION AND PROJECT DESCRIPTION

This report summarizes the results of a traffic impact analysis that was conducted for the expanded and new bleachers that is proposed by Riverside Unified School District at Arlington High School in Riverside. While the project is a component of a modernization project for the entire school campus, this traffic analysis addresses only the bleachers because the other campus improvements would not result in an increase in student capacity, student enrollment or traffic.

Arlington High School is located on the north side of Lincoln Avenue between Jackson Street and Irving Street approximately one-quarter mile south of the Riverside Freeway (State Route 91). Figure 1 in the Appendix is a vicinity map that shows the location of the high school. The track and field (football/soccer) is located at the northeast corner of the campus on the west side of Irving Street, as shown on the site plan (Figure 2).

The track and field currently has 750-seat bleachers on the west side. The existing bleachers would be expanded with additional home-side bleachers for a total of 2,000 seats and visitor-side bleachers would be constructed on the east side of the football field with 1,000 seats, for an overall total of 3,000 seats. The expanded and new bleachers would provide the opportunity for Arlington High School to host large events (Varsity football and graduation) at its own campus, as these events are currently held at another school. The project would also include construction of a Biomed/Special Education building, auxiliary gym, a concession/restroom building; modernization of the Media Arts Academy building, Administration Building, Student Service Building, and outdoor swimming pool.

An analysis has been prepared to evaluate the traffic impacts of the additional bleachers only because other project components would not increase student capacity or traffic. The methodology for the traffic study, in general, was to 1) establish the existing baseline traffic conditions on the streets that provide access to the school site, 2) project the future baseline traffic conditions for the target year of opening (year 2021), 3) estimate the levels of traffic that would be generated by the 3000-seat bleachers for a maximum-capacity event, 4) conduct a comparative analysis of traffic conditions with and without the project, and 5) identify the mitigation measures to alleviate the significant traffic impacts associated with the project, if required. The analysis is based on Friday evening traffic conditions on the streets and intersections in the school vicinity.

The traffic analysis addresses the conditions at 11 intersections in the vicinity of the school. The study area intersections and the type of traffic control at each intersection are listed below in Table 1. All 11 intersections are in the jurisdiction of the City of Riverside.

TABLE 1 STUDY AREA INTERSECTIONS	
Intersection	***Traffic Control***
Indiana Avenue/Jackson Street	Traffic Signal
Indiana Avenue/Monroe Street	Traffic Signal
Lincoln Avenue/Jackson Street	Traffic Signal
Lincoln Avenue/Irving Street	4-Way Stop Signs
Lincoln Avenue/Monroe Street	4-Way Stop Signs
Victoria Avenue Westbound/Jackson Street	3-Way Stop Signs
Victoria Avenue Eastbound/Jackson Street	3-Way Stop Signs
Victoria Avenue Westbound/Irving Street	3-Way Stop Signs
Victoria Avenue Eastbound/Irving Street	3-Way Stop Signs
Victoria Avenue Westbound/Monroe Street	3-Way Stop Signs
Victoria Avenue Eastbound/Monroe Street	3-Way Stop Signs

The traffic impact analysis is based on an evaluation of the levels of service at the affected study area intersections. Level of service (LOS) is an industry standard by which the operating conditions of a roadway segment or an intersection are measured. LOS is defined on a scale of A through F with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS A is characterized as having free flowing traffic conditions with no restrictions on maneuvering or operating speeds, where traffic volumes are low and travel speeds are high. LOS F is characterized as having forced flow with many stoppages and low operating speeds.

According to City of Riverside standards, LOS A through D represents acceptable conditions, while LOS E and F represent congested, over-capacity conditions. According to the Riverside County Congestion Management Program, LOS A through E represents acceptable conditions while LOS F represents unacceptable conditions. The levels of service at the study area intersections were determined by using the Highway Capacity Manual methodology, which is consistent with the guidelines for traffic impact studies from the City of Riverside's "Traffic Impact Analysis Preparation Guide."

The levels of service for the intersections in the vicinity of the project were analyzed for the following scenarios: existing conditions (2019), future baseline conditions without the project for the target year of 2021, existing plus project conditions, and future year 2021 conditions with the project. The year 2021 was used for the future target year as that is the anticipated to be the first year of operation for the expanded bleachers.

II.
EXISTING AND FUTURE BASELINE TRAFFIC CONDITIONS

The roadway network in the project vicinity, the existing traffic volumes, and the levels of service at the affected study area intersections are described below.

Study Area Street Network

The streets that provide access to the project area include Jackson Street, Lincoln Avenue, Irving Street, Monroe Street, Victoria Avenue, and Indiana Avenue. The following paragraphs provide a brief description of the characteristics of these streets. Figure 3 in the Appendix shows the study area street network, including the type of traffic control at the intersections, the lane configuration at the intersections, and the speed limits.

Jackson Street

Jackson Street is a two to four lane north-south street that abuts the west side of the school campus. It has four lanes between Lincoln Avenue and Indiana Avenue, two lanes north of Indiana Avenue, and two lanes south of Lincoln Avenue. The "Circulation and Community Mobility Element" of the "Riverside General Plan 2025" (Amended February 2018) indicates that Jackson Street is classified as an arterial street north of Victoria Avenue and a collector street south of Victoria Avenue. The speed limit on Jackson Street is 40 miles per hour (mph) north of Victoria Avenue and 45 mph south of Victoria Avenue.

Lincoln Avenue

Lincoln Avenue is a four lane east-west street that abuts the south side of the school campus. It is classified as an arterial street and has a speed limit of 45 mph.

Irving Street

Irving Street is a two lane north-south street that abuts the east side of the school campus. It is classified as a local street and terminates at a cul-de-sac adjacent to the trach and field. The speed limit on Irving Street is 25 mph north of Victoria Avenue and 45 mph south of Victoria Avenue.

Monroe Street

Monroe Street is a two lane north-south street that is located one-quarter mile east of the school campus. It is classified as a collector street south of Indiana Avenue and an arterial street north of Indiana Avenue. The speed limit on Monroe Street is 40 mph.

Victoria Avenue

Victoria Avenue is a two lane east-west street located one-quarter mile south of the school campus. The eastbound and westbound lanes are divided by a wide median, which is essentially a linear park between the two travel lanes. Victoria Avenue is classified as a parkway and the speed limit is 40 mph.

Indiana Avenue

Indiana Avenue is a two to four lane east-west street located one-quarter mile north of the school campus. It runs parallel to the Riverside Freeway (State Route 91) on the south side of the freeway and has two lanes west of Monroe Street and four lanes east of Monroe Street. Indiana Avenue is classified as an arterial street and the speed limit is 40 mph.

Existing Traffic Volumes

Manual traffic counts were taken at the 11 study area intersections during the Friday evening peak period on April 19, 2019. The peak hour for this analysis refers to the one-hour time period prior to the beginning of an event when patrons are traveling to the school. The traffic analysis addresses the pre-event time period because the ambient traffic volumes are substantially higher during the pre-event period (generally between 6:00 and 7:00 p.m.) as compared to the post-event period (after 9:00 p.m.). Most high school football games in this district begin at 7:00 p.m. Figure 4 in the Appendix illustrates the existing peak hour traffic volumes and turning movements at each intersection.

Existing Intersection Levels of Service

To quantify the existing baseline traffic conditions, the study area intersections were analyzed to determine their operating conditions during the Friday evening peak hour. A level of service (LOS) analysis was conducted for the intersections using the Highway Capacity Manual (HCM) methodology. The average levels of vehicle delay at each intersection and the resulting levels of service were determined using the Highway Capacity Software (HCS).

Level of service is a qualitative indicator of the traffic conditions at an intersection. The LOS values range from LOS A to LOS F. LOS A indicates excellent operating conditions with little or no delay to motorists, while LOS F represents congested conditions with excessive vehicle delay. The City of Riverside defines LOS D as the lowest acceptable operating condition.

Levels of service are based on the average amount of vehicular delay that occurs at an intersection. The relationship between delay values and the corresponding levels of service is shown in Table 2.

TABLE 2
RELATIONSHIP BETWEEN DELAY VALUES & LEVELS OF SERVICE

Level of Service	*Delay Value (seconds) Signalized Intersections*	*Delay Value (seconds) Unsignalized Intersections*
A	0.0 to 10.0	0.0 to 10.0
B	> 10.0 to 20.0	> 10.0 to 15.0
C	> 20.0 to 35.0	> 15.0 to 25.0
D	> 35.0 to 55.0	> 25.0 to 35.0
E	> 55.0 to 80.0	> 35.0 to 50.0
F	> 80.0	> 50.0

Based on the hourly traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the average vehicle delay values and corresponding levels of service have been determined at each intersection for the existing conditions scenario, as summarized in Table 3.

TABLE 3 EXISTING INTERSECTION LEVELS OF SERVICE	
Intersection	***Delay Value (seconds/vehicle) & Level of Service Friday Evening Pre-Event Peak Hour***
SIGNALIZED INTERSECTIIONS	
Indiana Avenue/Jackson Street	22.8 – C
Indiana Avenue/Monroe Street	17.7 – B
Lincoln Avenue/Jackson Street	16.1 – B
INTERSECTIONS WITH STOP SIGNS	
Lincoln Avenue/Irving Street	8.52 – A
Lincoln Avenue/Monroe Street	10.46 – B
Victoria Avenue Westbound/Jackson Street	8.54 – A
Victoria Avenue Eastbound/Jackson Street	8.15 – A
Victoria Avenue Westbound/Irving Street	8.13 – A
Victoria Avenue Eastbound/Irving Street	7.87 – A
Victoria Avenue Westbound/Monroe Street	8.23 – A
Victoria Avenue Eastbound/Monroe Street	8.10 – A

As shown in Table 3, all 11 of the study area intersections currently operate at acceptable levels of service (LOS A through D) during the Friday evening peak hour. Seven intersections operate at LOS A, three intersections operate at LOS B, and one intersection operates at LOS C.

Future Baseline Traffic Conditions

As the project is expected to be completed and occupied in the year 2021, the existing (2019) traffic volumes were expanded by a growth factor of 1.04 to account for general regional growth and the cumulative impacts of traffic associated with other development projects in the area. This growth factor represents a two percent annual growth rate for two years. The projected traffic volumes for the year 2021 without the project are shown on Figure 5 in the Appendix.

Based on the projected peak hour traffic volumes, the turning movement counts, and the existing lane configuration, the future baseline levels of service were calculated for each study area intersection, as summarized in Table 4.

TABLE 4 ***YEAR 2021 INTERSECTION LEVELS OF SERVICE***	
Intersection	***Delay Value (seconds/vehicle) & Level of Service Friday Evening Pre-Event Peak Hour***
SIGNALIZED INTERSECTIIONS	
Indiana Avenue/Jackson Street	23.8 – C
Indiana Avenue/Monroe Street	18.0 – B
Lincoln Avenue/Jackson Street	16.2 – B
INTERSECTIONS WITH STOP SIGNS	
Lincoln Avenue/Irving Street	8.61 – A
Lincoln Avenue/Monroe Street	10.71 – B
Victoria Avenue Westbound/Jackson Street	8.66 – A
Victoria Avenue Eastbound/Jackson Street	8.22 – A
Victoria Avenue Westbound/Irving Street	8.21 – A
Victoria Avenue Eastbound/Irving Street	7.92 – A
Victoria Avenue Westbound/Monroe Street	8.32 – A
Victoria Avenue Eastbound/Monroe Street	8.18 – A

For the target year of 2021, all 11 of the study area intersections are projected to operate at acceptable levels of service (LOS A through D) as seven of the intersections would operate at LOS A, three intersections would operate at LOS B, and one intersection would operate at LOS C. These traffic conditions represent a Friday evening pre-event peak hour.

III.
TRAFFIC IMPACT ANALYSIS

This section summarizes the analysis of the project's impacts on study area traffic conditions. First is a discussion of project generated traffic volumes. This is followed by an analysis of the impacts of the project on traffic volumes and intersection levels of service. Then the impacts associated with construction, site access, and safety are presented.

Standards of Significance

According to the City of Riverside's "Traffic Impact Analysis Preparation Guide," a significant impact would occur at a study intersection when the addition of project-generated trips cause the peak hour LOS to degrade from an acceptable LOS (A thru D) to an unacceptable LOS (E or F). The guidelines also state that a significant impact would occur when the project causes the peak hour delay to increase as follows:

LOS A/B	=	By 10.0 seconds
LOS C	=	By 8.0 seconds
LOS D	=	By 5.0 seconds
LOS E	=	By 2.0 seconds
LOS F	=	By 1.0 seconds

Project Generated Traffic

The volume of traffic that would be generated by the expanded and new bleachers was determined in order to estimate the impacts of the project on the study area streets and intersections. The trip generation rates and the anticipated volumes of traffic that would be generated when operating at maximum capacity are shown in Table 5. The table shows the traffic volumes for the 3,000-seat bleachers.

TABLE 5
PROJECT GENERATED TRAFFIC

Facility	*Evening Hour – Pre-Event*			*Daily Traffic*
	Inbound	*Outbound*	*Total*	
TRIP GENERATION RATES				
Bleachers (vehicle trips per seat)	0.275	0.025	0.30	0.60
GENERATED TRAFFIC VOLUMES				
Bleachers (3,000 seats)	825	75	900	1,800

The trip generation rates shown in Table 5 is based on one vehicle for every four seats (for vehicles that remain parked at the site) and that an additional ten percent of the vehicles arriving at the school would drop passengers off then leave. The rate of one vehicle for every four seats is based

on the parking requirement for "assemblies of people" in the City of Riverside Municipal Code, which is one space per four fixed seats.

Table 5 indicates that the 3,000-seat bleachers would generate an estimated 900 vehicle trips during the peak hour (825 inbound and 75 outbound). The peak hour for this analysis represents the one-hour time period prior to the beginning of an event when patrons are traveling to the school. Approximately the same level of traffic would be generated at the end of an event when patrons are exiting (with the inbound and outbound traffic volumes reversed). The project may also generate traffic at other times; however, such traffic activity would be minor as compared to a maximum-capacity event represented by the traffic volumes shown in Table 5. The estimated daily traffic volume for a maximum-capacity event would be 1,800 vehicle trips per day.

While the 3,000 bleacher seats would significantly increase the 750 seats, a credit for the traffic generated by the existing bleachers has not been applied because Arlington High School currently has their home football games and graduation ceremonies at another school. So the traffic impact analysis is based on the assumption that the 3,000-seats would be a new facility that is fully occupied.

It should be noted that the volumes of traffic that would be generated by the project do not necessarily represent new traffic on the overall street network because the project-related traffic represents traffic that would be re-directed to this school instead of Ramona High School where Arlington High School home Varsity football games and graduation ceremonies currently occur.

To quantify the increase in traffic at each intersection the project-generated traffic was geographically distributed onto the street network using the directional percentages shown on Figure 6 in the Appendix. This distribution assumption is based on the layout of the existing street network, the school attendance boundaries, and the anticipated geographical distribution of the event patrons.

Using the generated traffic volumes shown in Table 5 and the geographical distribution assumptions outlined above, the volume of project traffic on each access street and at each study area intersection was determined for the traffic impact analysis. The volumes of project-generated traffic are shown on Figure 6.

For purposes of evaluating the impacts, the traffic analysis considers two scenarios. One is the project's impacts on existing conditions and the other is the project's impacts on the projected year 2021 conditions. To quantify the impacts on existing conditions, the project generated traffic volumes shown on Figure 6 were added to the existing traffic volumes. The resulting "existing plus project" traffic volumes are shown on Figure 7.

The total volumes of traffic projected for the year 2021 traffic conditions for the "with project" scenario were determined by adding the project generated traffic to the future year 2021 baseline traffic volumes. The "2021 with project" traffic volumes are shown on Figure 8.

Intersection Impact Analysis

An analysis of traffic impacts was conducted by quantifying the before-and-after traffic volumes, then determining the average delay values and levels of service at the study area intersections for the "without project" and "with project" scenarios. Two baseline scenarios are addressed in the analysis: existing conditions and the projected year 2021 conditions. The year 2021 was used as the target year for future conditions as that is the first year that the bleacher project would be

completed and operational. The peak hour for the analysis represents the time period during which the project would generate the heaviest volumes of traffic (typically between 6:00 and 7:00 p.m.), which does not coincide with the peak commuter period for the ambient traffic volumes, which generally occurs between 4:00 and 6:00 p.m.

For the existing conditions baseline scenario, the before-and-after delay values and levels of service at each of the study area intersections are summarized in Table 6 for the Friday evening peak hour. The table shows the existing traffic conditions, the traffic conditions with the addition of the project-generated traffic, and the increase in delay values associated with the project. The final column in the table indicates if the intersection would be significantly impacted by the project traffic according to the significance criteria outlined above.

TABLE 6
PROJECT IMPACT ON INTERSECTION LEVELS OF SERVICE
EXISTING CONDITIONS AS BASELINE

Intersection	*Delay Value (seconds/vehicle) & Level of Service*		*Increase In Delay (sec)*	*Significant Impact*
	Existing Conditions	*Existing Plus Project*		
SIGNALIZED INTERSECTIONS				
Indiana Avenue/Jackson Street	22.8 – C	23.4 – C	0.6	No
Indiana Avenue/Monroe Street	17.7 – B	19.5 – B	1.8	No
Lincoln Avenue/Jackson Street	16.1 – B	19.5 – B	3.4	No
UNSIGNALIZED INTERSECTIONS				
Lincoln Avenue/Irving Street	8.52 – A	13.29 – B	4.77	No
Lincoln Avenue/Monroe Street	10.46 – B	13.07 – B	2.61	No
Victoria Avenue Westbound/Jackson Street	8.54 – A	8.97 – A	0.43	No
Victoria Avenue Eastbound/Jackson Street	8.15 – A	8.63 – A	0.48	No
Victoria Avenue Westbound/Irving Street	8.13 – A	8.57 – A	0.44	No
Victoria Avenue Eastbound/Irving Street	7.87 – A	8.00 – A	0.13	No
Victoria Avenue Westbound/Monroe Street	8.23 – A	9.00 – A	0.77	No
Victoria Avenue Eastbound/Monroe Street	8.10 – A	8.31 – A	0.21	No

The intersection of Indiana Avenue and Jackson Street, for example, currently operates with an average delay value of 22.8 seconds and LOS C for existing conditions and with an average delay value of 23.4 seconds and LOS C for the "existing plus project" scenario. The additional traffic would increase the average delay at the intersection by 0.6 seconds and the intersection would not be significantly impacted based on the criteria outlined previously.

Table 6 shows that the project would not have a significant impact at any of the study area intersections based on the City of Riverside's significance criteria. Six intersections would operate at LOS A, four intersections would operate at LOS B, and one intersection would operate at LOS C, which represents acceptable traffic conditions according to the City of Riverside guidelines.

The comparative delay values and levels of service for the year 2021 analysis scenario are shown in Table 7. The findings are essentially the same as for the existing conditions scenario as all of

the study area intersections would continue to operate at acceptable levels of service and none of the intersections would be significantly impacted by the project.

TABLE 7
PROJECT IMPACT ON INTERSECTION LEVELS OF SERVICE
YEAR 2021 AS BASELINE

Intersection	Delay Value (seconds/vehicle) & Level of Service		Increase In Delay (sec)	Significant Impact
	2021 Without Project	2021 With Project		
SIGNALIZED INTERSECTIONS				
Indiana Avenue/Jackson Street	23.8 – C	24.4 – C	0.6	No
Indiana Avenue/Monroe Street	18.0 – B	19.9 – B	1.9	No
Lincoln Avenue/Jackson Street	16.2 – B	19.9 – B	3.7	No
UNSIGNALIZED INTERSECTIONS				
Lincoln Avenue/Irving Street	8.61 – A	13.57 – B	4.96	No
Lincoln Avenue/Monroe Street	10.71 – B	13.45 – B	2.74	No
Victoria Avenue Westbound/Jackson Street	8.66 – A	9.10 – A	0.44	No
Victoria Avenue Eastbound/Jackson Street	8.22 – A	8.71 – A	0.49	No
Victoria Avenue Westbound/Irving Street	8.21 – A	8.67 – A	0.46	No
Victoria Avenue Eastbound/Irving Street	7.92 – A	8.06 – A	0.14	No
Victoria Avenue Westbound/Monroe Street	8.32 – A	9.12 – A	0.80	No
Victoria Avenue Eastbound/Monroe Street	8.18 – A	8.39 – A	0.21	No

It should be noted that the traffic impacts would not occur on a daily basis, but would occur only when a major event were to be held at the facility, such as a Varsity football game or graduation. Such events would typically occur on a Friday evening, but could also occur on a Thursday evening or a Saturday afternoon. The analysis addressed the Friday evening scenario because the ambient traffic volumes would typically be higher on Friday as compared to Thursday evening or Saturday afternoon.

Construction Traffic Impacts

Construction would generate various levels of truck and automobile traffic throughout the duration of the construction period. The construction-related traffic includes construction workers traveling to and from the school as well as trucks hauling construction materials to, and demolition/excavation material from the school.

Construction of the entire project (new Biomed/Special Education building, auxiliary gym, a concession/restroom building and expansion of the bleachers at the stadium; modernization of the Media Arts Academy building, Administration Building, Student Service Building, and outdoor swimming pool) would generate various levels of truck and automobile traffic throughout the duration of the construction period. The project construction is anticipated to start in Q4-2020 and finish in Q4-2021. As required by the City of Riverside Municipal Code Title 7-Noise Control,

construction activities are only permitted from 7:00 AM to 7:00 PM on weekdays and 8:00 AM to 5:00 PM Saturdays. No construction activities are to take place on Sundays or federal holidays. Construction staging (i.e., storage of equipment and materials) would be contained on the school campus. Parking for workers is anticipated to be provided in the staging areas and existing parking lots during all phases of construction. The construction-related traffic would include construction workers traveling to and from the school as well as trucks hauling equipment, materials to, and demolition materials from the campus.

The maximum number of the haul trips would occur during demolition debris hauling with about 5 trips per day. The truck trips would be spread out throughout the workday and would generally occur during non-peak traffic periods. This level of construction-related traffic would not result in a significant traffic impact on the study area roadway network.

The maximum number of the worker and vendor trips would occur during building construction with about 42 trips per day. Current site access is from Jackson Street and Lincoln Avenue. Existing average daily trips on Jackson Street and Lincoln Avenue are 1,900 ADT to 11,500 ADT, respectively. Compared to the existing traffic from the 1,928 high school students (3,296 trips)[1] and ADT, the number of worker trips would be negligible.

This level of construction-related traffic would not result in a significant traffic impact on the study area roadway network as it would be negligible compared to the volumes of traffic currently generated by the existing high school.

Non-motorized Transportation and Transit

The proposed project would generate a demand for non-motorized travel as some event patrons would travel to and from the school as pedestrians or on bicycles. The streets in the school vicinity north of Victoria Avenue have sidewalks along both sides of the street, except for parts of Jackson Street and Irving Street north of Victoria Avenue that are adjacent to agricultural uses. The south side of Victoria Avenue and the streets that extend south of Victoria Avenue do not have sidewalks. All of the study area intersections are equipped with painted crosswalks and the signalized intersections also have pedestrian signals and pedestrian push buttons to activate the signals. Bike lanes are provided on both sides of Lincoln Avenue and Victoria Avenue.

With regard to public transit, the Riverside Transit Agency (RTA) operates bus lines along Lincoln Avenue and Indiana Avenue. Route 10 runs on Lincoln Avenue adjacent to the school site and Route 14 runs along Indiana Avenue approximately one-quarter mile north of the school campus. The project would not adversely affect the performance of these transit or non-motorized transportation facilities and would not conflict with any plans or policies relative to these transportation modes.

Congestion Management Program

According to the "Riverside County Congestion Management Program" (Riverside County

[1] Based on the ITE Trip Generation Manual 10th Edition. Public school daily trip rates: High School with 1,928 students at 1.71 = 3,296 trips.

Transportation Commission, December 14, 2011), the CMP arterial roadways nearest the project site are Van Buren Boulevard, which is located approximately one-half mile west of the school site, and Magnolia Avenue, which is located approximately one mile north of the school site. The nearest freeway, which is also included in the CMP roadway network, is the Riverside Freeway (State Route 60), which is located approximately one-quarter mile north of the school site and has an interchange with Van Buren Boulevard.

The Congestion Management Program (CMP) indicates that a project may have a significant impact and that a traffic study would be required if the project would adversely affect the morning or afternoon peak periods on a designated CMP arterial roadway or freeway. As the project would generate traffic primarily during times that are outside the commuter peak periods (i.e., 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.), it would not typically impact the traffic conditions that are the focus of the CMP. The heaviest traffic volumes are generally between 6:30 and 7:00 p.m. and between 9:00 and 9:30 p.m. on a Thursday or Friday and occasionally on a Saturday. The project's peak traffic flows would not, therefore, coincide with the commuter peak periods on the CMP roadway network and the peak hour traffic conditions on the CMP roadway network would not be substantially affected by the proposed project.

The project would not conflict with the congestion management program or a level of service standard established by the congestion management agency and the impacts would be less than significant relative to CMP roads or highways.

Traffic Hazards and Incompatible Uses

Access to the school campus is provided by existing driveways on Jackson Street, Lincoln Avenue, and Irving Street. The increased levels of traffic, pedestrians, and vehicular turning movements at the school entrances and at the nearby intersections may result in an increased number of traffic conflicts and a corresponding increase in the probability of an accident occurring. These impacts would not be significant, however, because the streets, intersections, and driveways are designed to accommodate the anticipated levels of vehicular and pedestrian activity and have historically been accommodating school-related traffic on a daily basis. The project would be compatible with the design and operation of a high school and would not result in any major modifications to the existing access or circulation features at the school. The project would not, therefore, substantially increase hazards due to a design feature or incompatible uses.

Emergency Access

The existing access and circulation features at the school, including the fire lanes, currenlty accommodate emergency ingress and egress by fire trucks, police units, and ambulance/paramedic vehicles. Site access would not change and is currently provided via the driveways on Jackson Street, Lincoln Avenue, and Irving Street that lead to the parking lots and drop-off/pick-up zones. In addition, emergency access lanes are available for access to the school buildings and athletic facilities. The project would not, therefore, result in inadequate emergency access.

Alternative Transportation

The project would be consistent with policies supporting alternative transportation (public transit, bicycle, and pedestrian facilities) because busing would typically be provided from the opposing school during football games, bike racks are available on the school campus, bus loading/unloading zones are provided at the school, sidewalks are in place along the streets in the

school vicinity, crosswalks and pedestrian signals are in place at the nearby intersections, and bus routes operate along Lincoln Avenue and Indiana Avenue. The project would not, therefore, conflict with policies, plans, or programs regarding transit, bicycle, or pedestrian facilities and the project would not decrease the performance or safety of such facilities.

IV.
SUMMARY OF IMPACTS

The key findings of the traffic impact analysis are presented below.

- The proposed 3,000-seat bleachers at the high school would generate an estimated 900 vehicle trips during the peak hour (825 inbound and 75 outbound) and a total of 1,800 trips per day. The peak hour for this analysis represents the one-hour time period prior to the beginning of an event when patrons are traveling to the school. As football games typically begin on Fridays at 7:00 p.m., the peak hour would be from 6:00 to 7:00 p.m.
- An analysis of 11 intersections in the vicinity of the school site indicates that the traffic generated by the project would not result in a significant impact at any of the study area intersections according to the City of Riverside's significance criteria. The impact analysis was conducted for the existing conditions (2019) and year 2021 baseline scenarios.
- The project would not conflict with the congestion management program or a level of service standard established by the congestion management agency and the impacts would be less than significant relative to CMP roads or highways.
- The project would not substantially increase hazards due to a design feature or incompatible uses and would not result in inadequate emergency access.
- The project would not adversely affect the performance of any transit or non-motorized transportation facilities (pedestrians and bicycles) and would not conflict with any adopted policies, plans, or programs supporting alternative transportation

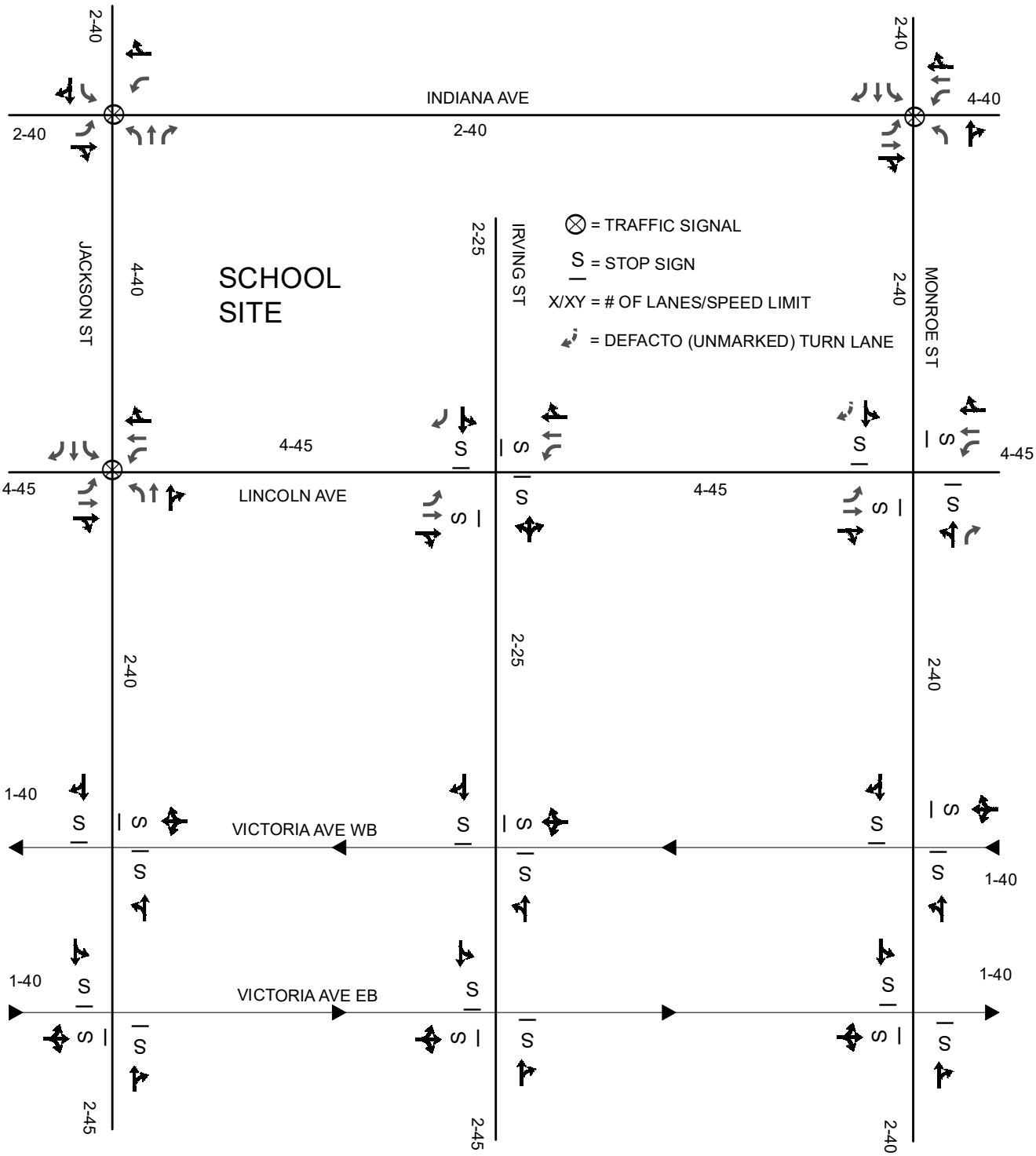

FIGURE 3
STUDY AREA STREETS AND INTERSECTIONS
ARLINGTON HIGH SCHOOL STADIUM - RIVERSIDE

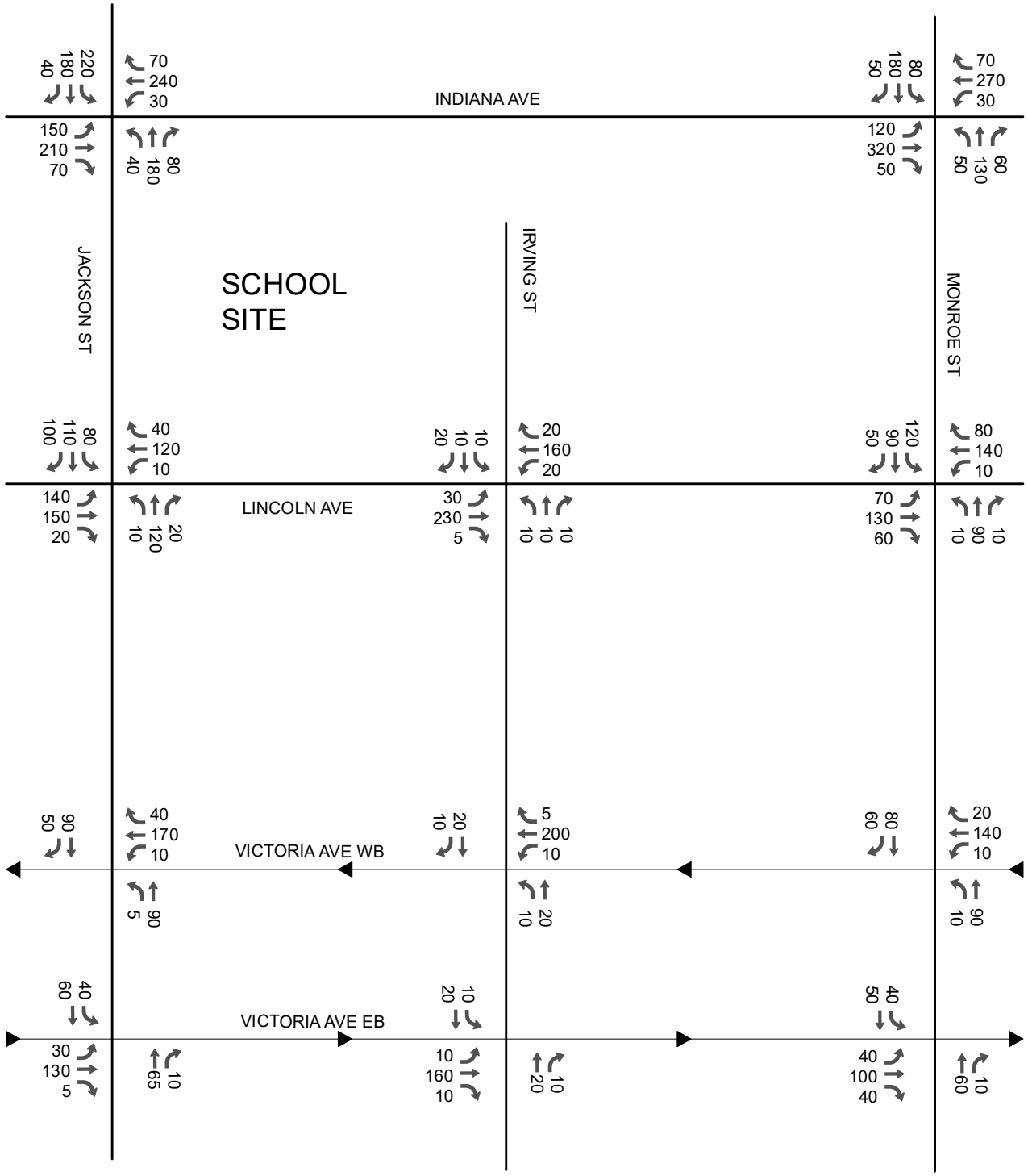

FIGURE 4
EXISTING TRAFFIC VOLUMES - FRIDAY EVENING PEAK HOUR
ARLINGTON HIGH SCHOOL STADIUM - RIVERSIDE

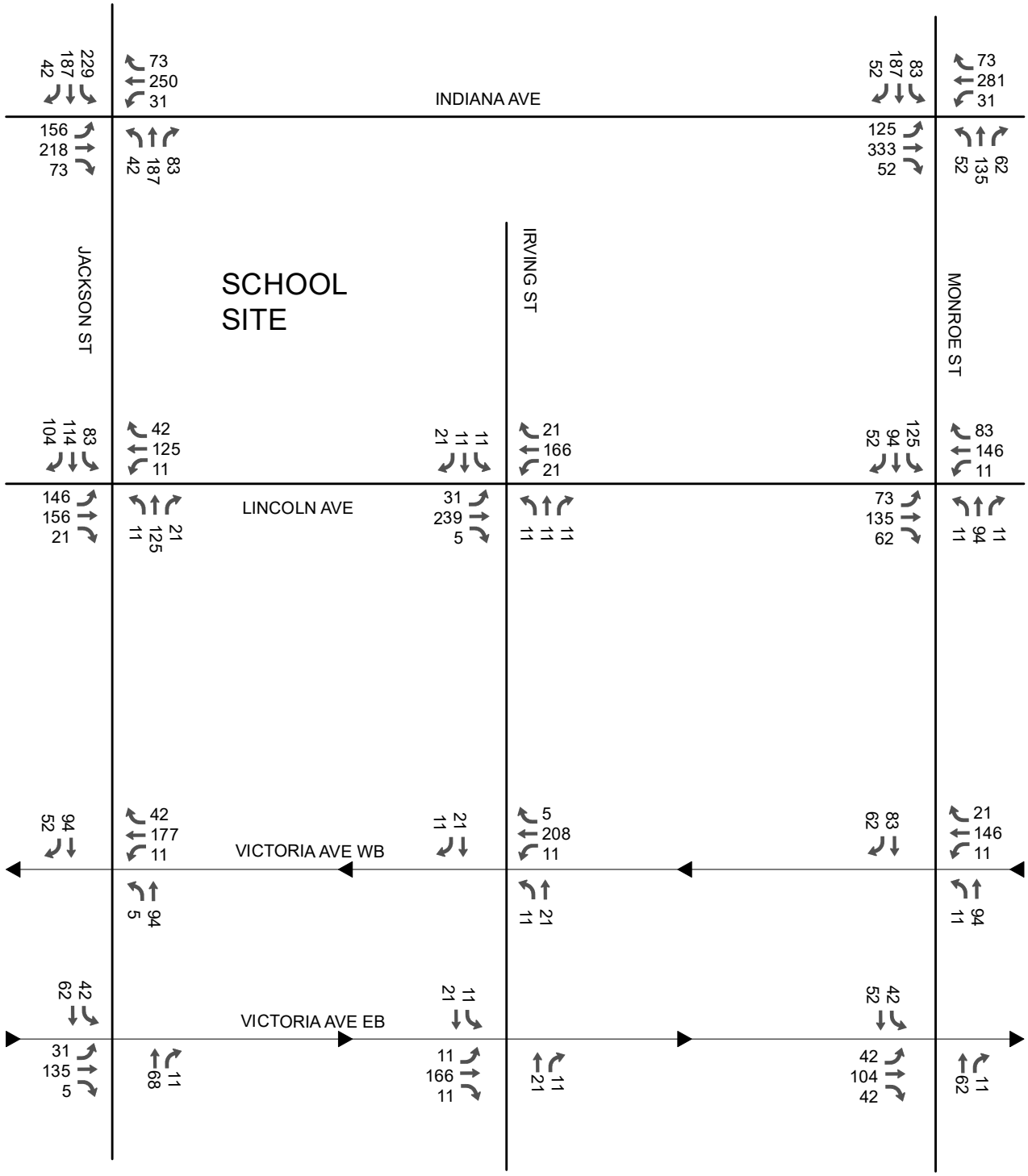

FIGURE 5
2021 TRAFFIC VOLUMES WITHOUT PROJECT
ARLINGTON HIGH SCHOOL STADIUM - RIVERSIDE

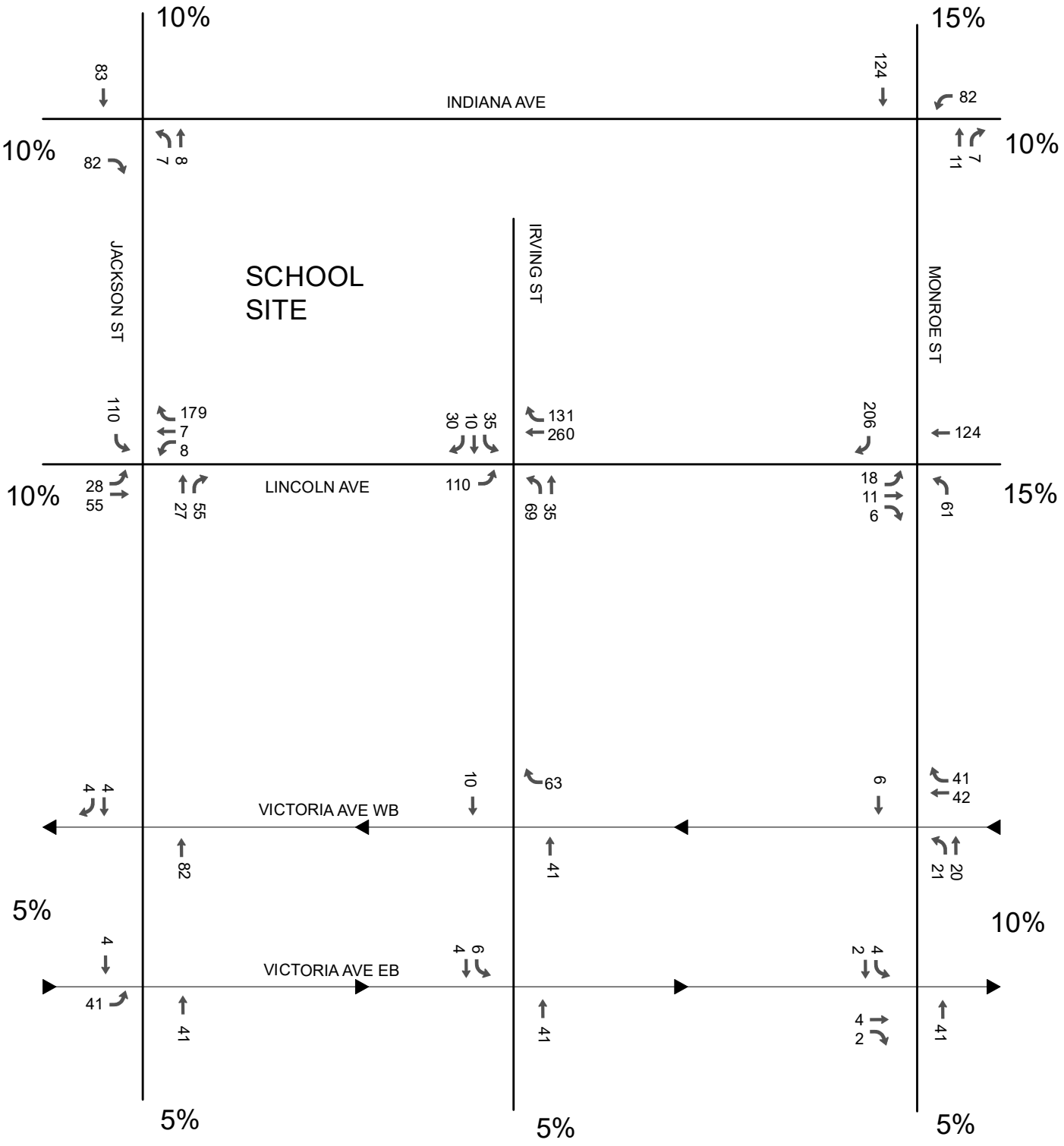

FIGURE 6
PROJECT GENERATED TRAFFIC - FRIDAY EVENING PEAK HOUR
ARLINGTON HIGH SCHOOL STADIUM - RIVERSIDE

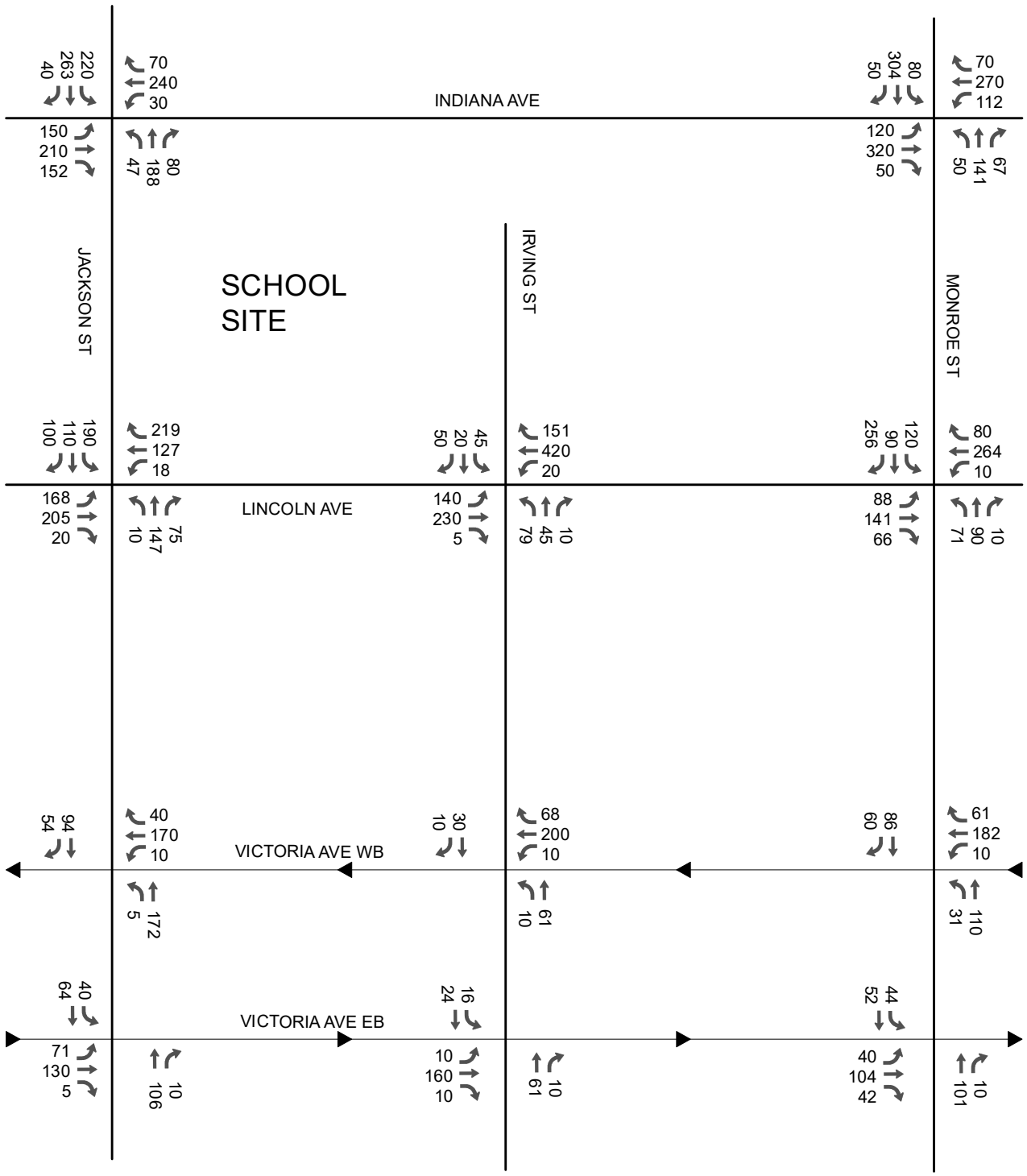

FIGURE 7
EXISTING PLUS PROJECT TRAFFIC VOLUMES
ARLINGTON HIGH SCHOOL STADIUM - RIVERSIDE

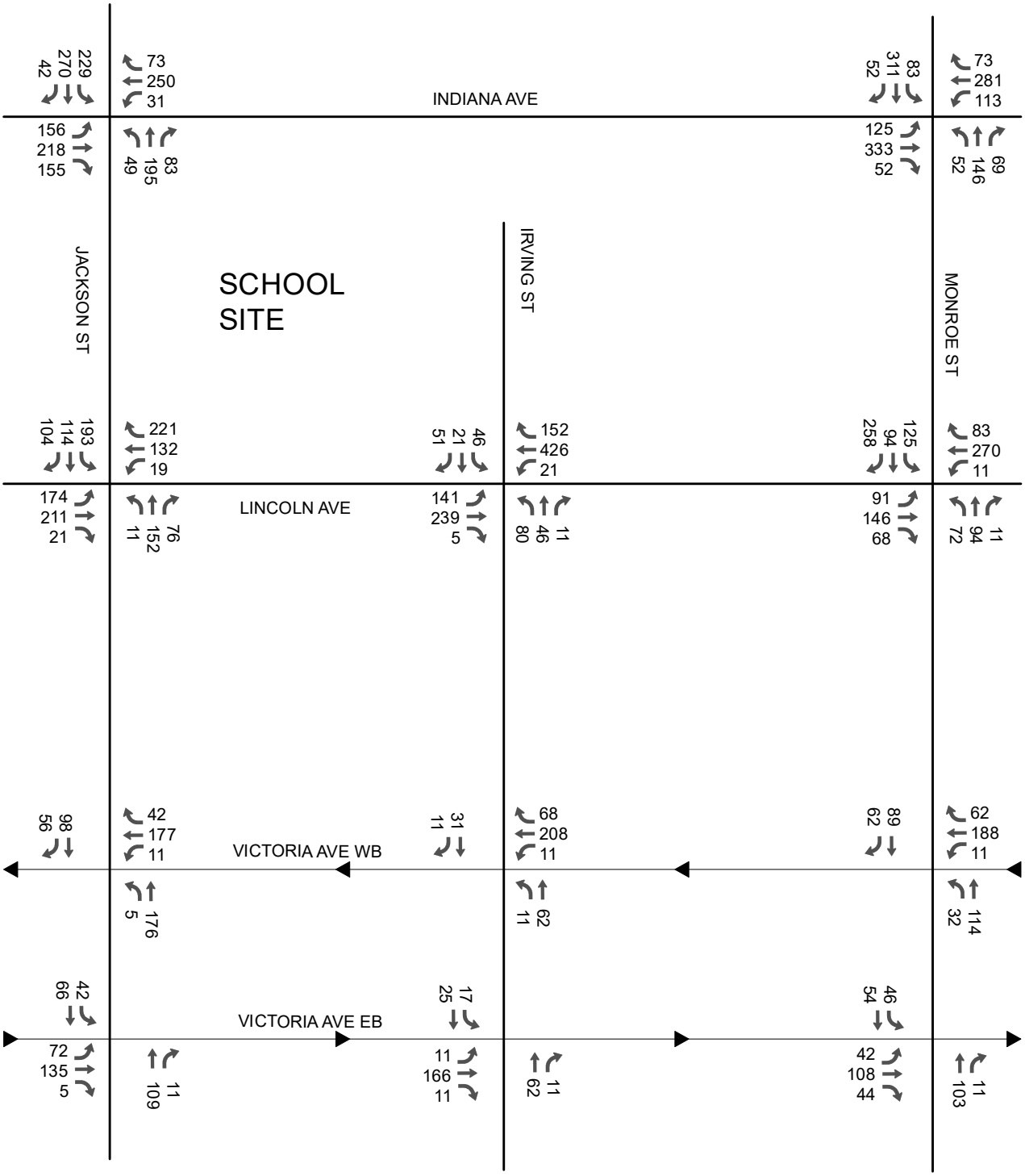

FIGURE 8
2021 TRAFFIC VOLUMES WITH PROJECT
ARLINGTON HIGH SCHOOL STADIUM - RIVERSIDE

Appendix E Air Quality and Greenhouse Gas Background and Modeling Data

Appendices

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Air Quality and Greenhouse Gas Background and Modeling Data

AIR QUALITY

Climate/Meteorology

SOUTH COAST AIR BASIN

The project site lies in the South Coast Air Basin (SoCAB), which includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The SoCAB is in a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds.[1]

Temperature and Precipitation

The annual average temperature varies little throughout the SoCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station nearest to the project site with temperature data is the Riverside Fire Station 3 Monitoring Station (ID No. 047470). The lowest average temperature is reported at 39.1°F in January, and the highest average temperature is 94.4°F in August.[2]

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from October through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast, with slightly heavier shower activity in the east and over the mountains. Rainfall historically averages 10.21 inches per year in the project area.[3]

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1 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

2 Western Regional Climate Center (WRCC). 2019. Riverside Fire Station 3, California ([Station ID] 047470): Period of Record Monthly Climate Summary, 01/01/1893 to 06/05/2016. Western U.S. Climate Summaries. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7470.

3 Western Regional Climate Center (WRCC). 2019. Riverside Fire Station 3, California ([Station ID] 047470): Period of Record Monthly Climate Summary, 01/01/1893 to 06/05/2016. Western U.S. Climate Summaries. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7470.

Humidity

Although the SoCAB has a semiarid climate, the air near the earth's surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SoCAB by offshore winds, the "ocean effect" is dominant. Periods of heavy fog, especially along the coast, are frequent. Low clouds, often referred to as high fog, are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the eastern portions of the SoCAB.[4]

Wind

Wind patterns across the south coastal region are characterized by westerly or southwesterly onshore winds during the day and by easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season.

Between periods of wind, periods of air stagnation may occur, both in the morning and evening hours. Air stagnation is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high-pressure systems over the SoCAB, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally continue a few days before predominant meteorological conditions are reestablished.

The mountain ranges to the east affect the transport and diffusion of pollutants by inhibiting their eastward transport. Air quality in the SoCAB generally ranges from fair to poor and is similar to air quality in most of coastal southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions.[5]

Inversions

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. These are the marine/subsidence inversion and the radiation inversion. The combination of winds and inversions are critical determinants in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the project area.[6]

Air Quality Regulations

The proposed project has the potential to release gaseous emissions of criteria pollutants and dust into the ambient air; therefore, it falls under the ambient air quality standards promulgated at the local, state, and federal levels. The project site is in the SoCAB and is subject to the rules and regulations imposed by the South Coast

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4 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

5 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

6 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

Air Quality Management District (SCAQMD). However, SCAQMD reports to California Air Resources board (CARB) and all criteria emissions are also governed by the California and national Ambient Air Quality Standards (AAQS). Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized below.

AMBIENT AIR QUALITY STANDARDS

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS, based on even greater health and welfare concerns.

These National AAQS and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health based AAQS for seven air pollutants. As shown in Table 1, these pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[a]	Federal Primary Standard[b]	Major Pollutant Sources
Ozone (O_3)[c]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[a]	Federal Primary Standard[b]	Major Pollutant Sources
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	
Respirable Fine Particulate Matter ($PM_{2.5}$)[d]	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m^3	
	Rolling 3-Month Average	*	0.15 µg/m^3	
Sulfates (SO_4)[e]	24 hours	25 µg/m^3	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[a]	Federal Primary Standard[b]	Major Pollutant Sources
Vinyl Chloride	24 hour	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: California Air Resources Board (CARB). 2016, October 1. Ambient Air Quality Standards.
Notes: ppm: parts per million; µg/m^3: micrograms per cubic meter
* Standard has not been established for this pollutant/duration by this entity.
a California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
b National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
c On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
d On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
e On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- AB 1493: Pavley Fuel Efficiency Standards
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building and Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

CRITERIA AIR POLLUTANTS

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. VOC and oxides of nitrogen (NO_x) are air pollutant precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and NO_2 are the principal secondary pollutants. A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

Carbon Monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be

the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion, engines and motor vehicles operating at slow speeds are the primary source of CO in the SoCAB. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.[7,8] The SoCAB is designated under the California and National AAQS as being in attainment of CO criteria levels.[9]

Volatile Organic Compounds (VOC) are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of VOCs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. There are no ambient air quality standards established for VOCs. However, because they contribute to the formation of ozone (O_3), SCAQMD has established a significance threshold for this pollutant.[10]

Nitrogen Oxides (NO_x) are a byproduct of fuel combustion and contribute to the formation of O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal form of NO_2 produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 part per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure.[11,12] The SoCAB is designated as an attainment area for NO_2 under the National AAQS California AAQS.[13]

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not

7 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.
8 US Environmental Protection Agency (USEPA). 2019. Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.
9 California Air Resources Board (CARB). 2018, June 12 (updated). Air Quality Standards and Area Designations. http://www.arb.ca.gov/desig/desig.htm.
10 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.
11 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.
12 US Environmental Protection Agency (USEPA). 2019. Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.
13 California Air Resources Board (CARB). 2017, May 5. Area Designations Maps/State and National. http://www.arb.ca.gov/desig/desig.htm.

release significant quantities of SO_2.[14,15] When sulfur dioxide forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_X). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. The SoCAB is designated as attainment under the California and National AAQS.[16]

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on arid landscapes also contributes substantially to local particulate loading (i.e., fugitive dust). Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems.[17]

The US Environmental Protection Agency's (EPA) scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to health effects and at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms.[18] There has been emerging evidence that even smaller particulates with an aerodynamic diameter of <0.1 microns or less (i.e., ≤0.1 millionths of a meter or <0.000004 inch), known as ultrafine particulates (UFPs), have human health implications, because UFPs toxic components may initiate or facilitate biological processes that may lead to adverse effects to the heart, lungs, and other organs.[19] However, the EPA or CARB have yet to adopt AAQS to regulate these particulates. Diesel particulate matter (DPM) is classified by the CARB as a carcinogen.[20]

[14] South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

[15] US Environmental Protection Agency (USEPA). 2019. Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

[16] California Air Resources Board (CARB). 2018, June 12 (updated). Air Quality Standards and Area Designations. http://www.arb.ca.gov/desig/desig.htm.

[17] South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

[18] South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

[19] South Coast Air Quality Management District (SCAQMD). 2016, February. 2016 Air Quality Management Plan National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf.

[20] California Air Resources Board (CARB). 1998, April 22. The Report on Diesel Exhaust. http://www.arb.ca.gov/toxics/dieseltac/de-fnds.htm.

Particulate matter can also cause environmental effects such as visibility impairment,[21] environmental damage,[22] and aesthetic damage.[23,24,25] The SoCAB is a nonattainment area for $PM_{2.5}$ under California and National AAQS and a nonattainment area for PM_{10} under the California AAQS.[26]

Ozone (O_3) is commonly referred to as "smog" and is a gas that is formed when VOCs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O_3 can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level O_3 also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. O_3 also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges, and wilderness areas. In particular, O_3 harms sensitive vegetation during the growing season.[27,28] The SoCAB is designated as extreme nonattainment under the California AAQS (1-hour and 8-hour) and National AAQS (8-hour).[29]

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. Once taken into the body, lead distributes throughout the body in the blood and accumulates in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood. The effects of lead most commonly encountered in current populations are neurological effects in children and cardiovascular effects in adults (e.g., high blood pressure and heart disease). Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems,

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21 $PM_{2.5}$ is the main cause of reduced visibility (haze) in parts of the United States.

22 Particulate matter can be carried over long distances by wind and then settle on ground or water, making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.

23 Particulate matter can stain and damage stone and other materials, including culturally important objects such as statues and monuments.

24 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

25 US Environmental Protection Agency (USEPA). 2019, June 11 (updated). Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

26 CARB approved the SCAQMD's request to redesignate the SoCAB from serious nonattainment for PM_{10} to attainment for PM_{10} under the National AAQS on March 25, 2010, because the SoCAB has not violated federal 24-hour PM_{10} standards during the period from 2004 to 2007. In June 2013, the EPA approved the State of California's request to redesignate the PM_{10} nonattainment area to attainment of the PM_{10} National AAQS, effective on July 26, 2013.

27 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

28 US Environmental Protection Agency (USEPA). 2018, October 31 (updated). Ground Level Ozone Basics. https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics#effects.

29 California Air Resources Board (CARB). 2018, June 12 (updated). Air Quality Standards and Area Designations. http://www.arb.ca.gov/desig/desig.htm.

learning deficits, and lowered IQ.[30,31] The major sources of lead emissions have historically been mobile and industrial sources. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. However, in 2008 the EPA and CARB adopted stricter lead standards, and special monitoring sites immediately downwind of lead sources recorded very localized violations of the new state and federal standards.[32] As a result of these violations, the Los Angeles County portion of the SoCAB is designated nonattainment under the National AAQS for lead.[33] Because emissions of lead are found only in projects that are permitted by SCAQMD, lead is not a pollutant of concern for the project.

TOXIC AIR CONTAMINANTS

The public's exposure to air pollutants classified as toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the federal Clean Air Act (42 United States Code §7412[b]) is a toxic air contaminant. Under state law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

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30 South Coast Air Quality Management District (SCAQMD). 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

31 US Environmental Protection Agency (USEPA). 2019. Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants.

32 Source-oriented monitors record concentrations of lead at lead-related industrial facilities in the SoCAB, which include Exide Technologies in the City of Commerce; Quemetco, Inc., in the City of Industry; Trojan Battery Company in Santa Fe Springs; and Exide Technologies in Vernon. Monitoring conducted between 2004 through 2007 showed that the Trojan Battery Company and Exide Technologies exceed the federal standards (See South Coast Air Quality Management District (SCAQMD). 2012, May 4. Final 2012 Lead State Implementation Plan: Los Angeles County. http://www3.aqmd.gov/hb/attachments/2011-2015/2012May/2012-May4-030.pdf).

33 South Coast Air Quality Management District (SCAQMD). 2012, May 4. Final 2012 Lead State Implementation Plan: Los Angeles County. http://www3.aqmd.gov/hb/attachments/2011-2015/2012May/2012-May4-030.pdf.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs.[34] Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

CARB has promulgated the following specific rules to limit TAC emissions:

- 13 CCR Chapter 10, Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling
- 13 CCR Chapter 10, Section 2480, Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools
- 13 CCR Section 2477 and Article 8, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate

Community Risk

In addition, to reduce exposure to TACs, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005)[35] to provide guidance regarding the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources. CARB's recommendations on the siting of new sensitive land uses were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources. The key observation in these studies is that proximity to air pollution sources substantially increases exposure and the potential for adverse health effects. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risks from motor vehicle traffic, DPM from trucks, and benzene and 1,3-butadiene from passenger vehicles. CARB

[34] California Air Resources Board (CARB). 1999. California Air Resources Board (CARB). Final Staff Report: Update to the Toxic Air Contaminant List.

[35] California Air Resources Board (CARB). 2005, April. Air Quality and Land Use Handbook: A Community Health Perspective. https://www.arb.ca.gov/ch/handbook.pdf.

recommendations are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations.

Multiple Airborne Toxics Exposure Study (MATES)

The Multiple Air Toxics Exposure Study (MATES) is a monitoring and evaluation study on ambient concentrations of TACs and estimated the potential health risks from air toxics in the SoCAB. In 2008, SCAQMD conducted its third update to the MATES study (MATES III). The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,200 in a million. The largest contributor to this risk was diesel exhaust, accounting for 84 percent of the cancer risk.[36]

SCAQMD recently released the fourth update (MATES IV). The results showed that the overall monitored risk for excess cancer from a lifetime exposure to ambient levels of air toxics decreased to approximately 418 in one million. Compared to the 2008 MATES III, monitored excess cancer risks decreased by approximately 65 percent. Approximately 90 percent of the risk is attributed to mobile sources while 10 percent is attributed to TACs from stationary sources, such as refineries, metal processing facilities, gas stations, and chrome plating facilities. The largest contributor to this risk was diesel exhaust, accounting for approximately 68 percent of the air toxics risk. Compared to MATES III, MATES IV found substantial improvement in air quality and associated decrease in air toxics exposure. As a result, the estimated basin-wide population-weighted risk decreased by approximately 57 percent compared to the analysis done for the MATES III time period.[37]

The Office of Environmental Health Hazard Assessment (OEHHA) updated the guidelines for estimating cancer risks on March 6, 2015. The new method utilizes higher estimates of cancer potency during early life exposures, which result in a higher calculation of risk. There are also differences in the assumptions on breathing rates and length of residential exposures. When combined together, SCAQMD estimates that risks for a given inhalation exposure level will be about 2.7 times higher using the proposed updated methods identified in MATES IV (e.g., 2.7 times higher than 418 in one million overall excess cancer risk).[38]

Air Quality Management Planning

SCAQMD is the agency responsible for preparing the air quality management plan (AQMP) for the SoCAB in coordination with the Southern California Association of Governments (SCAG). Since 1979, a number of AQMPs have been prepared.

[36] South Coast Air Quality Management District (SCAQMD). 2008, September. Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES III). https://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-iii.

[37] South Coast Air Quality Management District (SCAQMD). 2015, October 3. Final Report Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES IV). http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf.

[38] South Coast Air Quality Management District (SCAQMD). 2015, October 3. Final Report Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES IV). http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf.

2016 AQMP

On March 3, 2017, SCAQMD adopted the 2016 AQMP as an update to the 2012 AQMP. The 2016 AQMP addresses strategies and measures to attain the following National AAQS:

- 2008 National 8-hour ozone standard by 2031,
- 2012 National annual $PM_{2.5}$ standard by 2025[39],
- 2006 National 24-hour $PM_{2.5}$ standard by 2019,
- 1997 National 8-hour ozone standard by 2023, and the
- 1979 National 1-hour ozone standard by year 2022.

It is projected that total NO_X emissions in the SoCAB would need to be reduced to 150 tons per day (tpd) by year 2023 and to 100 tpd in year 2031 to meet the 1997 and 2008 federal 8-hour ozone standards. The strategy to meet the 1997 federal 8-hour ozone standard would also lead to attaining the 1979 federal 1-hour ozone standard by year 2022[40], which requires reducing NO_X emissions in the SoCAB to 250 tpd. This is approximately 45 percent additional reductions above existing regulations for the 2023 ozone standard and 55 percent additional reductions above existing regulations to meet the 2031 ozone standard.

Reducing NO_X emissions would also reduce $PM_{2.5}$ concentrations in the SoCAB. However, as the goal is to meet the 2012 federal annual $PM_{2.5}$ standard no later than year 2025, SCAQMD is seeking to reclassify the SoCAB from "moderate" to "serious" nonattainment under this federal standard. A "moderate" non-attainment would require meeting the 2012 federal standard by no later than 2021.

Overall, the 2016 AQMP is composed of stationary and mobile-source emission reductions from regulatory control measures, incentive-based programs, co-benefits from climate programs, mobile-source strategies, and reductions from federal sources such as aircrafts, locomotives, and ocean-going vessels. Strategies outlined in the 2016 AQMP would be implemented in collaboration between CARB and the EPA.[41]

LEAD STATE IMPLEMENTATION PLAN

In 2008 EPA designated the Los Angeles County portion of the SoCAB nonattainment under the federal lead (Pb) classification due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and the City of Industry exceeding the new standard. The rest of the SoCAB, outside the Los Angeles County nonattainment area remains in attainment of the new standard. On May 24, 2012, CARB approved the SIP revision for the federal lead standard, which the EPA revised in 2008. Lead concentrations in this nonattainment area have been below the level of the federal standard since December 2011. The SIP revision was submitted to EPA for approval.

[39] The 2016 AQMP requests a reclassification from moderate to serious non-attainment for the 2012 National $PM_{2.5}$ standard.
[40] South Coast Air Quality Management District (SCAQMD). 2017, March 4. Final 2016 Air Quality Management Plan. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.
[41] South Coast Air Quality Management District (SCAQMD). 2017, March 4. Final 2016 Air Quality Management Plan. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

AREA DESIGNATIONS

The AQMP provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards through the State Implementation Plan (SIP). Areas are classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet ambient air quality standards. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- **Attainment:** a pollutant is in attainment if the CAAQS for that pollutant was not violated at any site in the area during a three-year period.
- **Nonattainment:** a pollutant is in nonattainment if there was at least one violation of a state AAQS for that pollutant in the area.
- **Nonattainment/Transitional:** a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the SoCAB is shown in Table 2. The SoCAB is designated in attainment of the California AAQS for sulfates. The SoCAB is designated as nonattainment for lead (Los Angeles County only) under the National AAQS.

Table 2 Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
Ozone – 1-hour	Extreme Nonattainment	No Federal Standard
Ozone – 8-hour	Extreme Nonattainment	Extreme Nonattainment
PM_{10}	Serious Nonattainment	Attainment/Maintenance
$PM_{2.5}$	Nonattainment	Nonattainment[1]
CO	Attainment	Attainment
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Nonattainment (Los Angeles County only)[2]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: California Air Resources Board (CARB). 2018, June 12. Air Quality Standards and Area Designations.
1 SCAQMD is seeking to reclassify the SoCAB from "moderate" to "serious" nonattainment under federal $PM_{2.5}$ standard.
2 In 2010, the Los Angeles portion of the SoCAB was designated nonattainment for lead under the new federal and existing state AAQS as a result of large industrial emitters. Remaining areas in the SoCAB are unclassified.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site are best documented by measurements taken by the SCAQMD. The project site is located within Source Receptor Area (SRA) 23 – Metropolitan Riverside County. The air quality monitoring station closest to the project site is the Riverside-Rubidoux Monitoring Station. This station monitors O_3, NO_x, PM_{10}, and $PM_{2.5}$. The most current five years of data from these monitoring stations are included in Table 3, *Ambient Air Quality Monitoring Summary*. The data show regular violations of the state and federal O_3, state PM_{10}, and federal $PM_{2.5}$ standards in the last five years.

Table 3 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2013	2014	2015	2016	2017
Ozone (O_3)[1]					
State 1-Hour ≥ 0.09 ppm (days exceed threshold)	13	29	31	33	47
State 8-hour ≥ 0.07 ppm (days exceed threshold)	36	66	55	69	81
Federal 8-Hour > 0.075 ppm (days exceed threshold)	26	41	39	47	58
Max. 1-Hour Conc. (ppm)	0.123	0.141	0.132	0.142	0.145
Max. 8-Hour Conc. (ppm)	0.103	0.104	0.105	0.104	0.118
Nitrogen Dioxide (NO_2)[2]					
State 1-Hour ≥ 0.18 ppm (days exceed threshold)	0	0	0	0	0
Federal 1-Hour ≥ 0.100 ppm (days exceed threshold)	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.0596	0.0599	0.0574	0.0731	0.063
Coarse Particulates (PM_{10})[2]					
State 24-Hour > 50 µg/m^3 (days exceed threshold)	86	119	87	60	98
Federal 24-Hour > 150 µg/m^3 (days exceed threshold)	0	0	0	0	0
Max. 24-Hour Conc. (µg/m^3)	199.2	122.7	107.4	170.5	137.6

Table 3 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2013	2014	2015	2016	2017
Fine Particulates ($PM_{2.5}$)[2]					
Federal 24-Hour > 35 µg/m^3 (days exceed threshold)	6	5	9	5	7
Max. 24-Hour Conc. (µg/m^3)	60.3	48.9	54.7	51.5	50.3

Source: California Air Resources Board (CARB). 2019. Air Pollution Data Monitoring Cards (2013, 2014, 2015, 2016, and 2017).
Notes: ppm: parts per million; parts per billion, µg/m^3: micrograms per cubic meter
* Data not available.
[1] Data obtained from the Riverside-Rubidoux Monitoring Station

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public. The nearest sensitive receptors to the proposed project site are the residences immediately to the east, south, and west along Irving Street, Lincoln Avenue, and Jackson Street and residences across the Riverside Canal to the north.

Methodology

Projected construction-related air pollutant emissions are calculated using the California Emissions Estimator Model (CalEEMod)[42], Version 2016.3.2. CalEEMod compiles an emissions inventory of construction (fugitive dust, off-gas emissions, on-road emissions, and off-road emissions), area sources, indirect emissions from energy use, mobile sources, indirect emissions from waste disposal (annual only), and indirect emissions from water/wastewater (annual only) use. The calculated emissions of the project are compared to thresholds of significance for individual projects using the SCAQMD's CEQA Air Quality Analysis Guidance Handbook.

[42] California Air Pollution Control Officers Association (CAPCOA). 2017. California Emissions Estimator Model (CalEEMod). Version 2016.3.2. Prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

Thresholds of Significance

The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in SCAQMD's *CEQA Air Quality Handbook* and the significance thresholds on SCAQMD's website.[43] CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. SCAQMD has established thresholds of significance for regional air quality emissions for construction activities and project operation. In addition to the daily thresholds listed above, projects are also subject to the AAQS. These are addressed though an analysis of localized CO impacts and localized significance thresholds (LSTs).

REGIONAL SIGNIFICANCE THRESHOLDS

SCAQMD has adopted regional construction and operational emissions thresholds to determine a project's cumulative impact on air quality in the SoCAB. Table 4 lists SCAQMD's regional significance thresholds that are applicable for all projects uniformly regardless of size or scope. There is growing evidence that although ultrafine particulates contribute a very small portion of the overall atmospheric mass concentration, they represent a greater proportion of the health risk from PM. However, the EPA or CARB have not yet adopted AAQS to regulate ultrafine particulates; therefore, SCAQMD has not developed thresholds for them.

Table 4 SCAQMD Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Particulates (PM_{10})	150 lbs/day	150 lbs/day
Particulates ($PM_{2.5}$)	55 lbs/day	55 lbs/day

Source: South Coast Air Quality Management District (SCAQMD). 2019, March (revised). SCAQMD Air Quality Significance Thresholds.

Projects that exceed the regional significance threshold contribute to the nonattainment designation of the SoCAB. The attainment designations are based on the AAQS, which are set at levels of exposure that are determined to not result in adverse health. Exposure to fine particulate pollution and ozone causes myriad health impacts, particularly to the respiratory and cardiovascular systems:

- Linked to increased cancer risk ($PM_{2.5}$, TACs)
- Aggravates respiratory disease (O_3, $PM_{2.5}$)
- Increases bronchitis (O_3, $PM_{2.5}$)
- Causes chest discomfort, throat irritation, and increased effort to take a deep breath (O_3)
- Reduces resistance to infections and increases fatigue (O_3)

[43] South Coast Air Quality Management District (SCAQMD). 2019, March (revised). SCAQMD Air Quality Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

- Reduces lung growth in children ($PM_{2.5}$)
- Contributes to heart disease and heart attacks ($PM_{2.5}$)
- Contributes to premature death (O_3, $PM_{2.5}$)
- Linked to lower birth weight in newborns ($PM_{2.5}$)[44]

Exposure to fine particulates and ozone aggravates asthma attacks and can amplify other lung ailments such as emphysema and chronic obstructive pulmonary disease. Exposure to current levels of $PM_{2.5}$ is responsible for an estimated 4,300 cardiopulmonary-related deaths per year in the SoCAB. In addition, University of Southern California scientists responsible for a landmark children's health study found that lung growth improved as air pollution declined for children aged 11 to 15 in five communities in the SoCAB.[45]

Mass emissions in Table 4 are not correlated with concentrations of air pollutants but contribute to the cumulative air quality impacts in the SoCAB. Therefore, regional emissions from a single project do not single-handedly trigger a regional health impact. SCAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of air quality in the SoCAB. To achieve the health-based standards established by the EPA, SCAQMD prepares an AQMP that details regional programs to attain the AAQS.

CO HOTSPOTS

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the SoCAB and in the state have steadily declined.

In 2007, the SoCAB was designated in attainment for CO under both the California AAQS and National AAQS. The CO hot spot analysis conducted for the attainment by SCAQMD for busiest intersections in Los Angeles during the peak morning and afternoon periods plan did not predict a violation of CO standards.[46] As identified in SCAQMD's 2003 AQMP[47] and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SoCAB in previous years, prior to redesignation, were a result of

[44] South Coast Air Quality Management District (SCAQMD). 2015. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf.

[45] South Coast Air Quality Management District (SCAQMD). 2015, October. "Blueprint for Clean Air: 2016 AQMP White Paper." 2016 AQMP White Papers Web Page. https://www.aqmd.gov/docs/default-source/Agendas/aqmp/white-paper-working-groups/wp-blueprint-final.pdf?sfvrsn=2.

[46] The four intersections were: Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day with LOS E in the morning peak hour and LOS F in the evening peak hour.

[47] South Coast Air Quality Management District (SCAQMD). 2003, August. "Modeling and Attainment Demonstrations." Appendix V of 2003 Air Quality Management Plan. https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2003-aqmp.

unusual meteorological and topographical conditions and not a result of congestion at a particular intersection. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.[48]

LOCALIZED SIGNIFICANCE THRESHOLDS

SCAQMD developed LSTs for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at the project site (offsite mobile-source emissions are not included in the LST analysis). LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS and are shown in Table 5.

Table 5 SCAQMD Localized Significance Thresholds

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
Annual NO_2 Standard (CAAQS)	0.03 ppm
24-Hour PM_{10} Standard – Construction (SCAQMD)[1]	10.4 µg/m^3
24-Hour $PM_{2.5}$ Standard – Construction (SCAQMD)[1]	10.4 µg/m^3
24-Hour PM_{10} Standard – Operation (SCAQMD)[1]	2.5 µg/m^3
24-Hour $PM_{2.5}$ Standard – Operation (SCAQMD)[1]	2.5 µg/m^3

Source: South Coast Air Quality Management District (SCAQMD). 2019, March (revised). SCAQMD Air Quality Significance Thresholds.
ppm – parts per million; µg/m^3 – micrograms per cubic meter
[1] Threshold is based on SCAQMD Rule 403. Since the SoCAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an allowable change in concentration. Therefore, background concentration is irrelevant.

To assist lead agencies, SCAQMD developed screening-level LSTs to back-calculate the mass amount (lbs. per day) of emissions generated onsite that would trigger the levels shown in Table 5 for projects under 5-acres. These "screening-level" LSTs tables are the localized significance thresholds for all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required to compare concentrations of air pollutants generated by the project to the localized concentrations shown in Table 5.

In accordance with SCAQMD's LST methodology, construction LSTs are based on the acreage disturbed per day based on equipment use. The construction LSTs for the project site in SRA 23 are shown in Table 6, *SCAQMD Screening-Level Construction Localized Significance Thresholds,* for receptors within 82 feet (25 meters).

Table 6 SCAQMD Construction Localized Significance Thresholds

	Threshold (lbs/day)[a]			
Acreage Disturbed	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
≤1.00 Acre Disturbed Per Day	118	602	4.00	3.00

[48] Bay Area Air Quality Management District (BAAQMD). 2017, May. California Environmental Quality Act Air Quality Guidelines.

1.19 Acres Disturbed Per Day	128	655	4.56	3.19
1.89 Acres Disturbed Per Day	164	852	6.67	3.89

Sources:
South Coast Air Quality Management District (SCAQMD). 2008, September. Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES III).
South Coast Air Quality Management District (SCAQMD). 2011. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds.
[a] LSTs are based on receptors within 82 feet (25 meters) in SRA 23

Because the project is not an industrial project that has the potential to emit substantial sources of stationary emissions, operational LSTs are not an air quality impact of concern associated with the project.

Whenever a project would require use of chemical compounds that have been identified in SCAQMD Rule 1401, placed on CARB's air toxics list pursuant to AB 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the SCAQMD. Table 7, *Toxic Air Contaminants Incremental Risk Thresholds*, lists the TAC incremental risk thresholds for operation of a project. The purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. (*California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369 (Case No. S213478)*). CEQA does not require CEQA-level environmental document to analyze the environmental effects of attracting development and people to an area. However, the environmental document must analyze the impacts of environmental hazards on future users, when a proposed project exacerbates an existing environmental hazard or condition. Residential, commercial, and office uses do not use substantial quantities of TACs and typically do not exacerbate existing hazards, so these thresholds are typically applied to new industrial projects.

Table 7 SCAQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Incremental Cancer Risk	≥ 10 in 1 million
Hazard Index (project increment)	≥ 1.0
Cancer Burden in areas ≥ 1 in 1 million	> 0.5 excess cancer cases

Source: South Coast Air Quality Management District (SCAQMD). 2019, March (revised). SCAQMD Air Quality Significance Thresholds.

GREENHOUSE GAS EMISSIONS

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. Climate change is the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor,[49] carbon (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[50,51] The major GHG are briefly described below.

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g. manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global-warming-potential (GWP) gases.

    - ***Chlorofluorocarbons (CFCs***) are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases

[49] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop rather than a primary cause of change.

[50] Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities. (See California Air Resources Board. 2017, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/shortlived.htm.) However, state and national GHG inventories do not yet include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

[51] Intergovernmental Panel on Climate Change (IPCC). 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press.

and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.

- ***Perfluorocarbons (PFCs)*** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.

- ***Sulfur Hexafluoride (SF_6)*** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.

- ***Hydrochlorofluorocarbons (HCFCs)*** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

- ***Hydrofluorocarbons (HFCs)*** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs.[52,53]

GHGs are dependent on the lifetime or persistence of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 8. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential for different GHGs to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under IPCC's Fourth Assessment Report (AR4) GWP values for CH_4, a project that generates 10 metric tons (MT) of CH_4 would be equivalent to 250 MT of CO_2.[54]

[52] Intergovernmental Panel on Climate Change (IPCC). 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press.
[53] US Environmental Protection Agency (USEPA). 2019. Overview of Greenhouse Gases. http://www3.epa.gov/climatechange/ghgemissions/gases.html.
[54] Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press.

Table 8 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Second Assessment Report Atmospheric Lifetime (Years)	Fourth Assessment Report Atmospheric Lifetime (Years)	Second Assessment Report Global Warming Potential Relative to CO_2[1]	Fourth Assessment Report Global Warming Potential Relative to CO_2[1]
Carbon Dioxide (CO_2)	50 to 200	50 to 200	1	1
Methane[2] (CH_4)	12 (±3)	12	21	25
Nitrous Oxide (N_2O)	120	114	310	298
Hydrofluorocarbons:				
HFC-23	264	270	11,700	14,800
HFC-32	5.6	4.9	650	675
HFC-125	32.6	29	2,800	3,500
HFC-134a	14.6	14	1,300	1,430
HFC-143a	48.3	52	3,800	4,470
HFC-152a	1.5	1.4	140	124
HFC-227ea	36.5	34.2	2,900	3,220
HFC-236fa	209	240	6,300	9,810
HFC-4310mee	17.1	15.9	1,300	1,030
Perfluoromethane: CF_4	50,000	50,000	6,500	7,390
Perfluoroethane: C_2F_6	10,000	10,000	9,200	12,200
Perfluorobutane: C_4F_{10}	2,600	NA	7,000	8,860
Perfluoro-2-methylpentane: C_6F_{14}	3,200	NA	7,400	9,300
Sulfur Hexafluoride (SF_6)	3,200	NA	23,900	22,800

Source: Intergovernmental Panel on Climate Change (IPCC). 1995. Second Assessment Report: Climate Change 1995 and Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press.

Notes: The GWP values in the IPCC's Fifth Assessment Report[55] reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2. However, SCAQMD uses the AR4 GWP values to maintain consistency in statewide GHG emissions modeling. In addition, the 2017 Scoping Plan Update was based on the AR4 GWP values.

1 Based on 100-year time horizon of the GWP of the air pollutant relative to CO_2.

2 The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

California's Greenhouse Gas Sources and Relative Contribution

In 2018, the statewide GHG emissions inventory was updated for 2000 to 2016 emissions using the GWPs in IPCC's AR4.[56] Based on these GWPs, California produced 429.4 $MMTCO_2e$ GHG emissions in 2016. California's transportation sector was the single largest generator of GHG emissions, producing 40.5 percent of the state's total emissions. Industrial sector emissions made up 23.4 percent, and electric power generation made up 16.1 percent of the state's emissions inventory. Other major sectors of GHG emissions include

[55] Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press.

[56] Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (2006).

commercial and residential (12.0 percent), agriculture and forestry (7.9 percent) and other (solvents and chemicals at 0.2 percent).[57]

California's GHG emissions have followed a declining trend since 2007. In 2016, emissions from routine GHG emitting activities statewide were 429 $MMTCO_2e$, or 12 $MMTCO_2e$ lower than 2015 levels. This represents an overall decrease of 13 percent since peak levels in 2004 and 2 $MMTCO_2e$ below the 1990 level and the state's 2020 GHG target. During the 2000 to 2016 period, per capita GHG emissions in California have continued to drop from a peak in 2001 of 14.0 $MTCO_2e$ per capita to 10.8 $MTCO_2e$ per capita in 2016, a 23 percent decrease. Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product (GDP)) is declining, representing a 38 percent decline since the 2001 peak, while the state's GDP has grown 41 percent during this period.[58]

Regulatory Settings

REGULATION OF GHG EMISSIONS ON A NATIONAL LEVEL

The U.S. Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.[59]

To regulate GHGs from passenger vehicles, EPA was required to issue an endangerment finding. The finding identifies emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the project's GHG emissions inventory because they constitute the majority of GHG emissions and, per South Coast Air Quality Management District guidance, are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO_2 per year are required to submit an annual report.

[57] California Air Resources Board (CARB). 2018, February. Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. https://www.arb.ca.gov/cc/inventory/data/data.htm.

[58] California Air Resources Board (CARB). 2018, July 11. 2018 Edition California Greenhouse Gas Inventory for 2000-2016: By Category as Defined in the 2008 Scoping Plan. https://www.arb.ca.gov/cc/inventory/data/data.htm.

[59] US Environmental Protection Agency (USEPA). 2009, December. EPA: Greenhouse Gases Threaten Public Health and the Environment. Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. https://archive.epa.gov/epapages/newsroom_archive/newsreleases/08d11a451131bca585257685005bf252.html.

Update to Corporate Average Fuel Economy Standards (2010/2012)

The current Corporate Average Fuel Economy standards (for model years 2011 to 2016) incorporate stricter fuel economy requirements promulgated by the federal government and California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by roughly 25 percent by 2016 (resulting in a fleet average of 35.5 miles per gallon by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow automakers who show compliance with the national program to also be deemed in compliance with state requirements. The federal government issued new standards in 2012 for model years 2017–2025 that will require a fleet average of 54.5 miles per gallon in 2025. However, the EPA is reexamining the 2017-2025 emissions standards.

EPA Regulation of Stationary Sources under the Clean Air Act (Ongoing)

Pursuant to its authority under the Clean Air Act, the EPA has been developing regulations for new stationary sources such as power plants, refineries, and other large sources of emissions. Pursuant to former President Obama's 2013 Climate Action Plan, the EPA was directed to develop regulations for existing stationary sources also. However, the EPA is reviewing the Clean Power Plan under President Trump's Energy Independence Executive Order.

REGULATION OF GHG EMISSIONS ON A STATE LEVEL

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-3-05, Executive Order B-30-15, Assembly Bill 32 (AB 32), Senate Bill 32 (SB 32) and Senate Bill 375 (SB 375).

Executive Order S-3-05

Executive Order S-3-05, signed June 1, 2005. Executive Order S-3-05 set the following GHG reduction targets for the State:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32, the Global Warming Solutions Act (2006)

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in AB 32. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-03-05.

CARB 2008 Scoping Plan

The final Scoping Plan was adopted by CARB on December 11, 2008. The *2008 Scoping Plan* identified that GHG emissions in California are anticipated to be approximately 596 $MMTCO_2e$ in 2020. In December 2007,

CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state.[60] In order to effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 $MTCO_2e$ per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012.

First Update to the Scoping Plan

CARB completed a five-year update to the 2008 Scoping Plan, as required by AB 32. The First Update to the Scoping Plan was adopted at the May 22, 2014, board hearing. The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the original 2008 Scoping Plan. As part of the update, CARB recalculated the 1990 GHG emission levels with the updated AR4 GWPs, and the 427 $MMTCO_2e$ 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, is slightly higher at 431 $MMTCO_2e$.[61]

As identified in the Update to the Scoping Plan, California is on track to meeting the goals of AB 32. However, the update also addresses the state's longer-term GHG goals within a post-2020 element. The post-2020 element provides a high-level view of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for the state to adopt a midterm target. According to the Update to the Scoping Plan, local government reduction targets should chart a reduction trajectory that is consistent with or exceeds the trajectory created by statewide goals.[62] CARB identified that reducing emissions to 80 percent below 1990 levels will require a fundamental shift to efficient, clean energy in every sector of the economy. Progressing toward California's 2050 climate targets will require significant acceleration of GHG reduction rates. Emissions from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit.[63]

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions in the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in state planning and investment decisions.

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60 California Air Resources Board (CARB). 2008, October. Climate Change Proposed Scoping Plan, a Framework for Change. https://ww3.arb.ca.gov/cc/scopingplan/document/psp.pdf.

61 California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

62 California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

63 California Air Resources Board (CARB). 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

Senate Bill 32 and Assembly Bill 197

In September 2016, Governor Brown signed SB 32 and AB 197 into law, making the Executive Order goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires the CARB to prioritize direction emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

2017 Climate Change Scoping Plan Update

Executive Order B-30-15 and SB 32 required CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. On December 24, 2017, CARB adopted the 2017 Climate Change Scoping Plan Update, which outlines potential regulations and programs, including strategies consistent with AB 197 requirements, to achieve the 2030 target. The 2017 Scoping Plan establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.[64]

California's climate strategy will require contributions from all sectors of the economy, including enhanced focus on zero- and near-zero emission (ZE/NZE) vehicle technologies; continued investment in renewables, such as solar roofs, wind, and other types of distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning, to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for GHG reductions at stationary sources complement local air pollution control efforts by the local air districts to tighten criteria air pollutants and TACs emissions limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks;
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Post-2020 Cap-and-Trade Program that includes declining caps.

[64] California Air Resources Board (CARB). 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

- Continued implementation of SB 375.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

In addition to the statewide strategies listed above, the 2017 Climate Change Scoping Plan also identified local governments as essential partners in achieving the State's long-term GHG reduction goals and identified local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends statewide targets of no more than 6 $MTCO_2e$ or less per capita by 2030 and 2 $MTCO_2e$ or less per capita by 2050. CARB recommends that local governments evaluate and adopt robust and quantitative locally appropriate goals that align with the statewide per capita targets and the State's sustainable development objectives and develop plans to achieve the local goals. The statewide per capita goals were developed by applying the percent reductions necessary to reach the 2030 and 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to the State's 1990 emissions limit established under AB 32. For CEQA projects, CARB states that lead agencies have discretion to develop evidenced-based numeric thresholds (mass emissions, per capita, or per service population)—consistent with the Scoping Plan and the state's long-term GHG goals. To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits. Where further project design or regional investments are infeasible or not proven to be effective, CARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits.

The Scoping Plan scenario is set against what is called the business-as-usual (BAU) yardstick—that is, what would the GHG emissions look like if the State did nothing at all beyond the existing policies that are required and already in place to achieve the 2020 limit, as shown in Table 9. It includes the existing renewables requirements, advanced clean cars, the "10 percent" Low Carbon Fuel Standard (LCFS), and the SB 375 program for more vibrant communities, among others. However, it does not include a range of new policies or measures that have been developed or put into statute over the past two years. Also shown in the table, the known commitments are expected to result in emissions that are 60 $MMTCO_2e$ above the target in 2030. If the estimated GHG reductions from the known commitments are not realized due to delays in implementation or technology deployment, the post-2020 Cap-and-Trade Program would deliver the additional GHG reductions in the sectors it covers to ensure the 2030 target is achieved.

Table 9 2017 Climate Change Scoping Plan Emissions Reductions Gap

Modeling Scenario	2030 GHG Emissions $MMTCO_2e$
Reference Scenario (Business-as-Usual)	389
With Known Commitments	320
2030 GHG Target	**260**
Gap to 2030 Target	**60**

Source: California Air Resources Board (CARB). 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target.

Table 10 provides estimated GHG emissions by sector, compared to 1990 levels, and the range of GHG emissions for each sector estimated for 2030.

Table 10 2017 Climate Change Scoping Plan Emissions Change by Sector

Scoping Plan Sector	1990 $MMTCO_2e$	2030 Proposed Plan Ranges $MMTCO_2e$	% Change from 1990
Agricultural	26	24-25	-8% to -4%
Residential and Commercial	44	38-40	-14% to -9%
Electric Power	108	30-53	-72% to -51%
High GWP	3	8-11	267% to 367%
Industrial	98	83-90	-15% to -8%
Recycling and Waste	7	8-9	14% to 29%
Transportation (including TCU)	152	103-111	-32% to -27%
Net Sink[1]	-7	TBD	TBD
Sub Total	431	294-339	-32% to -21%
Cap-and-Trade Program	NA	24-79	NA
Total	**431**	**260**	**-40%**

Source: California Air Resources Board (CARB). 2017, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target.
Notes: TCU = Transportation, Communications, and Utilities; TBD: To Be Determined.
[1] Work is underway through 2017 to estimate the range of potential sequestration benefits from the natural and working lands sector.

Senate Bill 1383

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and CH_4. Black carbon is the light-absorbing component of fine particulate matter produced during incomplete combustion of fuels. SB 1383 requires the state board, no later than January 1, 2018, to approve and begin implementing that comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030, as specified. The bill also establishes targets for reducing organic waste in landfill. On March 14, 2017, CARB adopted the "Final Proposed Short-Lived Climate Pollutant Reduction Strategy", which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s despite the tripling of diesel fuel use.[65] In-use on-road rules are expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020. SCAQMD is one of the air districts that requires air pollution control technologies for chain-driven broilers, which reduces particulate emissions from these char broilers by over 80 percent.[66] Additionally, SCAQMD Rule 445 limits installation of new fireplaces in the SoCAB.

[65] California Air Resources Board (CARB). 2017, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/shortlived.htm.
[66] California Air Resources Board (CARB). 2017, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/shortlived.htm.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs). The Southern California Association of Governments (SCAG) is the MPO for the Southern California region, which includes the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial.

Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target. SCAG's targets are an 8 percent per capita reduction from 2005 GHG emission levels by 2020 and a 13 percent per capita reduction from 2005 GHG emission levels by 2035.[67] The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the 2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's transportation network. The targets would result in 3 $MMTCO_2e$ of reductions by 2020 and 15 $MMTCO_2e$ of reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met.[68]

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. In June 2017, CARB released updated targets and technical methodology and recently released another update in February 2018. The updated targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update, while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks relative to 2005. This excludes reductions anticipated from implementation of state technology and fuels strategies and any potential future state strategies such as statewide road user pricing. The proposed targets call for greater per capita GHG emission reductions from SB 375 than are currently in place, which for 2035, translate into proposed targets that either match or exceed the emission reduction levels in the MPOs' currently adopted SCSs. As proposed, CARB staff's proposed targets would result in an additional reduction of over 8 $MMTCO_2e$ in 2035 compared to the current targets. For the next round of SCS updates, CARB's updated targets for the SCAG region are an 8 percent per capita GHG reduction in 2020 from 2005 levels (unchanged from the 2010 target) and a 19 percent per capita

[67] California Air Resources Board (CARB). 2010, August. Staff Report Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375.

[68] California Air Resources Board (CARB). 2010, August. Staff Report Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375.

GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 13 percent).[69] CARB adopted the updated targets and methodology on March 22, 2018. All SCSs adopted after October 1, 2018 are subject to these new targets.

SCAG's 2016-2040 RTP/SCS

SB 375 requires each MPO to prepare an SCS in their regional transportation plan. For the SCAG region, the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was adopted on April 7, 2016 and is an update to the 2012 RTP/SCS.[70] In general, the SCS outlines a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce vehicle miles traveled from automobiles and light duty trucks and thereby reduce GHG emissions from these sources.

The 2016-2040 RTP/SCS projects that the SCAG region will meet or exceed the passenger per capita targets set in 2010 by CARB. It is projected that VMT per capita in the region for year 2040 would be reduced by 7.4 percent with implementation of the 2016-2040 RTP/SCS compared to a no-plan year 2040 scenario. Under the 2016-2040 RTP/SCS, SCAG anticipates lowering GHG emissions 8 percent below 2005 levels by 2020, 18 percent by 2035, and 21 percent by 2040. The 18 percent reduction by 2035 over 2005 levels represents a 2 percent increase in reduction compared to the 2012 RTP/SCS projection. Overall, the SCS is meant to provide growth strategies that will achieve the aforementioned regional GHG emissions reduction targets. Land use strategies to achieve the region's targets include planning for new growth around high quality transit areas and livable corridors and creating neighborhood mobility areas to integrate land use and transportation and plan for more active lifestyles.[71] However, the SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS; instead, it provides incentives to governments and developers for consistency.

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and was anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles (see also the discussion on the update to the Corporate Average Fuel Economy standards under *Federal Laws*, above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car

[69] California Air Resources Board (CARB). 2018, February. Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. https://www.arb.ca.gov/cc/inventory/data/data.htm.

[70] Southern California Association of Governments (SCAG). 2016, April. The 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

[71] Southern California Association of Governments (SCAG). 2016, April. The 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the state set a new LCFS for transportation fuels sold in the state. Executive Order S-01-07 sets a declining standard for GHG emissions measured in carbon dioxide equivalent gram per unit of fuel energy sold in California. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Senate Bills 1078, 107, X1-2, and Executive Order S-14-08

A major component of California's Renewable Energy Program is the RPS established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008, which expanded the state's Renewable Energy Standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects, because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

Senate Bill 350 (de Leon), was signed into law in September 2015. SB 350 establishes tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, which raises California's RPS requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Executive Order B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals,

meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Executive Order B-16-2012

On March 23, 2012, the state identified that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directs the number of zero-emission vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are zero-emission by 2015 and at least 25 percent by 2020. The executive order also establishes a target for the transportation sector of reducing GHG emissions from the transportation sector 80 percent below 1990 levels.

California Building Code: Building Energy Efficiency Standards

Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2016 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On June 10, 2015, the CEC adopted the 2016 Building Energy Efficiency Standards, which went into effect on January 1, 2017.

The 2016 Standards continues to improve upon the previous 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. Under the 2016 Standards, residential and nonresidential buildings are 28 and 5 percent more energy efficient than the 2013 Standards, respectively.[72] Buildings that are constructed in accordance with the 2013 Building Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the prior 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features. While the 2016 standards do not achieve zero net energy, they do get very close to the state's goal and make important steps toward changing residential building practices in California. The 2019 standards will take the final step to achieve zero net energy for newly constructed residential buildings throughout California.[73]

The 2019 standards move towards cutting energy use in new homes by more than 50 percent and will require installation of solar photovoltaic systems for single-family homes and multi-family buildings of 3 stories and less. Four key areas the 2019 standards will focus on include 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3)

[72] California Energy Commission (CEC). 2015, June 10. 2016 Building Energy Efficiency Standards, Adoption Hearing Presentation. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents.
[73] California Energy Commission (CEC). 2015. 2016 Building Energy and Efficiency Standards Frequently Asked Questions.

residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements.[74] Under the 2019 standards, nonresidential buildings will be 30 percent more energy efficient compared to the 2016 standards while single-family homes will be 7 percent more energy efficient.[75] When accounting for the electricity generated by the solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards.[76]

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[77] The mandatory provisions of CALGreen became effective January 1, 2011 and were last updated in 2016. The 2016 CALGreen became effective on January 1, 2017.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR §§ 1601–1608) were adopted by the CEC on October 11, 2006 and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

Solid Waste Regulations

California's Integrated Waste Management Act of 1989 (AB 939; Public Resources Code §§ 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses.

The California Solid Waste Reuse and Recycling Access Act (AB 1327; Public Resources Code §§ 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any

[74] California Energy Commission (CEC). 2018. News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. http://www.energy.ca.gov/releases/2018_releases/2018-05-09_building_standards_adopted_nr.html.

[75] California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

[76] California Energy Commission (CEC). 2018. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

[77] The green building standards became mandatory in the 2010 edition of the code.

local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

Section 5.408 of the 2016 CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

In October of 2014 Governor Brown signed AB 1826, requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.

Water Efficiency Regulations

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 requires urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Thresholds of Significance

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;

2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;

3. The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions.[78]

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD has convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) held in September 2010, SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency[79]:

- **Tier 1.** If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.

- **Tier 2.** If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project's geographic area (i.e., city or county), project-level and cumulative GHG emissions are less than significant.

- **Tier 3.** If GHG emissions are less than the screening-level threshold, project-level and cumulative GHG emissions are less than significant.

  For projects that are not exempt or where no qualifying GHG reduction plans are directly applicable, SCAQMD requires an assessment of GHG emissions. Project-related GHG emissions include on-road transportation, energy use, water use, wastewater generation, solid waste disposal, area sources, off-road emissions, and construction activities. The SCAQMD Working Group identified that because construction activities would result in a "one-time" net increase in GHG emissions, construction activities should be amortized into the operational phase GHG emissions inventory based on the service life of a building. For buildings in general, it is reasonable to look at a 30-year time frame, since this is a typical interval before a new building requires the first major renovation. SCAQMD identified a screening-level threshold of 3,000 $MTCO_2e$ annually for all land use types or the following land-use-specific thresholds: 1,400 $MTCO_2e$ for commercial projects, 3,500 $MTCO_2e$ for residential projects, and 3,000 $MTCO_2e$ for mixed-use projects. These interim bright-line screening-level criteria are based on a review of the Governor's Office of Planning and Research database of CEQA projects. Based on their review of 711 CEQA projects, 90 percent of CEQA projects would exceed the bright-line thresholds. Therefore, projects that do not exceed the bright-line threshold would have a nominal, and therefore, less than cumulatively considerable impact

[78] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

[79] South Coast Air Quality Management District (SCAQMD). 2010, September 28. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 15. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf.

on GHG emissions. SCAQMD recommends use of the 3,000 $MTCO_2e$ interim bright-line screening-level criterion for all project types.[80]

- **Tier 4.** If emissions exceed the screening threshold, a more detailed review of the project's GHG emissions is warranted.

  The SCAQMD Working Group has identified an efficiency target for projects that exceed the screening threshold of 4.8 $MTCO_2e$ per year per service population ($MTCO_2e$/year/SP) for project-level analyses and 6.6 $MTCO_2e$/year/SP for plan level projects (e.g., program-level projects such as general plans) for the year 2020.[81] The per capita efficiency targets are based on the AB 32 GHG reduction target and 2020 GHG emissions inventory prepared for CARB's 2008 Scoping Plan.[82] If a proposed project's horizon year is beyond year 2020, the efficiency target would need to be adjusted based on the mid-term GHG reduction target of SB 32, which establishes a target of 40 percent below 1990 levels by 2030, and the long-term reduction goal of Executive Order S-03-05, which sets a goal of 80 percent below 1990 levels by 2050. For the purpose of this project, because it has not developed its own numeric GHG significance threshold, the Riverside Unified School District utilizes the SCAQMD's bright-line screening-level criterion of 3,000 $MTCO_2e$ per year as the significance threshold for this project. If the project's operation-phase emissions exceed the bright-line screening-level criterion, GHG emissions would be considered potentially significant in the absence of mitigation measures.

[80] South Coast Air Quality Management District (SCAQMD). 2008. Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf.

[81] It should be noted that the Working Group also considered efficiency targets for 2035 for the first time in this Working Group meeting.

[82] SCAQMD took the 2020 statewide GHG reduction target for land use only GHG emissions sectors and divided it by the 2020 statewide employment for the land use sectors to derive a per capita GHG efficiency metric that coincides with the GHG reduction targets of AB 32 for year 2020.

Regional Construction Emissions Worksheet:

Demolition

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2020 Summer**						
Fugitive Dust						0.4351	0.0659
Off-Road		2.1262	20.9463	14.6573	0.0241	1.1525	1.0761
Total		**2.1262**	**20.9463**	**14.6573**	**0.0241**	**1.5876**	**1.142**
Offsite							
Hauling		0.0243	1.1194	0.1381	3.60E-03	0.0806	0.0247
Vendor		5.57E-03	0.2058	0.0377	5.20E-04	0.0132	4.61E-03
Worker		0.0662	0.0391	0.5242	1.44E-03	0.1348	0.0366
Total		**0.096**	**1.3643**	**0.6999**	**5.56E-03**	**0.2286**	**0.0659**
TOTAL		***2.2222***	***22.3106***	***15.3572***	***0.0297***	***1.8162***	***1.2079***
Onsite	**2020 Winter**						
Fugitive Dust						0.4351	0.0659
Off-Road		2.1262	20.9463	14.6573	0.0241	1.1525	1.0761
Total		**2.1262**	**20.9463**	**14.6573**	**0.0241**	**1.5876**	**1.142**
Offsite							
Hauling		0.0256	1.1291	0.1618	3.51E-03	0.0807	0.0248
Vendor		5.88E-03	0.2047	0.0441	5.00E-04	0.0132	4.62E-03
Worker		0.0648	0.0405	0.424	1.29E-03	0.1348	0.0366
Total		**0.0962**	**1.3743**	**0.6299**	**5.30E-03**	**0.2287**	**0.0659**
TOTAL		***2.2224***	***22.3206***	***15.2872***	***0.0294***	***1.8163***	***1.2079***
Onsite	**2020**						
Fugitive Dust		0	0	0	0	0.4351	0.0659
Off-Road		2.1262	20.9463	14.6573	0.0241	1.1525	1.0761
Total		**2.1262**	**20.9463**	**14.6573**	**0.0241**	**1.5876**	**1.142**
Offsite							
Hauling		0.0256	1.1291	0.1618	0.0036	0.0807	0.0248
Vendor		0.00588	0.2058	0.0441	0.00052	0.0132	0.00462
Worker		0.0662	0.0405	0.5242	0.00144	0.1348	0.0366
Total		**0.0962**	**1.3743**	**0.6999**	**0.00556**	**0.2287**	**0.0659**
TOTAL		***2.2224***	***22.3206***	***15.3572***	***0.02966***	***1.8163***	***1.2079***

Grading/Trenching

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2020 Summer**						
Fugitive Dust						2.1013	1.0798
Off-Road		2.0179	21.3256	12.3879	0.0227	1.0875	1.0005
Total		**2.0179**	**21.3256**	**12.3879**	**0.0227**	**3.1888**	**2.0803**
Offsite							
Hauling		0	0	0	0	0	0
Vendor		5.57E-03	0.2058	0.0377	5.20E-04	0.0132	4.61E-03
Worker		0.0662	0.0391	0.5242	1.44E-03	0.1348	0.0366
Total		**0.0717**	**0.2449**	**0.5618**	**1.96E-03**	**0.148**	**0.0412**
TOTAL		***2.0896***	***21.5705***	***12.9497***	***0.0247***	***3.3368***	***2.1215***
Onsite	**2020 Winter**						
Fugitive Dust						2.1013	1.0798
Off-Road		2.0179	21.3256	12.3879	0.0227	1.0875	1.0005
Total		**2.0179**	**21.3256**	**12.3879**	**0.0227**	**3.1888**	**2.0803**
Offsite							
Hauling		0	0	0	0	0	0
Vendor		5.88E-03	0.2047	0.0441	5.00E-04	0.0132	4.62E-03
Worker		0.0648	0.0405	0.424	1.29E-03	0.1348	0.0366
Total		**0.0707**	**0.2452**	**0.4681**	**1.79E-03**	**0.148**	**0.0412**
TOTAL		***2.0886***	***21.5708***	***12.8560***	***0.0245***	***3.3368***	***2.1215***
Onsite	**2020**						
Fugitive Dust		0	0	0	0	2.1013	1.0798
Off-Road		2.0179	21.3256	12.3879	0.0227	1.0875	1.0005
Total		**2.0179**	**21.3256**	**12.3879**	**0.0227**	**3.1888**	**2.0803**
Offsite							
Hauling		0	0	0	0	0	0
Vendor		0.00588	0.2058	0.0441	0.00052	0.0132	0.00462
Worker		0.0662	0.0405	0.5242	0.00144	0.1348	0.0366
Total		**0.0717**	**0.2452**	**0.5618**	**0.00196**	**0.148**	**0.0412**
TOTAL		***2.0896***	***21.5708***	***12.9497***	***0.02466***	***3.3368***	***2.1215***

Building Construction 2020

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2020** Summer						
	Off-Road	2.0305	14.7882	13.1881	0.022	0.796	0.7688
	Total	**2.0305**	**14.7882**	**13.1881**	**0.022**	**0.796**	**0.7688**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0.0195	0.7202	0.1318	1.83E-03	0.0461	0.0161
	Worker	0.0814	0.0482	0.6451	1.77E-03	0.1659	0.045
	Total	**0.1009**	**0.7684**	**0.7769**	**3.60E-03**	**0.212**	**0.0611**
TOTAL		***2.1314***	***15.5566***	***13.9650***	***0.0256***	***1.0080***	***0.8299***
Onsite	**2020** Winter						
	Off-Road	2.0305	14.7882	13.1881	0.022	0.796	0.7688
	Total	**2.0305**	**14.7882**	**13.1881**	**0.022**	**0.796**	**0.7688**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0.0206	0.7165	0.1543	1.76E-03	0.0461	0.0162
	Worker	0.0797	0.0498	0.5219	1.59E-03	0.1659	0.045
	Total	**0.1003**	**0.7663**	**0.6762**	**3.35E-03**	**0.212**	**0.0612**
TOTAL		***2.1308***	***15.5545***	***13.8643***	***0.0254***	***1.0080***	***0.8300***
Onsite	**2020**						
	Off-Road	2.0305	14.7882	13.1881	0.022	0.796	0.7688
	Total	**2.0305**	**14.7882**	**13.1881**	**0.022**	**0.796**	**0.7688**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0.0206	0.7202	0.1543	0.00183	0.0461	0.0162
	Worker	0.0814	0.0498	0.6451	0.00177	0.1659	0.045
	Total	**0.1009**	**0.7684**	**0.7769**	**0.0036**	**0.212**	**0.0612**
TOTAL		***2.1314***	***15.5566***	***13.9650***	***0.0256***	***1.0080***	***0.8300***

Building Construction 2021

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2021** Summer						
	Off-Road	1.8125	13.6361	12.8994	0.0221	0.6843	0.6608
	Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**	**0.6843**	**0.6608**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0.0163	0.6478	0.1156	1.81E-03	0.0432	0.0134
	Worker	0.0759	0.0432	0.5915	1.71E-03	0.1659	0.045
	Total	**0.0922**	**0.691**	**0.7071**	**3.52E-03**	**0.2091**	**0.0584**
TOTAL		***1.9047***	***14.3271***	***13.6065***	***0.0256***	***0.8934***	***0.7192***
Onsite	**2021** Winter						
	Off-Road	1.8125	13.6361	12.8994	0.0221	0.6843	0.6608
	Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**	**0.6843**	**0.6608**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0.0174	0.6422	0.1367	1.75E-03	0.0432	0.0134
	Worker	0.0744	0.0447	0.4775	1.53E-03	0.1659	0.045
	Total	**0.0918**	**0.6869**	**0.6142**	**3.28E-03**	**0.2091**	**0.0584**
TOTAL		***1.9043***	***14.3230***	***13.5136***	***0.0254***	***0.8934***	***0.7192***
Onsite	**2021**						
	Off-Road	1.8125	13.6361	12.8994	0.0221	0.6843	0.6608
	Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**	**0.6843**	**0.6608**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0.0174	0.6478	0.1367	0.00181	0.0432	0.0134
	Worker	0.0759	0.0447	0.5915	0.00171	0.1659	0.045
	Total	**0.0922**	**0.691**	**0.7071**	**0.00352**	**0.2091**	**0.0584**
TOTAL		***1.9047***	***14.3271***	***13.6065***	***0.0256***	***0.8934***	***0.7192***

Architectural Coating

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2021** Summer						
	Archit. Coating	18.3403				0	0
	Off-Road	0.2189	1.5268	1.8176	2.97E-03	0.0941	0.0941
	Total	**18.5592**	**1.5268**	**1.8176**	**2.97E-03**	**0.0941**	**0.0941**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0	0	0	0	0	0
	Worker	0.0142	8.10E-03	0.1109	3.20E-04	0.0311	8.43E-03
	Total	**0.0142**	**8.10E-03**	**0.1109**	**3.20E-04**	**0.0311**	**8.43E-03**
TOTAL		***18.5734***	***1.5349***	***1.9285***	***0.0033***	***0.1252***	***0.1025***
Onsite	**2021** Winter						
	Archit. Coating	18.3403				0	0
	Off-Road	0.2189	1.5268	1.8176	2.97E-03	0.0941	0.0941
	Total	**18.5592**	**1.5268**	**1.8176**	**2.97E-03**	**0.0941**	**0.0941**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0	0	0	0	0	0
	Worker	0.014	8.38E-03	0.0895	2.90E-04	0.0311	8.43E-03
	Total	**0.014**	**8.38E-03**	**0.0895**	**2.90E-04**	**0.0311**	**8.43E-03**
TOTAL		***18.5732***	***1.5352***	***1.9071***	***0.0033***	***0.1252***	***0.1025***
Onsite	**2021**						
	Archit. Coating	18.3403	0	0	0	0	0
	Off-Road	0.2189	1.5268	1.8176	0.00297	0.0941	0.0941
	Total	**18.5592**	**1.5268**	**1.8176**	**0.00297**	**0.0941**	**0.0941**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0	0	0	0	0	0
	Worker	0.0142	0.00838	0.1109	0.00032	0.0311	0.00843
	Total	**0.0142**	**0.00838**	**0.1109**	**0.00032**	**0.0311**	**0.00843**
TOTAL		***18.5734***	***1.53518***	***1.9285***	***0.00329***	***0.1252***	***0.10253***

Paving

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2021** Summer						
	Off-Road	0.7739	7.7422	8.8569	0.0135	0.4153	0.383
	Paving	0.3311				0	0
	Total	**1.1049**	**7.7422**	**8.8569**	**0.0135**	**0.4153**	**0.383**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0	0	0	0	0	0
	Worker	0.0616	0.0351	0.4806	1.39E-03	0.1348	0.0365
	Total	**0.0616**	**0.0351**	**0.4806**	**1.39E-03**	**0.1348**	**0.0365**
TOTAL		***1.1665***	***7.7773***	***9.3375***	***0.0149***	***0.5501***	***0.4195***
Onsite	**2021** Winter						
	Off-Road	0.7739	7.7422	8.8569	0.0135	0.4153	0.383
	Paving	0.3311				0	0
	Total	**1.1049**	**7.7422**	**8.8569**	**0.0135**	**0.4153**	**0.383**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0	0	0	0	0	0
	Worker	0.0605	0.0363	0.388	1.25E-03	0.1348	0.0365
	Total	**0.0605**	**0.0363**	**0.388**	**1.25E-03**	**0.1348**	**0.0365**
TOTAL		***1.1654***	***7.7785***	***9.2449***	***0.0148***	***0.5501***	***0.4195***
Onsite	**2021**						
	Off-Road	0.7739	7.7422	8.8569	0.0135	0.4153	0.383
	Paving	0.3311	0	0	0	0	0
	Total	**1.1049**	**7.7422**	**8.8569**	**0.0135**	**0.4153**	**0.383**
Offsite							
	Hauling	0	0	0	0	0	0
	Vendor	0	0	0	0	0	0
	Worker	0.0616	0.0363	0.4806	0.00139	0.1348	0.0365
	Total	**0.0616**	**0.0363**	**0.4806**	**0.00139**	**0.1348**	**0.0365**
TOTAL		***1.1665***	***7.7785***	***9.3375***	***0.01489***	***0.5501***	***0.4195***

MAX DAILY	**18.57**	**22.32**	**15.36**	**0.03**	**3.34**	**2.12**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

Regional Construction LSTs Emissions Worksheet:

Demolition					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2020**				
	Fugitive Dust			0.4351	0.0659
	Off-Road	20.9463	14.6573	1.1525	1.0761
	Total	**20.9463**	**14.6573**	**1.5876**	**1.142**
Offsite					
	Hauling				
	Vendor				
	Worker				
	Total				
TOTAL		***20.9463***	***14.6573***	***1.5876***	***1.1420***
Onsite	**2020**				
	Fugitive Dust			0.4351	0.0659
	Off-Road	20.9463	14.6573	1.1525	1.0761
	Total	**20.9463**	**14.6573**	**1.5876**	**1.142**
Offsite					
	Hauling				
	Vendor				
	Worker				
	Total				
TOTAL		***20.9463***	***14.6573***	***1.5876***	***1.1420***
Onsite	**2020**				
	Fugitive Dust	0	0	0.4351	0.0659
	Off-Road	20.9463	14.6573	1.1525	1.0761
	Total	**20.9463**	**14.6573**	**1.5876**	**1.142**
Offsite					
	Hauling	0	0	0	0
	Vendor	0	0	0	0
	Worker	0	0	0	0
	Total	**0**	**0**	**0**	**0**
TOTAL		***20.9463***	***14.6573***	***1.5876***	***1.142***
	1.89 Acre LST	***164***	***852***	***6.67***	***3.89***
	Exceeds LST?	***no***	***no***	***no***	***no***

Grading/Trenching						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2020**				
	Fugitive Dust				2.1013	1.0798
	Off-Road		21.3256	12.3879	1.0875	1.0005
	Total		**21.3256**	**12.3879**	**3.1888**	**2.0803**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***21.3256***	***12.3879***	***3.1888***	***2.0803***
Onsite		**2020**				
	Fugitive Dust				2.1013	1.0798
	Off-Road		21.3256	12.3879	1.0875	1.0005
	Total		**21.3256**	**12.3879**	**3.1888**	**2.0803**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***21.3256***	***12.3879***	***3.1888***	***2.0803***
Onsite		**2020**				
	Fugitive Dust		0	0	2.1013	1.0798
	Off-Road		21.3256	12.3879	1.0875	1.0005
	Total		**21.3256**	**12.3879**	**3.1888**	**2.0803**
Offsite						
	Hauling		0	0	0	0
	Vendor		0	0	0	0
	Worker		0	0	0	0
	Total		**0**	**0**	**0**	**0**
TOTAL			***21.3256***	***12.3879***	***3.1888***	***2.0803***
	1.19 Acre LST		***128***	***655***	***4.56***	***3.19***
	Exceeds LST?		***no***	***no***	***no***	***no***

Building Construction 2020						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2020**				
	Off-Road		14.7882	13.1881	0.796	0.7688
	Total		**14.7882**	**13.1881**	**0.796**	**0.7688**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***14.7882***	***13.1881***	***0.7960***	***0.7688***
Onsite		**2020**				
	Off-Road		14.7882	13.1881	0.796	0.7688
	Total		**14.7882**	**13.1881**	**0.796**	**0.7688**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***14.7882***	***13.1881***	***0.7960***	***0.7688***
Onsite		**2020**				
	Off-Road		14.7882	13.1881	0.796	0.7688
	Total		**14.7882**	**13.1881**	**0.796**	**0.7688**
Offsite						
	Hauling		0	0	0	0
	Vendor		0	0	0	0
	Worker		0	0	0	0
	Total		**0**	**0**	**0**	**0**
TOTAL			***14.7882***	***13.1881***	***0.7960***	***0.7688***
	0.38 Acre LST		***118***	***602***	***4.00***	***3.00***
	Exceeds LST?		***no***	***no***	***no***	***no***

Building Construction 2021						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2021**				
	Off-Road		13.6361	12.8994	0.6843	0.6608
	Total		**13.6361**	**12.8994**	**0.6843**	**0.6608**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***13.6361***	***12.8994***	***0.6843***	***0.6608***
Onsite		**2021**				
	Off-Road		13.6361	12.8994	0.6843	0.6608
	Total		**13.6361**	**12.8994**	**0.6843**	**0.6608**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***13.6361***	***12.8994***	***0.6843***	***0.6608***
Onsite		**2021**				
	Off-Road		13.6361	12.8994	0.6843	0.6608
	Total		**13.6361**	**12.8994**	**0.6843**	**0.6608**
Offsite						
	Hauling		0	0	0	0
	Vendor		0	0	0	0
	Worker		0	0	0	0
	Total		**0**	**0**	**0**	**0**
TOTAL			***13.6361***	***12.8994***	***0.6843***	***0.6608***
	0.38 Acre LST		***118***	***602***	***4.00***	***3.00***
	Exceeds LST?		***no***	***no***	***no***	***no***

Architectural Coating					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2021**				
Archit. Coating				0	0
Off-Road		1.5268	1.8176	0.0941	0.0941
Total		**1.5268**	**1.8176**	**0.0941**	**0.0941**
Offsite					
Hauling					
Vendor					
Worker					
Total					
TOTAL		***1.5268***	***1.8176***	***0.0941***	***0.0941***
Onsite	**2021**				
Archit. Coating				0	0
Off-Road		1.5268	1.8176	0.0941	0.0941
Total		**1.5268**	**1.8176**	**0.0941**	**0.0941**
Offsite					
Hauling					
Vendor					
Worker					
Total					
TOTAL		***1.5268***	***1.8176***	***0.0941***	***0.0941***
Onsite	**2021**				
Archit. Coating		0	0	0	0
Off-Road		1.5268	1.8176	0.0941	0.0941
Total		**1.5268**	**1.8176**	**0.0941**	**0.0941**
Offsite					
Hauling		0	0	0	0
Vendor		0	0	0	0
Worker		0	0	0	0
Total		**0**	**0**	**0**	**0**
TOTAL		***1.5268***	***1.8176***	***0.0941***	***0.0941***
0.00 Acre LST		***118***	***602***	***4.00***	***3.00***
Exceeds LST?		***no***	***no***	***no***	***no***

Paving						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2021**				
	Off-Road		7.7422	8.8569	0.4153	0.383
	Paving				0	0
	Total		**7.7422**	**8.8569**	**0.4153**	**0.383**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***7.7422***	***8.8569***	***0.4153***	***0.3830***
Onsite		**2021**				
	Off-Road		7.7422	8.8569	0.4153	0.383
	Paving				0	0
	Total		**7.7422**	**8.8569**	**0.4153**	**0.383**
Offsite						
	Hauling					
	Vendor					
	Worker					
	Total					
TOTAL			***7.7422***	***8.8569***	***0.4153***	***0.3830***
Onsite		**2021**				
	Off-Road		7.7422	8.8569	0.4153	0.383
	Paving		0	0	0	0
	Total		**7.7422**	**8.8569**	**0.4153**	**0.383**
Offsite						
	Hauling		0	0	0	0
	Vendor		0	0	0	0
	Worker		0	0	0	0
	Total		**0**	**0**	**0**	**0**
TOTAL			***7.7422***	***8.8569***	***0.4153***	***0.383***
	0.50 Acre LST		***118***	***602***	***4.00***	***3.00***
	Exceeds LST?		***no***	***no***	***no***	***no***

Regional Operation Emissions Worksheet*

*CalEEMod, Version 2016.3.2

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	0.50510	0.00008	0.00844	0.00000	0.00003	0.00003
Energy	0.00425	0.03870	0.03250	0.00023	0.00294	0.00294
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	**0.50940**	**0.03880**	**0.04090**	**0.00023**	**0.00297**	**0.00297**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	0.50510	0.00008	0.00844	0.00000	0.00003	0.00003
Energy	0.00425	0.03870	0.03250	0.00023	0.00294	0.00294
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	**0.50940**	**0.03880**	**0.04090**	**0.00023**	**0.00297**	**0.00297**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	0.505	0.000	0.008	0.000	0.000	0.000
Energy	0.004	0.039	0.033	0.000	0.003	0.003
Mobile	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.509**	**0.039**	**0.041**	**0.000**	**0.003**	**0.003**
Regional Thresholds	**55**	**55**	**550**	**150**	**150**	**550**
Exceeds Thresholds?	No	No	No	No	No	No

GHG Emissions Inventory

Proposed Project Buildout

Construction

	$MTCO_2e$ Total*
2020	147
2021	125
Total Construction	**272**

*CalEEMod, Version 2016.3.2.

Operation*

Proposed		
Area	**0**	$MTCO_2e$/Year**
Energy	**92**	$MTCO_2e$/Year
Mobile	**0**	$MTCO_2e$/Year
Solid Waste	**0**	$MTCO_2e$/Year
Water	**0**	$MTCO_2e$/Year
Amortized Construction Emissions***	9	$MTCO_2e$/Year
Total	**101**	**$MTCO_2e$/Year**
SCAQMD Bright-Line Screening Threshold	3,000	$MTCO_2e$/Year
Exceed Threshold?	**No**	

*CalEEMod, Version 2016.3.2.

** $MTCO_2e$=metric tons of carbon dioxide equivalent.

*** Total construction emissions are amortized over 30 years per SCAQMD methodology; SCAQMD. 2009, November 19. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 14. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf?sfvrsn=2.

CalEEMod Inputs - Arlington High School Renovation

Name:	Arlington High School Renovation
Project Number:	RIV-24
Project Location:	2951 Jackson St, Riverside, CA 92503
County/Air Basin:	Riverside
Climate Zone:	10
Land Use Setting:	Urban
Operational Year:	2021
Utility Company:	Riverside Public Utilities
Air Basin:	SoCAB
Air District:	SCAQMD
SRA:	23

Proiect Site Acreage	46.9
Disturbed Site Acreage	1.89

Project Components	SQFT	Acres	Notes
New Construction			
Auxiliary Gym	8,755.00	0.2010	one story
Biomed/Special Education Building	10,262.00	0.2356	one story
Concessions and Restroom Building	2,000.00	0.0459	one story
Press Box	576.00	0.0132	
Admin Lobby	500.00	0.0115	
Gym Concrete Paving	8,688.22	0.1995	
Biomedical Concrete Paving	25,298.49	0.5808	
Concessions Concrete Paving	3,983.70	0.0915	
Media Arts Garden	1,364.71	0.0313	
Additional Area	20,900.28	0.4798	
Site Upgrades			
Media Arts Academy Building	7,725.00	0.18	taking down walls, painting, new carpet, etc.
Admin Building	6,394.00	0.15	
Student Services Building	2,592.00	0.06	
Outdoor Pool	5,321.00	0.12	
TOTAL	16,711.00		
Demolition			
Portable Buildings (7)	6,720.00	0.15	
Handball Courts (8)	9,067.00	0.21	
Media Arts Wall	200.00	0.00	
		0.00	

Land Use	Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Auxiliary Gym	Educational	High School	8.76	1000sqft	0.20	8,755
Biomed/Special Education Building	Educational	High School	10.26	1000sqft	0.24	10,262
Concessions and Restroom Building	Educational	High School	2.00	1000sqft	0.05	2,000
Press Box	Educational	High School	0.58	1000sqft	0.01	576
Admin Lobby	Parking	Other Non-asphalt surfaces	0.50	1000sqft	0.01	500
Gym Concrete Paving	Parking	Other Non-asphalt surfaces	8.69	1000sqft	0.20	8,688
Biomedical Concrete Paving	Parking	Other Non-asphalt surfaces	25.30	1000sqft	0.58	25,298
Concessions Concrete Paving	Parking	Other Non-asphalt surfaces	3.98	1000sqft	0.09	3,984
Media Arts Garden	Parking	Other Non-asphalt surfaces	1.36	1000sqft	0.03	1,365
Additional Area			20.90	1000sqft	0.48	20,900
Total					1.89	

Land Use Summary	Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
	Educational	High School	21.59	1000sqft	0.50	21,593
	Parking	Other Non-asphalt Surfaces	60.74	1000sqft	1.39	60,735
					1.89	

Demolition

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (tons)	Haul Distance (miles)	Total Trip Ends	Trip Ends/ day	Duration (days)
Portables and Modernized Buildings	318	20.23	20	32	2	22
Handball Courts	722	20.23	20	72	4	22
Total	1,040			104		

[1] *Based on information provided by the applicant*

Architectural Coating

Percentage of Proposed Biomedical Building's Interior Painted:	50%	*Percentage of ModernizedMedia Arts Buildings' Interior Painted:*	50%
Percentage of Proposed Biomedical Building's Exterior Painted:	100%	*Percentage of Modernized Media Arts Buildings' Exterior Painted:*	50%
Percentage of Proposed Auxiliary Gym's Interior Painted:	75%	*Percentage of Modernized Admin/ Student Services Buildings' Interior Painted:*	10%
Percentage of Proposed Auxiliary Gym's Exterior Painted:	100%	*Percentage of Modernized Admin/ Student Services Buildings' Exterior Painted:*	50%
Percentage of Proposed Stadium Building and Press Box Interior Painted:	100%		
Percentage of Proposed Stadium Building and Press Box Exterior Painted:	100%		

SCAQMD Rule 1113

Interior Paint VOC content:	100	grams per liter
Exterior Paing VOC content:	100	grams per liter

Non-Residential Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Auxiliary Gym	8,755	2	17,510	9,849	4,378
Biomed/Special Education Building	10,262	2	20,524	7,697	5,131
Concessions and Restroom Building	2,000	2	4,000	3,000	1,000
Press Box	576	2	1,152	864	288
Media Arts Academy Building	7,725	2	15,450	5,794	1,931
Admin Building	6,394	2	12,788	959	1,599
Student Services Building	2,592	2	5,184	389	648
			76,608	28,552	14,974
		6%	0	-	0
			0	-	0

[1] *CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.*
[2] *The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user. Architectural coatings for the parking lot*
[3] *We assume 100% of the interior and exterior of buildings to be modernized will be painted*

Construction Mitigation

SCAQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
Replace Ground Cover	PM10:	5	% Reduction
	PM25:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph

SCAQMD Rule 1186

	Clean Paved Road	9	% PM Reduction

CalEEMod Construction Off-Road Equipment Inputs

Based on CalEEMod defaults

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

		Construction Equipment Details					
	Equipment	**# of Equipment**	**hrs/ day**	**hp**	**load factor**	**Model**	**total trips**
Demolition							
	Concrete/Industrial Saws	1	8	81	0.73		
	Rubber Tired Dozers	1	8	247	0.4		
	Tractors/Loaders/Backhoes	3	8	97	0.37		
	Water Truck	1					2
	Worker Trips						13
	Vendor Trips						
	Hauling Trips						104
Grading/Trenching							
	Graders	1	6	187	0.41		
	Rubber Tired Dozers	1	6	247	0.4		
	Tractors/Loaders/Backhoes	1	7	97	0.37		
	Trenchers	1	8	78	0.5025		
	Excavators	1	8	158	0.3819		
	Water Truck	1					2
	Worker Trips						13
	Vendor Trips						
	Hauling Trips						
Building Construction							
	Cranes	1	6	231	0.29		
	Forklifts	1	6	89	0.2		
	Generator Sets	1	8	84	0.74		
	Tractors/Loaders/Backhoes	1	6	97	0.37		
	Welders	3	8	46	0.45		
	Worker Trips						16
	Vendor Trips						7
	Hauling Trips						
Architectural Coating							
	Air Compressors	1	6	78	0.48		
	Worker Trips						3
	Vendor Trips						
	Hauling Trips						
Asphalt Paving							
	Cement and Mortar Mixers	1	6	9	0.56		
	Pavers	1	6	130	0.42		
	Paving Equipment	1	8	132	0.36		
	Rollers	1	7	80	0.38		
	Tractors/Loaders/Backhoes	1	8	97	0.37		
	Worker Trips						13
	Vendor Trips						
	Hauling Trips						

Construction Activities and Schedule Assumptions: Arlington High School Renovation

* As provided by applicant

Default Construction Activities		**Construction Schedule**		
	Phase Type	**Start Date**	**End Date**	**Duration (Workday)**
Demolition	Demolition	7/1/2020	7/28/2020	20
Grading/Trenching	Grading	7/29/2020	8/3/2020	4
Building Construction/Modernization	Building Construction	8/4/2020	5/10/2021	200
Architectural Coating	Architectural Coating	5/11/2021	5/24/2021	10
Paving	Paving	5/25/2021	6/7/2021	10

Normalized Construction Schedule

Construction Activities		**Construction Schedule**		
	Phase Type	**Start Date**	**End Date**	**Duration (Workday)**
Demolition	Demolition	7/1/2020	7/30/2020	22
Grading/Trenching	Grading	7/31/2020	8/6/2020	5
Building Construction/Modernization	Building Construction	8/7/2020	6/2/2021	214
Architectural Coating	Architectural Coating	6/3/2021	6/17/2021	11
Paving	Paving	6/18/2021	7/2/2021	11

Pavement Volume to Weight Conversion

Component	Total SF of Area[1]	Assumed Thickness (foot)[2]	Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[3]	AC Mass (lbs)	AC Mass (tons)
Handball Court Demolition			32,084	45	1,443,793	721.90

[1] Based on construction information provided by the Applicant.

[2] Pavements and Surface Materials. Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Conneticut Cooperative Extension System, 1999.

[3] http://www.reade.com/Particle_Briefings/spec_gra2.html

Demo Haul Trip Calculation

*Conversion factors**

0.046	ton/SF
1.2641662	tons/cy
20	tons
15.82070459	CY
0.791035229	CY/ton

Building Demoltion Haul Trips (BSF and Haul Truck (CY) given)

Building	BSF Demo	Tons/SF	Tons	Haul Truck (CY)	Haul Truck (Ton)	Round Trips	Total Trip Ends
Portable Buildings	6,720	0.046	309.12	16	20.23	15	31
Media Arts Wall	200	0.046	9.20	16	20.23	0	1
			318.32				

*CalEEMod User's Guide Version 2011.1, Appendix A

Construction Trips Worksheet

Phase Name	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Haul Truck Trip Ends	Start Date	End Date	Workdays
Demolition	13	2	5	104	7/1/2020	7/30/2020	22
Grading/Trenching	13	2	0		7/31/2020	8/6/2020	5
Building Construction/Modernization	16	7	0		8/7/2020	6/2/2021	214
Architectural Coating	3	0	0		6/3/2021	6/17/2021	11
Paving	13	0	0		6/18/2021	7/2/2021	11

	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Trip Ends Per Day	Start Date	End Date	Workdays
Demolition	13	2	5	20	7/1/2020	7/30/2020	22
Grading/Trenching	13	2	0	15	7/31/2020	8/6/2020	5
Building Construction/Modernization	16	7	0	23	8/7/2020	6/2/2021	214
Architectural Coating	3	0	0	3	6/3/2021	6/17/2021	11
Paving	13	0	0	13	6/18/2021	7/2/2021	11
				0			
Maximum Daily Trips	**16**	**7**	5	**23**			

CalEEMod Land Use Inputs: Proposed

Land Use Type	Type	Land Use Unit Amount (Total)	Land Use Size Metric	Lot Acreage	Land Use Square Feet
Educational	High School	21.593	1000sqft	0.50	21,593
Parking	Other Non-asphalt Surfaces	60.735	1000sqft	1.39	60,735
				1.89	**82,328**

Project Location:	2951 Jackson St, Riverside, CA 92503	
Climate Zone:	10	
Operation Year	**2021**	
Land Use Setting	Urban	
Utility Company	Riverside Public Utilities	
Source Receptor Area:	23	
Project Site Area:	46.90	acres
Disturbed Site Area:	1.89	

Land Uses/Development

Buildings		
Auxiliary Gym	8,755.0	building sqft
Biomed/Special Education Building	10,262.0	building sqft
Concessions and Restroom Building	2,000.0	building sqft
Addition of Bleachers	10,518.6	building sqft
Press Box	576.0	building sqft
Paving		
Admin Lobby	500.0	sqft
Gym Concrete Paving	8,688.2	sqft
Biomedical Concrete Paving	25,298.5	sqft
Concessions Concrete Paving	3,983.7	sqft
Media Arts Garden	1,364.7	sqft
Site Upgrades		
Media Arts Academy Building	7,725.0	sqft
Admin Building (Interior)	6,394.0	sqft
Student Services Building (Interior)	2,592.0	sqft
Outdoor Pool	5,321.0	sqft
		sqft

Other*

Surface Parking:	0	square feet
Total Non-Asphalt Surfaces	60,735	square feet
Total Asphalt Surrfaces		square feet

**Based on information provided by the Applicant.*

Trip Generation

Type	Land Use Type	Land Use Unit Amount	Land Use Size Metric	Land Use Square Feet
High School	Educational	21.59	1000sqft	21,593

Trip Generation

Land Use Type	Average Daily Trips[1]	Adjusted ADT Rate[1]
0	0	0.00

**Based on assumption that student capacity will not increase and that average trip length to Arlington stadium would be shorter than trips to Ramona stadium. Maximum capacity events will be at 3,000 seats in Arlington stadium as compared to 5,000 seat capacity at Ramona High School*

Water Use CalEEMod Defaults*

	CalEEMod Inputs		
Land Use	Indoor	Outdoor	Total
Land Use Type	0.00	0	0

**CalEEMod default, assuming water/wastewater and solid waste generated per student. Student capacity would not increase.*

Solid Waste*

Land Use	Total Solid Waste (tons/yr)
Land Use Type	0

**CalEEMod default, assuming water/wastewater and solid waste generated per student. Student capacity would not increase.*

Architectural Coating

Percentage of Proposed Biomedical Building's Interior Painted:	50%	*Percentage of ModernizedMedia Arts Buildings' Interior Painted:*	50%
Percentage of Proposed Biomedical Building's Exterior Painted:	100%	*Percentage of Modernized Media Arts Buildings' Exterior Painted:*	50%
Percentage of Proposed Auxiliary Gym's Interior Painted:	75%	*Percentage of Modernized Admin/ Student Services Buildings' Interior Painted:*	10%
Percentage of Proposed Auxiliary Gym's Exterior Painted:	100%	*Percentage of Modernized Admin/ Student Services Buildings' Exterior Painted:*	50%
Percentage of Proposed Stadium Building and Press Box Interior Painted:	100%		
Percentage of Proposed Stadium Building and Press Box Exterior Painted:	100%		

SCAQMD Rule 1113

Interior Paint VOC content:	100	grams per liter
Exterior Paing VOC content:	100	grams per liter

Non-Residential Structures	Land Use Square Feet	CalEEMod Factor2	Total Paintable Surface Area	Paintable Interior Area1	Paintable Exterior Area1
Auxiliary Gym	8,755	2	17,510	9,849	4,378
Biomed/Special Education Building	10,262	2	20,524	7,697	5,131
Concessions and Restroom Building	2,000	2	4,000	3,000	1,000
Press Box	576	2	1,152	864	288
Media Arts Academy Building	7,725	2	15,450	5,794	1,931
Admin Building	6,394	2	12,788	959	1,599
Student Services Building	2,592	2	5,184	389	648
			76,608	28,552	14,974
		6%	0	-	0
			0	-	0

Electricity (Buildings)

Buildings constructed after January 1, 2020 are required to meet the 2019 Building Energy Efficiency Standards. Non-residential buildings in compliance with the 2019 Standards are generally 30 percent more energy efficient compared to the 2016 Standards.

Changes to the CalEEMod Defaults - Fleet Mix 2021

Average Daily Trips: 0

Default	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	
FleetMix	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038	100%
Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.904223					0.027082		0.068695						100%
Proportion	0.599538	0.041558	0.204820	0.131055	0.017961	0.189831	0.642198	1.000000	0.051067	0.043682	0.005067	0.034894	0.038328	
Assumed Mix	0.97					0.02		0.01						100%
adjusted with Assumed	0.581552	0.040312	0.198675	0.127123	0.017422	0.003797	0.012844	0.010000	0.001021	0.000874	0.004915	0.000698	0.000767	100%
Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calibrated for zero medium and heavy-duty trucks	0.581552	0.040312	0.198675	0.127123	0.017422	0	0	0	0	0	0.004915	0.001400	0	97.1%
Modified	**0.598674**	**0.041498**	**0.204525**	**0.130866**	**0.017935**	**0**	**0**	**0**	**0**	**0**	**0.005060**	**0.001441**	**0**	**100.0%**
Trips	0	0	0	0	0	**0**	**0**	**0**	**0**	**0**	0	0	**0**	0

Arlington High School Construction Run

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	21.59	1000sqft	0.50	21,590.00	0
Other Asphalt Surfaces	60.74	1000sqft	1.39	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - nonpaintable area

Construction Phase - normalized construction schedule based on 12 month schedule

Off-road Equipment - account for trenching in this phase as well

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading -

Demolition - portables, mod building wall (assumed), handball court

Trips and VMT - 2 VT for each water truck, modernization of buildings added in. BC 9 WT 4VT originally, AC 2 WT original

Architectural Coating - mod buildings and new buildings have different amounts of coverage

Construction Off-road Equipment Mitigation - see assumptions file

Arlington High School Construction Run - Riverside-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	10,795.00	14,974.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	32,385.00	28,552.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	NumDays	200.00	214.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	4.00	5.00
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	PhaseEndDate	6/9/2021	6/17/2021
tblConstructionPhase	PhaseEndDate	5/12/2021	6/2/2021
tblConstructionPhase	PhaseEndDate	7/28/2020	7/30/2020
tblConstructionPhase	PhaseEndDate	8/5/2020	8/6/2020
tblConstructionPhase	PhaseStartDate	5/27/2021	6/3/2021
tblConstructionPhase	PhaseStartDate	8/6/2020	8/7/2020
tblLandUse	LandUseSquareFeet	60,740.00	0.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblTripsAndVMT	HaulingTripNumber	103.00	104.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	4.00	7.00
tblTripsAndVMT	WorkerTripNumber	9.00	16.00
tblTripsAndVMT	WorkerTripNumber	2.00	3.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.2222	22.3106	15.3572	0.0297	5.0734	1.1581	6.1630	2.5680	1.0815	3.5704	0.0000	2,902.4518	2,902.4518	0.7183	0.0000	2,918.1394
2021	18.5734	14.3270	13.6065	0.0256	0.2237	0.6866	0.9103	0.0603	0.6630	0.7233	0.0000	2,362.8559	2,362.8559	0.4144	0.0000	2,372.2312
Maximum	**18.5734**	**22.3106**	**15.3572**	**0.0297**	**5.0734**	**1.1581**	**6.1630**	**2.5680**	**1.0815**	**3.5704**	**0.0000**	**2,902.4518**	**2,902.4518**	**0.7183**	**0.0000**	**2,918.1394**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.2222	22.3106	15.3572	0.0297	2.2472	1.1581	3.3368	1.1190	1.0815	2.1214	0.0000	2,902.4518	2,902.4518	0.7183	0.0000	2,918.1394
2021	18.5734	14.3270	13.6065	0.0256	0.2068	0.6866	0.8934	0.0562	0.6630	0.7192	0.0000	2,362.8559	2,362.8559	0.4144	0.0000	2,372.2312
Maximum	**18.5734**	**22.3106**	**15.3572**	**0.0297**	**2.2472**	**1.1581**	**3.3368**	**1.1190**	**1.0815**	**2.1214**	**0.0000**	**2,902.4518**	**2,902.4518**	**0.7183**	**0.0000**	**2,918.1394**

Arlington High School Construction Run - Riverside-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.67**	**0.00**	**40.19**	**55.29**	**0.00**	**33.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Mobile	0.6085	4.4828	8.1773	0.0341	2.5348	0.0236	2.5584	0.6782	0.0222	0.7004		3,477.2383	3,477.2383	0.1538		3,481.0832
Total	**1.0972**	**4.5337**	**8.2284**	**0.0344**	**2.5348**	**0.0275**	**2.5623**	**0.6782**	**0.0260**	**0.7043**		**3,538.2163**	**3,538.2163**	**0.1550**	**1.1200e-003**	**3,542.4247**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Mobile	0.6085	4.4828	8.1773	0.0341	2.5348	0.0236	2.5584	0.6782	0.0222	0.7004		3,477.2383	3,477.2383	0.1538		3,481.0832
Total	**1.0972**	**4.5337**	**8.2284**	**0.0344**	**2.5348**	**0.0275**	**2.5623**	**0.6782**	**0.0260**	**0.7043**		**3,538.2163**	**3,538.2163**	**0.1550**	**1.1200e-003**	**3,542.4247**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2020	7/30/2020	5	22	
2	Grading/Trenching	Grading	7/31/2020	8/6/2020	5	5	
3	Building Construction	Building Construction	8/7/2020	6/2/2021	5	214	
4	Architectural Coating	Architectural Coating	6/3/2021	6/17/2021	5	11	
5	Paving	Paving	6/18/2021	7/2/2021	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 28,552; Non-Residential Outdoor: 14,974; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Arlington High School Construction Run - Riverside-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Grading/Trenching	Trenchers	1	8.00	78	0.50
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading/Trenching	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading/Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading/Trenching	Excavators	1	8.00	158	0.38
Grading/Trenching	Graders	1	6.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	2.00	104.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Trenching	5	13.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	16.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0178	0.0000	1.0178	0.1541	0.0000	0.1541			0.0000			0.0000
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761		2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**	**1.0178**	**1.1525**	**2.1703**	**0.1541**	**1.0761**	**1.2303**		**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0243	1.1194	0.1381	3.6000e-003	0.0827	3.5700e-003	0.0863	0.0227	3.4100e-003	0.0261		381.8536	381.8536	0.0228		382.4225
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0128	1.1700e-003	0.0140	3.6900e-003	1.1200e-003	4.8100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.0662	0.0391	0.5242	1.4400e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		143.2073	143.2073	3.6700e-003		143.2991
Total	**0.0960**	**1.3643**	**0.6999**	**5.5600e-003**	**0.2408**	**5.6200e-003**	**0.2464**	**0.0649**	**5.3400e-003**	**0.0702**		**580.1391**	**580.1391**	**0.0306**		**580.9030**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4351	0.0000	0.4351	0.0659	0.0000	0.0659			0.0000			0.0000
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761	0.0000	2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**	**0.4351**	**1.1525**	**1.5876**	**0.0659**	**1.0761**	**1.1420**	**0.0000**	**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0243	1.1194	0.1381	3.6000e-003	0.0771	3.5700e-003	0.0806	0.0213	3.4100e-003	0.0247		381.8536	381.8536	0.0228		382.4225
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0120	1.1700e-003	0.0132	3.4900e-003	1.1200e-003	4.6100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.0662	0.0391	0.5242	1.4400e-003	0.1339	8.8000e-004	0.1348	0.0358	8.1000e-004	0.0366		143.2073	143.2073	3.6700e-003		143.2991
Total	**0.0960**	**1.3643**	**0.6999**	**5.5600e-003**	**0.2230**	**5.6200e-003**	**0.2286**	**0.0605**	**5.3400e-003**	**0.0659**		**580.1391**	**580.1391**	**0.0306**		**580.9030**

3.3 Grading/Trenching - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9153	0.0000	4.9153	2.5257	0.0000	2.5257			0.0000			0.0000
Off-Road	2.0179	21.3256	12.3879	0.0227		1.0875	1.0875		1.0005	1.0005		2,196.7835	2,196.7835	0.7105		2,214.5456
Total	**2.0179**	**21.3256**	**12.3879**	**0.0227**	**4.9153**	**1.0875**	**6.0028**	**2.5257**	**1.0005**	**3.5262**		**2,196.7835**	**2,196.7835**	**0.7105**		**2,214.5456**

3.3 Grading/Trenching - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0128	1.1700e-003	0.0140	3.6900e-003	1.1200e-003	4.8100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.0662	0.0391	0.5242	1.4400e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		143.2073	143.2073	3.6700e-003		143.2991
Total	**0.0717**	**0.2449**	**0.5618**	**1.9600e-003**	**0.1581**	**2.0500e-003**	**0.1602**	**0.0422**	**1.9300e-003**	**0.0442**		**198.2855**	**198.2855**	**7.8000e-003**		**198.4805**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1013	0.0000	2.1013	1.0798	0.0000	1.0798			0.0000			0.0000
Off-Road	2.0179	21.3256	12.3879	0.0227		1.0875	1.0875		1.0005	1.0005	0.0000	2,196.7835	2,196.7835	0.7105		2,214.5456
Total	**2.0179**	**21.3256**	**12.3879**	**0.0227**	**2.1013**	**1.0875**	**3.1888**	**1.0798**	**1.0005**	**2.0803**	**0.0000**	**2,196.7835**	**2,196.7835**	**0.7105**		**2,214.5456**

3.3 Grading/Trenching - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0120	1.1700e-003	0.0132	3.4900e-003	1.1200e-003	4.6100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.0662	0.0391	0.5242	1.4400e-003	0.1339	8.8000e-004	0.1348	0.0358	8.1000e-004	0.0366		143.2073	143.2073	3.6700e-003		143.2991
Total	**0.0717**	**0.2449**	**0.5618**	**1.9600e-003**	**0.1459**	**2.0500e-003**	**0.1480**	**0.0392**	**1.9300e-003**	**0.0412**		**198.2855**	**198.2855**	**7.8000e-003**		**198.4805**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688		2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**		**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.7202	0.1318	1.8300e-003	0.0448	4.1000e-003	0.0489	0.0129	3.9200e-003	0.0168		192.7737	192.7737	0.0145		193.1351
Worker	0.0814	0.0482	0.6451	1.7700e-003	0.1788	1.0800e-003	0.1799	0.0474	1.0000e-003	0.0484		176.2551	176.2551	4.5200e-003		176.3681
Total	**0.1009**	**0.7684**	**0.7769**	**3.6000e-003**	**0.2237**	**5.1800e-003**	**0.2289**	**0.0603**	**4.9200e-003**	**0.0653**		**369.0288**	**369.0288**	**0.0190**		**369.5032**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688	0.0000	2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**	**0.0000**	**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0195	0.7202	0.1318	1.8300e-003	0.0420	4.1000e-003	0.0461	0.0122	3.9200e-003	0.0161		192.7737	192.7737	0.0145		193.1351
Worker	0.0814	0.0482	0.6451	1.7700e-003	0.1649	1.0800e-003	0.1659	0.0440	1.0000e-003	0.0450		176.2551	176.2551	4.5200e-003		176.3681
Total	**0.1009**	**0.7684**	**0.7769**	**3.6000e-003**	**0.2068**	**5.1800e-003**	**0.2120**	**0.0562**	**4.9200e-003**	**0.0611**		**369.0288**	**369.0288**	**0.0190**		**369.5032**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608		2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**		**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0163	0.6478	0.1156	1.8100e-003	0.0448	1.2300e-003	0.0461	0.0129	1.1800e-003	0.0141		191.2757	191.2757	0.0137		191.6178
Worker	0.0759	0.0432	0.5915	1.7100e-003	0.1788	1.0500e-003	0.1799	0.0474	9.7000e-004	0.0484		170.3602	170.3602	4.0600e-003		170.4617
Total	**0.0922**	**0.6910**	**0.7071**	**3.5200e-003**	**0.2237**	**2.2800e-003**	**0.2260**	**0.0603**	**2.1500e-003**	**0.0625**		**361.6359**	**361.6359**	**0.0177**		**362.0795**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608	0.0000	2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**	**0.0000**	**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0163	0.6478	0.1156	1.8100e-003	0.0420	1.2300e-003	0.0432	0.0122	1.1800e-003	0.0134		191.2757	191.2757	0.0137		191.6178
Worker	0.0759	0.0432	0.5915	1.7100e-003	0.1649	1.0500e-003	0.1659	0.0440	9.7000e-004	0.0450		170.3602	170.3602	4.0600e-003		170.4617
Total	**0.0922**	**0.6910**	**0.7071**	**3.5200e-003**	**0.2068**	**2.2800e-003**	**0.2091**	**0.0562**	**2.1500e-003**	**0.0584**		**361.6359**	**361.6359**	**0.0177**		**362.0795**

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	18.3403					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**18.5592**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0142	8.1000e-003	0.1109	3.2000e-004	0.0335	2.0000e-004	0.0337	8.8900e-003	1.8000e-004	9.0800e-003		31.9425	31.9425	7.6000e-004		31.9616
Total	**0.0142**	**8.1000e-003**	**0.1109**	**3.2000e-004**	**0.0335**	**2.0000e-004**	**0.0337**	**8.8900e-003**	**1.8000e-004**	**9.0800e-003**		**31.9425**	**31.9425**	**7.6000e-004**		**31.9616**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	18.3403					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**18.5592**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0142	8.1000e-003	0.1109	3.2000e-004	0.0309	2.0000e-004	0.0311	8.2500e-003	1.8000e-004	8.4300e-003		31.9425	31.9425	7.6000e-004		31.9616
Total	**0.0142**	**8.1000e-003**	**0.1109**	**3.2000e-004**	**0.0309**	**2.0000e-004**	**0.0311**	**8.2500e-003**	**1.8000e-004**	**8.4300e-003**		**31.9425**	**31.9425**	**7.6000e-004**		**31.9616**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830		1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.3311					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1049**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**		**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0616	0.0351	0.4806	1.3900e-003	0.1453	8.6000e-004	0.1462	0.0385	7.9000e-004	0.0393		138.4176	138.4176	3.3000e-003		138.5001
Total	**0.0616**	**0.0351**	**0.4806**	**1.3900e-003**	**0.1453**	**8.6000e-004**	**0.1462**	**0.0385**	**7.9000e-004**	**0.0393**		**138.4176**	**138.4176**	**3.3000e-003**		**138.5001**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830	0.0000	1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.3311					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1049**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**	**0.0000**	**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0616	0.0351	0.4806	1.3900e-003	0.1339	8.6000e-004	0.1348	0.0358	7.9000e-004	0.0365		138.4176	138.4176	3.3000e-003		138.5001
Total	**0.0616**	**0.0351**	**0.4806**	**1.3900e-003**	**0.1339**	**8.6000e-004**	**0.1348**	**0.0358**	**7.9000e-004**	**0.0365**		**138.4176**	**138.4176**	**3.3000e-003**		**138.5001**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.6085	4.4828	8.1773	0.0341	2.5348	0.0236	2.5584	0.6782	0.0222	0.7004		3,477.2383	3,477.2383	0.1538		3,481.0832
Unmitigated	0.6085	4.4828	8.1773	0.0341	2.5348	0.0236	2.5584	0.6782	0.0222	0.7004		3,477.2383	3,477.2383	0.1538		3,481.0832

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	278.30	94.35	38.65	930,097	930,097
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	278.30	94.35	38.65	930,097	930,097

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Other Asphalt Surfaces	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
NaturalGas Unmitigated	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	518.16	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**5.5900e-003**	**0.0508**	**0.0427**	**3.0000e-004**		**3.8600e-003**	**3.8600e-003**		**3.8600e-003**	**3.8600e-003**		**60.9600**	**60.9600**	**1.1700e-003**	**1.1200e-003**	**61.3223**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	0.51816	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**5.5900e-003**	**0.0508**	**0.0427**	**3.0000e-004**		**3.8600e-003**	**3.8600e-003**		**3.8600e-003**	**3.8600e-003**		**60.9600**	**60.9600**	**1.1700e-003**	**1.1200e-003**	**61.3223**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Unmitigated	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0548					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4275					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.4831**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0548					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4275					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.4831**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Arlington High School Construction Run

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	21.59	1000sqft	0.50	21,590.00	0
Other Asphalt Surfaces	60.74	1000sqft	1.39	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - nonpaintable area

Construction Phase - normalized construction schedule based on 12 month schedule

Off-road Equipment - account for trenching in this phase as well

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading -

Demolition - portables, mod building wall (assumed), handball court

Trips and VMT - 2 VT for each water truck, modernization of buildings added in. BC 9 WT 4VT originally, AC 2 WT original

Architectural Coating - mod buildings and new buildings have different amounts of coverage

Construction Off-road Equipment Mitigation - see assumptions file

Arlington High School Construction Run - Riverside-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	10,795.00	14,974.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	32,385.00	28,552.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	NumDays	200.00	214.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	4.00	5.00
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	PhaseEndDate	6/9/2021	6/17/2021
tblConstructionPhase	PhaseEndDate	5/12/2021	6/2/2021
tblConstructionPhase	PhaseEndDate	7/28/2020	7/30/2020
tblConstructionPhase	PhaseEndDate	8/5/2020	8/6/2020
tblConstructionPhase	PhaseStartDate	5/27/2021	6/3/2021
tblConstructionPhase	PhaseStartDate	8/6/2020	8/7/2020
tblLandUse	LandUseSquareFeet	60,740.00	0.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblTripsAndVMT	HaulingTripNumber	103.00	104.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	4.00	7.00
tblTripsAndVMT	WorkerTripNumber	9.00	16.00
tblTripsAndVMT	WorkerTripNumber	2.00	3.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.2224	22.3206	15.2871	0.0294	5.0734	1.1582	6.1630	2.5680	1.0815	3.5704	0.0000	2,876.0919	2,876.0919	0.7183	0.0000	2,891.8330
2021	18.5731	14.3230	13.5136	0.0253	0.2237	0.6867	0.9103	0.0603	0.6630	0.7233	0.0000	2,338.1322	2,338.1322	0.4140	0.0000	2,347.5334
Maximum	**18.5731**	**22.3206**	**15.2871**	**0.0294**	**5.0734**	**1.1582**	**6.1630**	**2.5680**	**1.0815**	**3.5704**	**0.0000**	**2,876.0919**	**2,876.0919**	**0.7183**	**0.0000**	**2,891.8330**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.2224	22.3206	15.2871	0.0294	2.2472	1.1582	3.3368	1.1190	1.0815	2.1214	0.0000	2,876.0919	2,876.0919	0.7183	0.0000	2,891.8330
2021	18.5731	14.3230	13.5136	0.0253	0.2068	0.6867	0.8935	0.0562	0.6630	0.7192	0.0000	2,338.1322	2,338.1322	0.4140	0.0000	2,347.5334
Maximum	**18.5731**	**22.3206**	**15.2871**	**0.0294**	**2.2472**	**1.1582**	**3.3368**	**1.1190**	**1.0815**	**2.1214**	**0.0000**	**2,876.0919**	**2,876.0919**	**0.7183**	**0.0000**	**2,891.8330**

Arlington High School Construction Run - Riverside-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.67**	**0.00**	**40.19**	**55.29**	**0.00**	**33.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Mobile	0.5207	4.5123	6.9754	0.0315	2.5348	0.0238	2.5586	0.6782	0.0223	0.7006		3,214.6543	3,214.6543	0.1566		3,218.5689
Total	**1.0094**	**4.5632**	**7.0265**	**0.0318**	**2.5348**	**0.0277**	**2.5625**	**0.6782**	**0.0262**	**0.7045**		**3,275.6323**	**3,275.6323**	**0.1578**	**1.1200e-003**	**3,279.9103**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Mobile	0.5207	4.5123	6.9754	0.0315	2.5348	0.0238	2.5586	0.6782	0.0223	0.7006		3,214.6543	3,214.6543	0.1566		3,218.5689
Total	**1.0094**	**4.5632**	**7.0265**	**0.0318**	**2.5348**	**0.0277**	**2.5625**	**0.6782**	**0.0262**	**0.7045**		**3,275.6323**	**3,275.6323**	**0.1578**	**1.1200e-003**	**3,279.9103**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2020	7/30/2020	5	22	
2	Grading/Trenching	Grading	7/31/2020	8/6/2020	5	5	
3	Building Construction	Building Construction	8/7/2020	6/2/2021	5	214	
4	Architectural Coating	Architectural Coating	6/3/2021	6/17/2021	5	11	
5	Paving	Paving	6/18/2021	7/2/2021	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 28,552; Non-Residential Outdoor: 14,974; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Arlington High School Construction Run - Riverside-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Grading/Trenching	Trenchers	1	8.00	78	0.50
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading/Trenching	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading/Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading/Trenching	Excavators	1	8.00	158	0.38
Grading/Trenching	Graders	1	6.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	2.00	104.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Trenching	5	13.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	16.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0178	0.0000	1.0178	0.1541	0.0000	0.1541			0.0000			0.0000
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761		2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**	**1.0178**	**1.1525**	**2.1703**	**0.1541**	**1.0761**	**1.2303**		**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0256	1.1291	0.1618	3.5100e-003	0.0827	3.6200e-003	0.0863	0.0227	3.4600e-003	0.0261		372.3001	372.3001	0.0249		372.9228
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0128	1.1800e-003	0.0140	3.6900e-003	1.1300e-003	4.8200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.0648	0.0405	0.4240	1.2900e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		128.4707	128.4707	3.1900e-003		128.5504
Total	**0.0962**	**1.3743**	**0.6299**	**5.3000e-003**	**0.2408**	**5.6800e-003**	**0.2465**	**0.0649**	**5.4000e-003**	**0.0703**		**553.7793**	**553.7793**	**0.0327**		**554.5967**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4351	0.0000	0.4351	0.0659	0.0000	0.0659			0.0000			0.0000
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761	0.0000	2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**	**0.4351**	**1.1525**	**1.5876**	**0.0659**	**1.0761**	**1.1420**	**0.0000**	**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0256	1.1291	0.1618	3.5100e-003	0.0771	3.6200e-003	0.0807	0.0213	3.4600e-003	0.0248		372.3001	372.3001	0.0249		372.9228
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0120	1.1800e-003	0.0132	3.4900e-003	1.1300e-003	4.6200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.0648	0.0405	0.4240	1.2900e-003	0.1339	8.8000e-004	0.1348	0.0358	8.1000e-004	0.0366		128.4707	128.4707	3.1900e-003		128.5504
Total	**0.0962**	**1.3743**	**0.6299**	**5.3000e-003**	**0.2230**	**5.6800e-003**	**0.2287**	**0.0605**	**5.4000e-003**	**0.0659**		**553.7793**	**553.7793**	**0.0327**		**554.5967**

3.3 Grading/Trenching - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9153	0.0000	4.9153	2.5257	0.0000	2.5257			0.0000			0.0000
Off-Road	2.0179	21.3256	12.3879	0.0227		1.0875	1.0875		1.0005	1.0005		2,196.7835	2,196.7835	0.7105		2,214.5456
Total	**2.0179**	**21.3256**	**12.3879**	**0.0227**	**4.9153**	**1.0875**	**6.0028**	**2.5257**	**1.0005**	**3.5262**		**2,196.7835**	**2,196.7835**	**0.7105**		**2,214.5456**

3.3 Grading/Trenching - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0128	1.1800e-003	0.0140	3.6900e-003	1.1300e-003	4.8200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.0648	0.0405	0.4240	1.2900e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		128.4707	128.4707	3.1900e-003		128.5504
Total	**0.0707**	**0.2452**	**0.4681**	**1.7900e-003**	**0.1581**	**2.0600e-003**	**0.1602**	**0.0422**	**1.9400e-003**	**0.0442**		**181.4792**	**181.4792**	**7.7900e-003**		**181.6739**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1013	0.0000	2.1013	1.0798	0.0000	1.0798			0.0000			0.0000
Off-Road	2.0179	21.3256	12.3879	0.0227		1.0875	1.0875		1.0005	1.0005	0.0000	2,196.7835	2,196.7835	0.7105		2,214.5456
Total	**2.0179**	**21.3256**	**12.3879**	**0.0227**	**2.1013**	**1.0875**	**3.1888**	**1.0798**	**1.0005**	**2.0803**	**0.0000**	**2,196.7835**	**2,196.7835**	**0.7105**		**2,214.5456**

3.3 Grading/Trenching - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0120	1.1800e-003	0.0132	3.4900e-003	1.1300e-003	4.6200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.0648	0.0405	0.4240	1.2900e-003	0.1339	8.8000e-004	0.1348	0.0358	8.1000e-004	0.0366		128.4707	128.4707	3.1900e-003		128.5504
Total	**0.0707**	**0.2452**	**0.4681**	**1.7900e-003**	**0.1459**	**2.0600e-003**	**0.1480**	**0.0392**	**1.9400e-003**	**0.0412**		**181.4792**	**181.4792**	**7.7900e-003**		**181.6739**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688		2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**		**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0206	0.7165	0.1543	1.7600e-003	0.0448	4.1400e-003	0.0490	0.0129	3.9700e-003	0.0169		185.5299	185.5299	0.0161		185.9322
Worker	0.0797	0.0498	0.5219	1.5900e-003	0.1788	1.0800e-003	0.1799	0.0474	1.0000e-003	0.0484		158.1177	158.1177	3.9300e-003		158.2159
Total	**0.1003**	**0.7663**	**0.6762**	**3.3500e-003**	**0.2237**	**5.2200e-003**	**0.2289**	**0.0603**	**4.9700e-003**	**0.0653**		**343.6477**	**343.6477**	**0.0200**		**344.1481**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0305	14.7882	13.1881	0.0220		0.7960	0.7960		0.7688	0.7688	0.0000	2,001.1595	2,001.1595	0.3715		2,010.4467
Total	**2.0305**	**14.7882**	**13.1881**	**0.0220**		**0.7960**	**0.7960**		**0.7688**	**0.7688**	**0.0000**	**2,001.1595**	**2,001.1595**	**0.3715**		**2,010.4467**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0206	0.7165	0.1543	1.7600e-003	0.0420	4.1400e-003	0.0461	0.0122	3.9700e-003	0.0162		185.5299	185.5299	0.0161		185.9322
Worker	0.0797	0.0498	0.5219	1.5900e-003	0.1649	1.0800e-003	0.1659	0.0440	1.0000e-003	0.0450		158.1177	158.1177	3.9300e-003		158.2159
Total	**0.1003**	**0.7663**	**0.6762**	**3.3500e-003**	**0.2068**	**5.2200e-003**	**0.2120**	**0.0562**	**4.9700e-003**	**0.0612**		**343.6477**	**343.6477**	**0.0200**		**344.1481**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608		2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**		**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0174	0.6422	0.1367	1.7500e-003	0.0448	1.2700e-003	0.0461	0.0129	1.2100e-003	0.0141		184.0813	184.0813	0.0153		184.4624
Worker	0.0744	0.0447	0.4775	1.5300e-003	0.1788	1.0500e-003	0.1799	0.0474	9.7000e-004	0.0484		152.8310	152.8310	3.5300e-003		152.9193
Total	**0.0918**	**0.6869**	**0.6142**	**3.2800e-003**	**0.2237**	**2.3200e-003**	**0.2260**	**0.0603**	**2.1800e-003**	**0.0625**		**336.9122**	**336.9122**	**0.0188**		**337.3817**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608	0.0000	2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**	**0.0000**	**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0174	0.6422	0.1367	1.7500e-003	0.0420	1.2700e-003	0.0432	0.0122	1.2100e-003	0.0134		184.0813	184.0813	0.0153		184.4624
Worker	0.0744	0.0447	0.4775	1.5300e-003	0.1649	1.0500e-003	0.1659	0.0440	9.7000e-004	0.0450		152.8310	152.8310	3.5300e-003		152.9193
Total	**0.0918**	**0.6869**	**0.6142**	**3.2800e-003**	**0.2068**	**2.3200e-003**	**0.2091**	**0.0562**	**2.1800e-003**	**0.0584**		**336.9122**	**336.9122**	**0.0188**		**337.3817**

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	18.3403					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**18.5592**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0140	8.3800e-003	0.0895	2.9000e-004	0.0335	2.0000e-004	0.0337	8.8900e-003	1.8000e-004	9.0800e-003		28.6558	28.6558	6.6000e-004		28.6724
Total	**0.0140**	**8.3800e-003**	**0.0895**	**2.9000e-004**	**0.0335**	**2.0000e-004**	**0.0337**	**8.8900e-003**	**1.8000e-004**	**9.0800e-003**		**28.6558**	**28.6558**	**6.6000e-004**		**28.6724**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	18.3403					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**18.5592**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0140	8.3800e-003	0.0895	2.9000e-004	0.0309	2.0000e-004	0.0311	8.2500e-003	1.8000e-004	8.4300e-003		28.6558	28.6558	6.6000e-004		28.6724
Total	**0.0140**	**8.3800e-003**	**0.0895**	**2.9000e-004**	**0.0309**	**2.0000e-004**	**0.0311**	**8.2500e-003**	**1.8000e-004**	**8.4300e-003**		**28.6558**	**28.6558**	**6.6000e-004**		**28.6724**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830		1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.3311					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1049**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**		**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0605	0.0363	0.3880	1.2500e-003	0.1453	8.6000e-004	0.1462	0.0385	7.9000e-004	0.0393		124.1752	124.1752	2.8700e-003		124.2469
Total	**0.0605**	**0.0363**	**0.3880**	**1.2500e-003**	**0.1453**	**8.6000e-004**	**0.1462**	**0.0385**	**7.9000e-004**	**0.0393**		**124.1752**	**124.1752**	**2.8700e-003**		**124.2469**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830	0.0000	1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.3311					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1049**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**	**0.0000**	**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0605	0.0363	0.3880	1.2500e-003	0.1339	8.6000e-004	0.1348	0.0358	7.9000e-004	0.0365		124.1752	124.1752	2.8700e-003		124.2469
Total	**0.0605**	**0.0363**	**0.3880**	**1.2500e-003**	**0.1339**	**8.6000e-004**	**0.1348**	**0.0358**	**7.9000e-004**	**0.0365**		**124.1752**	**124.1752**	**2.8700e-003**		**124.2469**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5207	4.5123	6.9754	0.0315	2.5348	0.0238	2.5586	0.6782	0.0223	0.7006		3,214.6543	3,214.6543	0.1566		3,218.5689
Unmitigated	0.5207	4.5123	6.9754	0.0315	2.5348	0.0238	2.5586	0.6782	0.0223	0.7006		3,214.6543	3,214.6543	0.1566		3,218.5689

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	278.30	94.35	38.65	930,097	930,097
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	278.30	94.35	38.65	930,097	930,097

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Other Asphalt Surfaces	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
NaturalGas Unmitigated	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	518.16	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**5.5900e-003**	**0.0508**	**0.0427**	**3.0000e-004**		**3.8600e-003**	**3.8600e-003**		**3.8600e-003**	**3.8600e-003**		**60.9600**	**60.9600**	**1.1700e-003**	**1.1200e-003**	**61.3223**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	0.51816	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9600	60.9600	1.1700e-003	1.1200e-003	61.3223
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**5.5900e-003**	**0.0508**	**0.0427**	**3.0000e-004**		**3.8600e-003**	**3.8600e-003**		**3.8600e-003**	**3.8600e-003**		**60.9600**	**60.9600**	**1.1700e-003**	**1.1200e-003**	**61.3223**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Unmitigated	0.4831	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0548					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4275					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.4831**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0548					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4275					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.4831**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Arlington High School Construction Run

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	21.59	1000sqft	0.50	21,590.00	0
Other Asphalt Surfaces	60.74	1000sqft	1.39	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - nonpaintable area

Construction Phase - normalized construction schedule based on 12 month schedule

Off-road Equipment - account for trenching in this phase as well

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading -

Demolition - portables, mod building wall (assumed), handball court

Trips and VMT - 2 VT for each water truck, modernization of buildings added in. BC 9 WT 4VT originally, AC 2 WT original

Architectural Coating - mod buildings and new buildings have different amounts of coverage

Construction Off-road Equipment Mitigation - see assumptions file

Arlington High School Construction Run - Riverside-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	10,795.00	14,974.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	32,385.00	28,552.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	NumDays	200.00	214.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	4.00	5.00
tblConstructionPhase	NumDays	10.00	11.00
tblConstructionPhase	PhaseEndDate	6/9/2021	6/17/2021
tblConstructionPhase	PhaseEndDate	5/12/2021	6/2/2021
tblConstructionPhase	PhaseEndDate	7/28/2020	7/30/2020
tblConstructionPhase	PhaseEndDate	8/5/2020	8/6/2020
tblConstructionPhase	PhaseStartDate	5/27/2021	6/3/2021
tblConstructionPhase	PhaseStartDate	8/6/2020	8/7/2020
tblLandUse	LandUseSquareFeet	60,740.00	0.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblTripsAndVMT	HaulingTripNumber	103.00	104.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	4.00	7.00
tblTripsAndVMT	WorkerTripNumber	9.00	16.00
tblTripsAndVMT	WorkerTripNumber	2.00	3.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1411	1.1170	0.9292	1.7200e-003	0.0380	0.0575	0.0956	0.0119	0.0550	0.0670	0.0000	146.2755	146.2755	0.0265	0.0000	146.9382
2021	0.2120	0.8325	0.7988	1.4800e-003	0.0130	0.0402	0.0532	3.5000e-003	0.0388	0.0423	0.0000	124.6590	124.6590	0.0207	0.0000	125.1770
Maximum	**0.2120**	**1.1170**	**0.9292**	**1.7200e-003**	**0.0380**	**0.0575**	**0.0956**	**0.0119**	**0.0550**	**0.0670**	**0.0000**	**146.2755**	**146.2755**	**0.0265**	**0.0000**	**146.9382**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1411	1.1170	0.9292	1.7200e-003	0.0235	0.0575	0.0810	7.0900e-003	0.0550	0.0621	0.0000	146.2754	146.2754	0.0265	0.0000	146.9380
2021	0.2120	0.8325	0.7988	1.4800e-003	0.0120	0.0402	0.0522	3.2600e-003	0.0388	0.0420	0.0000	124.6589	124.6589	0.0207	0.0000	125.1769
Maximum	**0.2120**	**1.1170**	**0.9292**	**1.7200e-003**	**0.0235**	**0.0575**	**0.0810**	**7.0900e-003**	**0.0550**	**0.0621**	**0.0000**	**146.2754**	**146.2754**	**0.0265**	**0.0000**	**146.9380**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**30.42**	**0.00**	**10.43**	**32.97**	**0.00**	**4.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2020**	**9-30-2020**	0.6694	0.6694
2	**10-1-2020**	**12-31-2020**	0.5811	0.5811
3	**1-1-2021**	**3-31-2021**	0.5216	0.5216
4	**4-1-2021**	**6-30-2021**	0.5145	0.5145
5	**7-1-2021**	**9-30-2021**	0.0064	0.0064
		Highest	0.6694	0.6694

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0881	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Energy	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	104.8625	104.8625	2.2700e-003	6.1000e-004	105.1021
Mobile	0.0744	0.6535	1.0282	4.5800e-003	0.3551	3.3700e-003	0.3585	0.0952	3.1600e-003	0.0983	0.0000	424.2154	424.2154	0.0198	0.0000	424.7093
Waste						0.0000	0.0000		0.0000	0.0000	5.6980	0.0000	5.6980	0.3367	0.0000	14.1165
Water						0.0000	0.0000		0.0000	0.0000	0.2274	17.9279	18.1554	0.0238	6.3000e-004	18.9377
Total	**0.1635**	**0.6628**	**1.0370**	**4.6400e-003**	**0.3551**	**4.0700e-003**	**0.3592**	**0.0952**	**3.8600e-003**	**0.0990**	**5.9254**	**547.0078**	**552.9332**	**0.3825**	**1.2400e-003**	**562.8678**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0881	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Energy	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	104.8625	104.8625	2.2700e-003	6.1000e-004	105.1021
Mobile	0.0744	0.6535	1.0282	4.5800e-003	0.3551	3.3700e-003	0.3585	0.0952	3.1600e-003	0.0983	0.0000	424.2154	424.2154	0.0198	0.0000	424.7093
Waste						0.0000	0.0000		0.0000	0.0000	5.6980	0.0000	5.6980	0.3367	0.0000	14.1165
Water						0.0000	0.0000		0.0000	0.0000	0.2274	17.9279	18.1554	0.0238	6.3000e-004	18.9377
Total	**0.1635**	**0.6628**	**1.0370**	**4.6400e-003**	**0.3551**	**4.0700e-003**	**0.3592**	**0.0952**	**3.8600e-003**	**0.0990**	**5.9254**	**547.0078**	**552.9332**	**0.3825**	**1.2400e-003**	**562.8678**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Arlington High School Construction Run - Riverside-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2020	7/30/2020	5	22	
2	Grading/Trenching	Grading	7/31/2020	8/6/2020	5	5	
3	Building Construction	Building Construction	8/7/2020	6/2/2021	5	214	
4	Architectural Coating	Architectural Coating	6/3/2021	6/17/2021	5	11	
5	Paving	Paving	6/18/2021	7/2/2021	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 28,552; Non-Residential Outdoor: 14,974; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Arlington High School Construction Run - Riverside-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Grading/Trenching	Trenchers	1	8.00	78	0.50
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading/Trenching	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading/Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading/Trenching	Excavators	1	8.00	158	0.38
Grading/Trenching	Graders	1	6.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	2.00	104.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Trenching	5	13.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	16.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0112	0.0000	0.0112	1.7000e-003	0.0000	1.7000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0234	0.2304	0.1612	2.7000e-004		0.0127	0.0127		0.0118	0.0118	0.0000	23.1744	23.1744	5.9600e-003	0.0000	23.3234
Total	**0.0234**	**0.2304**	**0.1612**	**2.7000e-004**	**0.0112**	**0.0127**	**0.0239**	**1.7000e-003**	**0.0118**	**0.0135**	**0.0000**	**23.1744**	**23.1744**	**5.9600e-003**	**0.0000**	**23.3234**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	0.0126	1.6300e-003	4.0000e-005	9.0000e-004	4.0000e-005	9.4000e-004	2.5000e-004	4.0000e-005	2.8000e-004	0.0000	3.7705	3.7705	2.4000e-004	0.0000	3.7764
Vendor	6.0000e-005	2.2900e-003	4.5000e-004	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5410	0.5410	4.0000e-005	0.0000	0.5420
Worker	6.6000e-004	4.6000e-004	4.9200e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3150	1.3150	3.0000e-005	0.0000	1.3158
Total	**9.9000e-004**	**0.0154**	**7.0000e-003**	**6.0000e-005**	**2.6100e-003**	**6.0000e-005**	**2.6700e-003**	**7.1000e-004**	**6.0000e-005**	**7.6000e-004**	**0.0000**	**5.6265**	**5.6265**	**3.1000e-004**	**0.0000**	**5.6343**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.7900e-003	0.0000	4.7900e-003	7.2000e-004	0.0000	7.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0234	0.2304	0.1612	2.7000e-004		0.0127	0.0127		0.0118	0.0118	0.0000	23.1744	23.1744	5.9600e-003	0.0000	23.3233
Total	**0.0234**	**0.2304**	**0.1612**	**2.7000e-004**	**4.7900e-003**	**0.0127**	**0.0175**	**7.2000e-004**	**0.0118**	**0.0126**	**0.0000**	**23.1744**	**23.1744**	**5.9600e-003**	**0.0000**	**23.3233**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	0.0126	1.6300e-003	4.0000e-005	8.4000e-004	4.0000e-005	8.8000e-004	2.3000e-004	4.0000e-005	2.7000e-004	0.0000	3.7705	3.7705	2.4000e-004	0.0000	3.7764
Vendor	6.0000e-005	2.2900e-003	4.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5410	0.5410	4.0000e-005	0.0000	0.5420
Worker	6.6000e-004	4.6000e-004	4.9200e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.3150	1.3150	3.0000e-005	0.0000	1.3158
Total	**9.9000e-004**	**0.0154**	**7.0000e-003**	**6.0000e-005**	**2.4200e-003**	**6.0000e-005**	**2.4800e-003**	**6.6000e-004**	**6.0000e-005**	**7.2000e-004**	**0.0000**	**5.6265**	**5.6265**	**3.1000e-004**	**0.0000**	**5.6343**

3.3 Grading/Trenching - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0123	0.0000	0.0123	6.3100e-003	0.0000	6.3100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0400e-003	0.0533	0.0310	6.0000e-005		2.7200e-003	2.7200e-003		2.5000e-003	2.5000e-003	0.0000	4.9822	4.9822	1.6100e-003	0.0000	5.0225
Total	**5.0400e-003**	**0.0533**	**0.0310**	**6.0000e-005**	**0.0123**	**2.7200e-003**	**0.0150**	**6.3100e-003**	**2.5000e-003**	**8.8100e-003**	**0.0000**	**4.9822**	**4.9822**	**1.6100e-003**	**0.0000**	**5.0225**

3.3 Grading/Trenching - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	5.2000e-004	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1229	0.1229	1.0000e-005	0.0000	0.1232
Worker	1.5000e-004	1.0000e-004	1.1200e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2989	0.2989	1.0000e-005	0.0000	0.2991
Total	**1.6000e-004**	**6.2000e-004**	**1.2200e-003**	**0.0000**	**3.9000e-004**	**0.0000**	**3.9000e-004**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.4218**	**0.4218**	**2.0000e-005**	**0.0000**	**0.4222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.2500e-003	0.0000	5.2500e-003	2.7000e-003	0.0000	2.7000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0400e-003	0.0533	0.0310	6.0000e-005		2.7200e-003	2.7200e-003		2.5000e-003	2.5000e-003	0.0000	4.9822	4.9822	1.6100e-003	0.0000	5.0225
Total	**5.0400e-003**	**0.0533**	**0.0310**	**6.0000e-005**	**5.2500e-003**	**2.7200e-003**	**7.9700e-003**	**2.7000e-003**	**2.5000e-003**	**5.2000e-003**	**0.0000**	**4.9822**	**4.9822**	**1.6100e-003**	**0.0000**	**5.0225**

3.3 Grading/Trenching - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	5.2000e-004	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1229	0.1229	1.0000e-005	0.0000	0.1232
Worker	1.5000e-004	1.0000e-004	1.1200e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2989	0.2989	1.0000e-005	0.0000	0.2991
Total	**1.6000e-004**	**6.2000e-004**	**1.2200e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.4218**	**0.4218**	**2.0000e-005**	**0.0000**	**0.4222**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1066	0.7764	0.6924	1.1600e-003		0.0418	0.0418		0.0404	0.0404	0.0000	95.3096	95.3096	0.0177	0.0000	95.7520
Total	**0.1066**	**0.7764**	**0.6924**	**1.1600e-003**		**0.0418**	**0.0418**		**0.0404**	**0.0404**	**0.0000**	**95.3096**	**95.3096**	**0.0177**	**0.0000**	**95.7520**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0382	7.4800e-003	9.0000e-005	2.3200e-003	2.2000e-004	2.5400e-003	6.7000e-004	2.1000e-004	8.8000e-004	0.0000	9.0364	9.0364	7.2000e-004	0.0000	9.0544
Worker	3.8600e-003	2.7100e-003	0.0289	9.0000e-005	9.2300e-003	6.0000e-005	9.2900e-003	2.4500e-003	5.0000e-005	2.5000e-003	0.0000	7.7246	7.7246	1.9000e-004	0.0000	7.7294
Total	**4.9000e-003**	**0.0409**	**0.0364**	**1.8000e-004**	**0.0116**	**2.8000e-004**	**0.0118**	**3.1200e-003**	**2.6000e-004**	**3.3800e-003**	**0.0000**	**16.7610**	**16.7610**	**9.1000e-004**	**0.0000**	**16.7838**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1066	0.7764	0.6924	1.1600e-003		0.0418	0.0418		0.0404	0.0404	0.0000	95.3095	95.3095	0.0177	0.0000	95.7518
Total	**0.1066**	**0.7764**	**0.6924**	**1.1600e-003**		**0.0418**	**0.0418**		**0.0404**	**0.0404**	**0.0000**	**95.3095**	**95.3095**	**0.0177**	**0.0000**	**95.7518**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0382	7.4800e-003	9.0000e-005	2.1700e-003	2.2000e-004	2.3900e-003	6.3000e-004	2.1000e-004	8.4000e-004	0.0000	9.0364	9.0364	7.2000e-004	0.0000	9.0544
Worker	3.8600e-003	2.7100e-003	0.0289	9.0000e-005	8.5100e-003	6.0000e-005	8.5700e-003	2.2700e-003	5.0000e-005	2.3300e-003	0.0000	7.7246	7.7246	1.9000e-004	0.0000	7.7294
Total	**4.9000e-003**	**0.0409**	**0.0364**	**1.8000e-004**	**0.0107**	**2.8000e-004**	**0.0110**	**2.9000e-003**	**2.6000e-004**	**3.1700e-003**	**0.0000**	**16.7610**	**16.7610**	**9.1000e-004**	**0.0000**	**16.7838**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0988	0.7432	0.7030	1.2000e-003		0.0373	0.0373		0.0360	0.0360	0.0000	98.9435	98.9435	0.0177	0.0000	99.3851
Total	**0.0988**	**0.7432**	**0.7030**	**1.2000e-003**		**0.0373**	**0.0373**		**0.0360**	**0.0360**	**0.0000**	**98.9435**	**98.9435**	**0.0177**	**0.0000**	**99.3851**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.1000e-004	0.0356	6.8400e-003	1.0000e-004	2.4100e-003	7.0000e-005	2.4800e-003	7.0000e-004	7.0000e-005	7.6000e-004	0.0000	9.3076	9.3076	7.1000e-004	0.0000	9.3253
Worker	3.7400e-003	2.5200e-003	0.0275	9.0000e-005	9.5800e-003	6.0000e-005	9.6400e-003	2.5500e-003	5.0000e-005	2.6000e-003	0.0000	7.7507	7.7507	1.8000e-004	0.0000	7.7553
Total	**4.6500e-003**	**0.0381**	**0.0343**	**1.9000e-004**	**0.0120**	**1.3000e-004**	**0.0121**	**3.2500e-003**	**1.2000e-004**	**3.3600e-003**	**0.0000**	**17.0583**	**17.0583**	**8.9000e-004**	**0.0000**	**17.0806**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0988	0.7432	0.7030	1.2000e-003		0.0373	0.0373		0.0360	0.0360	0.0000	98.9433	98.9433	0.0177	0.0000	99.3849
Total	**0.0988**	**0.7432**	**0.7030**	**1.2000e-003**		**0.0373**	**0.0373**		**0.0360**	**0.0360**	**0.0000**	**98.9433**	**98.9433**	**0.0177**	**0.0000**	**99.3849**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.1000e-004	0.0356	6.8400e-003	1.0000e-004	2.2600e-003	7.0000e-005	2.3200e-003	6.6000e-004	7.0000e-005	7.2000e-004	0.0000	9.3076	9.3076	7.1000e-004	0.0000	9.3253
Worker	3.7400e-003	2.5200e-003	0.0275	9.0000e-005	8.8400e-003	6.0000e-005	8.8900e-003	2.3600e-003	5.0000e-005	2.4100e-003	0.0000	7.7507	7.7507	1.8000e-004	0.0000	7.7553
Total	**4.6500e-003**	**0.0381**	**0.0343**	**1.9000e-004**	**0.0111**	**1.3000e-004**	**0.0112**	**3.0200e-003**	**1.2000e-004**	**3.1300e-003**	**0.0000**	**17.0583**	**17.0583**	**8.9000e-004**	**0.0000**	**17.0806**

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1009					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2000e-003	8.4000e-003	0.0100	2.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	1.4043	1.4043	1.0000e-004	0.0000	1.4067
Total	**0.1021**	**8.4000e-003**	**0.0100**	**2.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**1.4043**	**1.4043**	**1.0000e-004**	**0.0000**	**1.4067**

3.5 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1467	0.1467	0.0000	0.0000	0.1468
Total	**7.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1467**	**0.1467**	**0.0000**	**0.0000**	**0.1468**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1009					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2000e-003	8.4000e-003	0.0100	2.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	1.4043	1.4043	1.0000e-004	0.0000	1.4067
Total	**0.1021**	**8.4000e-003**	**0.0100**	**2.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**1.4043**	**1.4043**	**1.0000e-004**	**0.0000**	**1.4067**

3.5 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.7000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	5.0000e-005	0.0000	0.1467	0.1467	0.0000	0.0000	0.1468
Total	**7.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1467**	**0.1467**	**0.0000**	**0.0000**	**0.1468**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2600e-003	0.0426	0.0487	7.0000e-005		2.2800e-003	2.2800e-003		2.1100e-003	2.1100e-003	0.0000	6.4707	6.4707	2.0500e-003	0.0000	6.5220
Paving	1.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.0800e-003**	**0.0426**	**0.0487**	**7.0000e-005**		**2.2800e-003**	**2.2800e-003**		**2.1100e-003**	**2.1100e-003**	**0.0000**	**6.4707**	**6.4707**	**2.0500e-003**	**0.0000**	**6.5220**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.1000e-004	2.2500e-003	1.0000e-005	7.9000e-004	0.0000	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6355	0.6355	1.0000e-005	0.0000	0.6359
Total	**3.1000e-004**	**2.1000e-004**	**2.2500e-003**	**1.0000e-005**	**7.9000e-004**	**0.0000**	**7.9000e-004**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.6355**	**0.6355**	**1.0000e-005**	**0.0000**	**0.6359**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2600e-003	0.0426	0.0487	7.0000e-005		2.2800e-003	2.2800e-003		2.1100e-003	2.1100e-003	0.0000	6.4707	6.4707	2.0500e-003	0.0000	6.5220
Paving	1.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.0800e-003**	**0.0426**	**0.0487**	**7.0000e-005**		**2.2800e-003**	**2.2800e-003**		**2.1100e-003**	**2.1100e-003**	**0.0000**	**6.4707**	**6.4707**	**2.0500e-003**	**0.0000**	**6.5220**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.1000e-004	2.2500e-003	1.0000e-005	7.2000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6355	0.6355	1.0000e-005	0.0000	0.6359
Total	**3.1000e-004**	**2.1000e-004**	**2.2500e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6355**	**0.6355**	**1.0000e-005**	**0.0000**	**0.6359**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0744	0.6535	1.0282	4.5800e-003	0.3551	3.3700e-003	0.3585	0.0952	3.1600e-003	0.0983	0.0000	424.2154	424.2154	0.0198	0.0000	424.7093
Unmitigated	0.0744	0.6535	1.0282	4.5800e-003	0.3551	3.3700e-003	0.3585	0.0952	3.1600e-003	0.0983	0.0000	424.2154	424.2154	0.0198	0.0000	424.7093

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	278.30	94.35	38.65	930,097	930,097
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	278.30	94.35	38.65	930,097	930,097

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Other Asphalt Surfaces	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	94.7698	94.7698	2.0700e-003	4.3000e-004	94.9495
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	94.7698	94.7698	2.0700e-003	4.3000e-004	94.9495
NaturalGas Mitigated	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0926	10.0926	1.9000e-004	1.9000e-004	10.1526
NaturalGas Unmitigated	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0926	10.0926	1.9000e-004	1.9000e-004	10.1526

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	189128	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0926	10.0926	1.9000e-004	1.9000e-004	10.1526
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.0200e-003**	**9.2700e-003**	**7.7900e-003**	**6.0000e-005**		**7.0000e-004**	**7.0000e-004**		**7.0000e-004**	**7.0000e-004**	**0.0000**	**10.0926**	**10.0926**	**1.9000e-004**	**1.9000e-004**	**10.1526**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	189128	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0926	10.0926	1.9000e-004	1.9000e-004	10.1526
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.0200e-003**	**9.2700e-003**	**7.7900e-003**	**6.0000e-005**		**7.0000e-004**	**7.0000e-004**		**7.0000e-004**	**7.0000e-004**	**0.0000**	**10.0926**	**10.0926**	**1.9000e-004**	**1.9000e-004**	**10.1526**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	157607	94.7698	2.0700e-003	4.3000e-004	94.9495
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**94.7698**	**2.0700e-003**	**4.3000e-004**	**94.9495**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	157607	94.7698	2.0700e-003	4.3000e-004	94.9495
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**94.7698**	**2.0700e-003**	**4.3000e-004**	**94.9495**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0881	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Unmitigated	0.0881	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0100					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0780					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Total	**0.0881**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0400e-003**	**2.0400e-003**	**1.0000e-005**	**0.0000**	**2.1800e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0100					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0780					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Total	**0.0881**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0400e-003**	**2.0400e-003**	**1.0000e-005**	**0.0000**	**2.1800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	18.1554	0.0238	6.3000e-004	18.9377
Unmitigated	18.1554	0.0238	6.3000e-004	18.9377

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0.716888 / 1.84343	18.1554	0.0238	6.3000e-004	18.9377
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**18.1554**	**0.0238**	**6.3000e-004**	**18.9377**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0.716888 / 1.84343	18.1554	0.0238	6.3000e-004	18.9377
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**18.1554**	**0.0238**	**6.3000e-004**	**18.9377**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	5.6980	0.3367	0.0000	14.1165
Unmitigated	5.6980	0.3367	0.0000	14.1165

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	28.07	5.6980	0.3367	0.0000	14.1165
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**5.6980**	**0.3367**	**0.0000**	**14.1165**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	28.07	5.6980	0.3367	0.0000	14.1165
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**5.6980**	**0.3367**	**0.0000**	**14.1165**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Arlington High School Construction Run

Riverside-South Coast County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demolition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Trenching	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cement and Mortar Mixers	Diesel	No Change	0	1	No Change	0.00
Concrete/Industrial Saws	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Forklifts	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	1	No Change	0.00
Rollers	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	6	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Paving Equipment	Diesel	No Change	0	1	No Change	0.00
Welders	Diesel	No Change	0	3	No Change	0.00
Excavators	Diesel	No Change	0	1	No Change	0.00
Trenchers	Diesel	No Change	0	1	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	1.20000E-003	8.40000E-003	1.00000E-002	2.00000E-005	5.20000E-004	5.20000E-004	0.00000E+000	1.40429E+000	1.40429E+000	1.00000E-004	0.00000E+000	1.40670E+000
Cement and Mortar Mixers	2.40000E-004	1.52000E-003	1.27000E-003	0.00000E+000	6.00000E-005	6.00000E-005	0.00000E+000	1.89040E-001	1.89040E-001	2.00000E-005	0.00000E+000	1.89530E-001
Concrete/Industrial Saws	4.60000E-003	3.62800E-002	4.05500E-002	7.00000E-005	2.18000E-003	2.18000E-003	0.00000E+000	5.91422E+000	5.91422E+000	3.70000E-004	0.00000E+000	5.92359E+000
Cranes	3.47300E-002	4.10510E-001	1.64340E-001	4.60000E-004	1.68000E-002	1.54600E-002	0.00000E+000	4.06789E+001	4.06789E+001	1.31600E-002	0.00000E+000	4.10078E+001
Excavators	6.20000E-004	6.06000E-003	8.21000E-003	1.00000E-005	2.90000E-004	2.70000E-004	0.00000E+000	1.13992E+000	1.13992E+000	3.70000E-004	0.00000E+000	1.14914E+000
Forklifts	1.09600E-002	9.92900E-002	9.42100E-002	1.20000E-004	7.23000E-003	6.65000E-003	0.00000E+000	1.07769E+001	1.07769E+001	3.49000E-003	0.00000E+000	1.08640E+001
Generator Sets	4.04300E-002	3.55180E-001	3.95360E-001	7.00000E-004	1.94400E-002	1.94400E-002	0.00000E+000	6.04772E+001	6.04772E+001	3.24000E-003	0.00000E+000	6.05583E+001
Graders	8.90000E-004	1.18600E-002	3.40000E-003	1.00000E-005	3.80000E-004	3.50000E-004	0.00000E+000	1.09325E+000	1.09325E+000	3.50000E-004	0.00000E+000	1.10209E+000
Pavers	1.02000E-003	1.07000E-002	1.19800E-002	2.00000E-005	5.20000E-004	4.80000E-004	0.00000E+000	1.70290E+000	1.70290E+000	5.50000E-004	0.00000E+000	1.71667E+000
Paving Equipment	1.06000E-003	1.06700E-002	1.39800E-002	2.00000E-005	5.30000E-004	4.80000E-004	0.00000E+000	1.96814E+000	1.96814E+000	6.40000E-004	0.00000E+000	1.98406E+000
Rollers	9.10000E-004	9.26000E-003	9.05000E-003	1.00000E-005	5.70000E-004	5.20000E-004	0.00000E+000	1.10931E+000	1.10931E+000	3.60000E-004	0.00000E+000	1.11828E+000
Rubber Tired Dozers	1.39000E-002	1.45900E-001	5.31900E-002	1.10000E-004	7.15000E-003	6.57000E-003	0.00000E+000	9.66336E+000	9.66336E+000	3.13000E-003	0.00000E+000	9.74150E+000
Tractors/Loaders/ Backhoes	2.43100E-002	2.44880E-001	2.74800E-001	3.80000E-004	1.51100E-002	1.39000E-002	0.00000E+000	3.30037E+001	3.30037E+001	1.06700E-002	0.00000E+000	3.32705E+001
Trenchers	1.05000E-003	9.54000E-003	6.62000E-003	1.00000E-005	7.10000E-004	6.60000E-004	0.00000E+000	7.44900E-001	7.44900E-001	2.40000E-004	0.00000E+000	7.50930E-001
Welders	1.03360E-001	4.94190E-001	5.59330E-001	8.20000E-004	2.58000E-002	2.58000E-002	0.00000E+000	6.04188E+001	6.04188E+001	8.39000E-003	0.00000E+000	6.06286E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	1.20000E-003	8.40000E-003	1.00000E-002	2.00000E-005	5.20000E-004	5.20000E-004	0.00000E+000	1.40429E+000	1.40429E+000	1.00000E-004	0.00000E+000	1.40670E+000
Cement and Mortar Mixers	2.40000E-004	1.52000E-003	1.27000E-003	0.00000E+000	6.00000E-005	6.00000E-005	0.00000E+000	1.89040E-001	1.89040E-001	2.00000E-005	0.00000E+000	1.89530E-001
Concrete/Industrial Saws	4.60000E-003	3.62800E-002	4.05500E-002	7.00000E-005	2.18000E-003	2.18000E-003	0.00000E+000	5.91421E+000	5.91421E+000	3.70000E-004	0.00000E+000	5.92358E+000
Cranes	3.47300E-002	4.10510E-001	1.64340E-001	4.60000E-004	1.68000E-002	1.54600E-002	0.00000E+000	4.06788E+001	4.06788E+001	1.31600E-002	0.00000E+000	4.10077E+001
Excavators	6.20000E-004	6.06000E-003	8.21000E-003	1.00000E-005	2.90000E-004	2.70000E-004	0.00000E+000	1.13992E+000	1.13992E+000	3.70000E-004	0.00000E+000	1.14914E+000
Forklifts	1.09600E-002	9.92900E-002	9.42100E-002	1.20000E-004	7.23000E-003	6.65000E-003	0.00000E+000	1.07769E+001	1.07769E+001	3.49000E-003	0.00000E+000	1.08640E+001
Generator Sets	4.04300E-002	3.55180E-001	3.95360E-001	7.00000E-004	1.94400E-002	1.94400E-002	0.00000E+000	6.04771E+001	6.04771E+001	3.24000E-003	0.00000E+000	6.05582E+001
Graders	8.90000E-004	1.18600E-002	3.40000E-003	1.00000E-005	3.80000E-004	3.50000E-004	0.00000E+000	1.09324E+000	1.09324E+000	3.50000E-004	0.00000E+000	1.10208E+000
Pavers	1.02000E-003	1.07000E-002	1.19800E-002	2.00000E-005	5.20000E-004	4.80000E-004	0.00000E+000	1.70290E+000	1.70290E+000	5.50000E-004	0.00000E+000	1.71667E+000
Paving Equipment	1.06000E-003	1.06700E-002	1.39800E-002	2.00000E-005	5.30000E-004	4.80000E-004	0.00000E+000	1.96814E+000	1.96814E+000	6.40000E-004	0.00000E+000	1.98405E+000
Rollers	9.10000E-004	9.26000E-003	9.05000E-003	1.00000E-005	5.70000E-004	5.20000E-004	0.00000E+000	1.10931E+000	1.10931E+000	3.60000E-004	0.00000E+000	1.11828E+000
Rubber Tired Dozers	1.39000E-002	1.45900E-001	5.31900E-002	1.10000E-004	7.15000E-003	6.57000E-003	0.00000E+000	9.66335E+000	9.66335E+000	3.13000E-003	0.00000E+000	9.74149E+000
Tractors/Loaders/Backhoes	2.43100E-002	2.44880E-001	2.74800E-001	3.80000E-004	1.51100E-002	1.39000E-002	0.00000E+000	3.30036E+001	3.30036E+001	1.06700E-002	0.00000E+000	3.32705E+001
Trenchers	1.05000E-003	9.54000E-003	6.62000E-003	1.00000E-005	7.10000E-004	6.60000E-004	0.00000E+000	7.44900E-001	7.44900E-001	2.40000E-004	0.00000E+000	7.50930E-001
Welders	1.03360E-001	4.94190E-001	5.59330E-001	8.20000E-004	2.58000E-002	2.58000E-002	0.00000E+000	6.04188E+001	6.04188E+001	8.39000E-003	0.00000E+000	6.06285E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cement and Mortar Mixers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.69084E-006	1.69084E-006	0.00000E+000	0.00000E+000	1.68817E-006
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.22914E-006	1.22914E-006	0.00000E+000	0.00000E+000	1.21928E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.85582E-006	1.85582E-006	0.00000E+000	0.00000E+000	9.20470E-007
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.15746E-006	1.15746E-006	0.00000E+000	0.00000E+000	1.32104E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	9.14704E-006	9.14704E-006	0.00000E+000	0.00000E+000	9.07367E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	5.04017E-006
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.03484E-006	1.03484E-006	0.00000E+000	0.00000E+000	1.02654E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.21199E-006	1.21199E-006	0.00000E+000	0.00000E+000	1.20227E-006
Trenchers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.15858E-006	1.15858E-006	0.00000E+000	0.00000E+000	1.31951E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Replace Ground Cover of Area Disturbed	PM10 Reduction	5.00	PM2.5 Reduction	5.00		

Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	15.00		
Yes	Clean Paved Road	% PM Reduction	9.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.00	0.00	0.00	0.00	0.06	0.20
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.02	0.01	0.02	0.01	0.08	0.07
Demolition	Fugitive Dust	0.01	0.00	0.00	0.00	0.57	0.58
Demolition	Roads	0.00	0.00	0.00	0.00	0.07	0.07
Grading/Trenching	Fugitive Dust	0.01	0.01	0.01	0.00	0.57	0.57
Grading/Trenching	Roads	0.00	0.00	0.00	0.00	0.08	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.09	0.10

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	50.00
No	Use Low VOC Paint (Residential Exterior)	50.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Arlington High School Operational Run

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	21.59	1000sqft	0.50	21,593.00	0
Other Non-Asphalt Surfaces	60.74	1000sqft	1.39	60,735.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - pool lumped into other non-asphalt surfaces

Construction Phase -

Vehicle Trips - no increase in student cap, stadium capacity is lower than ramona HS

Energy Use - would follow existing HS energy use

Water And Wastewater - water/wastewater generated per student instead of BSF. no change in student capacity

Solid Waste - solid waste generated per student instead of BSF. No change in student capacity

Energy Mitigation -

Water Mitigation -

Area Coating - see assumptions file

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10797	14974
tblAreaCoating	Area_Nonresidential_Interior	32390	28552
tblAreaCoating	Area_Parking	3644	0
tblEnergyUse	LightingElect	4.52	3.03
tblEnergyUse	T24E	3.64	2.78
tblEnergyUse	T24NG	8.05	6.97
tblSolidWaste	SolidWasteGenerationRate	28.07	0.00
tblVehicleTrips	ST_TR	4.37	0.00
tblVehicleTrips	SU_TR	1.79	0.00
tblVehicleTrips	WD_TR	12.89	0.00
tblWater	IndoorWaterUseRate	716,888.18	0.00
tblWater	OutdoorWaterUseRate	1,843,426.74	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.1923	20.9854	15.1814	0.0255	0.1453	1.1534	1.2987	0.0385	1.0770	1.1155	0.0000	2,465.5200	2,465.5200	0.6006	0.0000	2,480.5354
Maximum	**2.1923**	**20.9854**	**15.1814**	**0.0255**	**0.1453**	**1.1534**	**1.2987**	**0.0385**	**1.0770**	**1.1155**	**0.0000**	**2,465.5200**	**2,465.5200**	**0.6006**	**0.0000**	**2,480.5354**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.1923	20.9854	15.1814	0.0255	0.1453	1.1534	1.2987	0.0385	1.0770	1.1155	0.0000	2,465.5200	2,465.5200	0.6006	0.0000	2,480.5354
Maximum	**2.1923**	**20.9854**	**15.1814**	**0.0255**	**0.1453**	**1.1534**	**1.2987**	**0.0385**	**1.0770**	**1.1155**	**0.0000**	**2,465.5200**	**2,465.5200**	**0.6006**	**0.0000**	**2,480.5354**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9685	60.9685	1.1700e-003	1.1200e-003	61.3308
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.5107**	**0.0509**	**0.0511**	**3.0000e-004**	**0.0000**	**3.8900e-003**	**3.8900e-003**	**0.0000**	**3.8900e-003**	**3.8900e-003**		**60.9865**	**60.9865**	**1.2200e-003**	**1.1200e-003**	**61.3500**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	4.2500e-003	0.0387	0.0325	2.3000e-004		2.9400e-003	2.9400e-003		2.9400e-003	2.9400e-003		46.4154	46.4154	8.9000e-004	8.5000e-004	46.6912
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.5094**	**0.0388**	**0.0409**	**2.3000e-004**	**0.0000**	**2.9700e-003**	**2.9700e-003**	**0.0000**	**2.9700e-003**	**2.9700e-003**		**46.4334**	**46.4334**	**9.4000e-004**	**8.5000e-004**	**46.7104**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.26**	**23.84**	**19.93**	**23.33**	**0.00**	**23.65**	**23.65**	**0.00**	**23.65**	**23.65**	**0.00**	**23.86**	**23.86**	**22.95**	**24.11**	**23.86**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2020	7/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761		2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**		**1.1525**	**1.1525**		**1.0761**	**1.0761**		**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0662	0.0391	0.5242	1.4400e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		143.2073	143.2073	3.6700e-003		143.2991
Total	**0.0662**	**0.0391**	**0.5242**	**1.4400e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0394**		**143.2073**	**143.2073**	**3.6700e-003**		**143.2991**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761	0.0000	2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**		**1.1525**	**1.1525**		**1.0761**	**1.0761**	**0.0000**	**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0662	0.0391	0.5242	1.4400e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		143.2073	143.2073	3.6700e-003		143.2991
Total	**0.0662**	**0.0391**	**0.5242**	**1.4400e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0394**		**143.2073**	**143.2073**	**3.6700e-003**		**143.2991**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Other Non-Asphalt Surfaces	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.2500e-003	0.0387	0.0325	2.3000e-004		2.9400e-003	2.9400e-003		2.9400e-003	2.9400e-003		46.4154	46.4154	8.9000e-004	8.5000e-004	46.6912
NaturalGas Unmitigated	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9685	60.9685	1.1700e-003	1.1200e-003	61.3308

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	518.232	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9685	60.9685	1.1700e-003	1.1200e-003	61.3308
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**5.5900e-003**	**0.0508**	**0.0427**	**3.0000e-004**		**3.8600e-003**	**3.8600e-003**		**3.8600e-003**	**3.8600e-003**		**60.9685**	**60.9685**	**1.1700e-003**	**1.1200e-003**	**61.3308**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	0.394531	4.2500e-003	0.0387	0.0325	2.3000e-004		2.9400e-003	2.9400e-003		2.9400e-003	2.9400e-003		46.4154	46.4154	8.9000e-004	8.5000e-004	46.6912
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.2500e-003**	**0.0387**	**0.0325**	**2.3000e-004**		**2.9400e-003**	**2.9400e-003**		**2.9400e-003**	**2.9400e-003**		**46.4154**	**46.4154**	**8.9000e-004**	**8.5000e-004**	**46.6912**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Unmitigated	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0553					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.5051**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0553					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.5051**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Arlington High School Operational Run

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	21.59	1000sqft	0.50	21,593.00	0
Other Non-Asphalt Surfaces	60.74	1000sqft	1.39	60,735.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - pool lumped into other non-asphalt surfaces

Construction Phase -

Vehicle Trips - no increase in student cap, stadium capacity is lower than ramona HS

Energy Use - would follow existing HS energy use

Water And Wastewater - water/wastewater generated per student instead of BSF. no change in student capacity

Solid Waste - solid waste generated per student instead of BSF. No change in student capacity

Energy Mitigation -

Water Mitigation -

Area Coating - see assumptions file

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10797	14974
tblAreaCoating	Area_Nonresidential_Interior	32390	28552
tblAreaCoating	Area_Parking	3644	0
tblEnergyUse	LightingElect	4.52	3.03
tblEnergyUse	T24E	3.64	2.78
tblEnergyUse	T24NG	8.05	6.97
tblSolidWaste	SolidWasteGenerationRate	28.07	0.00
tblVehicleTrips	ST_TR	4.37	0.00
tblVehicleTrips	SU_TR	1.79	0.00
tblVehicleTrips	WD_TR	12.89	0.00
tblWater	IndoorWaterUseRate	716,888.18	0.00
tblWater	OutdoorWaterUseRate	1,843,426.74	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.1910	20.9868	15.0813	0.0254	0.1453	1.1534	1.2987	0.0385	1.0770	1.1155	0.0000	2,450.7833	2,450.7833	0.6001	0.0000	2,465.7868
Maximum	**2.1910**	**20.9868**	**15.0813**	**0.0254**	**0.1453**	**1.1534**	**1.2987**	**0.0385**	**1.0770**	**1.1155**	**0.0000**	**2,450.7833**	**2,450.7833**	**0.6001**	**0.0000**	**2,465.7868**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	2.1910	20.9868	15.0813	0.0254	0.1453	1.1534	1.2987	0.0385	1.0770	1.1155	0.0000	2,450.7833	2,450.7833	0.6001	0.0000	2,465.7868
Maximum	**2.1910**	**20.9868**	**15.0813**	**0.0254**	**0.1453**	**1.1534**	**1.2987**	**0.0385**	**1.0770**	**1.1155**	**0.0000**	**2,450.7833**	**2,450.7833**	**0.6001**	**0.0000**	**2,465.7868**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9685	60.9685	1.1700e-003	1.1200e-003	61.3308
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.5107**	**0.0509**	**0.0511**	**3.0000e-004**	**0.0000**	**3.8900e-003**	**3.8900e-003**	**0.0000**	**3.8900e-003**	**3.8900e-003**		**60.9865**	**60.9865**	**1.2200e-003**	**1.1200e-003**	**61.3500**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Energy	4.2500e-003	0.0387	0.0325	2.3000e-004		2.9400e-003	2.9400e-003		2.9400e-003	2.9400e-003		46.4154	46.4154	8.9000e-004	8.5000e-004	46.6912
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.5094**	**0.0388**	**0.0409**	**2.3000e-004**	**0.0000**	**2.9700e-003**	**2.9700e-003**	**0.0000**	**2.9700e-003**	**2.9700e-003**		**46.4334**	**46.4334**	**9.4000e-004**	**8.5000e-004**	**46.7104**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.26**	**23.84**	**19.93**	**23.33**	**0.00**	**23.65**	**23.65**	**0.00**	**23.65**	**23.65**	**0.00**	**23.86**	**23.86**	**22.95**	**24.11**	**23.86**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2020	7/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761		2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**		**1.1525**	**1.1525**		**1.0761**	**1.0761**		**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0648	0.0405	0.4240	1.2900e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		128.4707	128.4707	3.1900e-003		128.5504
Total	**0.0648**	**0.0405**	**0.4240**	**1.2900e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0394**		**128.4707**	**128.4707**	**3.1900e-003**		**128.5504**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1262	20.9463	14.6573	0.0241		1.1525	1.1525		1.0761	1.0761	0.0000	2,322.3127	2,322.3127	0.5970		2,337.2363
Total	**2.1262**	**20.9463**	**14.6573**	**0.0241**		**1.1525**	**1.1525**		**1.0761**	**1.0761**	**0.0000**	**2,322.3127**	**2,322.3127**	**0.5970**		**2,337.2363**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0648	0.0405	0.4240	1.2900e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0394		128.4707	128.4707	3.1900e-003		128.5504
Total	**0.0648**	**0.0405**	**0.4240**	**1.2900e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0394**		**128.4707**	**128.4707**	**3.1900e-003**		**128.5504**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Other Non-Asphalt Surfaces	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.2500e-003	0.0387	0.0325	2.3000e-004		2.9400e-003	2.9400e-003		2.9400e-003	2.9400e-003		46.4154	46.4154	8.9000e-004	8.5000e-004	46.6912
NaturalGas Unmitigated	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9685	60.9685	1.1700e-003	1.1200e-003	61.3308

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	518.232	5.5900e-003	0.0508	0.0427	3.0000e-004		3.8600e-003	3.8600e-003		3.8600e-003	3.8600e-003		60.9685	60.9685	1.1700e-003	1.1200e-003	61.3308
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**5.5900e-003**	**0.0508**	**0.0427**	**3.0000e-004**		**3.8600e-003**	**3.8600e-003**		**3.8600e-003**	**3.8600e-003**		**60.9685**	**60.9685**	**1.1700e-003**	**1.1200e-003**	**61.3308**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	0.394531	4.2500e-003	0.0387	0.0325	2.3000e-004		2.9400e-003	2.9400e-003		2.9400e-003	2.9400e-003		46.4154	46.4154	8.9000e-004	8.5000e-004	46.6912
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.2500e-003**	**0.0387**	**0.0325**	**2.3000e-004**		**2.9400e-003**	**2.9400e-003**		**2.9400e-003**	**2.9400e-003**		**46.4154**	**46.4154**	**8.9000e-004**	**8.5000e-004**	**46.6912**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Unmitigated	0.5051	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0553					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.5051**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0553					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9000e-004	8.0000e-005	8.4400e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0180	0.0180	5.0000e-005		0.0192
Total	**0.5051**	**8.0000e-005**	**8.4400e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0180**	**0.0180**	**5.0000e-005**		**0.0192**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Arlington High School Operational Run

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	21.59	1000sqft	0.50	21,593.00	0
Other Non-Asphalt Surfaces	60.74	1000sqft	1.39	60,735.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - pool lumped into other non-asphalt surfaces

Construction Phase -

Vehicle Trips - no increase in student cap, stadium capacity is lower than ramona HS

Energy Use - would follow existing HS energy use

Water And Wastewater - water/wastewater generated per student instead of BSF. no change in student capacity

Solid Waste - solid waste generated per student instead of BSF. No change in student capacity

Energy Mitigation -

Water Mitigation -

Area Coating - see assumptions file

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10797	14974
tblAreaCoating	Area_Nonresidential_Interior	32390	28552
tblAreaCoating	Area_Parking	3644	0
tblEnergyUse	LightingElect	4.52	3.03
tblEnergyUse	T24E	3.64	2.78
tblEnergyUse	T24NG	8.05	6.97
tblSolidWaste	SolidWasteGenerationRate	28.07	0.00
tblVehicleTrips	ST_TR	4.37	0.00
tblVehicleTrips	SU_TR	1.79	0.00
tblVehicleTrips	WD_TR	12.89	0.00
tblWater	IndoorWaterUseRate	716,888.18	0.00
tblWater	OutdoorWaterUseRate	1,843,426.74	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0219	0.2099	0.1510	2.5000e-004	1.4300e-003	0.0115	0.0130	3.8000e-004	0.0108	0.0112	0.0000	22.2631	22.2631	5.4500e-003	0.0000	22.3993
Maximum	**0.0219**	**0.2099**	**0.1510**	**2.5000e-004**	**1.4300e-003**	**0.0115**	**0.0130**	**3.8000e-004**	**0.0108**	**0.0112**	**0.0000**	**22.2631**	**22.2631**	**5.4500e-003**	**0.0000**	**22.3993**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0219	0.2099	0.1510	2.5000e-004	1.4300e-003	0.0115	0.0130	3.8000e-004	0.0108	0.0112	0.0000	22.2631	22.2631	5.4500e-003	0.0000	22.3992
Maximum	**0.0219**	**0.2099**	**0.1510**	**2.5000e-004**	**1.4300e-003**	**0.0115**	**0.0130**	**3.8000e-004**	**0.0108**	**0.0112**	**0.0000**	**22.2631**	**22.2631**	**5.4500e-003**	**0.0000**	**22.3992**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2020**	**9-30-2020**	0.2318	0.2318
		Highest	0.2318	0.2318

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0921	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Energy	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	104.8770	104.8770	2.2700e-003	6.1000e-004	105.1167
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0932**	**9.2800e-003**	**8.8400e-003**	**6.0000e-005**	**0.0000**	**7.0000e-004**	**7.0000e-004**	**0.0000**	**7.0000e-004**	**7.0000e-004**	**0.0000**	**104.8791**	**104.8791**	**2.2800e-003**	**6.1000e-004**	**105.1189**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0921	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Energy	7.8000e-004	7.0600e-003	5.9300e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	91.6390	91.6390	1.9800e-003	5.2000e-004	91.8438
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0929**	**7.0700e-003**	**6.9800e-003**	**4.0000e-005**	**0.0000**	**5.4000e-004**	**5.4000e-004**	**0.0000**	**5.4000e-004**	**5.4000e-004**	**0.0000**	**91.6410**	**91.6410**	**1.9900e-003**	**5.2000e-004**	**91.8460**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.26**	**23.81**	**21.04**	**33.33**	**0.00**	**22.86**	**22.86**	**0.00**	**22.86**	**22.86**	**0.00**	**12.62**	**12.62**	**12.72**	**14.75**	**12.63**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2020	7/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0213	0.2095	0.1466	2.4000e-004		0.0115	0.0115		0.0108	0.0108	0.0000	21.0677	21.0677	5.4200e-003	0.0000	21.2031
Total	**0.0213**	**0.2095**	**0.1466**	**2.4000e-004**		**0.0115**	**0.0115**		**0.0108**	**0.0108**	**0.0000**	**21.0677**	**21.0677**	**5.4200e-003**	**0.0000**	**21.2031**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.2000e-004	4.4700e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1955	1.1955	3.0000e-005	0.0000	1.1962
Total	**6.0000e-004**	**4.2000e-004**	**4.4700e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1955**	**1.1955**	**3.0000e-005**	**0.0000**	**1.1962**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0213	0.2095	0.1466	2.4000e-004		0.0115	0.0115		0.0108	0.0108	0.0000	21.0676	21.0676	5.4200e-003	0.0000	21.2030
Total	**0.0213**	**0.2095**	**0.1466**	**2.4000e-004**		**0.0115**	**0.0115**		**0.0108**	**0.0108**	**0.0000**	**21.0676**	**21.0676**	**5.4200e-003**	**0.0000**	**21.2030**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.2000e-004	4.4700e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1955	1.1955	3.0000e-005	0.0000	1.1962
Total	**6.0000e-004**	**4.2000e-004**	**4.4700e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1955**	**1.1955**	**3.0000e-005**	**0.0000**	**1.1962**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Other Non-Asphalt Surfaces	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	83.9544	83.9544	1.8400e-003	3.8000e-004	84.1135
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	94.7830	94.7830	2.0700e-003	4.3000e-004	94.9627
NaturalGas Mitigated	7.8000e-004	7.0600e-003	5.9300e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.6846	7.6846	1.5000e-004	1.4000e-004	7.7303
NaturalGas Unmitigated	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0940	10.0940	1.9000e-004	1.9000e-004	10.1540

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	189155	1.0200e-003	9.2700e-003	7.7900e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0940	10.0940	1.9000e-004	1.9000e-004	10.1540
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.0200e-003**	**9.2700e-003**	**7.7900e-003**	**6.0000e-005**		**7.0000e-004**	**7.0000e-004**		**7.0000e-004**	**7.0000e-004**	**0.0000**	**10.0940**	**10.0940**	**1.9000e-004**	**1.9000e-004**	**10.1540**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	144004	7.8000e-004	7.0600e-003	5.9300e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.6846	7.6846	1.5000e-004	1.4000e-004	7.7303
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**7.8000e-004**	**7.0600e-003**	**5.9300e-003**	**4.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**7.6846**	**7.6846**	**1.5000e-004**	**1.4000e-004**	**7.7303**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	157629	94.7830	2.0700e-003	4.3000e-004	94.9627
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**94.7830**	**2.0700e-003**	**4.3000e-004**	**94.9627**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	139620	83.9544	1.8400e-003	3.8000e-004	84.1135
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**83.9544**	**1.8400e-003**	**3.8000e-004**	**84.1135**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0921	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Unmitigated	0.0921	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0820					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Total	**0.0921**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0400e-003**	**2.0400e-003**	**1.0000e-005**	**0.0000**	**2.1800e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0820					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0400e-003	2.0400e-003	1.0000e-005	0.0000	2.1800e-003
Total	**0.0921**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0400e-003**	**2.0400e-003**	**1.0000e-005**	**0.0000**	**2.1800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Arlington High School Operational Run

Riverside-South Coast County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Demolition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Concrete/Industrial Saws	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	1	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	3	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Concrete/Industrial Saws	4.18000E-003	3.29900E-002	3.68700E-002	6.00000E-005	1.98000E-003	1.98000E-003	0.00000E+000	5.37656E+000	5.37656E+000	3.40000E-004	0.00000E+000	5.38508E+000
Rubber Tired Dozers	1.07900E-002	1.13320E-001	4.13200E-002	9.00000E-005	5.55000E-003	5.11000E-003	0.00000E+000	7.50552E+000	7.50552E+000	2.43000E-003	0.00000E+000	7.56621E+000
Tractors/Loaders/Backhoes	6.29000E-003	6.31500E-002	6.83900E-002	9.00000E-005	3.99000E-003	3.67000E-003	0.00000E+000	8.18558E+000	8.18558E+000	2.65000E-003	0.00000E+000	8.25176E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Concrete/Industrial Saws	4.18000E-003	3.29900E-002	3.68700E-002	6.00000E-005	1.98000E-003	1.98000E-003	0.00000E+000	5.37656E+000	5.37656E+000	3.40000E-004	0.00000E+000	5.38507E+000
Rubber Tired Dozers	1.07900E-002	1.13320E-001	4.13200E-002	9.00000E-005	5.55000E-003	5.11000E-003	0.00000E+000	7.50552E+000	7.50552E+000	2.43000E-003	0.00000E+000	7.56620E+000
Tractors/Loaders/Backhoes	6.29000E-003	6.31500E-002	6.83900E-002	9.00000E-005	3.99000E-003	3.67000E-003	0.00000E+000	8.18557E+000	8.18557E+000	2.65000E-003	0.00000E+000	8.25175E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Percent Reduction											
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.85698E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.32167E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.22166E-006	1.22166E-006	0.00000E+000	0.00000E+000	1.21186E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Demolition	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Demolition	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.42	11.42	11.11	11.63	11.42
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	23.53	23.84	23.88	33.33	22.86	22.86	0.00	23.87	23.87	21.05	26.32	23.87
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.10	0.32		

No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			
No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				

No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			
No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	50.00
No	Use Low VOC Paint (Residential Exterior)	50.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	30.00	
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy	0.00	0.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
Yes	Install low-flow bathroom faucet	32.00	
Yes	Install low-flow Kitchen faucet	18.00	
Yes	Install low-flow Toilet	20.00	
Yes	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
Yes	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value
Institute Recycling and Composting Services	
Percent Reduction in Waste Disposed	

Construction Localized Significance Thresholds: Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
23	1.89	25	82	1.89

Source Receptor	Metropolitan Riverside Cour	Equipment	Acres/8-hr Day		Daily hours	Equipment Used	Acres
Distance (meters)	25	Tractors	0.5	0.0625	8	3	1.5
NOx	**164**	Graders	0.5	0.0625			0
CO	**852**	Dozers	0.5	0.0625	8	1	0.5
PM10	**6.67**	Scrapers	1	0.125			0
PM2.5	**3.89**					**Acres**	2.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	118	148	212	335	652
	2	170	200	264	379	684
		164	194	258	374	680
CO	1	602	887	1746	4359	17640
	2	883	1262	2232	5136	18947
		852	1221	2179	5051	18803
PM10	1	4	12	30	67	178
	2	7	20	38	75	186
		7	19	37	74	185
PM2.5	1	3	4	8	20	86
	2	4	6	10	23	91
		4	6	10	23	90

Metropolitan Riverside County

1.89 Acres

	25	**50**	**100**	**200**	**500**
NOx	164	194	258	374	680
CO	852	1221	2179	5051	18803
PM10	7	19	37	74	185
PM2.5	4	6	10	23	90

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
23	1	23	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
23	1.19	25	82	1.89

Source Receptor	Metropolitan Riverside Cour	Equipment	Acres/8-hr Day		Daily hours	Equipment Used	Acres
Distance (meters)	25	Tractors	0.5	0.0625	7	1	0.4375
NOx	**128**	Graders	0.5	0.0625	6	1	0.375
CO	**655**	Dozers	0.5	0.0625	6	1	0.375
PM10	**4.56**	Scrapers	1	0.125			0
PM2.5	**3.19**					**Acres**	1.19

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	118	148	212	335	652
	2	170	200	264	379	684
		128	158	222	343	658
CO	1	602	887	1746	4359	17640
	2	883	1262	2232	5136	18947
		655	957	1837	4505	17885
PM10	1	4	12	30	67	178
	2	7	20	38	75	186
		5	14	32	69	180
PM2.5	1	3	4	8	20	86
	2	4	6	10	23	91
		3	4	8	21	87

Metropolitan Riverside County

1.19 Acres

	25	**50**	**100**	**200**	**500**
NOx	128	158	222	343	658
CO	655	957	1837	4505	17885
PM10	5	14	32	69	180
PM2.5	3	4	8	21	87

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
23	1	23	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Construction

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
23	0.38	25	82	1.89

Source Receptor	Metropolitan Riverside Cour	Equipment	Acres/8-hr Day		Daily hours	Equipment Used	Acres
Distance (meters)	25	Tractors	0.5	0.0625	6	1	0.375
NOx	**118**	Graders	0.5	0.0625			0
CO	**602**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.38

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	118	148	212	335	652
	1	118	148	212	335	652
		118	148	212	335	652
CO	1	602	887	1746	4359	17640
	1	602	887	1746	4359	17640
		602	887	1746	4359	17640
PM10	1	4	12	30	67	178
	1	4	12	30	67	178
		4	12	30	67	178
PM2.5	1	3	4	8	20	86
	1	3	4	8	20	86
		3	4	8	20	86

Metropolitan Riverside County

0.38 Acres

	25	**50**	**100**	**200**	**500**
NOx	118	148	212	335	652
CO	602	887	1746	4359	17640
PM10	4	12	30	67	178
PM2.5	3	4	8	20	86

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
23	1	23	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Architectural Coating

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
23	0.00	25	82	1.89

Source Receptor	Metropolitan Riverside Cour	Equipment	Acres/8-hr Day		Daily hours	Equipment Used	Acres
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**118**	Graders	0.5	0.0625			0
CO	**602**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	118	148	212	335	652
	1	118	148	212	335	652
		118	148	212	335	652
CO	1	602	887	1746	4359	17640
	1	602	887	1746	4359	17640
		602	887	1746	4359	17640
PM10	1	4	12	30	67	178
	1	4	12	30	67	178
		4	12	30	67	178
PM2.5	1	3	4	8	20	86
	1	3	4	8	20	86
		3	4	8	20	86

Metropolitan Riverside County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	118	148	212	335	652
CO	602	887	1746	4359	17640
PM10	4	12	30	67	178
PM2.5	3	4	8	20	86

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
23	1	23	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Paving

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
23	0.50	25	82	1.89

Source Receptor	Metropolitan Riverside Cour	Equipment	Acres/8-hr Day		Daily hours	Equipment Used	Acres
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**118**	Graders	0.5	0.0625			0
CO	**602**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	118	148	212	335	652
	1	118	148	212	335	652
		118	148	212	335	652
CO	1	602	887	1746	4359	17640
	1	602	887	1746	4359	17640
		602	887	1746	4359	17640
PM10	1	4	12	30	67	178
	1	4	12	30	67	178
		4	12	30	67	178
PM2.5	1	3	4	8	20	86
	1	3	4	8	20	86
		3	4	8	20	86

Metropolitan Riverside County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	118	148	212	335	652
CO	602	887	1746	4359	17640
PM10	4	12	30	67	178
PM2.5	3	4	8	20	86

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
23	1	23	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Appendix F Cultural Resource Investigation

Appendices

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

August 16, 2010

THE PLANNING CENTER
Attn: Henry Kaplan
9841 Airport Blvd., Suite 1010
Los Angeles, California 90045-5409

RE: Riverside Unified School District, Arlington High School.

Mr. Kaplan:

In response to your request, McKenna et al. has completed the studies for the Arlington High School Campus and has prepared the attached letter report for the improvements proposed for the campus. This study was prepared in support of a Mitigated Negative Declaration (MND). This level of research meets the minimum requirements for a Phase I cultural resources investigation for CEQA compliance. In preparing this abbreviated letter report, some detailed discussions have not been presented.

Please review the attached summary report and inform me of any questions or needs for clarification you may have.

Sincerely,

Jeanette A. McKenna, Principal
McKenna et al.

6008 Friends Avenue, Whittier, California 90601-3724 email = jmckena@earthlink.net
(562) 696-3852 OFFICE and FAX (562) 754-7712 CELL (480) 664-0682 AZ

A SUMMARY REPORT ON THE PROPOSED IMPROVEMENTS AT THE ARLINGTON HIGH SCHOOL CAMPUS IN THE CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA

- 2951 Jackson Street, Riverside, CA 92503 –

by:

Jeanette A. McKenna, Principal
McKenna et al., Whittier CA

INTRODUCTION

McKenna et al. initiated cultural resources investigations for the Arlington High School campus at 2951 Jackson Street, Riverside, California, at the request of The Planning Center, Los Angeles, California. These studies were completed in August, 2010, in support of a Mitigated Negative Declaration. These studies were completed by Jeanette A. McKenna (M.A.) and Kristina Lindgren (B.A.) of McKenna et al. Ms. McKenna is a Registered Professional Archaeologist (RPA) and meets the Secretary of the Interior standards for recognition as a professional cultural resource manager (Attachment 1).

PROJECT DESCRIPTION

The currently proposed project (improvements) at Arlington High School is designed to expand the existing recreational uses by expending into areas previously used for agricultural programs. The improvements include the construction of a new gymnasium, improvements to the existing baseball fields, the soccer fields, tennis and basketball courts, and football field. Artificial turf will replace the football field surface and ne bleachers will be constructed. New batting cages will be developed, along with storage containers and the installation of solar panels. New parking and bus drop-off areas will be developed along Jackson Street. No existing buildings will be impacted by the proposed project.

ARLINGTON HIGH SCHOOL

Arlington High School (Figures 1-3) is located at 2951 Jackson Street, Riverside, Riverside County, California. The existing campus was established in 1973 and has an enrollment of approximately 2200 students. The first graduating class graduated in 1975.

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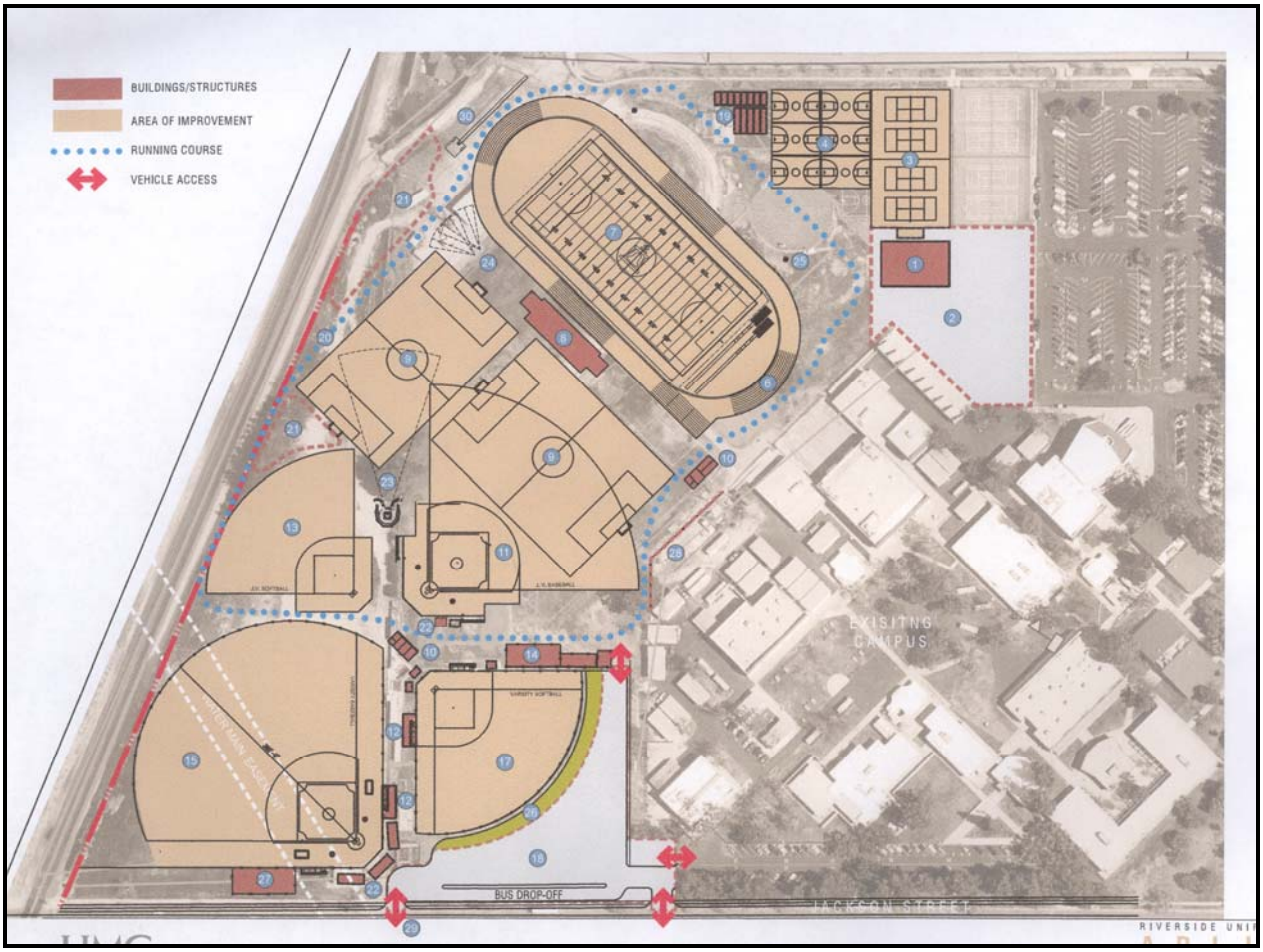

Figure 1. Proposed Improvements, Arlington High School.

The core area of the campus is located in the southeastern quarter of the campus. The proposed improvements will be completed in the fields to the west and north of the complex. The new gymnasium will be located to the north of the complex and adjacent to the tennis courts. The existing campus is 37 years old, rendering it too young for consideration as a significant cultural resource.

PREVIOUS RESEARCH

A standard archaeological records search was completed at the University of California, Riverside, Eastern Information Center. This research resulted in the identification of twelve studies within a one-half mile radius of the campus (RI-3605, RI-4073, RI-4252, RI-4404, RI-4479, RI-5027, RI-5753, RI-5754, RI-5755, RI-6007, RI-8164, and RI-8247). Two of these studies involved small portions of the school campus: RI-4404 (Jones and Stokes 2000) and RI-5753 (Duhdul, et al. 2002). The Jones & Stokes investigation involved a linear right of way for a fiber optic cable system and followed

the existing route of the MWD Upper Feeder (crossing the western portion of the campus. The Duhdul et al. study involved Assessor Parcel Number 193-122-031 and also involved the alignment for the MWD Upper Feeder.

Figure 2. Aerial Overview of Arlington High School, Riverside, California.

The studies noted above resulted in the identification of ten cultural resources within one half mile of the school (Table 1). As noted, two sites are identified as being within the project area – a small segment of the Upper and Lower Riverside Canals. This canal system was developed between 1870 and 1875 and eventually extended over fourteen linear miles. The alignment crosses the northern corner of the school site, near the railroad alignment, but will be avoided by the currently proposed improvements.

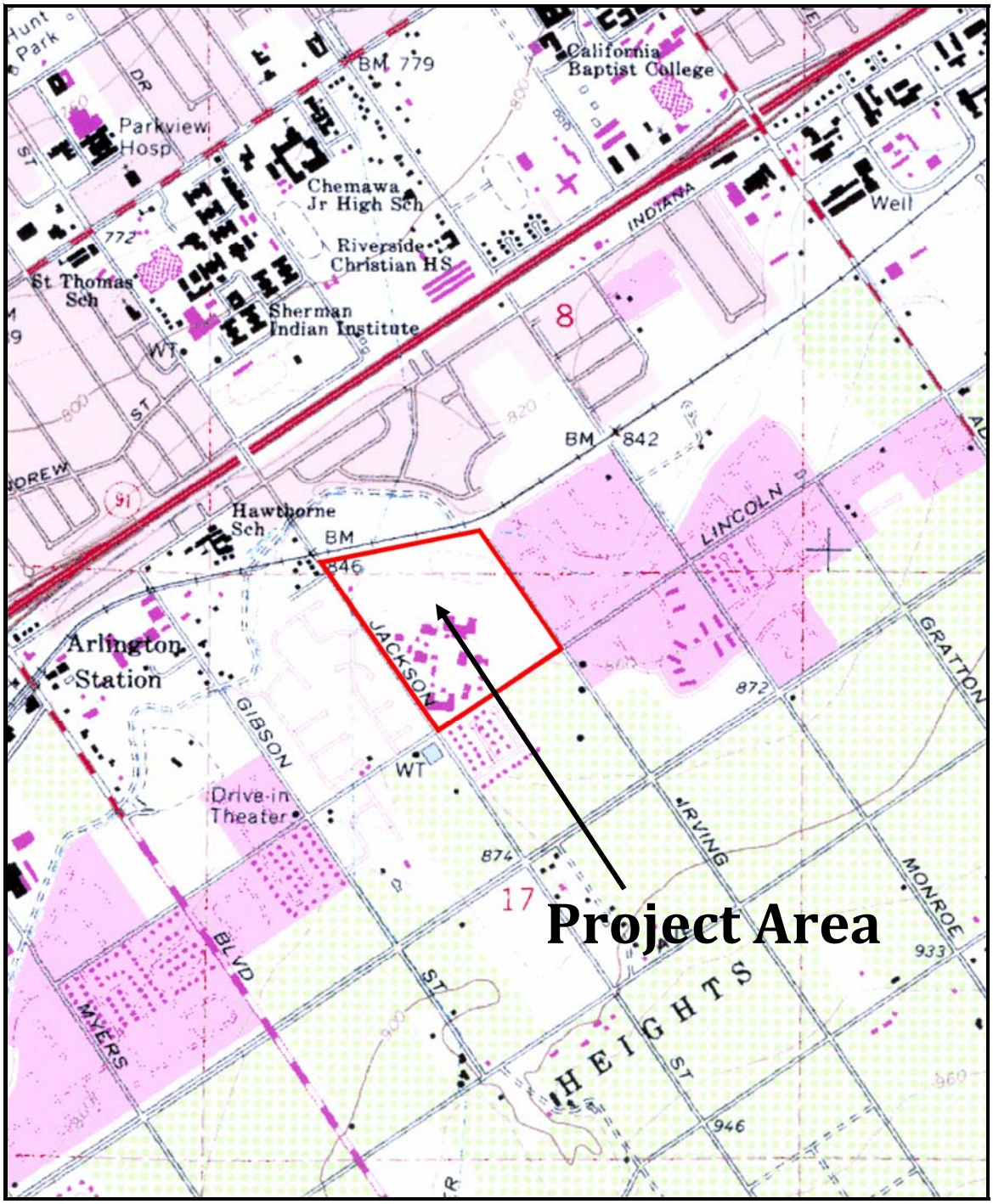

Figure 3. Specific Location of the Project Area.

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Table 1. Resources Identified within One Half Mile of Arlington High School.			
Site No.	Citation	Description	Location
33-004495	Ballester (2009)	Upper Riverside Canal	Inside
	Gustafson and McGrath (2001)	Upper Riverside Canal	
	Starzak and Fitzgerald (1996)	Upper Riverside Canal	
	Wlodarski and Larson 1992	Upper Riverside Canal	
	Jertberg (1991)	Upper Riverside Canal	
33-004791	McKenna (2005)	Lower Riverside Canal	Inside
	Chandler et al. (2002)	Lower Riverside Canal	
	Wlodarski (1992)	Lower Riverside Canal	
33-011361	Bricker et al. (2000)	Victoria Avenue	Outside
33-012172	Tibbet (1999)	3290 Monroe Street	Outside
33-012901	Tang et al. (2003)	3201 Gibson Street	Outside
33-013081	Marvin and Younger (2003)	3472 Farnham Place	Outside
33-013082	Marvin and Younger (2003)	3473 Farnham Place	Outside
33-013083	Marvin and Younger (2003)	9384 Martha Way	Outside
33-013084	Marvin (2003)	9374 Martha Way	Outside
33-017541	Cannon and Chapman (2008)	Farmstead	Outside

A review of historic maps showed that the school site was vacant in 1901, 1942, and 1953, although Lincoln Avenue and Jackson Street were present.

A review of data provided by the Los Angeles County Museum of Natural History (McLeod 2004 and 2007; on file, McKenna et al.) has identified this general area as consisting of Quaternary alluvial deposits ranging in age from the late Pleistocene to the Holocene (older and younger alluvium). Shallow deposits in this area are not likely to yield evidence of fossil specimens. However, deeper deposits of older Quaternary alluvium may, in fact, yield such evidence. At this time, it is not likely that fossils will be present or identified within the project area, but should significant excavations be needed, care should be taken to protect, recover, and analyze any paleontological specimens that may be uncovered.

McKenna et al. contacted the Native American Heritage Commission to inquire into the known presence/absence of Native American sacred or religious sites in the area. Results noted no evidence of any such resources and no listings for any such resources. It is unlikely that such resources will be present within the project area. If, however, potentially sacred or religious artifacts are identified within the project area, the Most Likely Descendant (MLD) for the local Native American community must be notified and permitted to consult with respect to the disposition of the resources.

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CONCLUSION AND RECOMMENDATIONS

The currently proposed improvements to the Arlington High School campus in the City of Riverside are limited to improvements within the existing sports complex and will not involve any alterations to the existing campus complex. The school was constructed in 1973 and, therefore, is not considered historically significant. McKenna et al. completed these studies in August of 2010 and concluded the only sensitive area of the campus for cultural resources is the very northern point of the campus, where the historic Upper and Lower Riverside Canals cross the area. This area is outside the Area of Potential Effects and, therefore, the resource should not be impacted. Although unlikely, there is a potential for additional resources associated with the development of the canal to be present within the campus. Therefore, McKenna et al. recommends the School District be aware of this potential and have an archaeological consultant on-call to assess any cultural resources that may be uncovered as a result of the proposed campus improvements. If evidence of Native American resources is uncovered, a local Native American representative should be consulted to assist in the accurate recordation and recovery of the resource(s). If, at any time, evidence of human remains is identified, the County Coroner must be notified and all protocols followed.

Supplemental information is attached to this letter report. Questions regarding the information provided in this letter report should be directed to the author, Jeanette A. McKenna, at McKenna et al., Whittier, California.

_____ _____

Jeanette A. McKenna, Principal, McKenna et al. Date

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ATTACHMENT 1:

Professional Qualifications

JEANETTE A. McKENNA

Owner and Principal Investigator
McKenna et al., Whittier CA

Ms. McKenna specializes in the field of Cultural Resource Management: prehistoric archaeology, historic archaeology, and history. She is a past member of the Board of Directors for the Society of Professional Archaeologists (SOPA 1993-97) and was certified by the Society to conduct both prehistoric and historic archaeological studies. Ms. McKenna was on the Board of Directors for SOPA when the Society established the Registry of Professional Archaeologists (RPA) and has been a Registered Professional Archaeologist since 1998. Ms. McKenna has over 33 years of professional experience as an archaeologist/cultural resource manager and has participated on over 1500 projects. The majority of her work has been conducted as a Field Director, Project Manager, and/or Principal Investigator throughout California and the Greater Southwest.

TECHNICAL CAPABILITIES

- Vast experience in the greater Southwest, Great Basin, and Southern California regions. Familiar with the full range of cultural resource investigations and has completed projects within the public and private sectors, including environmental management firms, planning and engineering firms, and State and federal agencies.
- Active in the discipline of Cultural Resource Management since 1976; over 30 years of professional experience in Southern California, Arizona, and Nevada.
- Particular interest in the desert regions of California and Arizona, with specializations in the Proto-historic and Historic Contact Periods.
- Considerable experience in dealing with prehistoric cultural remains and working directly with Native American groups in archaeological training programs (through Arizona State University and the Southern California Indian Center, Garden Grove).

EDUCATION AND AFFILIATIONS

B.A., Anthropology, 1977, CSU Fullerton
M.A., Anthropology, 1982, CSU Fullerton
Lambda Alpha Lambda Honors Society
Post Graduate Studies, Arizona St. Univ., 1982-85
Post Graduate Studies, UC Riverside, 1991-92
Certification Program: CEQA, Land Use and Environmental Planning, UC Riverside, 1997-98
Society of Professional Archaeologists (SOPA)
Certification: Field/ Prehistoric Archaeology and Historical Archaeology (1984 to Present)
Registry of Professional Archaeologists (RPA)
Board of Directors, Society of Professional Archaeologists 1993-1997 (American Society of Conservation Archaeologists Representative)
BLM California Permit
BLM Arizona State Permit
Riverside County Registration No. 161
Arizona State Museum Antiquities Permit (renewable)
Curation Agreement, San Bernardino County Museum AND Arizona State University

SELECTED PROJECT EXPERIENCE

- Historic Architectural Studies for Renovation and Restoration of the Greek Theatre, Los Angeles CA
- Evaluation of Cultural Resources within the Burbank and West Hollywood Redevelopment Project Areas, Los Angeles County, CA
- Historic Property Survey for the City of Whittier, Los Angeles County, CA
- Archaeological Investigations and Resource Evaluations for the Proposed Cajon Pipeline, San Bernardino and Los Angeles Counties, CA
- Archaeological Class I Investigations for the Proposed Mojave Pipeline, San Bernardino County, CA
- Cultural Resources Investigations (Phases I, II, III, and Mitigation Monitoring) for the RIX/SARI Projects, Santa Ana Watershed Project Authority (SAWPA), San Bernardino and Riverside Counties, CA
- Phase I, II, and III Archaeological Investigations for the County Sanitation Districts of Los Angeles County, Puente Hills Landfill Solid Waste Management Facility Expansion Project, Whittier, CA
- Archaeological Mitigation Program, The Phoenix Indian School Track Site Project. Arizona State University Office of Cultural Resource Management and the Bureau of Indian Affairs, Phoenix, AZ
- Archaeological and Testing Program for the Hidden Valley Golf Course and Van Buren Golf Course Properties, Riverside County, CA
- Cultural Resources Overview Studies for the Annexation of Unincorporated County Lands to the City of Ontario, CA
- Historic Property Survey Reports: Warner Bros. Main Lot Ranch Lot Properties, Burbank, CA
- Historic Archaeological Investigations for L.A. County Sheriff's Facility, Lancaster, CA.

ATTACHMENT 2:

Archaeological Records Search

EASTERN INFORMATION CENTER

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

Department of Anthropology, University of California, Riverside, CA 92521-0418

(951) 827-5745 - Fax (951) 827-5409 - eickw@ucr.edu

Inyo, Mono, and Riverside Counties

August 6, 2010
EIC-RIV-ST-1052

Jeanette A. McKenna
McKenna et al.
6008 Friends Avenue
Whittier, CA 90601

Re: Cultural Resources Records Search for Arlington High School Project (McKenna et al. Job #1496)

Dear Ms. McKenna:

We received your request on July 23, 2010 and the correct scale map on July 29, 2010, for a cultural resources records search for the Arlington High School project located at 2951 Jackson Street, Riverside, in Section 17, T.3S, R.5W, SBBM, in Riverside County. We have reviewed our site records, maps, and manuscripts against the location map you provided.

Our records indicate that 12 cultural resources studies have been conducted within a half-mile radius of your project area. Two of these studies involved a very small portion of the project area. Two additional studies provide overviews of cultural resources in the general project vicinity. All of these reports are listed on the attachment entitled "Eastern Information Center Report Listing" and are available upon request at 15¢/page plus $40/hour.

Two cultural resources properties are recorded within the boundaries of the project area. Our records indicate that eight properties have been recorded within a half-mile radius of the project area. Copies of the records are included for your reference.

The above information is reflected on the enclosed maps. Areas that have been surveyed are highlighted in yellow. Numbers marked in blue ink refer to the report number (RI #). Cultural resources properties are marked in red; numbers in black refer to Trinomial designations, those in green to Primary Number designations. National Register properties are indicated in light blue.

Additional sources of information consulted are identified below.

National Register of Historic Places: one property (33-011361 Victoria Avenue) is listed.

Office of Historic Preservation (OHP), Archaeological Determinations of Eligibility (ADOE): one property (33-004495 [CA-RIV-4491] Riverside Canal) is listed as potentially eligible for inclusion on the National Register of Historic Places. The applicable portion of this directory is enclosed for your study needs.

Office of Historic Preservation (OHP), Directory of Properties in the Historic Property Data File (HPD): five properties are listed; one as potentially eligible (33-011361 Victoria Avenue); four as ineligible (33-013081; 33-013082; 33-013083; 33-013084) for inclusion on the National Register of Historic Places. The applicable portion of this directory is enclosed for your study needs.

Note: not all properties in the California Historical Resources Information System are listed in the OHP ADOE and HPD; the ADOE and HPD comprise lists of properties submitted to the OHP for review.

Copies of the relevant portions of the 1953 USGS Riverside West 7.5', the 1901 and 1945 USGS Riverside 15', and the 1901 USGS Elsinore 30' topographic maps are included for your reference.

As the Information Center for Riverside County, it is necessary that we receive a copy of all cultural resources reports and site information pertaining to this county in order to maintain our map and manuscript files. Confidential information provided with this records search regarding the location of cultural resources outside the boundaries of your project area should not be included in reports addressing the project area.

Sincerely,

Michael P. Loyd

Michael P. Loyd
Information Officer

Enclosures

Eastern Information Center Report Listing

Report No.	Year	Author(s)	Title	Affiliation	Pages	Resources	----- Acreage ----- Survey	Monitoring
RI-03605	1993	WLODARSKI, ROBERT J.	DRAFT REPORT: AN ARCHAEOLOGICAL SURVEY REPORT DOCUMENTING THE EFFECTS OF THE RCIC I-215 IMPROVEMENT PROJECT IN MORENO VALLEY, RIVERSIDE COUNTY, TO ORANGE SHOW ROAD IN THE CITY OF SAN BERNARDINO, SAN BERNARDINO COUNTY, CALIFORNIA.	HISTORICAL, ENVIRONMENTAL, ARCHAEOLOGICAL RESEARCH TEAM, Calabasas, CA	117	7	~45.73	0.00
RI-04073	1998	LOVE, BRUCE and BAI "TOM" TANG	CULTURAL RECOURCES REPORT: CALIFORNIA BAPTIST COLLEGE MASTER PLAN: CASE NO. CU-027-667 (REVISED), CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	CRM TECH	36	0	80.00	0.00
RI-04252	1999	LOVE, BRUCE, BAI "TOM" TANG, and MICHAEL HOGAN	IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES: VICTORIA AVENUE WITHOUT WIRES, A STREET BEAUTIFICATION PROJECT ALONG HISTORIC VICTORIA AVENUE, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	CRM TECH	40	1	~7.95	0.00
RI-04404	2000	JONES AND STOKES ASSOCIATES, INC.	FINAL CULTURAL RESOURCES INVENTORY REPORT FOR THE WILLIAMS COMMUNICATIONS, INC., FIBER OPTIC CABLE SYSTEM INSTALLATION PROJECT, RIVERSIDE TO SAN DIEGO, CALIFORNIA VOL I-IV.	JONES AND STOKES ASSOCIATES, INC.	252	20	12.00	0.00
RI-04479	2000	ROBINSON, MARK C.	CULTURAL RESOURCES SURVEY AND ASSESSMENT OF APPROXIMATELY 10 ACRES: 9101 CLEVELAND PROJECT, CLEVELAND AVENUE AND JACKSON STREET, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	GREAT LAKES RESEARCH	15	0	10.00	0.00
RI-05027	2000	Jeanette A. McKenna	A PHASE I CULTURAL RESOURCES INVESTIGATION OF THE VESTA TELECOMMUNICATIONS, INC. FIBER OPTIC ALIGNMENT, RIVERSIDE COUNTY TO SAN DIEGO COUNTY, CALIFORNIA	MCKENNA ET AL.	283	0	~246.56	0.00
RI-05753	2002	DAHDUL, MARIAM, DANIEL BALLESTER, BAI TANG, and MICHEAL HOGAN	HISTORICAL.ARCHAEOLOGICAL RESOURCES SURVEY REPORT: ASSESSOR PARCEL NO. 193-122-021, ARLINGTON AREA, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	CRM TECH	20	0	9.00	0.00

Eastern Information Center Report Listing

Report No.	Year	Author(s)	Title	Affiliation	Pages	Resources	Acreage Survey	Acreage Monitoring
RI-05754	2003	TANG, BAI, MICHAEL HOGAN, and UYEN K. DOAN	CULTURAL RESOURCES RECONNAISSANCE REPORT: ARLINGTON REDEVELOPMENT PROJECT AMENDMENT NO. 3, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	CRM TECH	43	2	236.00	0.00
RI-05755	2003	TANG, BAI, MICHAEL HOGAN, MARIAM DAHDUL, and TERESA WOODARD	HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT: THE GIBSON PROJECT, APNS 233-170-006, -007, -008, -010, -013, -016, -018, AND -019, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CA	CRM TECH	23	0	7.00	0.00
RI-06007	2003	TANG, BAI, MICHAEL HOGAN, CASEY TIBBET, and DANIEL BALLESTER	HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT, TENTATIVE PARCEL MAP NO. 31439, VICTORIA AVENUE AND JACKSON STREET, CITY OR RIVERSIDE, RIVERSIDE COUNTY, CA	CRM TECH	20	1	10.00	0.00
RI-08164	2008	Bai Tang and Michael Hogan	Identification and Evaluation of Historic Properties Arlington Heights Sports Park	CRM Tech, Colton, California	38	0	34.00	0.00
RI-08247	2009	Bai "Tom" Tang and Michael Hogan	Identification and Evaluation of Historical Properties, Arlington Desalter System Expansion Project, City of Riverside County, California	CRM TECH, Colton, CA	46	5	~80.00	0.00

California Register of Historical Resources

This listing contains all resources in the selected region that are listed in the California Register of Historical Resources, in addition to other resources that are not presently listed. In order to determine which resources are currently listed in the California Register, refer to the columns labeled CHL# and NRS.

If there is a number listed under CHL# **and** if that number is 770 or higher . . .

OR

If there is a derivative of the rankings 1 **or** 2 under the NRS column . . .

then that resource has automatically been listed in the California Register.

Those resources with a derivative of the rankings 3, 4 and 5 in the NRS column may be eligible for the California Register and should be evaluated against the California Register criteria below to determine if they should be taken into consideration under the California Environmental Quality Act and are therefore subject to environmental review.

California Register Criteria

An historical resource must be significant at the local, state, or national level, under one or more of the following four criteria:

(1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

(2) It is associated with the lives of persons important to local, California, or national history;

(3) It embodies the distinctive characteristics of a type, period, region, or method or construction, or represents the work of a master, or possesses high artistic values; or

(4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

California Historical Resource Status Codes

1 Properties listed in the National Register (NR) or the California Register (CR)

1D Contributor to a district or multiple resource property listed in NR by the Keeper. Listed in the CR.
1S Individual property listed in NR by the Keeper. Listed in the CR.

1CD Listed in the CR as a contributor to a district or multiple resource property by the SHRC
1CS Listed in the CR as individual property by the SHRC.
1CL Automatically listed in the California Register – Includes State Historical Landmarks 770 and above and Points of Historical Interest nominated after December 1997 and recommended for listing by the SHRC.

2 Properties determined eligible for listing in the National Register (NR) or the California Register (CR)

2B Determined eligible for NR as an individual property and as a contributor to an eligible district in a federal regulatory process. Listed in the CR.
2D Contributor to a district determined eligible for NR by the Keeper. Listed in the CR.
2D2 Contributor to a district determined eligible for NR by consensus through Section 106 process. Listed in the CR.
2D3 Contributor to a district determined eligible for NR by Part I Tax Certification. Listed in the CR.
2D4 Contributor to a district determined eligible for NR pursuant to Section 106 without review by SHPO. Listed in the CR.
2S Individual property determined eligible for NR by the Keeper. Listed in the CR.
2S2 Individual property determined eligible for NR by a consensus through Section 106 process. Listed in the CR.
2S3 Individual property determined eligible for NR by Part I Tax Certification. Listed in the CR.
2S4 Individual property determined eligible for NR pursuant to Section 106 without review by SHPO. Listed in the CR.

2CB Determined eligible for CR as an individual property and as a contributor to an eligible district by the SHRC.
2CD Contributor to a district determined eligible for listing in the CR by the SHRC.
2CS Individual property determined eligible for listing in the CR by the SHRC.

3 Appears eligible for National Register (NR) or California Register (CR) through Survey Evaluation

3B Appears eligible for NR both individually and as a contributor to a NR eligible district through survey evaluation.
3D Appears eligible for NR as a contributor to a NR eligible district through survey evaluation.
3S Appears eligible for NR as an individual property through survey evaluation.

3CB Appears eligible for CR both individually and as a contributor to a CR eligible district through a survey evaluation.
3CD Appears eligible for CR as a contributor to a CR eligible district through a survey evaluation.
3CS Appears eligible for CR as an individual property through survey evaluation.

4 Appears eligible for National Register (NR) or California Register (CR) through other evaluation

4CM Master List - State Owned Properties – PRC §5024.

5 Properties Recognized as Historically Significant by Local Government

5D1 Contributor to a district that is listed or designated locally.
5D2 Contributor to a district that is eligible for local listing or designation.
5D3 Appears to be a contributor to a district that appears eligible for local listing or designation through survey evaluation.

5S1 Individual property that is listed or designated locally.
5S2 Individual property that is eligible for local listing or designation.
5S3 Appears to be individually eligible for local listing or designation through survey evaluation.

5B Locally significant both individually (listed, eligible, or appears eligible) and as a contributor to a district that is locally listed, designated, determined eligible or appears eligible through survey evaluation.

6 Not Eligible for Listing or Designation as specified

6C Determined ineligible for or removed from California Register by SHRC.
6J Landmarks or Points of Interest found ineligible for designation by SHRC.
6L Determined ineligible for local listing or designation through local government review process; may warrant special consideration in local planning.
6T Determined ineligible for NR through Part I Tax Certification process.
6U Determined ineligible for NR pursuant to Section 106 without review by SHPO.
6W Removed from NR by the Keeper.
6X Determined ineligible for the NR by SHRC or Keeper.
6Y Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing.
6Z Found ineligible for NR, CR or Local designation through survey evaluation.

7 Not Evaluated for National Register (NR) or California Register (CR) or Needs Revaluation

7J Received by OHP for evaluation or action but not yet evaluated.
7K Resubmitted to OHP for action but not reevaluated.
7L State Historical Landmarks 1-769 and Points of Historical Interest designated prior to January 1998 – Needs to be reevaluated using current standards.
7M Submitted to OHP but not evaluated - referred to NPS.
7N Needs to be reevaluated (Formerly NR Status Code 4)
7N1 Needs to be reevaluated (Formerly NR SC4) – may become eligible for NR w/restoration or when meets other specific conditions.
7R Identified in Reconnaissance Level Survey: Not evaluated.
7W Submitted to OHP for action – withdrawn.

SITE-NUMBER.	PRIMARY-NUM	NRS	EVL-DATE	PROGRAM REF.....	EVAL	OTHER NAMES AND NUMBERS.....
RIV-004069	33-004069	6Y	03/26/97	USAF960405A	SGPR	
RIV-004073	33-004073	6Y	12/27/90	COE900618B	TVPR	
RIV-004074	33-004074	6Y	12/27/90	COE900618B	TVPR	WB-B
RIV-004088	33-004088	6Y	01/02/91	ADOE-33-91-0001-00	LHPR	
				00		
		6Y	01/02/91	BLM901218A	LHPR	
RIV-004089	33-004089	6Y	12/06/90	BLM901204A	LHPR	
RIV-004112H	33-004112	2S2	11/03/97	ADOE-33-97-010-00	JWPR	P.J. WEISEL/OWENS-ILLINOIS GLASS/SAND PLANT
		2S2	11/03/97	BUR971010A	JWPR	
RIV-004174/H	33-004174	6Y	07/21/94	ADOE-33-92-009-00	GRPR	
		7J	09/13/91	FHWA860324A	LHPR	
RIV-004176H		1S	12/14/99	NPS-99001471-0000	KPNP	MARTINEZ ROCK HOUSE/JACK MILLER CABIN, RIV-4176
		3S	01/13/99	33-0064	CHRG	
RIV-004293H	33-004293	6Y	12/06/99	ADOE-33-99-006-000	SGPR	
		6Y	12/06/99	NPS991004A	SGPR	
RIV-004313	33-004313	6Y	02/06/92	USFS901017D	GRPR	
RIV-004361	33-004361	6Y	02/01/95	COE950105A	NDPR	
RIV-004495/H	33-004495	2S2	05/01/97	ADOE-33-97-033-00	CCPR	RIVERSIDE UPPER CANAL
		2S2	05/01/97	FHWA970331B	CCPR	
RIV-004707/H	33-004707	6Y	03/26/97	FHWA970307A	SGPR	
RIV-004727H	33-004727	6Y	08/25/94	ADOE-33-94-001-000	NDPR	MCCARTHY HOG FARM
		6Y	08/25/94	COE911223A	NDPR	
RIV-004728H	33-004728	6Y	08/25/94	ADOE-33-94-002-000	NDPR	REYNOLDS RANCH
		6Y	08/25/94	COE911223A	NDPR	CHINO GUN CLUB
RIV-004760H		6Y	02/16/00	COE980309B	SGPR	
RIV-004967	33-004967	6Y	02/01/95	COE950105A	NDPR	
RIV-004968	33-004968	6Y	02/01/95	COE950105A	NDPR	
RIV-004969	33-004969	6Y	02/01/95	COE950105A	NDPR	
RIV-005048	33-005048	6Y	04/25/94	COE940131B	NDPR	
RIV-005121H	33-005121	6Y	01/18/94	BLM940110A	NDPR	
RIV-005124H	33-005124	6Y	01/18/94	BLM940110A	NDPR	
RIV-005191/H	33-005191	2S2	11/12/97	ADOE-33-97-020-00	GRPR	BRADSHAW TRAIL
		2S2	11/12/97	WAPA960619A	GRPR	WBK 14
RIV-005253H	33-005253	6Y	08/25/94	ADOE-33-94-003-000	NDPR	ROBLES HOME
		6Y	08/25/94	COE911223A	NDPR	
RIV-005328/H	33-005328	2D2	12/15/97	ADOE-33-97-013-00	GRPR	DALE MINING DISTRICT
RIV-005407	33-005407	6Y	06/15/98	ADOE-33-98-001-00	SGPR	
		6Y	06/15/98	USAF980601A	SGPR	
RIV-005411	33-005411	6Y	06/15/98	ADOE-33-98-002-00	SGPR	
		6Y	06/15/98	USAF980601A	SGPR	
RIV-005419	33-005419	6Y	06/15/98	ADOE-33-98-003-00	SGPR	
		6Y	06/15/98	USAF980601A	SGPR	
RIV-005421	33-005421	6Y	06/15/98	ADOE-33-98-004-00	SGPR	
		6Y	06/15/98	USAF980601A	SGPR	
RIV-005439	33-005439	6Y	06/15/98	ADOE-33-98-005-00	SGPR	
		6Y	06/15/98	USAF980601A	SGPR	
RIV-005447	33-005447	6Y	03/14/96	USAF960228A	SGPR	
RIV-005448H	33-005448	6Y	06/15/98	ADOE-33-98-006-00	SGPR	
		6Y	06/15/98	USAF980601A	SGPR	
RIV-005450	33-005450	6Y	03/14/96	USAF960228A	SGPR	
RIV-005495		6Y	02/01/95	COE950105A	NDPR	
RIV-005496		2S2	03/22/95	BUR941220A	SGPR	
RIV-005497		6Y	01/12/95	BUR941220A	SGPR	
RIV-005500		6Y	02/01/95	COE950105A	NDPR	
RIV-005501		6Y	02/01/95	COE950105A	NDPR	
RIV-005520H		6Y	06/22/95	BIA950607A	SGPR	
RIV-005521H		6Y	06/11/97	COE911223A	NDPR	PB-9
RIV-005522H		6Y	06/11/97	COE911223A	NDPR	PB-97
RIV-005523H		6Y	06/11/97	COE911223A	NDPR	SAR-H2B
RIV-005524H		6Y	06/11/97	COE911223A	NDPR	PB-11
RIV-005530	33-005800	2S2	11/12/97	ADOE-33-97-014-00	GRPR	WBK 1
			11/12/97	WAPA960619A	GRPR	
RIV-005531	33-005801	2S2	11/12/97	ADOE-33-97-015-00	GRPR	WBK 2
		2S2	11/12/97	WAPA960619A	GRPR	
RIV-005532	33-005805	6Y	11/12/97	ADOE-33-97-016-00	GRPR	WBK 122
		6Y	11/12/97	WAPA960619A	GRPR	
RIV-005533	33-005803	2S2	11/12/97	ADOE-33-97-017-00	GRPR	WBK 21
		2S2	11/12/97	WAPA960619A	GRPR	
RIV-005534	33-005804	2S2	11/12/97	ADOE-33-97-018-00	GRPR	WBK 22
		2S2	11/12/97	WAPA960619A	GRPR	
RIV-005535	33-005805	6Y	11/12/97	ADOE-33-97-019-00	GRPR	WBK 11
		6Y	11/12/97	WAPA960619A	GRPR	
RIV-005536	33-005807	6Y	11/12/97	ADOE-33-97-021-00	GRPR	WBK 135
		6Y	11/12/97	WAPA960619A	GRPR	

ROPERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
145648		3631 VAN BUREN BLVD		RIVERSIDE	P	1938	HIST.SURV.	2517-0840-0000	10/29/03	6Z	
145649		3637 VAN BUREN BLVD		RIVERSIDE	P	1950	HIST.SURV.	2517-0841-0000	10/29/03	6Z	
145650		3644 VAN BUREN BLVD		RIVERSIDE	P	1925	HIST.SURV.	2517-0842-0000	10/29/03	6Z	
144821		3645 VAN BUREN BLVD		RIVERSIDE	P		HIST.SURV.	2517-0528-0000	10/29/03	6L	
145651		3657 VAN BUREN BLVD		RIVERSIDE	P	1937	HIST.SURV.	2517-0843-0000	10/29/03	6Z	
145652		3669 VAN BUREN BLVD		RIVERSIDE	P	1926	HIST.SURV.	2517-0844-0000	10/29/03	6Z	
145653		3679 VAN BUREN BLVD		RIVERSIDE	P	1941	HIST.SURV.	2517-0845-0000	10/29/04	6Z	
145654		3689 VAN BUREN BLVD		RIVERSIDE		1941	HIST.SURV.	2517-0846-0000	10/29/03	6Z	
145655		3693 VAN BUREN BLVD		RIVERSIDE	P	1957	HIST.SURV.	2517-0847-0000	10/29/03	6Z	
062938		3698 VAN BUREN BLVD	SITE OF	RIVERSIDE	P	1900	HIST.SURV.	2517-0530-0000	10/29/03	7R	
							HIST.SURV.	2517-0095-0000		5S2	
145688		3698 VAN BUREN BLVD		RIVERSIDE	P	1950	HIST.SURV.	2517-0853-0000	10/29/03	6Z	
144829		3719 VAN BUREN BLVD		RIVERSIDE	P	1900	HIST.SURV.	2517-0529-0000	10/29/03	5S2	
144819		3729 VAN BUREN BLVD		RIVERSIDE	P	1900	HIST.SURV.	2517-0527-0000	10/29/03	5S2	
145840		3904 VAN BUREN BLVD		RIVERSIDE	P	1926	HIST.SURV.	2517-0950-0000	10/29/03	7R	
145656		3914 VAN BUREN BLVD		RIVERSIDE	P	1948	HIST.SURV.	2517-0848-0000	10/29/03	6Z	
145657		3922 VAN BUREN BLVD		RIVERSIDE	P	1915	HIST.SURV.	2517-0849-0000	10/29/03	6Z	
145658		3925 VAN BUREN BLVD		RIVERSIDE	P	1950	HIST.SURV.	2517-0850-0000	10/29/03	6Z	
145841		3930 VAN BUREN BLVD		RIVERSIDE	P	1925	HIST.SURV.	2517-0951-0000	10/29/03	7R	
145659		3940 VAN BUREN BLVD		RIVERSIDE	P	1942	HIST.SURV.	2517-0851-0000	10/29/03	6Z	
145660		3958 VAN BUREN BLVD		RIVERSIDE	P	1941	HIST.SURV.	2517-0852-0000	10/29/03	6Z	
145689		3975 VAN BUREN BLVD		RIVERSIDE	P	1953	HIST.SURV.	2517-0854-0000	10/29/03	6Z	
145690		3976 VAN BUREN BLVD		RIVERSIDE	P	1938	HIST.SURV.	2517-0855-0000	10/29/03	6Z	
145691		3986 VAN BUREN BLVD		RIVERSIDE	P	1953	HIST.SURV.	2517-0856-0000	10/29/03	6Z	
145692		3994 VAN BUREN BLVD		RIVERSIDE	P	1950	HIST.SURV.	2517-0857-0000	10/29/03	6Z	
171754		2153 VERMONT AVE		RIVERSIDE		1954	PROJ.REVW.	HUD080317H	04/17/08	6U	
154248		2308 VERMONT ST		RIVERSIDE		1945	PROJ.REVW.	HUD040802L	09/01/04	6U	
119652		VICTORIA AVE	VICTORIA AVENUE	RIVERSIDE	M	1890	PROJ.REVW.	FHWA040616B	06/28/04	2S2	AC
							HIST.RES.	NPS-00001267-0000	10/26/00	1S	AC
							NAT.REG.	33-0065	08/31/00	3S	AC
115010		VICTORIA AVE	BRIDGE #56C-55 / VICTORIA AVENUE B	RIVERSIDE	M	1928	HIST.RES.	DOE-33-86-0001-0000	10/19/86	2S2	C
							PROJ.REVW.	FHWA860919Z	10/19/86	2S2	C
160347		5609 VICTORIA AVE		RIVERSIDE	P	1954	HIST.RES.	DOE-33-05-0008-0324	10/05/05	2D2	C
							PROJ.REVW.	HUD050829S	10/05/05	2D2	C
160349		5657 VICTORIA AVE		RIVERSIDE	P	1954	HIST.RES.	DOE-33-05-0008-0325	10/05/05	2D2	C
							PROJ.REVW.	HUD050829S	10/05/05	2D2	C
160350		5675 VICTORIA AVE		RIVERSIDE	P	1954	HIST.RES.	DOE-33-05-0008-0326	10/05/05	2D2	C
							PROJ.REVW.	HUD050829S	10/05/05	2D2	C
160351		5693 VICTORIA AVE		RIVERSIDE	P	1954	HIST.RES.	DOE-33-05-0008-0327	10/05/05	2D2	C
							PROJ.REVW.	HUD050829S	10/05/05	2D2	C
160354		5715 VICTORIA AVE		RIVERSIDE	P	1954	HIST.RES.	DOE-33-05-0008-0328	10/05/05	2D2	C
							PROJ.REVW.	HUD050829S	10/05/05	2D2	C
128782		3230 VINE ST	E. T. WALL GROWER AND SHIPPER PACK	RIVERSIDE	P	1923	HIST.RES.	DOE-33-01-0001-0000	01/05/01	2S2	AC
							PROJ.REVW.	FHWA970331B	01/05/01	2S2	AC
062914		3575 VINE ST		RIVERSIDE	U	1877	PROJ.REVW.	HUD880913A	07/17/91	2S2	AC
							HIST.SURV.	2517-0071-0000		3S	
062931		3751 VINE ST	SAN PEDRO-LA-SALT LAKE RR DEPOT /	RIVERSIDE	U	1904	HIST.RES.	DOE-33-97-0004-0021	05/01/97	2D2	AC
							PROJ.REVW.	FHWA970331B	05/01/97	2D2	AC
							HIST.RES.	NPS-77000326-0000	04/18/77	1S	
175138		1227 W CHURCH ST		RIVERSIDE	P	1924	PROJ.REVW.	HUD090209W	03/05/09	6Y	
165562		4121 WALLACE ST		RIVERSIDE	P	1947	PROJ.REVW.	HUD070313C	03/19/07	6Y	
142012		5610 WALTER ST		RIVERSIDE	P	1953	HIST.RES.	DOE-33-03-0060-0000	08/04/03	6U	
							PROJ.REVW.	HUD030804A	08/04/03	6U	
142011		5611 WALTER ST		RIVERSIDE	P	1953	HIST.RES.	DOE-33-03-0059-0000	08/04/03	6U	
							PROJ.REVW.	HUD030804A	08/04/03	6U	

PERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
144885	33-013081	3472 FARNHAM PL		RIVERSIDE	P	1953	HIST.RES.	DOE-33-04-0018-0000	08/23/04	6Y	
							PROJ.REVW.	FHWA040819T	08/23/04	6Y	
							HIST.SURV.	2517-0533-0000	10/29/03	7R	
144886	33-013082	3473 FARNHAM PL	RESIDENCE	RIVERSIDE	P	1953	HIST.RES.	DOE-33-04-0019-0000	08/23/04	6Y	
							PROJ.REVW.	FHWA040819T	08/23/04	6Y	
							HIST.SURV.	2517-0534-0000	10/29/03	7R	
144122		3482 FARNHAM PL		RIVERSIDE	P	1953	HIST.SURV.	2517-0245-0000	10/29/03	6L	
144887		3483 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0535-0000	10/29/03	6Z	
144888		3492 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0536-0000	10/29/03	6Z	
144889		3508 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0537-0000	10/29/03	6Z	
144890		3509 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0538-0000	10/29/03	6Z	
144891		3518 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0539-0000	10/29/03	6Z	
144892		3523 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0540-0000	10/29/03	6Z	
144893		3530 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0541-0000	10/29/03	6Z	
144894		3535 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0542-0000	10/29/03	6Z	
144123		3547 FARNHAM PL		RIVERSIDE	P	1953	HIST.SURV.	2517-0246-0000	10/29/03	6L	
145796		3554 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0909-0000	10/29/03	7R	
144895		3559 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0543-0000	10/29/03	6Z	
145797		3566 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0910-0000	10/29/03	7R	
144897		3580 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0545-0000	10/29/03	6Z	
144898		3585 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0546-0000	10/29/03	6Z	
144124		3607 FARNHAM PL		RIVERSIDE	P	1950	HIST.SURV.	2517-0247-0000	10/29/03	6L	
144126		3614 FARNHAM PL		RIVERSIDE	P	1952	HIST.SURV.	2517-0248-0000	10/29/03	6L	
144899		3615 FARNHAM PL		RIVERSIDE	P	1956	HIST.SURV.	2517-0547-0000	10/29/03	6Z	
144900		3622 FARNHAM PL		RIVERSIDE	P	1947	HIST.SURV.	2517-0548-0000	10/29/03	6Z	
144901		3627 FARNHAM PL		RIVERSIDE	P	1957	HIST.SURV.	2517-0549-0000	10/29/03	6Z	
144902		3632 FARNHAM PL		RIVERSIDE	P	1947	HIST.SURV.	2517-0550-0000	10/29/03	6Z	
145798		3640 FARNHAM PL		RIVERSIDE	P	1934	HIST.SURV.	2517-0911-0000	10/29/03	7R	
144903		3641 FARNHAM PL		RIVERSIDE	P	1948	HIST.SURV.	2517-0551-0000	10/29/03	6Z	
144127		3650 FARNHAM PL		RIVERSIDE	P	1928	HIST.SURV.	2517-0249-0000	10/29/03	6L	
144904		3659 FARNHAM PL		RIVERSIDE	P	1938	HIST.SURV.	2517-0552-0000	10/29/03	6Z	
144905		3669 FARNHAM PL		RIVERSIDE	P	1926	HIST.SURV.	2517-0553-0000	10/29/03	6Z	
144128		3676 FARNHAM PL		RIVERSIDE	P	1937	HIST.SURV.	2517-0250-0000	10/29/03	6L	
144906		3677 FARNHAM PL		RIVERSIDE	P	1947	HIST.SURV.	2517-0554-0000	10/29/03	6Z	
144907		3687 FARNHAM PL		RIVERSIDE	P	1937	HIST.SURV.	2517-0555-0000	10/29/03	6Z	
144472		3694 FARNHAM PL		RIVERSIDE	P	1924	HIST.SURV.	2517-0379-0000	10/29/03	5S2	
144129		3695 FARNHAM PL		RIVERSIDE	P	1937	HIST.SURV.	2517-0251-0000	10/29/03	6L	
144473		3706 FARNHAM PL		RIVERSIDE	P	1924	HIST.SURV.	2517-0380-0000	10/29/03	5S2	
144131		3707 FARNHAM PL		RIVERSIDE	P	1935	HIST.SURV.	2517-0252-0000	10/29/03	6L	
144908		3714 FARNHAM PL		RIVERSIDE	P	1937	HIST.SURV.	2517-0556-0000	10/29/03	6Z	
144132		3715 FARNHAM PL		RIVERSIDE	P	1910	HIST.SURV.	2517-0253-0000	10/29/03	6L	
144909		3722 FARNHAM PL		RIVERSIDE	P	1922	HIST.SURV.	2517-0557-0000	10/29/03	6Z	
144133		3723 FARNHAM PL		RIVERSIDE	P	1933	HIST.SURV.	2517-0254-0000	10/29/03	6L	
144135		3730 FARNHAM PL		RIVERSIDE	P	1915	HIST.SURV.	2517-0255-0000	10/29/03	6L	
144910		3731 FARNHAM PL		RIVERSIDE	P	1936	HIST.SURV.	2517-0558-0000	10/29/03	6Z	
144136		3739 FARNHAM PL		RIVERSIDE	P	1926	HIST.SURV.	2517-0256-0000	10/29/03	6L	
144474		3746 FARNHAM PL		RIVERSIDE	P	1913	HIST.SURV.	2517-0381-0000	10/29/03	5S2	
144137		3747 FARNHAM PL		RIVERSIDE	P	1932	HIST.SURV.	2517-0257-0000	10/29/03	6L	
144896		3751 FARNHAM PL		RIVERSIDE	P	1954	HIST.SURV.	2517-0544-0000	10/29/03	6Z	
144476		3755 FARNHAM PL		RIVERSIDE	P	1936	HIST.SURV.	2517-0382-0000	10/29/03	5S2	
144138		3763 FARNHAM PL		RIVERSIDE	P	1939	HIST.SURV.	2517-0258-0000	10/29/03	6L	
144139		3771 FARNHAM PL		RIVERSIDE	P	1940	HIST.SURV.	2517-0259-0000	10/29/03	6L	
144140		3779 FARNHAM PL		RIVERSIDE	P	1913	HIST.SURV.	2517-0260-0000	10/29/03	6L	
132320		3733 FLEMING ST		RIVERSIDE			HIST.RES.	DOE-33-01-0055-0000	09/26/01	6Y	
							PROJ.REVW.	FHWA010905B	09/26/01	6Y	
135554		6019 FLORENCE ST		RIVERSIDE	P	1915	HIST.RES.	DOE-33-02-0016-0000	07/30/02	6Y	

PROPERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
126263		2075 MARLBOROUGH AVE		RIVERSIDE	P	1926	HIST.RES.	DOE-33-98-0016-0000	11/30/98	6Y	
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
126260		2076 MARLBOROUGH AVE		RIVERSIDE	P	1927	HIST.RES.	DOE-33-98-0013-0000	11/30/98	6Y	
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
167235		1548 MARSH WY		RIVERSIDE	P	1955	PROJ.REVW.	HUD070810BB	08/15/07	6Y	
144940		9304 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0589-0000	10/29/03	6Z	
144941		9314 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0590-0000	10/29/03	6Z	
144942		9324 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0591-0000	10/29/03	6Z	
144943		9334 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0592-0000	10/29/03	6Z	
144944		9344 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0593-0000	10/29/03	6Z	
144945		9354 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0594-0000	10/29/03	6Z	
144946		9364 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0595-0000	10/29/03	6Z	
149842	33-013084	9374 MARTHA WY	RESIDENCE	RIVERSIDE	P	1954	HIST.RES.	DOE-33-04-0021-0000	08/23/04	6Y	
							PROJ.REVW.	FHWA040819T	08/23/04	6Y	
145820		9384 MARTHA WY		RIVERSIDE	P	1954	HIST.SURV.	2517-0930-0000	10/29/03	7R	
149841	33-013083	9384 MARTHA WY	RESIDENCE	RIVERSIDE	P	1954	HIST.RES.	DOE-33-04-0020-0000	08/23/04	6Y	
							PROJ.REVW.	FHWA040819T	08/23/04	6Y	
136677		3095 MARY ST		RIVERSIDE	P	1952	HIST.RES.	DOE-33-03-0006-0000	02/10/03	6U	
							PROJ.REVW.	HUD030203D	02/10/03	6U	
136678		3108 MARY ST		RIVERSIDE	P	1925	HIST.RES.	DOE-33-03-0007-0000	02/10/03	6U	
							PROJ.REVW.	HUD030203D	02/10/03	6U	
144160		9527 MASON ST		RIVERSIDE	P	1952	HIST.SURV.	2517-0281-0000	10/29/03	6L	
144157		9528 MASON ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0278-0000	10/29/03	6L	
144161		9536 MASON ST		RIVERSIDE	P	1957	HIST.SURV.	2517-0282-0000	10/29/03	6L	
144162		9546 MASON ST		RIVERSIDE	P	1957	HIST.SURV.	2517-0596-0000	10/29/03	6Z	
							HIST.SURV.	2517-0283-0000	10/29/03	6L	
144947		9547 MASON ST		RIVERSIDE	P	1948	HIST.SURV.	2517-0597-0000	10/29/03	6Z	
144948		9554 MASON ST		RIVERSIDE	P	1948	HIST.SURV.	2517-0598-0000	10/29/03	6Z	
144949		9555 MASON ST		RIVERSIDE	P	1949	HIST.SURV.	2517-0599-0000	10/29/03	6Z	
144950		9562 MASON ST		RIVERSIDE	P	1947	HIST.SURV.	2517-0600-0000	10/29/03	6Z	
145243		9563 MASON ST		RIVERSIDE	P	1953	HIST.SURV.	2517-0601-0000	10/29/03	6Z	
145821		9570 MASON ST		RIVERSIDE	P	1953	HIST.SURV.	2517-0931-0000	10/29/03	7R	
145244		9571 MASON ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0602-0000	10/29/03	6Z	
145245		9580 MASON ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0603-0000	10/29/03	6Z	
145246		9581 MASON ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0604-0000	10/29/03	6Z	
128790		3158 MATA PL		RIVERSIDE	P	1937	HIST.RES.	DOE-33-01-0009-0000	01/05/01	6Y	
							PROJ.REVW.	FHWA970331B	01/05/01	6Y	
128791		3174 MATA PL		RIVERSIDE	P	1938	HIST.RES.	DOE-33-01-0010-0000	01/05/01	6Y	
							PROJ.REVW.	FHWA970331B	01/05/01	6Y	
126258		1635 MATHEWS ST		RIVERSIDE	P	1946	HIST.RES.	DOE-33-98-0011-0000	11/30/98	6Y	
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
126257		1645 MATHEWS ST		RIVERSIDE	P	1948	HIST.RES.	DOE-33-98-0010-0000	11/30/98	6Y	
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
126256		1659 MATHEWS ST		RIVERSIDE	P	1948	HIST.RES.	DOE-33-98-0009-0000	11/30/98	6Y	
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
126255		1673 MATHEWS ST		RIVERSIDE	P	1946	HIST.RES.	DOE-33-98-0008-0000	11/30/98	6Y	
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
126254		1767 MATHEWS ST		RIVERSIDE	P	1947	HIST.RES.	DOE-33-98-0007-0000	11/30/98	6Y	
							PROJ.REVW.	FHWA981013D	11/30/98	6Y	
064226		2061 MCALLISTER ST		RIVERSIDE	P	1916	HIST.SURV.	2517-0110-0000	03/16/82	3S	
145247		3480 MCKENZIE ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0605-0000	10/29/03	6Z	
145248		3490 MCKENZIE ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0606-0000	10/29/03	6Z	
145249		3491 MCKENZIE ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0607-0000	10/29/03	6Z	
145250		3510 MCKENZIE ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0608-0000	10/29/03	6Z	
145251		3515 MCKENZIE ST		RIVERSIDE	P	1954	HIST.SURV.	2517-0609-0000	10/29/03	6Z	

Eastern Information Center Resource Listing

Primary No.	Trinomial	Other IDs	Reports
P-33-004495	CA-RIV-4495	Other RCTC Parcel 5	RI-03383, RI-03605, RI-04393, RI-04628, RI-05748, RI-05754, RI-06088, RI-08247
P-33-004791	CA-RIV-4791		RI-03605, RI-04486, RI-05036, RI-05056, RI-05748, RI-05754, RI-05780, RI-06327, RI-06894, RI-07925, RI-07964, RI-08247
P-33-011361			RI-04252, RI-06007, RI-07819, RI-08247
P-33-012172			
P-33-012901			
P-33-013081			RI-06894
P-33-013082			RI-06894
P-33-013083			RI-06894
P-33-013084			RI-06894
P-33-017541	CA-RIV-9106	Other RCF-5	

ATTACHMENT 3:

Native American Consultation

McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

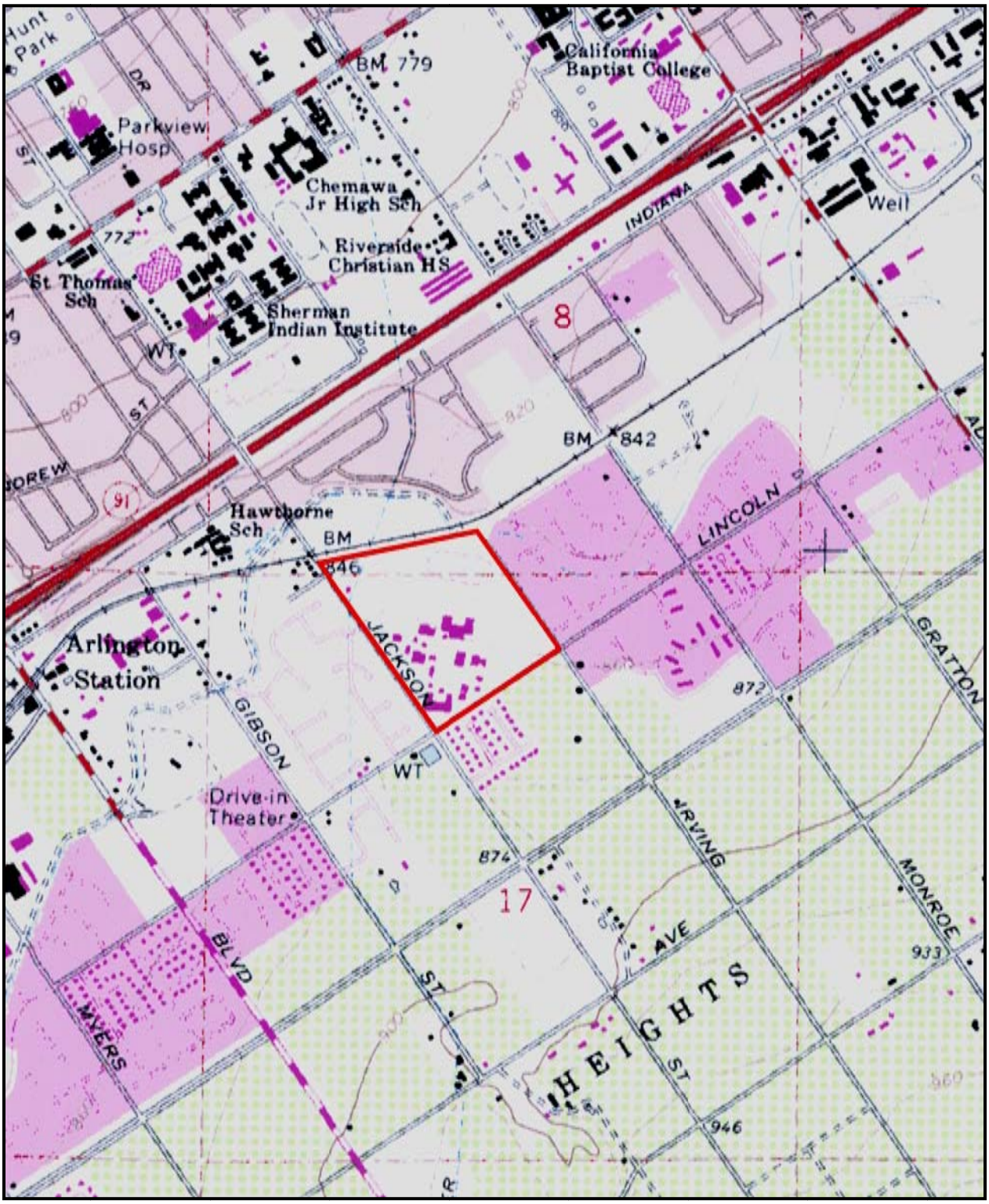
Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364
Sacramento, California 95814
(916) 653-4082 (916) 657-5390 FAX
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project:	McKenna et al. Job No. 1496		
County:	Riverside		
USGS Quadrangle:	Riverside West (rev. 1980)		
Name:	Arlington High School, Riverside, California		
Towns./Range/Section:	3S 5W NW ¼ Section 17		
Company/Firm/Agency:	McKenna et al.		
Contact Person:	Jeanette A. McKenna		
Street Address:	6008 Friends Avenue		
City:	Whittier, CA	Zip:	90601-3724
Phone:	(562) 696-3852		
FAX:	(562) 696-3852		
Email:	**jmckena@earthlink.net**		
Project Description:	Renovation of athletic fields		



Arlington High School Site.

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

July 23, 2010

Ms. Jeanette A. McKenna, M.A., RPA
McKenna et al.
6008 Friends Avenue
Whittier, CA 90601-3724

Sent by FAX TO: 562-696-3852
No. of Pages: 4

Re: Request for a Sacred Lands File Search and Native American Contacts List for the proposed **"Arlington High School Athletic Fields Renovation Project;"** located in Riverside;; Riverside County, California,

Dear Ms. McKenna:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources. The NAHC SLF search, **did not indicate** the presence of Native American cultural resources within one-half mile of the proposed project sites (APEs).

Also, this letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American India tribes and interested Native American individuals as 'consulting parties' under both state and federal law.

The California Environmental Quality Act (CEQA – CA Public Resources Code 21000-21177, amended in 2009) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Culturally-affiliated tribes and individuals may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g.APE). We recommend that you contact persons on the attached list of Native American contacts. Furthermore we suggest that you contact the California Historic Resources Information System (CHRIS) at the Office of Historic Preservation Coordinator's office (at 916-653-7272, for referral to the nearest Information Center of which there are 10.

Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f)(2), the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes.

Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery'.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

The response to this search for Native American cultural resources is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code 5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code 6254.10) although Native Americans on the attached contact list may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of he NHA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibility threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Attachment: Native American Contact List

Native American Contacts
Riverside County
July 23 2010

Pechanga Band of Mission Indians
Paul Macarro, Cultural Resource Center
P.O. Box 1477 Luiseno
Temecula , CA 92593
pmacarro@pechanga-nsn.
(951) 308-9295 Ext 8106
(951) 676-2768
(951) 506-9491 Fax

Santa Rosa Band of Mission Indians
John Marcus, Chairman
P.O. Box 609 Cahuilla
Hemet , CA 92546
srtribaloffice@aol.com
(951) 658-5311
(951) 658-6733 Fax

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairman
P.O. Box 391670 Cahuilla
Anza , CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

Gabrielino Tongva Nation
Sam Dunlap, Chairperson
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351 - cell

San Manuel Band of Mission Indians
James Ramos, Chairperson
26569 Community Center Drive Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 - FAX
(909) 864-3370 Fax

Morongo Band of Mission Indians
Michael Contreras, Cultural Heritage Prog.
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
mcontreras@monongo-nsn.
(951) 755-5025
(951)201-1866 - cell
(951) 922-0105 Fax

Gabrieleno/Tongva San Gabriel Band of Mission
Anthony Morales, Chairperson
PO Box 693 Gabrielino Tongva
San Gabriel , CA 91778
(626) 286-1262 -FAX
(626) 286-1632
(626) 286-1758 - Home
(626) 286-1262 Fax

San Manuel Band of Mission Indians
Ann Brierty, Policy/Cultural Resources Departmen
26569 Community Center. Drive Serrano
Highland , CA 92346
abrierty@sanmanuel-nsn.
(909) 864-8933 EXT-3250
(909) 649-1585 - cell
(909) 862-5152 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Arlington High School Athletic Fields Renovation Project; located in Riverside; Riverside County, California for which a Sacred Lands File search and Native American Contacts list were requested.

Native American Contacts
Riverside County
July 23 2010

Kupa Cultural Center (Pala Band)
Shasta Gaughen, Assistant Director
35008 Pala-Temecula Rd.PMB Box Luiseno
Pala , CA 92059
cupa@palatribe.com
(760) 891-3590
(760) 742-4543 - FAX

Cahuilla Band of Indians
Luther Salgado, Sr., , Chairperson
PO Box 391760 Cahuilla
Anza , CA 92539
tribalcouncil@cahuilla.net
915-763-5549

Pechanga Band of Mission Indians
Mark Macarro, Chairperson
P.O. Box 1477 Luiseno
Temecula , CA 92593
tbrown@pechanga-nsn.gov
(951) 676-2768
(951) 695-1778 Fax

Anna Hoover, Cultural Analyst
Pechanga Cultural Resources Department
P.O. Box 2183 Luiseño
Temecula , CA 92593
(951-770-8104
(951) 694-0446 - FAX
ahoover@pechanga-nsn.gov

Willie J. Pink
48310 Pechanga Road Luiseno
Temecula , CA 92592
wjpink@hotmail.com
(909) 936-1216
Prefers e-mail contact

Joseph Ontiveros, Cultural Resource Department
SOBOBA BAND OF LUISENO INDIANS
P.O. BOX 487 Luiseno
San Jacinto , CA 92581
(951) 654-5544, ext 4137
(951) 663-5279
jontiveros@soboba-msn.gov

Serrano Nation of Indians
Goldie Walker
6588 Valaria Drive Serrano
Highland , CA 92346
(909) 862-9883

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Pechanga Band of Mission Indians
Attn: Paul Macarro, Cultural Resource Center
P.O. Box 1477
Temecula, California 92593

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Macarro:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

Please review your records and provide me with any pertinent information on the presence/absence of Native American cultural resources for this area. Please respond in writing for my records. I look forward to hearing from you.

Sincerely,

Jeanette A. McKenna

Jeanette A. McKenna, Principal
McKenna et al.

6008 Friends Avenue, Whittier, California 90601-3724 email = jmckena@earthlink.net
(562) 696-3852 OFFICE and FAX (562) 754-7712 CELL (480) 664-0682 AZ

McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Ramona Band of Mission Indians
Attn: Joseph Hamilton, Chairman
P.O. Box 391670
Anza, California 92539

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Hamilton:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

San Manuel Band of Mission Indians
Attn: James Ramos, Chairperson
26569 Community Center Drive
Highland, California 92346

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Ramos:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Gabrielino/Tongva San Gabriel Band of Mission Indians
Attn: Anthony Morales, Chairperson
P.O. Box 693
San Gabriel, California 91778

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Morales:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Santa Rosa Band of Mission Indians
Attn: John Marcus, Chairperson
P.O. Box 609
Hemet, California 92549

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Marcus:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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McKenna et al.

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Gabrielino Tongva Nation
Attn: Sam Dunlap, Chairperson
P.O. Box 86908
Los Angeles, California 90066

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Dunlap:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

Please review your records and provide me with any pertinent information on the presence/absence of Native American cultural resources for this area. Please respond in writing for my records. I look forward to hearing from you.

Sincerely,

Jeanette A. McKenna

Jeanette A. McKenna, Principal
McKenna et al.

6008 Friends Avenue, Whittier, California 90601-3724 email = jmckena@earthlink.net
(562) 696-3852 OFFICE and FAX (562) 754-7712 CELL (480) 664-0682 AZ

McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Morongo Band of Mission Indians
Attn: Michael Contreras, Cultural Heritage Program
12700 Pumarra Road
Banning, California 92220

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Contreras:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

San Manuel Band of Mission Indians
Attn: Ann Brierty, Policy/Cultural Resources Department
26569 Community Center Drive
Highland, California 92346

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Ms. Brierty:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Kupa Cultural Center (Pala Band)
Attn: Shasta Gaughen, Assistant Director
35008 Pala-Temecula Road
Pala, California 92059

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Ms. Gaughen:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Willie J. Pink
48310 Pechanga Road
Temecula, California 92592

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Pink:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Serrano Nation of Indians
Attn: Goldie Walker
6588 Valaria Drive
Highland, California 92346

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Ms. Walker:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Cahuilla Band of Indians
Attn: Luther Salgado, Sr., Chairperson
P.O. Box 391760
Anza, California 92539

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Salgado:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Pechanga Band of Mission Indians
Attn: Anna Hoover, Cultural Analyst
P.O. Box 2183
Temecula, California 92693

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Ms. Hoover:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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McKenna et al.

History/Archaeology/Architectural History/Ethnography/Paleontology

Jeanette A. McKenna, MA
Registered Prof. Archaeologist
Owner and Principal Investigator

July 25, 2010

Soboba Band of Luiseno Indians
Attn: Joseph Ontiveros, Cultural Resources Department
P.O. Box 487
San Jacinto, California 92581

RE: Cultural Resources Investigations of Arlington High School, Riverside, CA.

Mr. Ontiveros:

McKenna et al. is initiating a cultural resources overview of the Arlington High School campus in the City of Riverside, Riverside County, California. The school is located at 2951 Jackson Street and illustrated on the attached map. The project, as currently defined, involves improvements to the athletic fields. No existing buildings will be impacted.

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ATTACHMENT 4:

Photographic Record

Administration Building for Arlington High School from Jackson Street Parking Lot (East).

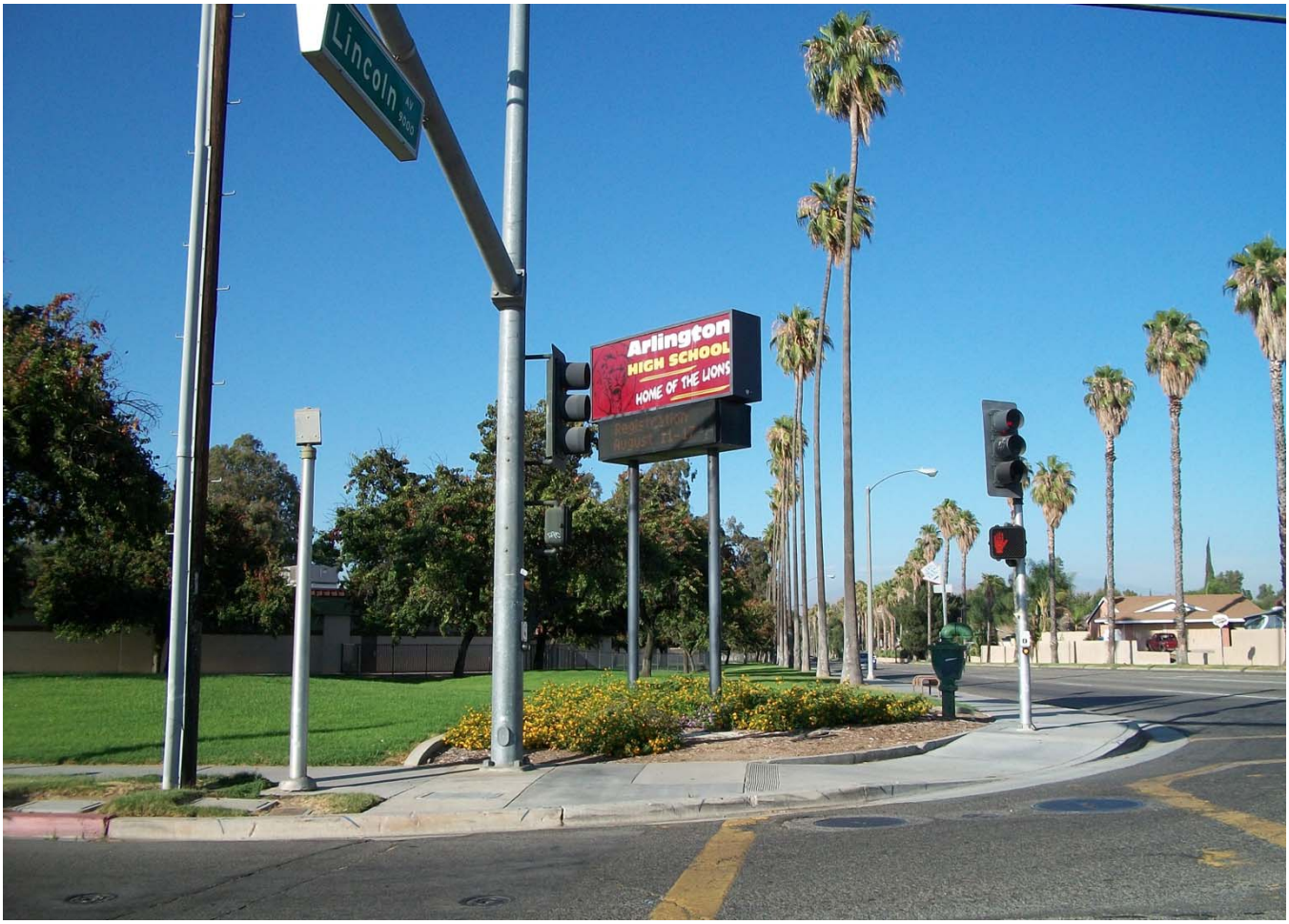
Address on Administration Building at Arlington High School (East).

Parking Lot and Administration Building Along Jackson Street (Southwest).

Classroom Buildings from Jackson Street Parking Lot (East).

Classroom Building from Jackson Street Parking Lot (North).

Jackson Street Parking Lot (Northwest).



Arlington High School Sign at Intersection of Jackson Street and Lincoln Avenue (Northeast).

View of Parking Lot and Buildings from Lincoln Avenue Entrance to Arlington High School (Southwest).

Auditorium from Lincoln Avenue Entrance (West).

Parking Lot Near Lincoln Avenue (North).

Parking Lot Along Lincoln Avenue (Northeast).

Parking Lot Adjacent to Areas to be Improved (East).

Towards Existing Tennis Courts, Site of Possible Parking Expansion (North).

Towards Existing Basketball Courts, Site of New Tennis Courts and Basketball Courts (East).

Existing Softball Diamond (Northeast).

Towards Existing Track, to be Relocated (North).

Current Softball Diamond, Site of Future Relocated Track (Northeast).

Current Basketball Courts (East).

Towards Existing Track, with Existing Lights (North).

Existing Track to be Relocated (North).

Existing Track, Site of Future Soccer Fields (North).

Baseball Diamond to be Relocated (Southeast).

Towards Track and Softball Field (Northeast).

Towards Current Baseball Diamond Near Jackson Street (West).

Towards Existing Baseball Diamonds (West).

Overview of Track from Baseball Diamonds (Northeast).

Containers for Athletic Equipment at South End of Fields (Southeast).

Pool Near Athletic Fields (Southeast).

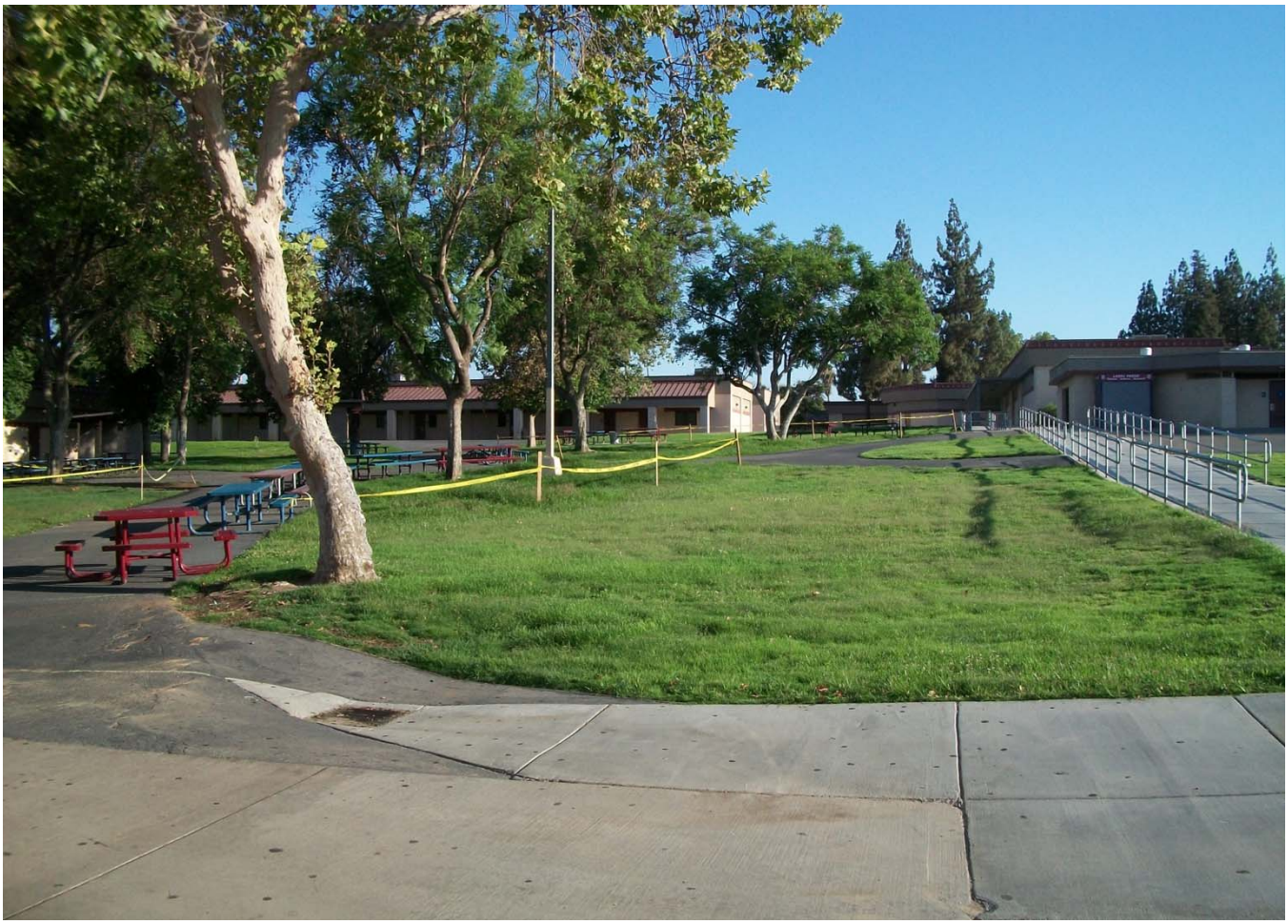
Temporary Classrooms at North End of Campus, Near Fields (Southeast).

Temporary Classrooms at North End of Campus, Near Fields (South).

Towards Athletic Fields from North End of Campus (North).

Bathroom Building Outside Gymnasium (Southeast).

Center of Arlington High School Campus (Southwest).



Center of Arlington High School Campus (South).

Center of Arlington High School Campus (Southeast).

Classrooms at East End of Campus from Center (Southeast).

Appendix G Geologic and Environmental Hazards Assessment

Appendices

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April 2019 | Geologic and Environmental Hazards Assessment

ARLINGTON HIGH SCHOOL MODERNIZATION

Riverside Unified School District

Riverside Unified School District
Contact: Anazele Gonzalez, Director II, Planning Development
3070 Washington Street
Riverside, CA 92504
951.788.7496

Prepared by:

PlaceWorks
Contact: Michael Watson, PG, Associate Geologist
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PLACEWORKS

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Abbreviations and Acronyms

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1. Introduction

1.1 INTRODUCTION

The Riverside Unified School District (District) is proposing to renovate the existing Arlington High School campus. The project would involve improvements to portions of the campus and the addition of new facilities. The State of California's standards for school site selection are found in Title 5 of the California Code of Regulations (CCR) Section 14010, and additional codes and regulations applicable to school facilities that are found in the Education, Government and Public Resources Codes. This study provides an assessment and supporting documentation of State school facility standards applicable to State-funded school modernization approvals (see SFPD 4.07, Part 4 C and SFPD 4.08B, Section 1).

The California Environmental Quality Act (CEQA) requires lead agencies to address the environmental impacts of a project on the environment. These are separate and distinct from the issues addressed in this study, which deal with a site's ability to provide a safe and healthy environment for the school. Documentation of the project's environmental impacts under CEQA is provided under separate cover.

1.2 PROJECT LOCATION AND DESCRIPTION

The project site is within the campus of Arlington High School, at 2951 Jackson Street. The project location is shown in Figure 1, *Regional Location*, and Figure 2, *Local Vicinity*. The campus includes two parcels, APNs 233220010 and 233250001. The 45-acre campus is bounded by Irving Street to the east, a Burlington Northern Santa Fe (BNSF) Railway Company right-of-way to the north, Jackson Street to the west and Lincoln Avenue to the south. Regional access is provided to the site by State Route 91 (SR-91 or Riverside Freeway), approximately 1,000 feet northwest of the site.

Arlington High School has a current student enrollment of 1,918 students in grades 9-12 (CDE 2018) and was built in 1973 (RUSD 2016). The project site consists mainly of two distinct areas; outdoor athletic facilities area, in the northern portion of the site, and the school buildings area, in the southern portion. The schools parking lots are located in the northeast corner of campus and along Jackson Street. The project site and its surroundings can be seen in Figure 3, *Aerial Photograph*.

The proposed project includes modernizing the Media Arts Academy, Administration Building, pool, and student courtyard. The project also includes the new construction of the Biomed and Special Education Building, an Auxiliary Gymnasium and a new Administration and Student Services Building Lobby. These facilities would be used by the current student body and do not increase the school's capacity.

The football field will also be improved with the addition of restrooms adjacent to the field, and expansion and improvement of the bleachers. The existing football field and track bleachers will be replaced with home and visitor-side bleachers providing a total of 3,000 seats. A new press box will also be added. The expansion

of the bleachers would increase traffic on or around the campus during football season. The proposed project also includes the removal of six portable structures on site.

1.3 REPORT DESCRIPTION

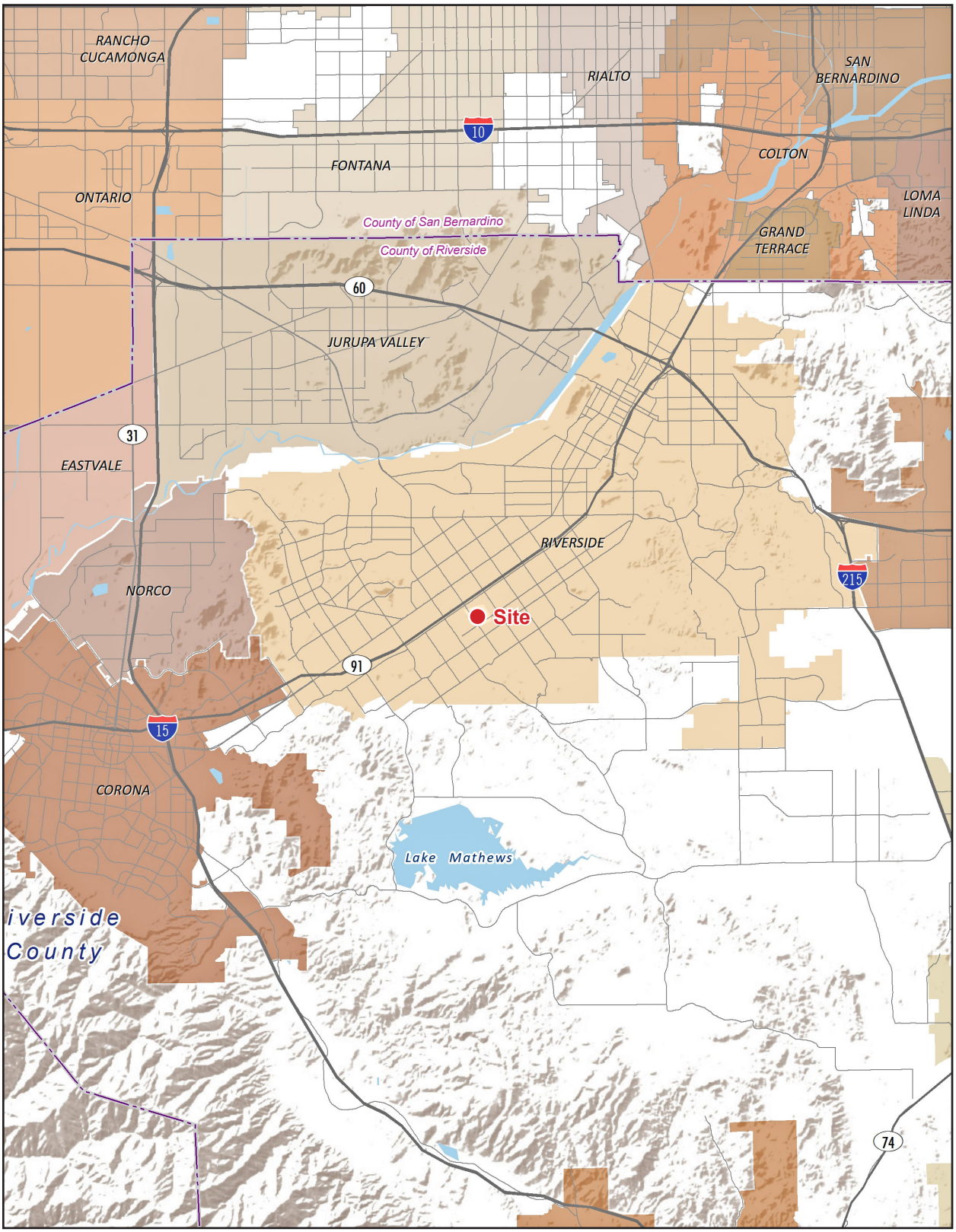
Because the District is seeking to qualify the proposed project for state matching funds, a Geological and Environmental Hazards Assessment (often referred to as a geohazards study) is needed to gain approval from the California Department of Education (CDE). The Geological and Environmental Hazards Assessment (GEHA) will identify potential health and safety hazards and constraints. It will be prepared to satisfy CDE's requirement for a geohazards study and cover due diligence in a broader sense. The GEHA does not satisfy the separate requirement for a soils and geotechnical study, which will be provided by others.

1.4 CONCLUSIONS/RECOMMENDATIONS

Based on a review of various information sources contained in this report, the following potentially environmental health and safety hazard is subject to further evaluation:

- The site will be investigated for organochlorine pesticides due to historic agricultural use of the site and lead in soil during the Preliminary Environmental Assessment (PEA) process, which is underway. The results of this testing will determine if any response action is needed. The PEA is being performed under the oversight of the Department of Toxic Substances Control, which will ultimately provide the final approval for the PEA either as a No Further Action determination or certifying a final response action, if necessary.

Figure 1 - Regional Location



Note: Unincorporated county areas are shown in white.

0 3
Scale (Miles)

Source: ESRI, 2018

1. Introduction

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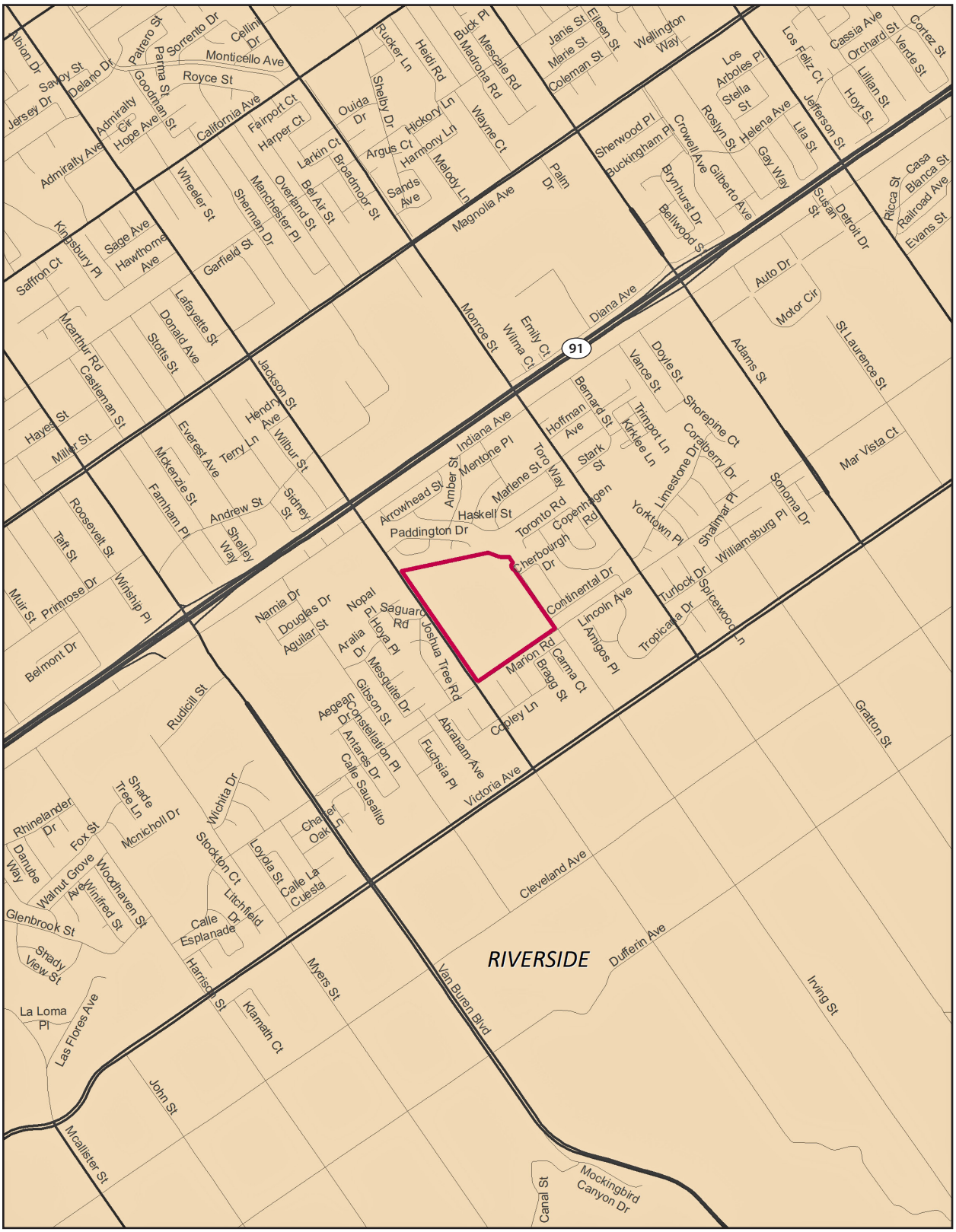
Figure 2 - Local Vicinity



School Boundary

0 2,000
Scale (Feet)

Source: ESRI, 2018

1. Introduction

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Figure 3 - Aerial Photograph

School Boundary

0 700
Scale (Feet)

Source: ESRI, 2018

1. Introduction

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2. Environmental Checklist

2.1 STATE STANDARDS FOR SCHOOL FACILITIES

The State of California's standards for school site selection are in CCR Title 5, Section 14010, and additional codes and regulations applicable to school facilities are in the Education, Government and Public Resources codes. The following checklist provides a list of questions and code citations related to state-funded new school building/modernization approvals.

STATE STANDARDS CHECKLIST FOR STATE-FUNDED SCHOOL FACILITIES—
SCHOOL PLAN/MODERNIZATION APPROVAL
(Documentation for SFPD 4.07, Part 4 C and SFPD 4.08B, Section 1)

Topic	Code References
Air Quality	
Is the boundary of the proposed school site within 500 feet of the edge of the closest traffic lane of a freeway or busy traffic corridor? If yes, would the project create an air quality health risk due to the placement of the school?	Ed. Code § 17213(c)(2)(C); CCR Title 5 § 14010(q)
Would the project create an air quality hazard due to the placement of a school within one-quarter mile of: (a) permitted and non-permitted facilities identified by the jurisdictional air quality control board or air pollution control district; (b) freeways and other busy traffic corridors; (c) large agricultural operations; and/or (d) a rail yard, which might reasonably be anticipated to emit hazardous air emissions, or handle hazardous or acutely hazardous material, substances, or waste?	Ed. Code § 17213(b); CCR Title 5 § 14010(q)
Geology and Soils	
Does the site contain an active earthquake fault or fault trace, or is the site located within the boundaries of any special studies zone or within an area designated as geologically hazardous in the safety element of the local general plan?	Ed. Code, § 17212 and § 17212.5; CCR Title 5 § 14010(f)
Would the project involve the construction, reconstruction, or relocation of any school building on the trace of a geological fault along which surface rupture can reasonably be expected to occur within the life of the school building?	Ed. Code § 17212.5
Would the project involve the construction, reconstruction, or relocation of any school building on a site subject to moderate-to-high liquefaction, landslides, or expansive soils?	CCR, Title 5 § 14010(i) School Site Selection and Approval Guide, Appendix H
Are naturally occurring asbestos minerals located at the site?	School Site Selection and Approval Guide, Appendix H
Hazards and Hazardous Materials	
Is the proposed school site located near an aboveground water or fuel storage tank or within 1,500 feet of an easement of an aboveground or underground pipeline that can pose a safety hazard to the site?	CCR, Title 5 § 14010 (h)

2. Environmental Checklist

STATE STANDARDS CHECKLIST FOR STATE-FUNDED SCHOOL FACILITIES—
SCHOOL PLAN/MODERNIZATION APPROVAL
(Documentation for SFPD 4.07, Part 4 C and SFPD 4.08B, Section 1)

Is the property line of the proposed school site less than the following distances from the edge of respective power line easements: (1) 100 feet of a 50–133 kV line; (2) 150 feet of a 220–230 kV line; or (3) 350 feet of a 500–550 kV line?	CCR, Title 5 § 14010 (c)
If prepared, has the risk assessment been performed with a focus on children's health posed by a hazardous materials release or threatened release, or the presence of naturally occurring hazardous materials on the schoolsite?	Ed. Code § 17210.1(a)(3)
If a response action is necessary and proposed as part of this project, has it been developed to be protective of children's health, with an ample margin of safety?	Ed. Code § 17210.1(a)(4)
Is the proposed school site situated within 2,000 feet of a significant disposal of hazardous waste?	CCR, Title 5 § 14010 (t)
Hydrology and Flooding	
Is the project site subject to flooding or tank/dam inundation or street flooding?	Ed. Code § 17212 and 17212.5; CCR, Title 5 § 14010 (g) School Site Selection and Approval Guide, Appendix H
Land Use and Planning	
Would the proposed school conflict with any existing or proposed land uses, such that a potential health or safety risk to students would be created?	Ed. Code § 17213; Gov't. Code § 65402; CCR, Title 5 § 14010 (m)
Are there easements on or adjacent to the site that would restrict access or building placement?	CCR, Title 5 § 14010(r)
Has the district considered environmental factors of light, wind, noise, aesthetics, and air pollution in its site selection process?	CCR, Title 5 § 14010(q)
Noise	
Is the proposed school site located adjacent to or near a major arterial roadway or freeway whose noise generation may adversely affect the educational program?	CCR, Title 5 § 14010 (e)
Public Services	
Does the site promote joint use of parks, libraries, museums, and other public services?	CCR, Title 5, § 14010 (o)
Is the site conveniently located for public services, including but not limited to fire protection, police protection, public transit and trash disposal wherever feasible?	CCR, Title 5, § 14010 (p)
Transportation/Traffic	
Are traffic and pedestrian hazards mitigated per Caltrans' School Area Pedestrian Safety manual?	CCR, Title 5 § 14010 (l)
Is the proposed school site within 1,500 feet of a railroad track easement?	CCR, Title 5 § 14010 (d)

School building "means and includes any building used, or designed to be used, for elementary or secondary school purposes and constructed, reconstructed, altered, or added to…" (Ed. Code § 17283).
Note: Any documentation related to the California Environmental Quality Act is provided under separate cover.

3. Environmental Analysis

Section 2.1 provided a checklist of the State of California's health and safety standards for school sites. This section provides documentation and an evaluation of applicable standards, and mitigation measures where appropriate.

3.1 AIR QUALITY

3.1.1 Is the boundary of the proposed school site within 500 feet of the edge of the closest traffic lane of a freeway or busy traffic corridor? If yes, would the project create an air quality health risk due to the placement of the school?

No Significant Hazard. There are no freeways within 500 feet of the project site. Additionally, Public Resources Code Section 21151.8(b)(9) and Education Code Section 17213(d)(9) define a "freeway or other busy traffic corridors" as roadways that on an average day have traffic in excess of 50,000 vehicles in a rural area or 100,000 vehicles in an urban area. According to the City of Riverside (2008), the average daily traffic volume on Lincoln Avenue at the intersection with Monroe Street is about 7,568 trips. The average daily traffic on Jackson Street at the intersection with Indiana Avenue is about 7,502 trips (City of Riverside 2008). Based on the lack of potential air quality health risks due to the school's proximity to a freeway or busy traffic corridor and the project not increasing the school's capacity, the proposed project would not exacerbate existing conditions.

3.1.2 Would the project create an air quality hazard due to the placement of a school within one-quarter mile of: (a) permitted and non-permitted facilities identified by the jurisdictional air quality control board or air pollution control district; (b) freeways and other busy traffic corridors; (c) large agricultural operations; and/or (d) a rail yard, which might reasonably be anticipated to emit hazardous air emissions, or handle hazardous or acutely hazardous material, substances, or waste?

No Significant Hazard. A review of regulatory databases showed that there is only one current or historic source of hazardous air emissions within a quarter-mile radius of the school site (EnviroStor 2019; EnviroMapper 2019; EJScreen 2019; FIND 2019). The campus has a permit with South Coast Air Quality Management District (AQMD) for an emergency generator and boilers. Since the project would not increase the capacity of the school, the project would not exacerbate the existing conditions. A Health Risk Assessment was prepared by PlaceWorks for the project (PlaceWorks 2019a). Based on a comparison to the carcinogenic and non-carcinogenic thresholds established by OEHHA and SCAQMD, hazardous air emissions generated from the emission sources within a quarter-mile radius are not anticipated to pose an actual or potential endangerment to students and staff occupying the project site and no mitigation measures are required.

There is a small citrus orchard approximately 0.15 mile southeast of the school. Additionally, this orchard does not appear to be actively maintained. Since the project would not increase the capacity of the school, the project would not exacerbate the existing conditions.

There are no freeways or busy traffic corridors within 500 feet of the school site (see Section 3.1.1). There are no large agricultural operations or rail yards within a quarter-mile of the school site (Google Earth Pro 2019).

Therefore, potential risks associated with hazardous air emissions; hazardous or acutely hazardous material, substances, or waste from industrial/commercial facilities; freeways and other busy traffic corridors; large agricultural operations; and rail yards are negligible and would not cause a significant hazard.

3.2 GEOLOGY AND SOILS

3.2.1 Does the site contain an active earthquake fault or fault trace, or is the site located within the boundaries of any special studies zone or within an area designated as geologically hazardous in the safety element of the local general plan?

No Significant Hazard. The site is not within or immediately adjacent (i.e., within a few hundred feet) to an Alquist-Priolo Earthquake Fault Zone (CGS 2019). The nearest Alquist-Priolo Earthquake Fault Zone is the Elsinore Fault located approximately 9.5 miles southwest of the site (CGS 2019).

3.2.2 Would the project involve the construction, reconstruction, or relocation of any school building on the trace of a geological fault along which surface rupture can reasonably be expected to occur within the life of the school building?

No Significant Hazard. The site is not within or immediately adjacent (i.e., within a few hundred feet) to an Alquist-Priolo Earthquake Fault Zone (CGS 2019). The nearest Alquist-Priolo Earthquake Fault Zone is the Elsinore Fault located approximately 9.5 miles southwest of the site (CGS 2019).

3.2.3 Would the project involve the construction, reconstruction, or relocation of any school building on a site subject to moderate-to-high liquefaction, landslides, or expansive soils?

No Significant Hazard. Liquefaction refers to loose, saturated sand, or gravel deposits that lose their load-supporting capability when subjected to intense shaking. Liquefaction potential varies based upon three main contributing factors: 1) cohesionless, granular soils having relatively low densities (usually of Holocene age); 2) shallow groundwater (generally less than 50 feet); and 3) moderate to high seismic ground shaking.

Based on the Riverside County MapMyCounty website (2019) and past work on the campus by Leighton Consulting, Inc. (2010), the project site has low liquefaction susceptibility. Liquefaction occurs primarily in areas characterized by recently deposited sands and silts and in areas with high groundwater levels. State law requires identification of these zones, within which the stability of foundation soils and hill slopes must be evaluated, and countermeasures undertaken in the design and construction of buildings for human occupancy (Public Resources Code, Section 2693(c)).

Landslides are a type of erosion in which masses of earth and rock move down a slope as a single unit. Susceptibility of slopes to landslides and other forms of slope failure depend on several factors. These

factors are usually present in combination and include steep slopes, condition of rock and soil materials, the presence of water, formational contacts, geologic shear zones, and seismic activity.

The project site and its adjoining properties are relatively flat and exhibit no substantial elevation changes or unusual geographic features. Based on the City of Riverside Property Viewer Map and County of Riverside General Plan (City of Riverside, 2019 and Riverside County, 2016), the project site is not within a landslide hazard area.

Expansive soils are soils that swell when wetted and shrink when dry due to significant amounts of clay particles. A 2010 study done by Leighton Consulting, Inc. tested onsite soils and their research found that the alluvial soils onsite have a very low expansion potential.

3.2.4 Are naturally occurring asbestos minerals located at the site?

No Significant Hazard. Based on available data, no naturally-occurring serpentine rock or rock formations that may contain a significant quantity of asbestos are located within 10 miles of the site (CDC 2000).

3.3 HAZARDS AND HAZARDOUS MATERIALS

3.3.1 Is the proposed school site located near an aboveground water or fuel storage tank or within 1,500 feet of an easement of an aboveground or underground pipeline that can pose a safety hazard to the site?

Aboveground Water or Fuel Storage Tanks

No Significant Hazard. No aboveground water or fuel storage tanks were identified within a 1,500-foot radius, based on review of Google Earth Pro and the GeoTracker website (2019). The development of the project will not create a new hazard or exacerbate the current conditions.

Hazardous Substance Pipelines

No Significant Hazard. Sempra Energy confirmed that there were no high pressure (over 80 psig) natural gas pipelines located within a 1,500-foot radius of the site (Appendix A). An NPMS search of the site location showed no other hazardous material pipelines within 1,500 feet of the site (Appendix A).

Sewer and Water Pipelines

No Significant Hazard. The City of Riverside Public Works Department confirmed that there were no pressurized sewer lines located within 1,500 feet from the site (Appendix A). However, the City of Riverside did indicate that one 36-inch water main, two 42-inch water mains and one 54-inch water main are located within 1,500 feet of the site.

The Metropolitan Water District provided a map showing an Upper Feeder high pressure water pipeline that runs through the northwest portion of the Arlington High School campus. They also provided a letter describing the pipeline as a 124-inch inside diameter steel welded Upper Feeder pipeline with a 40-foot wide permanent easement right-of-way across Jackson Street. The letter also states that the pipeline is designed to operate with an approximate optimum pressure of 183 psi and a maximum flow capacity of 805 cfs.

3. Environmental Analysis

Refer to Appendix A for copies of correspondences with service providers.

PlaceWorks prepared a Water Pipeline Hazard Assessment Report to analyze potential impacts from the high-volume water pipelines identified above (PlaceWorks 2019b). Based on the results of the Water Pipeline Hazard Assessment Report, a potential break in any of the water pipelines located within 1,500 feet of the site would not result in significant flooding within any new construction or modernized structures, or place any structures closer to flooding than what currently exists. The project would not exacerbate the existing safety hazards on the school campus.

3.3.2 Is the property line of the proposed school site less than the following distances from the edge of respective power line easements: (1) 100 feet of a 50–133 kV line; (2) 150 feet of a 220–230 kV line; or (3) 350 feet of a 500–550 kV line?

No Significant Hazard. Southern California Edison and City of Riverside were contacted with regards to the presence of power transmission or distribution lines in the vicinity of the site. Southern California Edison confirmed that the location of the project site is not within the service territory of Southern California Edison (Appendix A).

City of Riverside Public Utilities confirmed that they do not operate powerlines that met the above outlined powerline easements near the project site. The project will not create any new significant hazard or exacerbate any existing safety hazard to the students.

3.3.3 If prepared, has the risk assessment been performed with a focus on children's health posed by a hazardous materials release or threatened release, or the presence of naturally occurring hazardous materials on the school site?

No Significant Hazard. The regulatory database search showed that the site does not contain a current or former hazardous waste disposal site and the project is not within 2,000 feet of a current or former hazardous waste disposal site (EnviroStor 2019; EJScreen 2019; GeoTracker 2019). The regulatory database search further showed no cleanup sites within a quarter-mile radius of the school site (EnviroStor 2019; EnviroMapper 2019; EJScreen 2019; GeoTracker 2019). As indicated in Section 3.2.4, there are no naturally occurring asbestos deposits in the vicinity of the site. No significant hazard from hazardous materials is expected at the project site.

3.3.4 If a response action is necessary and proposed as part of this project, has it been developed to be protective of children's health, with an ample margin of safety?

No Significant Hazard. A Preliminary Environmental Assessment (PEA) is underway for the site by PlaceWorks. Based on a review of historical documents, the project site had been used for agricultural purposes from 1931 to 1975. The PEA will evaluate if the former orchard may have left residual pesticides in the soil and if there are any impacts from lead based paint and termiticides due to placement of portable buildings within the proposed area of new construction. Should any response action be necessary based on the results of the PEA, it will be developed to be protective of children's health under the oversight of the Department of Toxic Substances Control.

3.3.5 Is the proposed school site situated within 2,000 feet of a significant disposal of hazardous waste?

No Significant Hazard. Based on a review of the EnviroStor and GeoTracker databases, the project is not within 2,000 feet of a significant disposal of hazardous waste (EnviroStor 2019; GeoTracker 2019).

3.4 HYDROLOGY AND FLOODING

3.4.1 Is the project site subject to flooding or tank/dam inundation or street flooding?

No Significant Hazard. According to the FEMA Map Service Center website maps (FEMA, 2008), the project site is situated within Zone X. Zone X is defined as a moderate to low risk flood hazard area, and is an area that lies between the limits of the 100-year and 500-year flood. Therefore, the project site is not within a 100-year flood zone.

The California Office of Emergency Services' Dam Inundation Maps indicate that the entirety of the site is not within a dam inundation area (CalOES 2016).

A seiche is an oscillating surface wave in a restricted or enclosed body of water, generated by ground motion, usually during an earthquake. Seiches are of concern relative to water storage facilities, because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. Based on the lack of sizable bodies of water in the site vicinity, seiches are not a potential hazard for the site.

Tsunamis are a type of earthquake-induced flooding produced by large-scale sudden disturbances of the sea floor. Tsunami waves interact with the shallow sea floor bathymetry upon approaching a landmass, resulting in an increase in wave height, and a destructive run-up (wave surge) into low-lying coastal areas. Based on the distance from the ocean and elevation of the site, tsunamis are not a potential hazard for the site. Project implementation would not expose people or structures to adverse effects associated with flooding or inundation.

3.5 LAND USE AND PLANNING

3.5.1 Would the proposed school conflict with any existing or proposed land uses, such that a potential health or safety risk to students would be created?

No Significant Hazard. As shown in the aerial photograph in Figure 3, the project site is in an area characterized with suburban development. Properties within a quarter-mile radius of the site are generally zoned as public facilities and institutions, single-family, and business/office park (City of Riverside Property Viewer Map 2019). The project site is zoned as public facilities and institutions. Based on a review of the City of Riverside zoning map (2019) and the General Plan 2025 (City of Riverside 2007), there is currently no land use or zoning changes proposed in the project area. Therefore, there is no significant hazard to the project from existing or proposed land uses adjacent to the site.

3. Environmental Analysis

3.5.2 Are there easements on or adjacent to the site that would restrict access or building placement?

No Significant Hazard. An easement is located on the northwest portion of the site for the Upper Feeder pipeline, but there are no easements on or adjacent to the site that would restrict access or building placement (Riverside County 2019).

3.5.3 Has the district considered environmental factors of light, wind, noise, aesthetics, and air pollution in its site selection process?

Light and Wind

No Significant Hazard. The project site would be exposed to standard climate conditions experienced by the City of Riverside in Riverside County, California, which is generally characterized by Mediterranean conditions. Based on a windrose created from data collected in Riverside, the predominant wind directions are from the west and the southeast, and wind speeds are below 13 miles per hour for the vast majority of the time (Western Regional Climate Center 2019). The fastest wind speeds (greater than 13 miles per hour) tend to be from the north, and only occur for a fraction of one percent of the year (Western Regional Climate Center 2019). As applicable, the operation of the proposed project would consider these environmental conditions. Therefore, project implementation would not expose site occupants to adverse light or wind conditions.

Noise

Refer to section 3.6.

Aesthetics

No Significant Hazard. Project development would not degrade the existing visual character of the site, which is an existing school. The proposed project site is in an area with residential uses. The building of the proposed project would be consistent with the surrounding land uses. The character and quality of the site would not be incompatible with the nearby structures.

Air Pollution

No Significant Hazard. Public Resources Code Section 21151.8 and Education Code Section 17213 prohibit the approval of a project involving acquisition of a school site unless the following occur:

1. Consultation with an air pollution control district or air quality management district indicates that permitted and non-permitted facilities (including, but not limited to, freeways and other busy traffic corridors, large agricultural operations, and railyards, within one-fourth of a mile of the proposed school site that might be reasonably anticipated to emit hazardous air emissions, or to handle hazardous or extremely hazardous materials, substances, or waste) or significant pollution sources do not exist; or

2. The facilities or other pollution sources exist, but one of the following conditions applies:

A. The health risks from the facilities or other pollution sources do not and will not constitute an actual or potential endangerment of public health to persons who would attend or be employed at the school.

B. The governing board finds that corrective measures required under an existing order by another government entity that has jurisdiction over the facilities or other pollution sources will, before the school is occupied, result in the mitigation of all chronic or accidental hazardous air emissions to levels that do not constitute an actual or potential endangerment of public health to persons who would attend or be employed at the proposed school. If the governing board makes this finding, the governing board shall also make a subsequent finding, prior to the occupancy of the school, that the emissions have been mitigated to these levels.

C. For a school site with a boundary that is within 500 feet of the edge of the closest traffic lane of a freeway or other busy traffic corridor, the governing board of the school district determines, through analysis pursuant to paragraph (2) of subdivision (b) of Section 44360 of the Health and Safety Code, based on appropriate air dispersion modeling, and after considering any potential mitigation measures, that the air quality at the proposed site is such that neither short-term nor long-term exposure poses significant health risks to pupils.

D. The governing board finds that neither of the conditions set forth in subparagraph (B) or (C) can be met, and the school district is unable to locate an alternative site that is suitable due to a severe shortage of sites that meet the requirements in subdivision (a) of Section 17213. If the governing board makes this finding, the governing board shall adopt a statement of Overriding Considerations pursuant to Section 15093 of Title 14 of the California Code of Regulations.

A review of regulatory databases showed that there is only one current or historic source of hazardous air emissions within a quarter-mile radius of the school site (EnviroStor 2019; EnviroMapper 2019; EJScreen 2019; FIND 2019). The campus has a permit with South Coast Air Quality Management District (AQMD) for an emergency generator and boilers. Since the project would not increase the capacity of the school, the project would not exacerbate the existing conditions. A Health Risk Assessment was performed by PlaceWorks for the project (PlaceWorks 2019a). Based on a comparison to the carcinogenic and non-carcinogenic thresholds established by OEHHA and SCAQMD, hazardous air emissions generated from the emission sources within a quarter-mile radius are not anticipated to pose an actual or potential endangerment to students and staff occupying the project site and no mitigation measures are required. No rail yards and no agricultural uses nearby (see Section 3.1.2). Therefore, Section 2A, as listed above, applies, and no air pollution constraints would preclude use of the project site as a school.

3.6 NOISE

3.6.1 Is the proposed school site located adjacent to or near a major arterial roadway or freeway whose noise generation may adversely affect the educational program?

No Significant Hazard. The project site consists of the existing Arlington High School. The project site is generally bounded by the Arlington High School campus with the baseball field to the northwest, the parking

lot to the west, and other classrooms to the southeast. The project will not exacerbate the existing conditions at the school. Therefore, there is no significant hazard to the project from potential noise impacts.

3.7 PUBLIC SERVICES

3.7.1 Does the site promote joint use of parks, libraries, museums, and other public services?

No Significant Hazard. The school could be made available for public use as the scheduling of scholastic purposes allow, in accordance with the Civic Center Act and District policy. No significant impacts would occur as a result of the proposed project.

3.7.2 Is the site conveniently located for public services, including but not limited to fire protection, police protection, public transit and trash disposal wherever feasible?

No Significant Hazard. The project site is located 0.9-miles southwest of the Lincoln Avenue Police Station and 0.6-miles east of the Arlington Fire Station 2. The Lincoln Avenue and Jackson Street bus stop is across the street from the project site. The City of Riverside also provides regular trash collection services to the project site and surrounding area.

3.8 TRANSPORTATION/TRAFFIC

3.8.1 Are traffic and pedestrian hazards mitigated per Caltrans' School Area Pedestrian Safety manual?

No Significant Hazard. Traffic and pedestrian hazards for the existing Arlington High School are mitigated per Caltrans' School Area Pedestrian Safety Manual (1996). The school implements safety programs in line with the safety manual and will augment the program accordingly when the school site is expanded. Furthermore, the School Area Pedestrian Safety Manual will be used as a guide, but decisions related to particular traffic control devices at particular locations shall be made on the basis of an engineering and traffic survey. The school district governing board may request the appropriate city, county, or state agency to consider the installation of traffic control devices if the engineering and traffic survey determines the request to be justified. Traffic control devices include (Caltrans 1996):

1. Warning signs and markings.
2. Variable speed limits.
3. Intersection stop signs.
4. Flashing yellow beacons.
5. Traffic signals.
6. Remove visibility obstructions.
7. School Safety Patrol.
8. Adult Crossing Guard.

9. Pedestrian separation structures.
10. Pedestrian walkways along the roadway.
11. Pedestrian walkways separated from the roadway.
12. Parking controls and curb-use zones.
13. Bus transportation.

Based on existing conditions, the future project is not expected to have any significant traffic or pedestrian hazards to overcome on the existing high school campus.

3.8.2 Is the proposed school site within 1,500 feet of a railroad track easement?

No Significant Hazard. Based on a review of aerial photographs and maps, the site is within 1,500-feet of a Burlington Northern Santa Fe (BNSF) Railway Company rail line. The closest track is approximately 30-feet from Arlington High School property boundary at its nearest location. Based on a Rail Safety Study completed for the project site by PlaceWorks (2019c), there were no unusual circumstances present that would present special risk to students or staff at Arlington High School from operations along the BNSF railroad tracks. The Rail Safety Study concluded that there are no mitigation measures or special provisions required at this school site.

3.9 EXEMPTIONS TO SITING STANDARDS

3.9.1 Is the district seeking any exemptions to the standards found in CCR, Title 5, § 14010(c) through (t)?

No Significant Hazard. The District is not seeking any exemptions to the standards found in CCR, Title 5 § 14010(c) through (t).

3.9.2 If so, has mitigation been identified that demonstrates that the standard may be overridden without compromising a safe and supportive school environment?

No Significant Hazard. The District is not seeking any exemptions.

3. Environmental Analysis

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4. References

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4.2 WEB SITES

California Department of Education (CDE), 2018. 2017-2018 Enrollment by Grade, Arlington High School Report. https://data1.cde.ca.gov/dataquest/dqcensus/EnrGrdLevels.aspx?cds=33672153330024&agglevel=school&year=2017-18. Accessed November 9, 2018.

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4. References

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5. List of Preparers

5.1 LEAD AGENCY

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3070 Washington Street
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Tel: 949.234.9596

5.2 PLACEWORKS

PlaceWorks
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Tel: 909.989.4449

Michael Watson, PG
Project Geologist

Dwayne Mears
Principal

5. List of Preparers

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Appendix A Agency Correspondence

Appendices

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2951 JACKSON STREET, ARLINGTON, RIVERSIDE

ATTDSOUTH

EMERGENCY
ATT DAMAGE PREVENTION HOTLINE
510-645-2929

VACUUM
AT&T DAMAGE PREVENT HOTLINE
510-645-2929

DESIGN
SUBSTRUCTURE RECORDS REQUEST
CONSTRUCTION & ENGINEERING, CALL FOR MAILING ADDRESS, CA
510-645-2929

MWD06

EMERGENCY
NONE PROVIDED
000-000-0000

VACUUM
KIERAN CALLANAN
700 N. ALAMEDA ST, LOS ANGELES, CA 90012
213-217-7474

DESIGN
SUBSTRUCTURES TEAM
P O BOX 54153 TERMINAL ANNEX, LOS ANGELES, CA 90054
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NEXTGLAVEN

EMERGENCY
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RIV02

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UQSTSO
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Information Not Available
VACUUM
Information Not Available
DESIGN
Information Not Available

URIV01
EMERGENCY
ELECTRIC DISPATCH
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VACUUM
Information Not Available
DESIGN
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URIV39
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UTILITY DISPATCH
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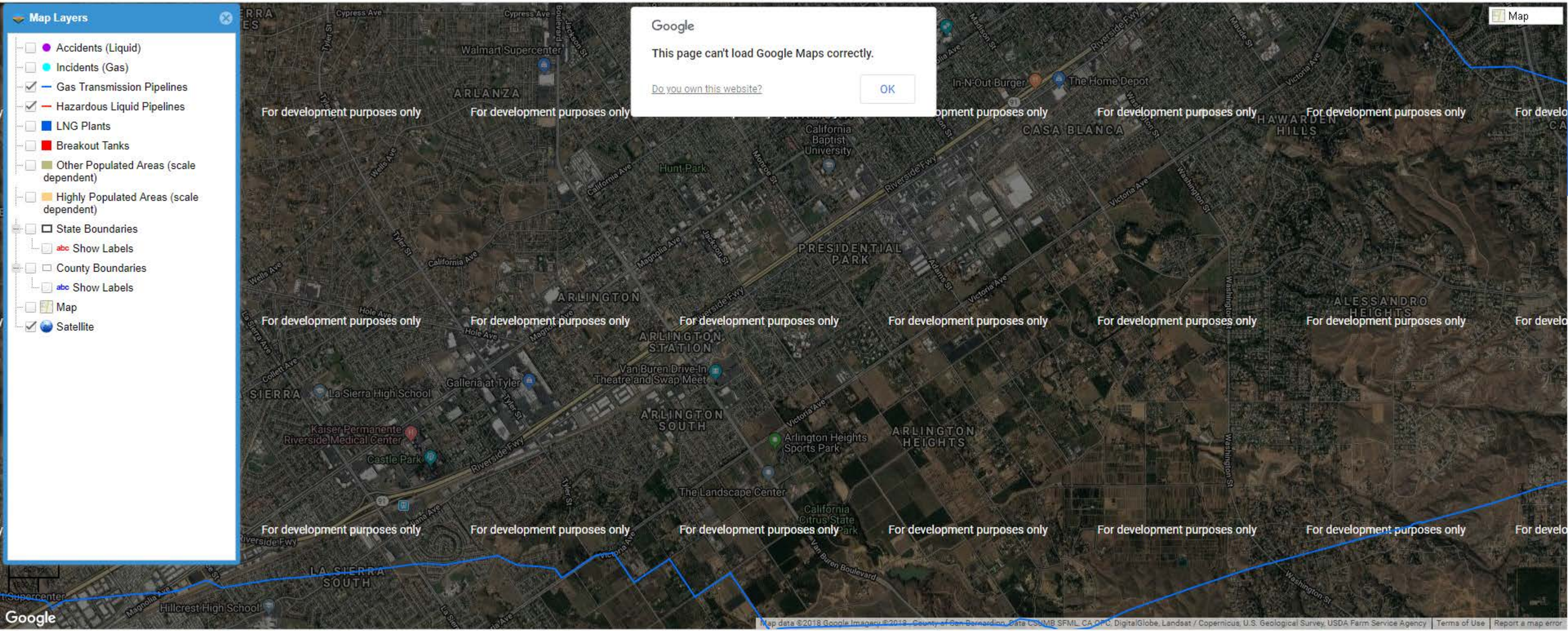

Ready | Zoom Level: 14 of 19 (1:24,000) Closest Zoom for Pipelines | 33.943269, -117.350813 | COUNTY : Riverside, CA

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Riverside County Parcel Report

APN(s) 233250001

MAPS/IMAGES

PARCEL

APN	233-250-001-6
Previous APN	054-000-184
Owners	Not Available Online
Address	233-250-001 NOT AVAILABLE
Mailing Address	233-250-001 SEE SITUS ADDRESS
Legal Description	233-250-001 Recorded Book/Page: MB 11/20 Subdivision Name: ARLINGTON HEIGHTS Lot/Parcel: 4 Block: 29 Tract Number: 0
Lot Size	233-250-001 Recorded lot size is 38.63 acres
Property Characteristics	233-250-001 Year Constructed: Number of Baths: Number of Bedrooms: Construction Type: SPECIAL CONSTRUCTION Garage Type: Property Area (sq ft): Roof Type: UNKNOWN Number of Stories: Pool: YES Central Cool: YES Central Heat: YES
Supervisorial District	KEVIN JEFFRIES, DISTRICT 1
Township/Range	T3SR5W SEC 8 SEC T3SR5W SEC 17 SEC
Elevation Range (ft.)	848 - 868
Thomas Bros. Maps Page/Grid	Page: 715 GRID: B6 Page: 715 GRID: B7 Page: 715 GRID: A7 Page: 715 GRID: A6
Indian Tribal Land	Not in a Tribal Land
City Boundary	RIVERSIDE
City Spheres of Influence	Not in a city sphere
Annexation Date	N/A
LAFCO Case	N/A
Proposals	N/A

March Joint Powers

March Joint Powers Authority	Not in the jurisdiction of the March Joint Powers Authority
County Service Area	Not in a County Service Area

PLANNING more...

Specific Plans	Not in a Specific Plan
Land Use Designations	CITY
General Plan Policy Overlays	Not in a General Plan Policy Area
Area Plan (RCIP)	Cities of Riverside and Norco
General Plan Policy Areas	Not in a General Plan Policy Area
Zoning Classifications (ORD. 348)	Zoning: In a city CZ Number:
Zoning Overlays	Not in a Zoning Overlay
Historical Preservation Districts	Not in a Historical Preservation District
Agricultural Preserve	Not in an Agricultural Preserve
Airport Influence Areas	NOT IN AN AIRPORT INFLUENCE AREA
Airport Compatibility Zones	NOT IN AN AIRPORT COMPATIBILITY ZONE
Zoning Districts/Areas	Not in a Zone District/Area
Community Advisory Councils	Not in a Community Advisory Council
Residential Permit Statistics	N/A Expected Units: BRS Permit Units: Final Issued Active Current Permits: Cumulative Total: % of Expected:

ENVIRONMENTAL more...

CVMSHCP (Coachella Valley Multi-Species Habitat Conservation Plan) Plan Area	NOT IN THE COACHELLA VALLEY MSHCP FEE
CVMSHCP (Coachella Valley Multi-Species Habitat Conservation Plan) Conservation Area	NOT COACHELLA VALLEY CONSERVATION
CVMSHCP Fluvial Sand Transport Special Provision Areas	NOT IN A FLUVIAL SAND TRANSPORT
WRMSHCP (Western Riverside County Multi-Species Habitat Conservation Plan) Plan Area	WESTERN RIVERSIDE COUNTY
WRMSHCP (Western Riverside County Multi-Species Habitat Conservation Plan) Cell Group	Not in a Cell Group
WRMSHCP Cell Number	Not in a Cell Number
HANS/ERP (Habitat Acquisition and Negotiation Strategy/Expedited Review Process)	Project: N/A Conserve: Status: Notes: Intake Num: LMS Case:
Vegetation (2005)	Urban or development Mapping Unit

FIRE

Fire Hazard Classification (Ord. 787)	Not in a Fire Hazard Zone
Fire Responsibility Area	Not in a Fire Responsibility Area

DEVELOPMENT FEES

CVMSHCP (Coachella Valley Multi-Species Habitat Conservation Plan) Fee Area (Ord 875)	NOT IN THE COACHELLA VALLEY MSHCP FEE
WRMSHCP (Western Riverside County Multi-Species Habitat Conservation Plan) Fee Area (Ord 810)	WESTERN RIVERSIDE COUNTY
Western TUMF (Transportation Uniform Mitigation Fee Ord. 824)	IN OR PARTIALLY WITHIN A TUMF FEE AREA.
Eastern TUMF (Transportation Uniform Mitigation Fee Ord. 673)	NOT IN THE EASTERN TUMF FEE AREA
Road & Bridge Benefit District	NOT IN AN ROAD/BRIDGE BENEFIT DISTRICT
DIF (Development Impact Fee Area Ord. 659)	HIGHGROVE/NORTHSIDE, AREA 3
SKR Fee Area (Stephen's Kagaroo Rat Ord. 663.10)	In or partially within the SKR Fee Area
Development Agreements	Agreement # Not in a Dev Agreement Amendment # Expiration Date Line

TRANSPORTATION more...

Circulation Element Ultimate Right-of-Way	IN OR PARTIALLY WITHIN A CIRCULATION
Road Book Page	19
Transportation Agreements	Contract Number: Not in a Trans Agreement
CETAP (Community and Environmental Transportation Acceptability Process) Corridors	Not in a CETAP Corridor

HYDROLOGY

Flood Plain Review	OUTSIDE FLOODPLAIN, REVIEW NOT
Flood Control District	RIVERSIDE COUNTY FLOOD CONTROL
Watershed	SANTA ANA RIVER
Water District	WESTERN MUNICIPAL WATER DISTRICT

GEOLOGIC

Fault Zone	NOT IN A FAULT ZONE
Faults	NOT IN A FAULT LINE
Liquefaction Potential	Low
Subsidence	Susceptible
Paleontological Sensitivity	HIGH SENSITIVITY (HIGH A): BASED ON GEOLOGIC FORMATIONS OR MAPPABLE ROCK UNITS THAT ARE ROCKS THAT CONTAIN FOSSILIZED BODY ELEMENTS, AND TRACE FOSSILS SUCH AS TRACKS, NESTS AND EGGS. THESE FOSSILS OCCUR ON OR BELOW THE SURFACE

MISCELLANEOUS

School Districts	RIVERSIDE UNIFIED
Communities	Not in a community
Lighting (Ord. 655)	Zone: N/A
2010 Census Tract	317.04
Farmland	URBAN-BUILT UP LAND
Special Notes	NO SPECIAL NOTES
Tax Rate Area & District Name	009002 - CITY OF RIVERSIDE 009002 - CSA 152 009002 - FLOOD CONTROL ADMIN 009002 - FLOOD CONTROL ZN 1 009002 - FLOOD CONTROL ZN 1 DS 009002 - GENERAL 009002 - GENERAL PURPOSE 009002 - MWD WEST 1302999 009002 - NW MOSQUITO & VECTOR CNTL 009002 - RIV CO REGIONAL PARK & OPEN SF 009002 - RIV CORONA RESOURCE 009002 - RIVERSIDE CITY COMMUNITY 009002 - RIVERSIDE CO OFC OF EDUCATION 009002 - RIVERSIDE UNIFIED SCHOOL 009002 - SO. CALIF,JT(19,30,33,36,37,56) 009002 - WESTERN MUNICIPAL WATER

PLUS PERMITS & CASES

Administrative Cases

Case	Case Description	Status
N/A	N/A	N/A

Building and Safety Cases

Case	Case Description	Status
N/A	N/A	N/A

Code Cases

Case	Case Description	Status
N/A	N/A	N/A

Fire Cases

Case	Case Description	Status
N/A	N/A	N/A

Planning Cases

Case	Case Description	Status
N/A	N/A	N/A

Survey Cases

Case	Case Description	Status
N/A	N/A	N/A

Transportation Cases

Case	Case Description	Status
N/A	N/A	N/A

DEPARTMENT of ENVIRONMENTAL HEALTH PERMITS

Septic Permits

Record Id	Application Date	Plan Check Approved Date	Final Inspection Date	Approved Date
N/A	N/A	N/A	N/A	N/A

Well Water Permits

Record Id	PE	Permit Paid Date	Permit Approved Date	Well Finaled Date
N/A	N/A	N/A	N/A	N/A

* DISCLAIMER *

Maps, permit information and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

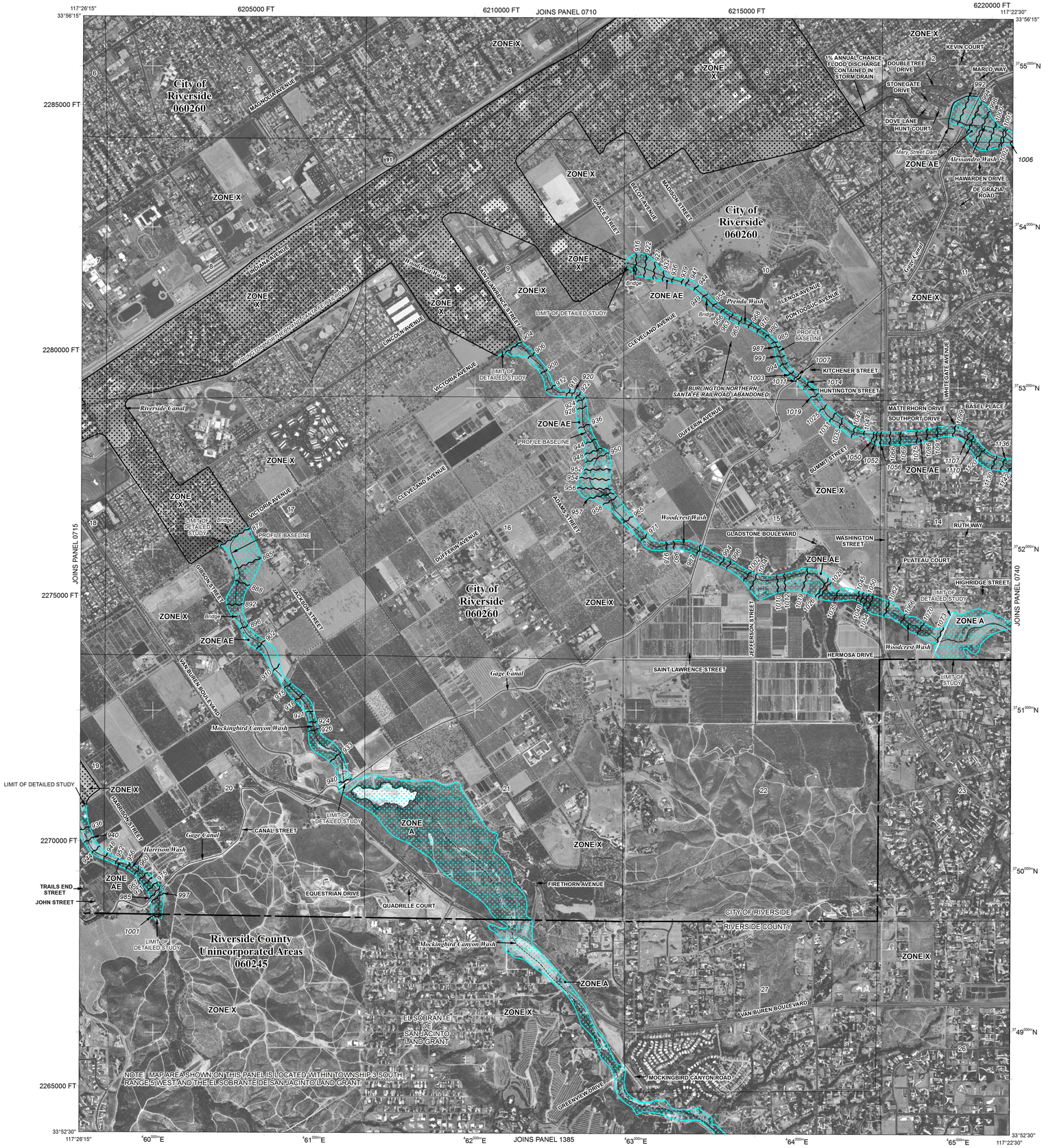
This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
2976000mN	1000-meter Universal Transverse Mercator grid values, zone 11N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone VI (FIPSZONE 0406), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0720G

FIRM
FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 720 OF 3805
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RIVERSIDE COUNTY	060245	0720	G
RIVERSIDE, CITY OF	060260	0720	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06065C0720G

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

November 20, 2018

Attn: Danielle Clendening
2850 Inland Empire Boulevard, Suite B
Ontario, CA. 91764

Pipeline Information Request: Engineering Project #18-1402

RE: Danielle Clendening is requesting a PIR for presence of any high-pressure gas lines within 1,500 feet of the 45-acre school site for the Riverside School District at 2951 Jackson St., Riverside, CA. 92503.

Dear Danielle Clendening,

The Gas Company operation and maintenance procedures are in compliance with the Department of Transportation, Title 49 of the Code of Federal Regulations, Part 192. These Company Procedures are on file with the California Public Utilities Commission that audits The Gas Company's compliance annually. In addition, The Gas Company is aware of the new requirement under Title 5, California Code of Regulations, Section 14010 (h), Standards for School Site Selection, which applies to gas pipelines near schools, and has been very responsive in providing necessary pipeline data to outside consultants conducting risk analysis studies on proposed school sites. The new requirement specifies that:

> *"The site shall not be located near an above-ground water or fuel storage tank or within 1500 feet of the easement of an above-ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional, which may include certification from a local public utility commission."*

The Gas Company continues to strive to reduce the risk to public safety through technological advances, an active pipeline integrity management program, and being an active participant in the statewide Underground Service Alert Program. We operate our pipelines at or below the allowable pressures and make every effort to use the laptest engineering advances in the design and construction of our pipeline system. As a result, The Gas Company operates nearly 4,000 miles of high-pressure transmission pipelines and over 44,000 miles of distribution lines collectively, contributing to one of the safest pipeline systems in the nation.

In response to your question concerning the school site located at 2951 Jackson St., Riverside, CA. 92503, we have determined that The Gas Company does not currently own or operate any high-pressure pipelines within a 1,500 ft radius.

If there are any further questions, please feel free to contact me.

Sincerely,

Sandy Taray

Sandy Bevans-Taray
Region Engineer II
Office (909) 335-7569

200m 800ft

Map Title: Pipeline Information Request

Printed By: CORP\GGonzal7

Printed Date: 11/19/2018

LIABILITY STATEMENT The facilities and their depiction on these maps are believed to be reasonably accurate, but the maps are not to be used in lieu of field verification or calling USA at 800-422-4133. NO WARRANTY expressed or implied (including of merchantability or of fitness for a particular purpose) is made as to any matter, including but not limited to, the design, size, type or location of the facilities, their presence or absence, the accuracy of the maps, the means used to transmit the data, absence of viruses (if transmitted electronically, by disk or diskette), data translation or transmission errors or omissions, compatibility with the user's system or its ability to interpret the data correctly or at all, or any other matter. The Gas Company has no liability for damages (direct, indirect, consequential, incidental or punitive) arising from the transmission, receipt or use by others of the maps or information contained in the maps.

SoCalGas

A Sempra Energy utility

Mike Campisi
Pipeline Planning Assistant

9400 Oakdale Ave
Chatsworth, CA 91311

Tel: 213-231-6081

February 27, 2019

Danielle Clendening
PLACEWORKS
2850 Inland Empire Boulevard, Suite B
Ontario, California 91764
dbclendening@placeworks.com

Subject: **2951 Jackson Street**
Riverside, CA

DCF: **0239-19NC191**

The Transmission Department of SoCalGas does not operate any facilities within 1500 feet of the address stated above. However, the Distribution Department of SoCalGas may maintain and operate facilities within that location.

To assure no conflict with the Distribution's pipeline system, please e-mail them at:

SCGSERegionRedlandsUtilityRequest@semprautilities.com

Sincerely,

Mike Campisi
Pipeline Planning Assistant
SoCalGas Transmission Technical Services
SoCalGasTransmissionUtilityRequest@semprautilities.com

From:	Clark, Laura
To:	Danielle Clendening
Cc:	Revuelta, Adelayda
Subject:	RE: [External] Title 5 Information Request for a School Site in Arlington Riverside, CA
Date:	Monday, November 19, 2018 9:22:06 AM
Attachments:	image002.png

Hi Danielle,

The are no transmission power line easements within the distances specified for the property at 2951 Jackson St.

The property line of the site shall be at least the following distance from the edge of respective power line easements:
(1) 100 feet for 50-133 kV line.
(2) 150 feet for 220-230 kV line.
(3) 350 feet for 500-550 kV line.

Thank you,

Laura Clark
City of Riverside
Riverside Public Utilities, Customer Engineering-Electric
Direct: (951) 826-5353
RiversideCA.gov

From: Danielle Clendening <dbclendening@placeworks.com>
Sent: Wednesday, November 14, 2018 1:53 PM
To: Clark, Laura <LClark@riversideca.gov>
Subject: [External] Title 5 Information Request for a School Site in Arlington Riverside, CA

This email's attachments were cleaned of potential threats by The City of Riverside's Security Gateway.
Click here if the original attachments are required (justification needed).

Good Afternoon,

Riverside Unified School District, in compliance with CCR Title V Section 14010 (h), has contracted the services of PlaceWorks to complete a safety hazard assessment related to powerlines near a site in the city of Riverside. The addresses for the site is 2951 Jackson Street Riverside, CA.

I have attached a pdf with a map showing the exact location of the site outlined in red.

Specifically, the safety hazard assessment report is looking for powerlines that fall within the following parameters:

The property line of the site shall be at least the following distance from the edge of respective power line easements:
(1) 100 feet for 50-133 kV line.
(2) 150 feet for 220-230 kV line.
(3) 350 feet for 500-550 kV line.

If there are no powerlines within the radius of the site that meet the previously stated specifications, could I get a response stating such for the school district's safety hazard report.

If this not the correct email to be sending such a request, could you please help direct this inquiry to the proper division.

The Client for this project is:

Riverside Unified School District
3070 Washington Street
Riverside, CA 92504

Thank you so much for your help, please contact me if you have any questions or need more information!

Best regards,

DANIELLE CLENDENING
Intern

2850 Inland Empire Boulevard, Suite B | Ontario, California 91764
909.989.4449 | dbclendening@placeworks.com | placeworks.com

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL℠ Company

Phil Hung, P.E.
EMF Program Manager
6042 N. Irwindale Ave
Irwindale CA 91702
Phone: (626) 633-3415
E-mail: phil.hung@sce.com

SCE Voltage Identification Report of Proposed or Existing School Site

Request Received: **11/14/2018** Received By: **Phil Hung**

Requesting Entity: __ School ____District __**X**__Consultant ___ School Representative:

Danielle Clendening
dbclendening@placeworks.com
The Planning Center
2850 Inland Empire Boulevard, Suite B
Ontario, California 91764
(909) 989-4449

Nature of Request: Voltage ID ___**X**___ Msmt. Req. _____ Information _____

Other: _____

Site Name:	**Arlington High School**
Site Address:	**2951 Jackson Street**
City:	**Riverside, CA 92503**
County:	**Riverside**
Cross Streets:	**Lincoln Avenue**

Client: **Riverside Unified School District**
3380 14th Street
Riverside, CA 92501

Photo(s):

Aerial View

Date of Site Visit: **11/16/2018 (Bing Maps)**
Support Action(s) Taken: **SCE system database lookup**

SCE Facilities Identified Within California Code of Regulations (CCR) Title 5 Prescribed Distances:

- **There are no SCE facilities of 50 kV or higher within the CDE Title 5 setback distances or within the 350 feet radius.**
- **This area is not in the SCE service territory. Please contact Riverside Public Utilities to identify any 50 kV circuits in the vicinity.**

Date(s) responded to Requestor:
11/14/18: Acknowledged, (E-mail)
11/16/18: Supplied Information (E-mail)

From: LaFace, Kaylee
To: Danielle Clendening
Cc: Scully, Chris; Gross, Christopher; Albano, Leonard
Subject: RE: [External] Title 5 Information Request for a School Site in Arlington Riverside, CA
Date: Thursday, November 15, 2018 8:13:08 AM

Good Morning Danielle,

Per our records there are no pressurized sewer pipelines located within a 1,500-foot radius of the site, 2951 Jackson Street.
If you have any questions or need anything additional please let us know.
Have a great day!

Thank you,

Kaylee La Face
City of Riverside
Public Works, Land Development
Main: *(951)826-5341*
Direct: *(951)826-2122*
RiversideCA.gov

From: Gross, Christopher
Sent: Wednesday, November 14, 2018 3:57 PM
To: LaFace, Kaylee <KLaFace@riversideca.gov>; Albano, Leonard <LAlbano@riversideca.gov>
Cc: Danielle Clendening <dbclendening@placeworks.com>; Scully, Chris <CScully@riversideca.gov>
Subject: RE: [External] Title 5 Information Request for a School Site in Arlington Riverside, CA

Kaylee or Leonard,

Can you please assist with this request?

Thank you,

Chris Gross, P.E.
City of Riverside
Public Utilities Department, Water Engineering
Main: 951.826.5285
Direct: 951.826.5370
RiversideCA.gov

From: Danielle Clendening <dbclendening@placeworks.com>
Sent: Wednesday, November 14, 2018 1:39 PM
To: WaterDevelopment <WaterDevelopment@riversideca.gov>
Subject: [External] Title 5 Information Request for a School Site in Arlington Riverside, CA

This email's attachments were cleaned of potential threats by The City of Riverside's Security Gateway.
Click here if the original attachments are required (justification needed).

Good Afternoon,

Riverside Unified School District, in compliance with CCR Title V Section 14010 (h), has contracted the services of PlaceWorks to complete a safety hazard assessments related to pressurized sewer lines that located within a 1,500-foot radius of a site in Arlington in Riverside County. The address for the site is 2951 Jackson Street, Riverside, CA.

I have attached a pdf of a map showing the exact location of the site outlined in red and an approximately 1,500-foot radius marked around the site in yellow.

This email is requesting information about any pressurized sewer pipelines operated by the city of Riverside located within a 1,500-foot radius of the site.

If there are no pressurized sewer lines that meet those specifications within the radius of the site, could I get a response stating such for the school district's safety hazard report.

If this not the correct email to be sending such a request, could you please help direct this inquiry to the proper division.

Thank you so much for your help, please contact me if you have any questions or need more information!

Best regards,

DANIELLE CLENDENING
Intern

2850 Inland Empire Boulevard, Suite B | Ontario, California 91764
909.989.4449 | dbclendening@placeworks.com | placeworks.com

City of Arts & Innovation

December 17, 2018

Placeworks
2850 Inland Empire Blvd. Suite B
Ontario, Ca 91764
Attn: Danielle Clendening

Subject: Water Facilities Research
Project: PUW18-0369

Dear Danielle Clendening:
The City of Riverside, Public Utilities Department, Water Division (RPU) completed your research request received on 12/14/2018, generally located at: 2951 JACKSON STREET. Our research indicates that RPU has water facilities within the requested area and are providing you the following reference plans.

- D5-704089, sheet(s) 1 OF 1
- D5-3718, sheet(s) 1 OF 1
- D5-4875, sheet(s) 1 OF 1
- D5-1505, sheet(s) 3-5 OF 5
- D5-1488, sheet(s) 1-5 OF 16

Please Note:
These plans have been provided at the request of the recipient. The existence of any pipelines, structures, and/or facilities shown on these plans were obtained by a search of available records. The City makes no warranty as to the accuracy or content of the plans, and advises recipient that these plans are to be used to acquire information regarding RPU Water Facilities only. Information regarding any other utilities shown or not shown on these plans shall be obtained through the applicable utility company. The City advises that recipient should ascertain the actual location of all above and below ground facilities; the depths of any underground utilities, pipelines, and the like, and shall be responsible for damage to any public or private utilities or facilities,

Please do not hesitate to contact me with additional requests or questions.

Sincerely,

Marissa Castro

Marissa Castro
Senior Engineering Aide
MCastro@RiversideCa.gov
(951) 826-2136

Symbology

- Distribution Main
- Supply Main
- Transmission Main
- Facility Main
- Recycled Main
- Irrigation Main/Canal
- Abandoned Main
- Service
- Fire Service
- Landscape Service
- Remote Service
- Recycled Service
- Abandoned Service
- Casing
- Air Valve
- Booster Pump
- Well Pump
- PRV
- Check Valve
- Relief Valve
- Manhole
- DC Meter
- Fire Hydrant
- Valve Open
- Valve Closed
- EOM/BO Valve
- BO Valve
- BO/PO Valve
- PO/BO Valve
- PO
- Mat'l Change
- Reducer
- Tee/Cross

N

1 inch = 240 feet

December 14, 2018

Aerial photos taken February 2012. The City of Riverside makes no warranty on the accuracy or content of the data shown on this map. This map shall not be reproduced or distributed.
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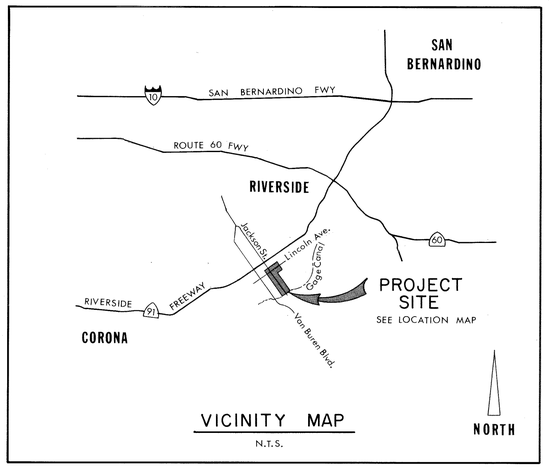
Printed by: MCASTRO

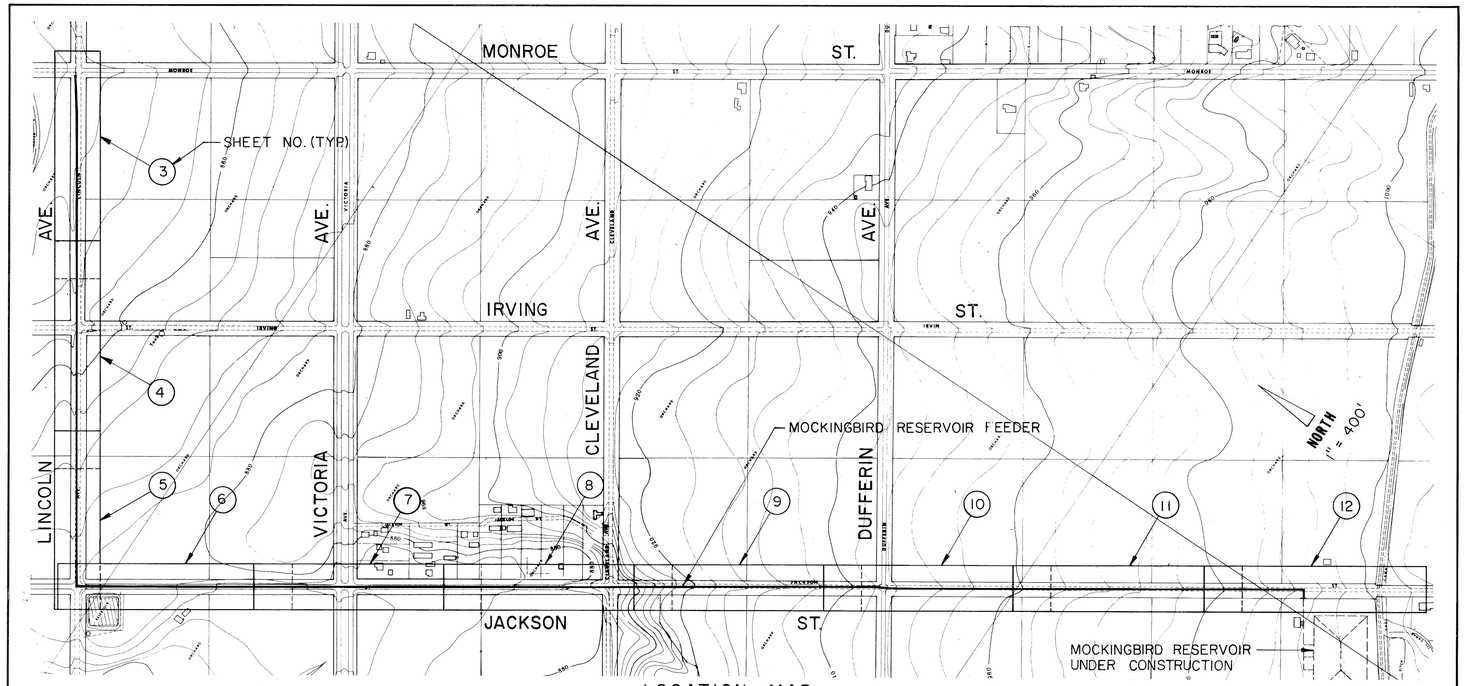
CONSTRUCTION DRAWINGS
FOR THE

CITY OF RIVERSIDE PUBLIC UTILITIES DEPARTMENT
WATER DIVISION

MOCKINGBIRD RESERVOIR FEEDER



VICINITY MAP
N.T.S.



LOCATION MAP

PREPARED IN THE OFFICE
OF
Boyle Engineering Corporation

RECORD DRAWING

THIS IS A RECORD DRAWING OF THE FACILITIES IDENTIFIED IN THE TITLE BLOCK ONLY AND HAS BEEN PREPARED IN PART ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE ENGINEER/ARCHITECT AND OWNER(S) WILL NOT BE RESPONSIBLE FOR ANY ERROR(S) OR OMISSION(S) WHICH HAVE BEEN INCORPORATED INTO THIS DRAWING. ACTUAL CONDITIONS WILL VARY SOMEWHAT FROM THE CONDITIONS SHOWN HEREON AND AT SOME LOCATIONS THE VARIANCE MAY BE LARGE. IF THE PRECISE LOCATION OF ANY FACILITY IS REQUIRED, THE FACILIT SHOULD BE FIELD LOCATED IN THE PRESENCE OF AN EMPLOYEE OF THE DISTRICT, OR THE OWNER(S) OF THE UTILITIES INVOLVED.

AS BUILT INFORMATION

PIPE SUPPLIER AMERON - JOB # 9677
TYPE PIPE PCC - CLASS 150
CONSTRUCTION CONTRACTOR A.W. DAVIES, INC.
INSPECTOR R. TRUESDELL, D. FERGUSON

C. Russell Hulse
C. RUSSELL HULSE - C.E. 17139
PROJECT ENGINEER, B.E.C.

Kevin P. Hunt
KEVIN P. HUNT - C.E. 21955
PROJECT MANAGER, B.E.C.

CITY OF RIVERSIDE

APPROVALS:

Fred Lantz — 10/20/80
WATER SYSTEM MANAGER — DATE

S.L. Harris — 10/20/80
PRINCIPAL ENGINEER — DATE

SHEET 1 OF 17 SHEETS

80-D5-1488-1

67/7/82/1-3-5-6

AGENCY INDEX

CITY OF RIVERSIDE 3900 MAIN STREET RIVERSIDE, CA 92522	
WATER DEPARTMENT	(714) 787-7285
PUBLIC WORKS DEPARTMENT	(714) 787-7341
ELECTRICAL UTILITIES DEPARTMENT	(714) 787-7421
PACIFIC TELEPHONE COMPANY DISTRIBUTION LINES 3073 ADAMS STREET RIVERSIDE, CA 92504	(714) 359-2507
PACIFIC TELEPHONE COMPANY TOLL CABLES 1695 WEST CRESCENT AVENUE ROOM 408 ANAHEIM, CA 92801	(714) 635-0054
SOUTHERN CALIFORNIA GAS COMPANY DISTRIBUTION AND PLANNING DIVISION 3700 CENTRAL AVENUE RIVERSIDE, CA 92516	(714) 781-6115
UNDERGROUND SERVICE ALERT	(1-800) 422-4133
THE GAGE CANAL COMPANY 7452 DUFFERIN AVENUE RIVERSIDE, CA 92504	(714) 780-1333

SHEET INDEX

SHEET NO.	TITLE
1	TITLE SHEET / LOCATION MAP
2	INDEX SHEET / GENERAL NOTES
3	PLAN AND PROFILE STA. 0+37.78 TO 10+20
4	PLAN AND PROFILE STA. 10+20 TO 20+10
5	PLAN AND PROFILE STA. 20+10 TO 28+40
6	PLAN AND PROFILE STA. 28+40 TO 37+80
7	PLAN AND PROFILE STA. 37+80 TO 47+90
8	PLAN AND PROFILE STA. 47+90 TO 57+80
9	PLAN AND PROFILE STA. 57+80 TO 68+00
10	PLAN AND PROFILE STA. 68+00 TO 78+00
11	PLAN AND PROFILE STA. 78+00 TO 88+00
12	PLAN AND PROFILE STA. 88+00 TO 92+47.79
13 THRU 17	MISCELLANEOUS DETAILS

LEGEND

— E —	ELECTRICAL
— G —	EXISTING GAS LINE
— T —	EXISTING TELEPHONE CABLE/DUCT
— 8"W —	EXISTING WATER LINE (SIZE AS INDICATED)
— X —	EXISTING FENCE (TYPE AS INDICATED)
	EXISTING PAVEMENT
	EDGE OF PAVEMENT
	TEMPORARY EASEMENT LINE
	PERMANENT EASEMENT LINE
	RIGHT-OF-WAY LINE
	CITY AND COUNTY BOUNDARY
	LIGHT STANDARD (L.S.)
	POWER POLE/TELEPHONE POLE (P.P./T.P.)
	SLOPE EASEMENT LINE
2 / 16	DENOTES DETAIL NUMBER
	DENOTES SHEET NUMBER
AV	DENOTES APPURTENANCE INSTALLATION
	TEST LEAD STATION (TLS)

ABBREVIATIONS

A.C.P.	ASBESTOS CEMENT PIPE
A.C.	ASPHALT CONCRETE
AR	AIR RELEASE VALVE
AV	AIR & VACUUM RELEASE VALVE
B.C.	BEGINNING OF CURVE
B.O.	BLOW OFF
BUR. CBL.	BURIED CABLE
℄	CENTERLINE
CLR	CLEARANCE
CONC.	CONCRETE
C.C.P.	CONCRETE CYLINDER PIPE
C.I.P.	CAST IRON PIPE
C.M.P.	CORRUGATED METAL PIPE
DWG.	DRAWING
E.C.	END OF CURVE
EL.	ELEVATION
ELEC.	ELECTRICAL
EXIST.	EXISTING
H.P.	HIGH PRESSURE
INV.	INVERT
IRR.	IRRIGATION WATER LINE
L	LENGTH
MH	MANHOLE
MW	MANWAY
PE	POLYETHYLENE
P.I.	POINT OF INTERSECTION
PL	PROPERTY LINE
P.P.	POWER POLE
P.R.C.	POINT OF REVERSE CURVATURE
P.V.I.	POINT OF VERTICAL INTERSECTION
R	RADIUS
R.C.P.	REINFORCED CONCRETE PIPE
R/W	RIGHT-OF-WAY
S	SLOPE IN FEET PER FOOT
STA.	STATION
STD.	STANDARD
STL.	STEEL
T	TANGENT LENGTH
TEL.	TELEPHONE
V.C.P.	VITRIFIED CLAY PIPE
W.S.P.	WELDED STEEL PIPE

GENERAL NOTES

1. UTILITIES AND SUBSTRUCTURES SHOWN HEREON ARE BASED ON THE LATEST AVAILABLE RECORDS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND LOCATION OF SAME.

2. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AFFECTED BY CONSTRUCTION AT LEAST TWO WORKING DAYS IN ADVANCE OF CONSTRUCTION.

3. A MINIMUM SEPARATION OF 8 INCHES SHALL BE MAINTAINED BETWEEN THE TRANSMISSION MAIN AND ANY UTILITY LINE OR STRUCTURE CROSSING, UNLESS OTHERWISE SPECIFIED.

RECORD DRAWING

THIS IS A RECORD DRAWING OF THE FACILITIES IDENTIFIED IN THE TITLE BLOCK ONLY AND HAS BEEN PREPARED IN PART ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE ENGINEER/ARCHITECT AND OWNER(S) WILL NOT BE RESPONSIBLE FOR ANY ERROR(S) OR OMISSION(S) WHICH HAVE BEEN INCORPORATED INTO THIS DRAWING. ACTUAL CONDITIONS WILL VARY SOMEWHAT FROM THE CONDITIONS SHOWN HEREON AND AT SOME LOCATIONS THE VARIANCE MAY BE LARGE. IF THE PRECISE LOCATION OF ANY FACILITY IS REQUIRED, THE FACILITY SHOULD BE FIELD LOCATED IN THE PRESENCE OF AN EMPLOYEE OF THE DISTRICT OR THE OWNER(S) OF THE UTILITIES INVOLVED.

SURVEY CONTROL POINTS

NO.	COORDINATES	ELEVATION
7	N 100,000.00 E 100,000.00	1003.39
37	N 102,162.17 E 98,544.12	947.59
41	N 103,356.97 E 97,738.94	893.58
45	N 104,519.96 E 96,949.12	874.83
50	N 105,684.61 E 96,168.85	876.52
55	N 106,446.61 E 97,298.29	855.75
59	N 107,208.10 E 98,427.25	848.70

BASIS OF BEARINGS

CO. OF RIVERSIDE
MAP BOOK 76, PAGES
44-48

℄ LINCOLN AVE. BETWEEN MONROE AND IRVING STREET
S 56° 00' 00" W.

BENCH MARKS

E 5-B
FD. P.K. NAIL IN N'LY END OF E'LY HEADWALL OF GAGE CANAL AT JACKSON STREET
EL. 1004.871

F 5-H
SET P.K. NAIL AND TAG IN R.W.C. CANAL HEADWALL ON W'LY SIDE MONROE ST. FB839/33
EL. 845.599

PER CITY OF RIVERSIDE BENCH LEVELS

NOTE

THESE PLANS HAVE BEEN RESUBMITTED AND APPROVED FOR REISSUANCE.

NO.	DATE	DWN	CKD	APPR	REVISIONS
1	1-82				RECORD DRAWINGS

DESIGNED P.H.H.
DRAWN
CHECKED C.R.H.

SUBMITTED C. Russell Huber — PROJECT ENGINEER, B.E.C. — 17139 R.C.E. NO. — 10/20/80 DATE
RECOMMENDED Hans P. Hurst — PROJECT MANAGER, B.E.C. — 21955 R.C.E. NO. — 10/20/80 DATE

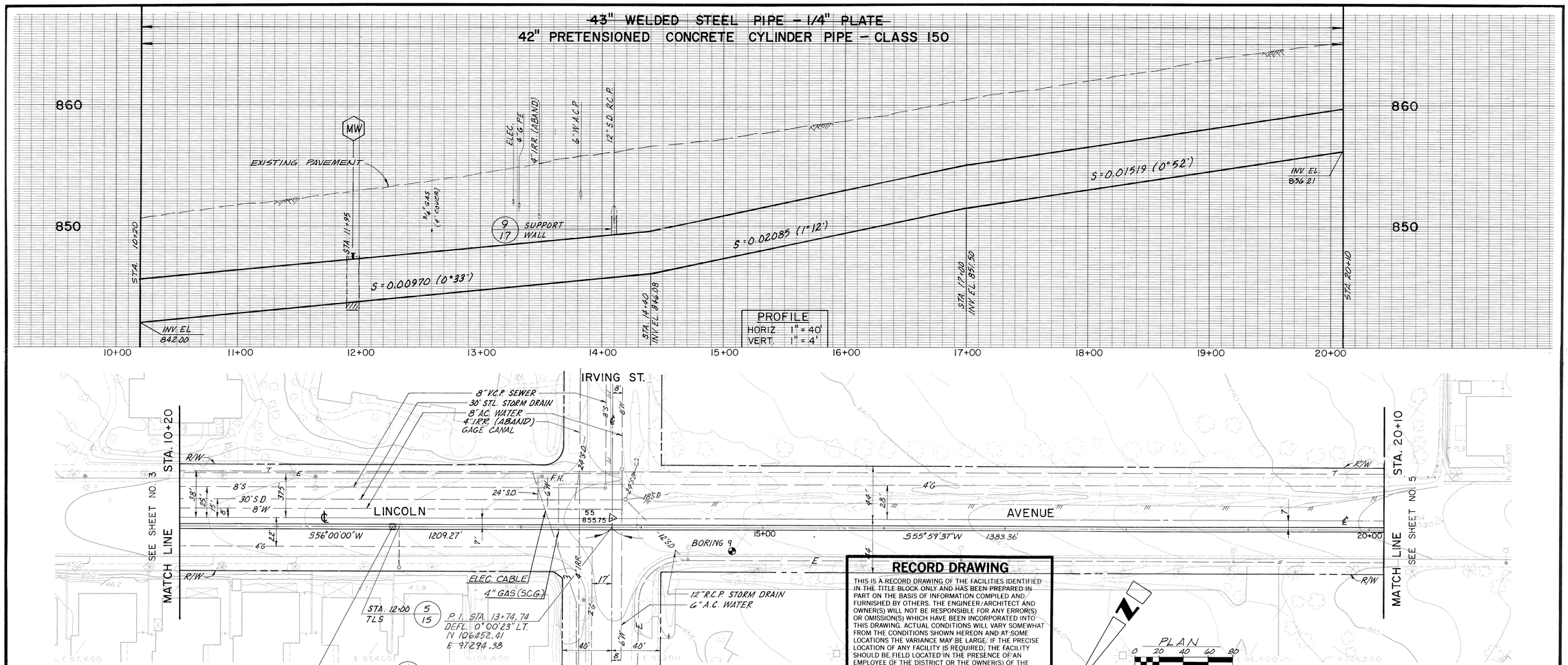
Boyle Engineering Corporation
consulting engineers / architects
(714) 824-5580
118 Airport Drive, Suite 210
San Bernardino, California 92408

THE CITY OF RIVERSIDE
APPROVED Fred Lantz — WATER SYSTEM MANAGER — 10/20/80 DATE
APPROVED S. Harris — PRINCIPAL ENGINEER — 10/20/80 DATE

MOCKINGBIRD RESERVOIR FEEDER
INDEX SHEET / GENERAL NOTES

SHEET 2 OF 17 SHEETS

80-D5-1488-2



RECORD DRAWING

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NO.	DATE	DWN	CKD	APPR	REVISIONS
1	1-82				RECORD DRAWINGS

DESIGNED P.H.H.
DRAWN P.H.H.
CHECKED C.R.H.

SUBMITTED C. Russell Fuller — PROJECT ENGINEER, B.E.C. — R.C.E. NO. 17139 — DATE 10/20/80
RECOMMENDED Wesley R. Hunt — PROJECT MANAGER, B.E.C. — R.C.E. NO. 21955 — DATE 10/20/80

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(714) 824-5580
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San Bernardino, California 92408

THE CITY OF RIVERSIDE

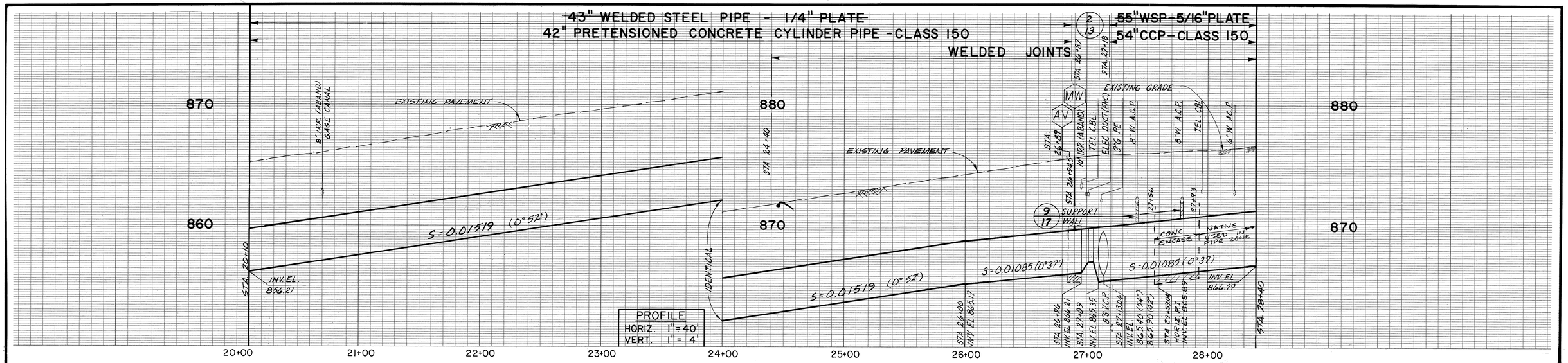
APPROVED Fred Lantz — WATER SYSTEM MANAGER — DATE 10/20/80
APPROVED — PRINCIPAL ENGINEER — DATE 10/20/80

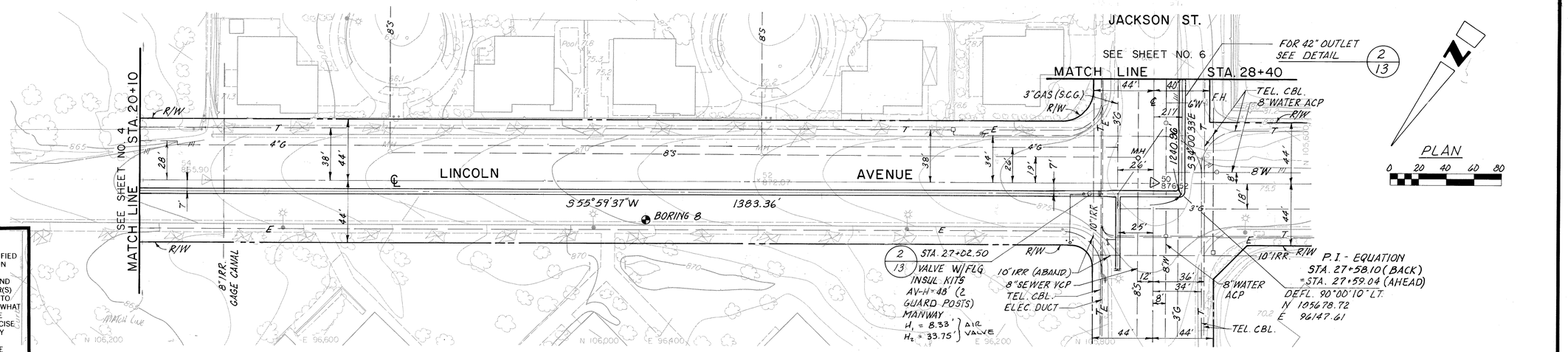
MOCKINGBIRD RESERVOIR FEEDER

PLAN AND PROFILE
STA. 10+20 TO STA. 20+10

SHEET 4 OF 17 SHEETS

80-D5-1488-4





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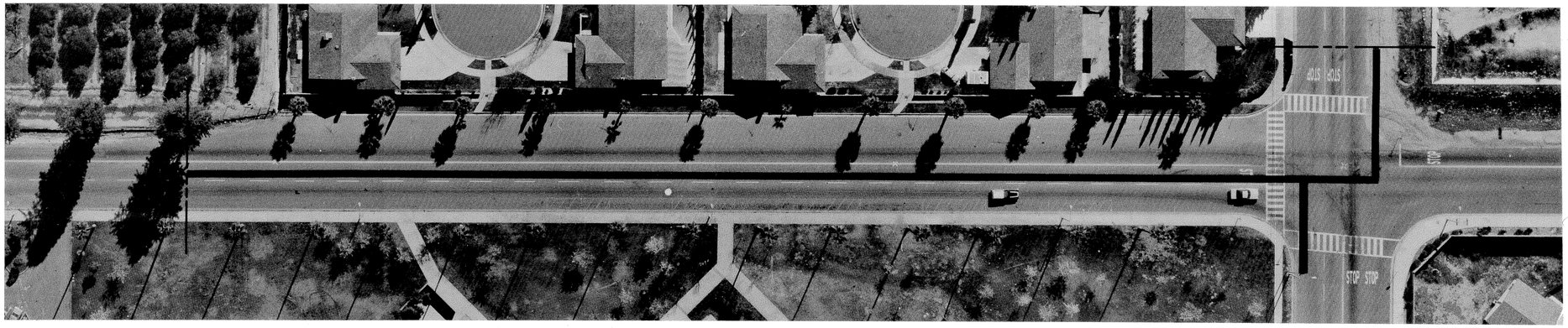

NO.	DATE	DWN	CKD	APPR	REVISIONS
1	1-82				RECORD DRAWINGS

DESIGNED P.H.H.
DRAWN P.H.H.
CHECKED C.R.H.

SUBMITTED C. Russell Hake — PROJECT ENGINEER, B.E.C. — R.C.E. NO. 17139 — DATE 10/20/80
RECOMMENDED Kevin R. Hirst — PROJECT MANAGER, B.E.C. — R.C.E. NO. 21955 — DATE 10/20/80

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San Bernardino, California 92408

THE CITY OF RIVERSIDE

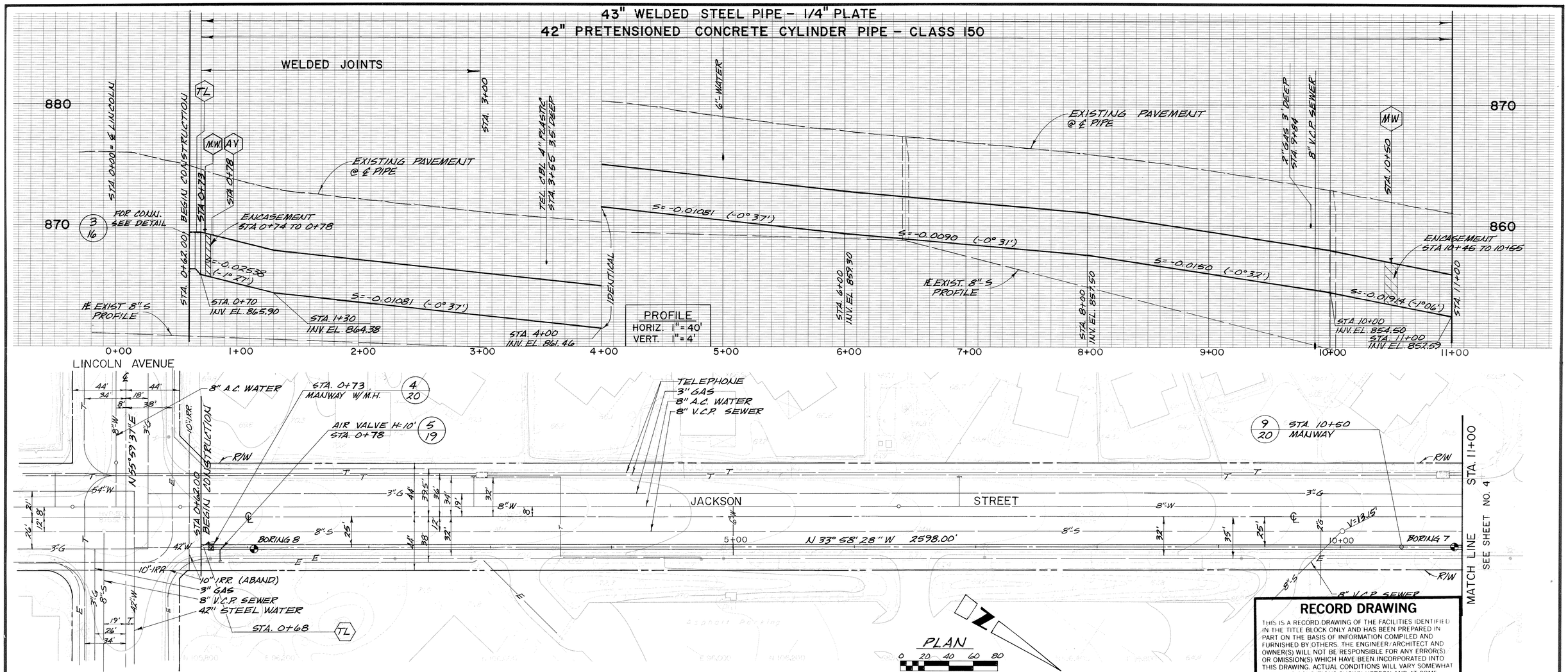
APPROVED Fred Lantz — WATER SYSTEM MANAGER — DATE 10/20/80
APPROVED K. Harris — PRINCIPAL ENGINEER — DATE 10/20/80

MOCKINGBIRD RESERVOIR FEEDER

PLAN AND PROFILE
STA. 20+10 TO STA. 28+40

SHEET 5 OF 17 SHEETS

80-D5-1488-5



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NO.	DATE	DWN	CKD	APPR	REVISIONS
1.	5-28-82				AS BUILT

DESIGNED JAF
DRAWN GRW
CHECKED JRL

SUBMITTED John A. Friedrich — PROJECT ENGINEER, B.E.C. — 27861 R.C.E. NO. — 12/24/80 DATE
RECOMMENDED John P. Hunt — PROJECT MANAGER, B.E.C. — 21955 R.C.E. NO. — 12/24/80 DATE

Boyle Engineering Corporation
consulting engineers / architects
(714) 824-5580
118 Airport Drive, Suite 212
San Bernardino, California 92408

THE CITY OF RIVERSIDE

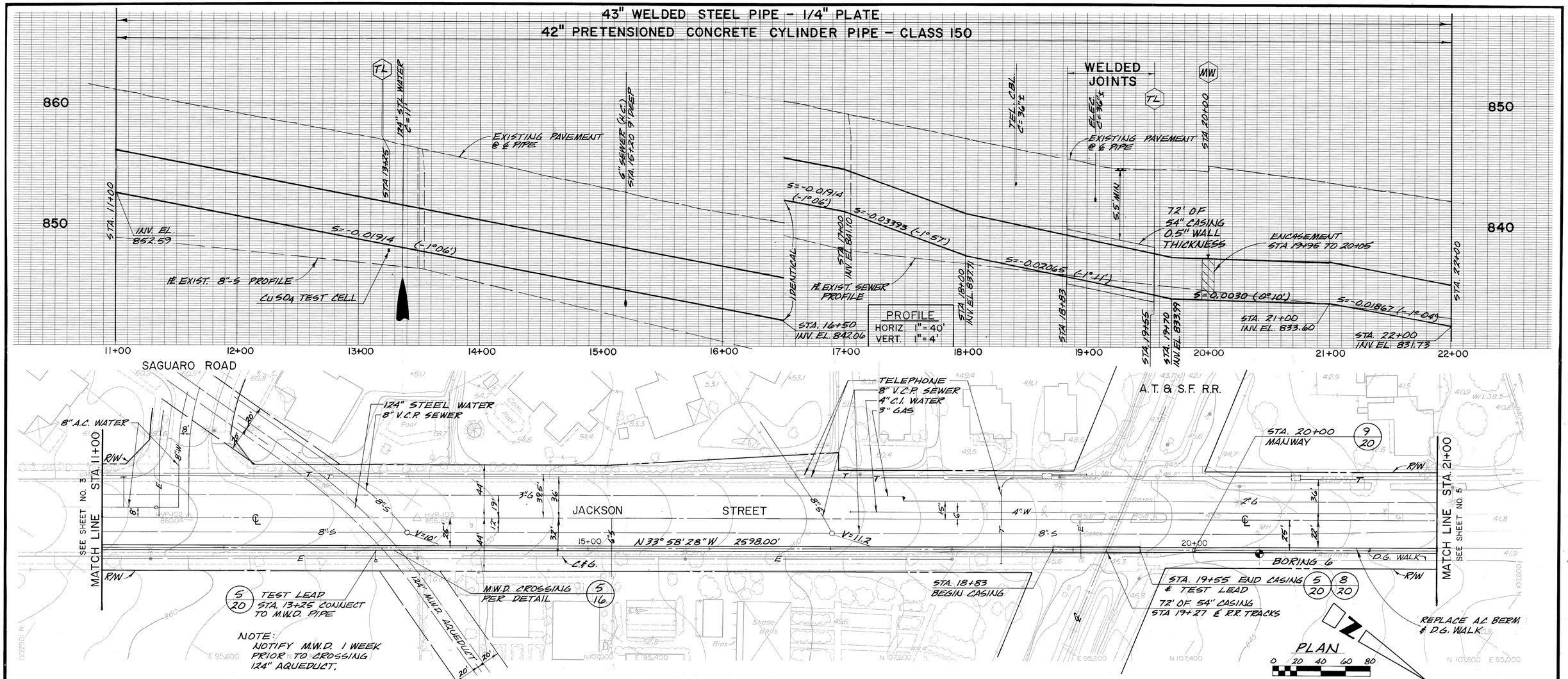
APPROVED Fred Lantz — WATER SYSTEM MANAGER — 3-13-81 DATE
APPROVED J. L. Herrera — PRINCIPAL ENGINEER — 3/13/81 DATE

MOCKINGBIRD FEEDER EXTENSION

PLAN AND PROFILE
STA. 0+62 TO STA. 11+00

SHEET 3 OF 20 SHEETS

80-D5-1505-3



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NO.	DATE	DWN	CKD	APPR	REVISIONS
1	5-28-82		TRP	MH	AS BUILT

DESIGNED JAF
DRAWN G.R.W.
CHECKED JRC

SUBMITTED John A. Friedrich — PROJECT ENGINEER, B.E.C. — R.C.E. NO. 27861 — DATE 12/24/80
RECOMMENDED Kevin P. Hurst — PROJECT MANAGER, B.E.C. — R.C.E. NO. 21955 — DATE 12/26/80

Boyle Engineering Corporation
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(714) 824-5580
118 Airport Drive, Suite 212
San Bernardino, California 92408

THE CITY OF RIVERSIDE

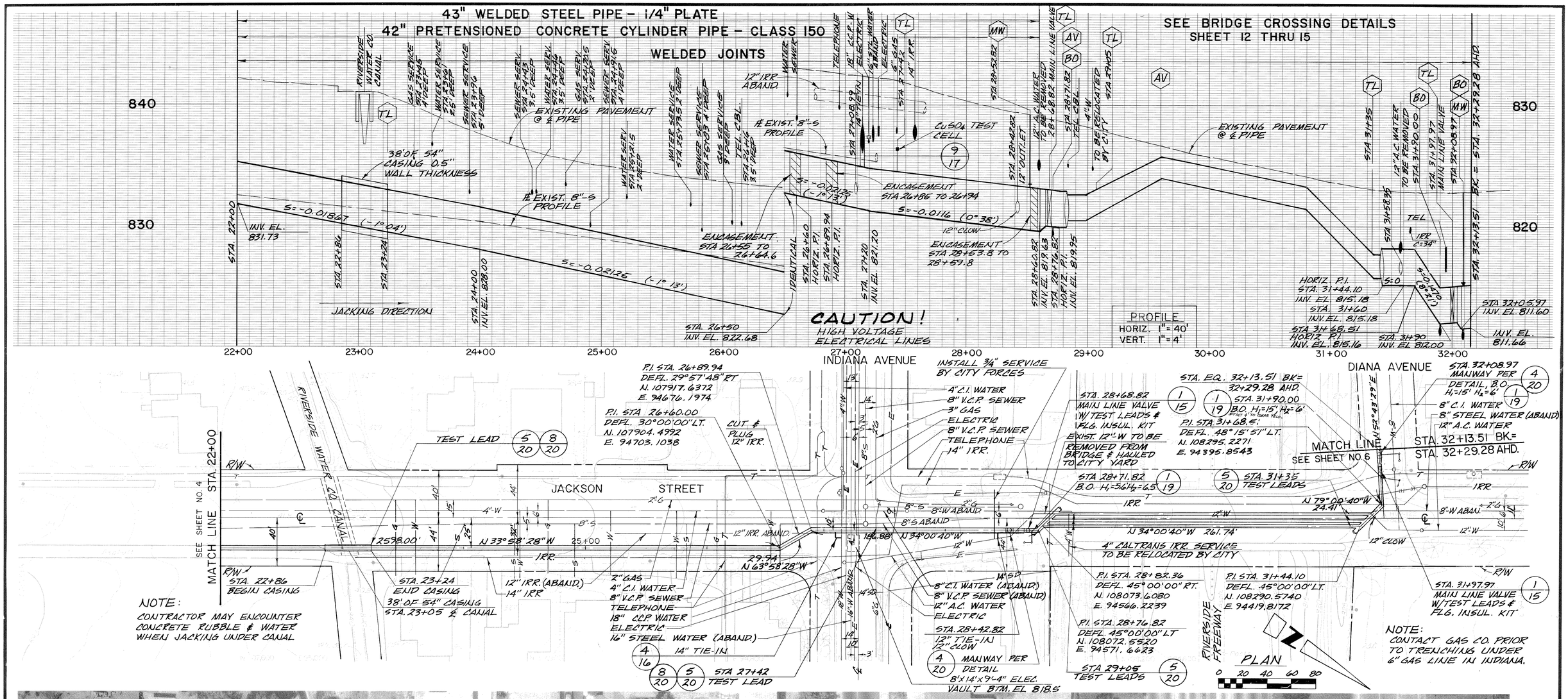
APPROVED Fred Lantz — WATER SYSTEM MANAGER — DATE 3-13-81
APPROVED [illegible] — PRINCIPAL ENGINEER — DATE 3/13/81

MOCKINGBIRD FEEDER EXTENSION

PLAN AND PROFILE
STA. 11+00 TO STA. 21+00

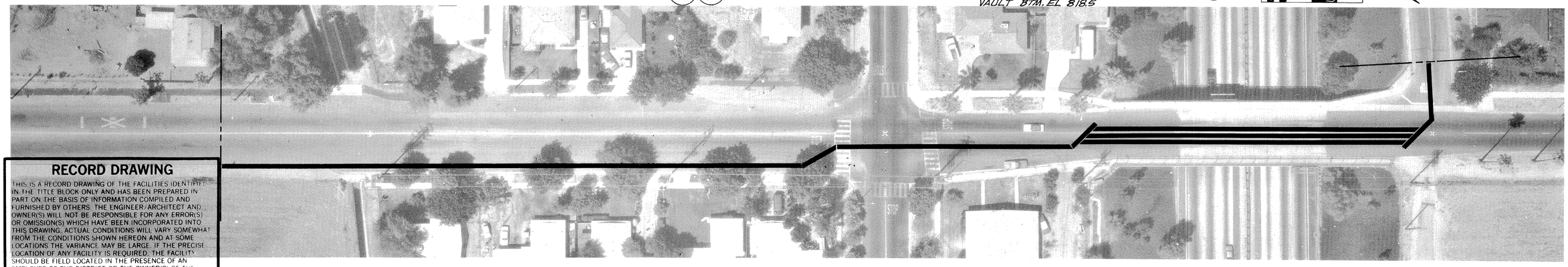
SHEET 4 OF 20 SHEETS

80-D5-1505-4



NOTE:
CONTRACTOR MAY ENCOUNTER CONCRETE RUBBLE & WATER WHEN JACKING UNDER CANAL

NOTE:
CONTACT GAS CO. PRIOR TO TRENCHING UNDER 6" GAS LINE IN INDIANA.



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NO.	DATE	DWN	CKD	APPR	REVISIONS
1	5-28-82		TLP	RJH	AS BUILT

DESIGNED JAF
DRAWN G.R.W.
CHECKED JRC

SUBMITTED John A. Friedrich — PROJECT ENGINEER, B.E.C. — 27861 R.C.E. NO. — 12/29/80 DATE
RECOMMENDED Kevin P. Hunt — PROJECT MANAGER, B.E.C. — 27955 R.C.E. NO. — 12/29/80 DATE

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(714) 824-5580
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San Bernardino, California 92408

THE CITY OF RIVERSIDE

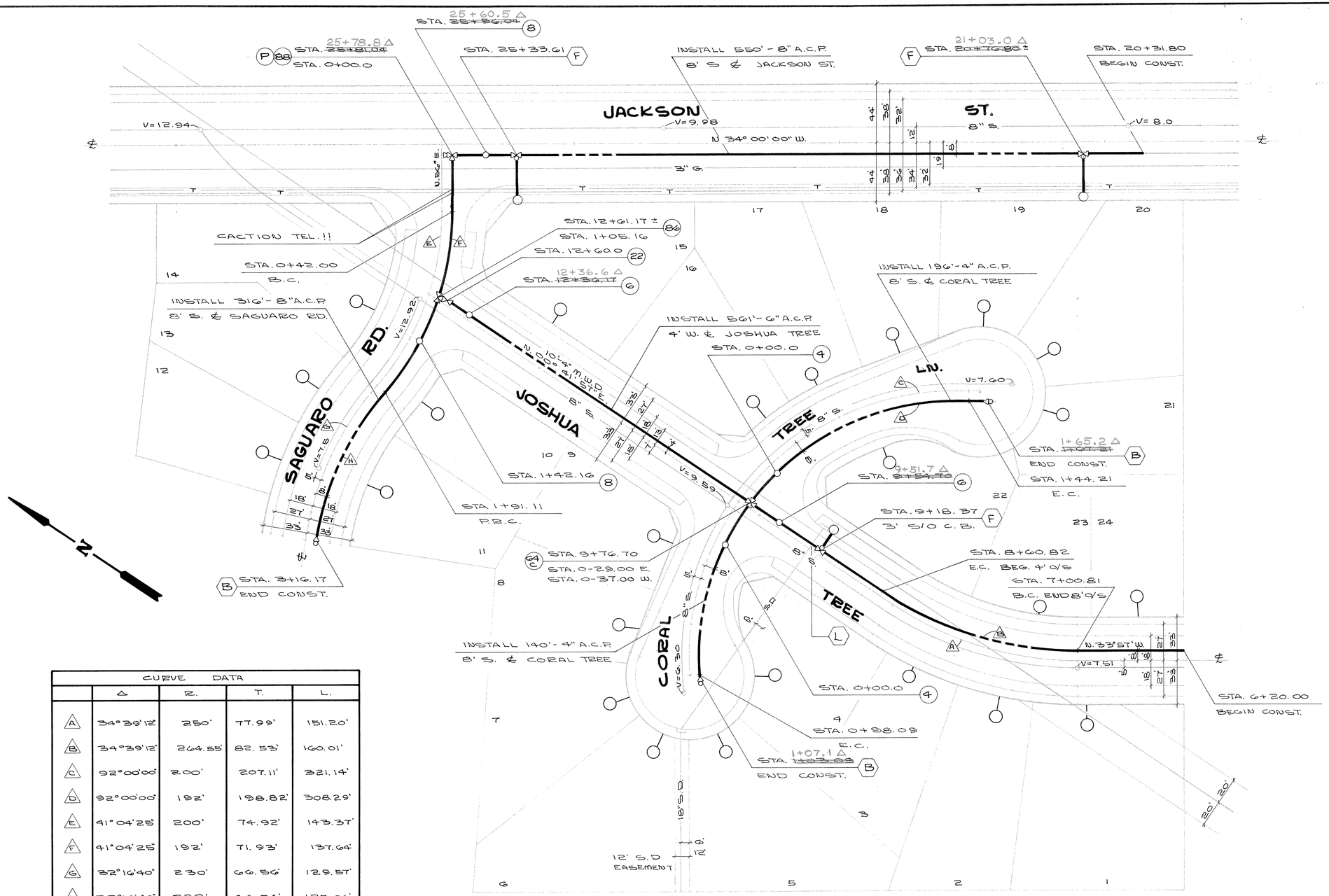
APPROVED Fred Lantz — WATER SYSTEM MANAGER — 3-13-81 DATE
APPROVED D. J. Harris — PRINCIPAL ENGINEER — 3/13/81 DATE

MOCKINGBIRD FEEDER EXTENSION

PLAN AND PROFILE
STA. 22+00 TO STA. 32+15.75

SHEET 5 OF 20 SHEETS

80-D5-1505-5

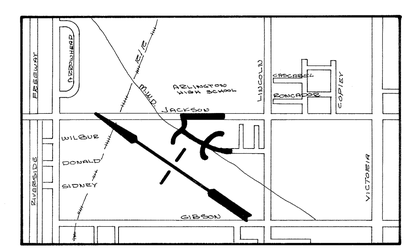


BILL OF MATERIALS			
	ITEM	MAIN	B.A.
	8" A.C.P.	880'	
	6" A.C.P.	640'	
	4" A.C.P.	336'	
8	8" G.V. R/T	2	5.0#
6	6" G.V. R/T	2	2.8#
4	4" G.V. R/T	2	1.3#
88	8" X 8" TEE R/T	1	5.0#
86	8" X 6" TEE R/T	1	2.8#
64 C	6" X 4" CROSS R/T	1	1.3#
22	6" 22° ELL R/T	1	1.0#
P	8" PLUG R/T	1	5.0#
F	8" X 6" F. TEE (C)	2	2.8#
F	6" X 6" F. TEE (C)	1	2.8#
B	8" CAP R/T	1	5.0#
B	4" CAP R/T	2	1.3#

CONSTRUCTION NOTES:

- (F) INSTALL 3 VAN FIRE HYDRANTS PER C.W.D.-700 AND STANDARD MATERIALS LIST.
- INSTALL 24-3/4" SERVICES PER C.W.D.-600 AND STANDARD MATERIALS LIST.
- (B) INSTALL 3-2" BLOW-OFFS PER C.W.D.-411 AND STANDARD MATERIALS LIST.
- CONTACT ENGR. FOR STREET OPENING PERMIT NO.
- (L) LOWER TRENCH TO 5.5' TO CLEAR 18" S.D.

CURVE DATA				
	△	R.	T.	L.
A	34°39'12"	250'	77.99'	151.20'
B	34°39'12"	264.55'	82.53'	160.01'
C	92°00'00"	200'	207.11'	321.14'
D	92°00'00"	192'	198.82'	308.29'
E	41°04'25"	200'	74.92'	143.37'
F	41°04'25"	192'	71.93'	137.64'
G	32°16'40"	230'	66.56'	129.57'
H	32°16'40"	222'	64.24'	125.06'



LOCATION MAP
N.T.S.

-CAUTION-
PACIFIC TELEPHONE
CABLES UNDERGROUND
BEFORE EXCAVATING
CALL COLLECT.
7:30 A.M. to 5 P.M. After Hours & Holidays
Orange County 714-533-0611 714-547-6606
Riverside County 714-684-0071 714-547-6606

FL △ "AS BUILT" 8/77

APPRVD	REVISIONS	DATE

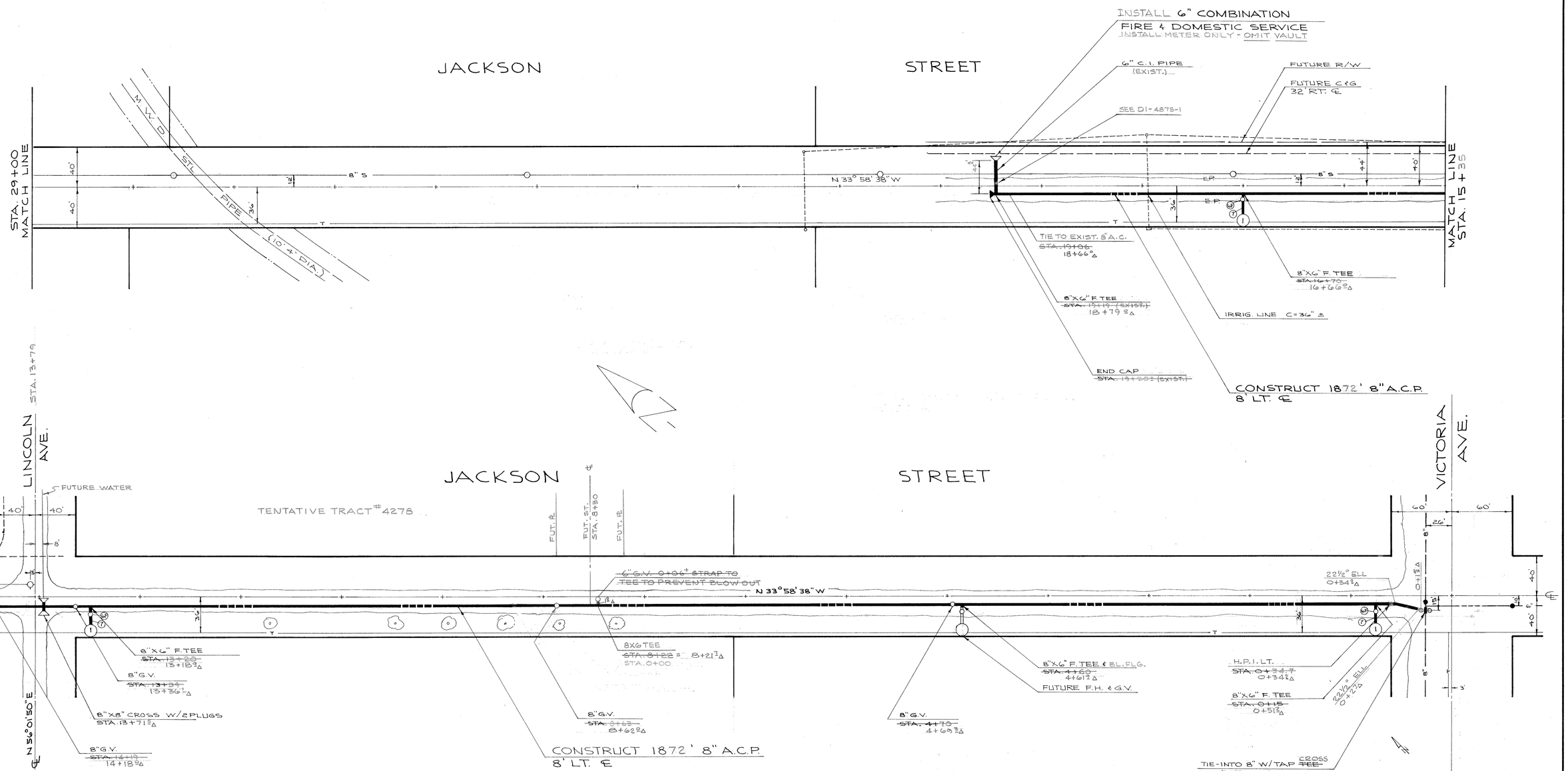
TRACT 5486-2
NEW PIPELINES

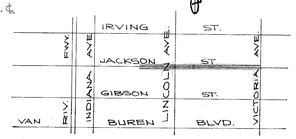
SCALE 1" = 40'	DRAWN R.W.H.	CITY OF RIVERSIDE DEPARTMENT OF PUBLIC UTILITIES
DATE 9-1976	CHECKED JA	
JOB No. 3718	APPROVED F. Kanty 10/5/76	W DEPT. DRAWING NO. D5-3718
F. B. No.	10/5/76	

65-751-703

66-8/81-2

PRINTED ON DIETERICH-POST CLEARPRINT 1000H





LOCATION MAP N.T.S.

BILL OF MATERIAL

ITEM	STOCK #	MAIN	HYD.	SER.	TOTAL	BEARING AREA
8" A.C.P.	5059	1872'			1872'	
8" G.V.	4412	5			5	
8" TAP TEE	6606	1			1	5.0 ☐
8" TAP G.V.	4417	1			1	
8"X8" CROSS	2046	1			1	5.0 ☐
8" PLUG	1403	2			2	
8X6 TEE	6571	1			1	2.8 ☐
6" G.V.	4411	1			1	
10" GATE BOX	4252	7	2		9	
6" COMB. SERV.	—			1	1	
6" BL. FLG.	4027		1		1	
(1) VAN HYD.	3002		2		2	
8"X6" TEE B.B.F.	6382		3		3	2.8 ☐
(6) 6" G.V. B.F.	4425		2		2	
(7) 6" C.I.P.	5028		75'	33'	108'	
6"X42" BURY	3027		3		3	2.0 ☐
8X8 TEE	6372	1			1	5.0 ☐

GENERAL NOTES:

(1) PAVING TO BE REPLACED PER STANDARD SPEC. FOR PUBLIC WORKS CONSTRUCTION (1970 EDITION) OPENING PERMIT # 2973

—CAUTION—
PACIFIC TELEPHONE
CABLES UNDERGROUND
BEFORE EXCAVATING
CALL COLLECT:

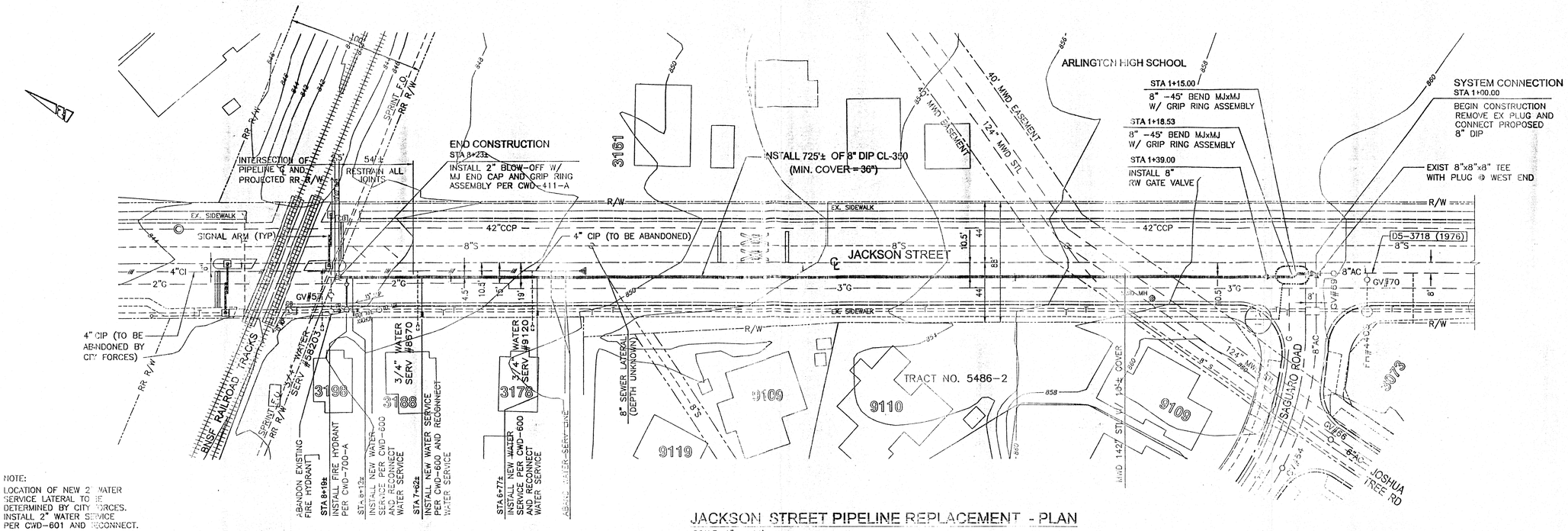
	7:30 A.M. to 5 P.M.	After Hours & Holidays
Orange County	714-633-0811	714-547-6606
Riverside County	714-684-0071	714-547-6606
Inyo County	714-684-0071	714-547-6606
San Bernardino County	714-684-0071	714-547-6606
Los Angeles County	213-621-3111	24 HOUR SERVICE
Ventura County	213-621-3111	
San Diego County	714-298-0595	714-232-0027

FOR FREE CABLE LOCATING SERVICE

APPRVD	REVISIONS	DATE
	"AS BUILT"	4/72

JACKSON ST. 8" A.C. EXTENSION

SCALE 1"=50'	DRAWN D.T. / J.A.	CITY OF RIVERSIDE DEPARTMENT OF PUBLIC UTILITIES	
DATE DEC. 71	CHECKED F.L.		
JOB No. 4875	APPROVED		DRAWING NO.
H.S. P. B. No. 215	65-751-703	W DIV.	D5-4875-2

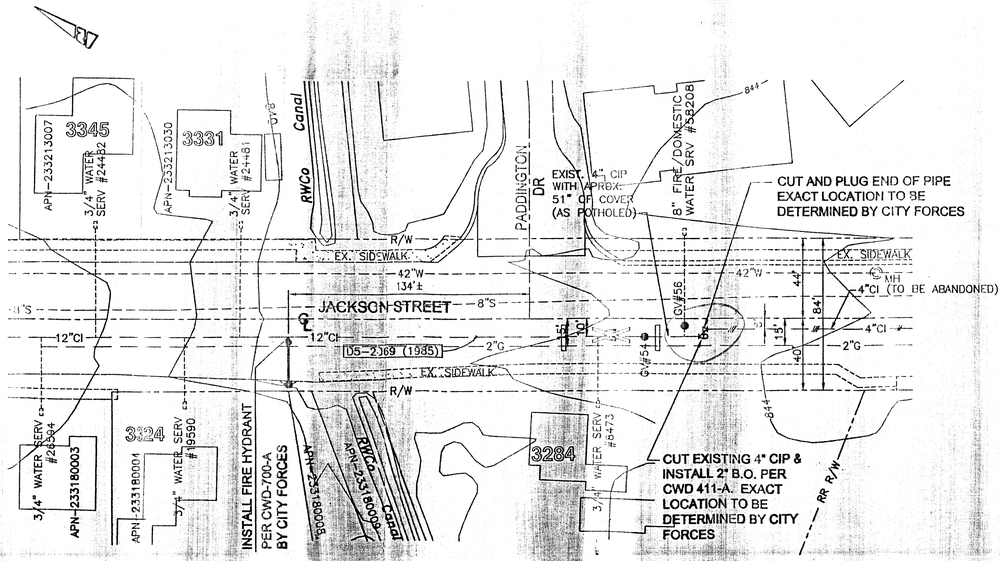


NOTE:
LOCATION OF NEW 2" WATER
SERVICE LATERAL TO BE
DETERMINED BY CITY FORCES.
INSTALL 2" WATER SERVICE
PER CWD-601 AND RECONNECT.

JACKSON STREET PIPELINE REPLACEMENT - PLAN

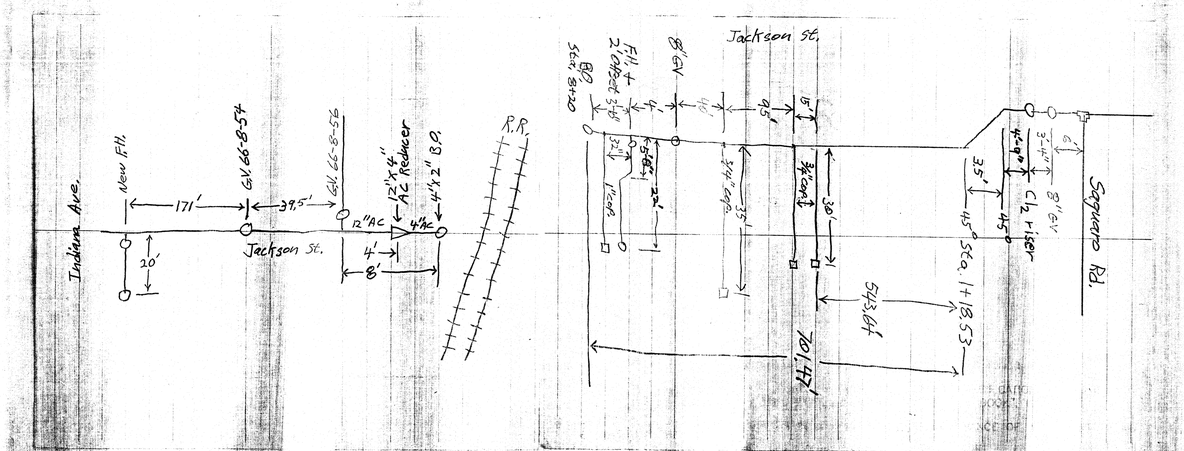
SCALE: 1" = 40'

212
Lucas
copies 9-2-04



JACKSON STREET F. H. INSTALLATION & ABANDONMENT- PLAN

SCALE: 1" = 40'



4. CITY FORCES SHALL INSTALL 2-INCH BLOW-OFF PER CWD-411A AS SHOWN.
5. CALL U.S.A. ALERT TWO DAYS PRIOR TO START OF PROJECT TO MARK UTILITIES.
6. POTHOLE ALL UTILITY CROSSINGS AND VERIFY, DEPTH, ALIGNMENT AND EXISTING MATERIAL BEFORE COMMENCING WORK.

UNDERGROUND SERVICE ALERT
CALL: TOLL FREE
1-800
227-2600
TWO WORKING DAY BEFORE YOU DIG

REGISTERED PROFESSIONAL ENGINEER
ERNEST PAUL MARQUEZ, JR.
No. C61911
Expires 6/30/05
CIVIL
STATE OF CALIFORNIA

CITY OF RIVERSIDE
PUBLIC UTILITIES DEPARTMENT
WATER ENGINEERING DIVISION

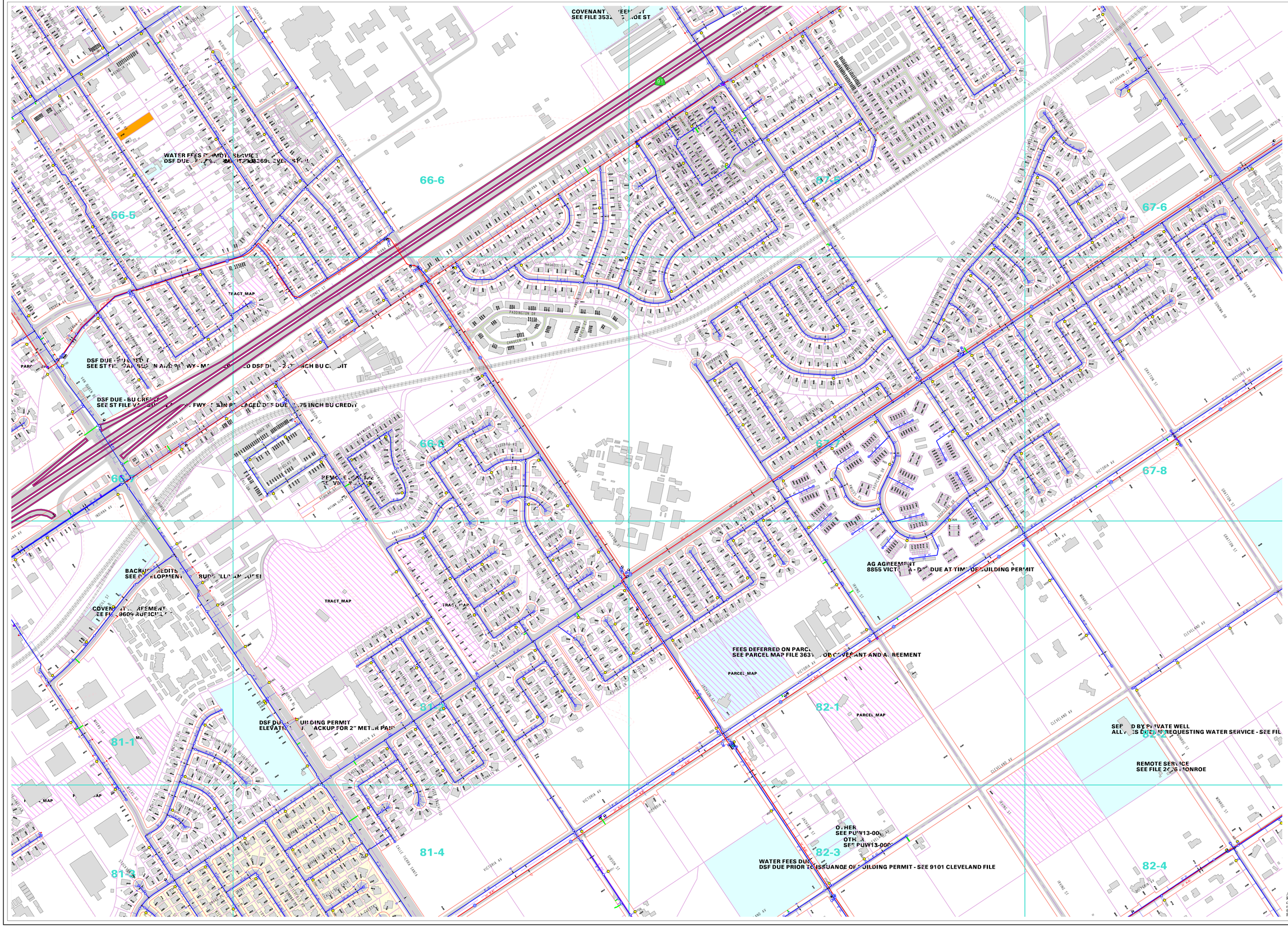
R.C.E. No. C61911 — DATE 7/16/03

MARK	REVISIONS	APPR.	DATE

JACKSON STREET RAILROAD XING - PHASE II
PIPELINE PLAN

SCALE: 1" = 40'	DRAWN: V. VASALLO	CITY OF RIVERSIDE PUBLIC UTILITIES DEPARTMENT
DATE: 7/03	CHECKED:	
JOB NO.: 704089	APPROVED: E.P.M.	W DIV. — DRAWING NO. D5-704089-1
CADME PG.: 66-8	G:\WATER\DWG\CADM\Railroad\Jackson-1.dwg 62.30\01\03 3:10 4/7/2003KCK 704089	SHEET 1 OF 1

9707071XX



Symbology

- Distribution Main
- Supply Main
- Transmission Main
- Facility Main
- Recycled Main
- Irrigation Main/Canal
- Abandoned Main
- Service
- Fire Service
- Landscape Service
- Remote Service
- Recycled Service
- Abandoned Service
- Casing
- Air Valve
- Booster Pump
- Well Pump
- PRV
- Check Valve
- Relief Valve
- Manhole
- DC Meter
- Fire Hydrant
- Valve Open
- Valve Closed
- EOM/BO Valve
- BO Valve
- BO/PO Valve
- PO/BO Valve
- PO
- Mat'l Change
- Reducer
- Tee/Cross

1 inch = 300 feet

December 31, 2018

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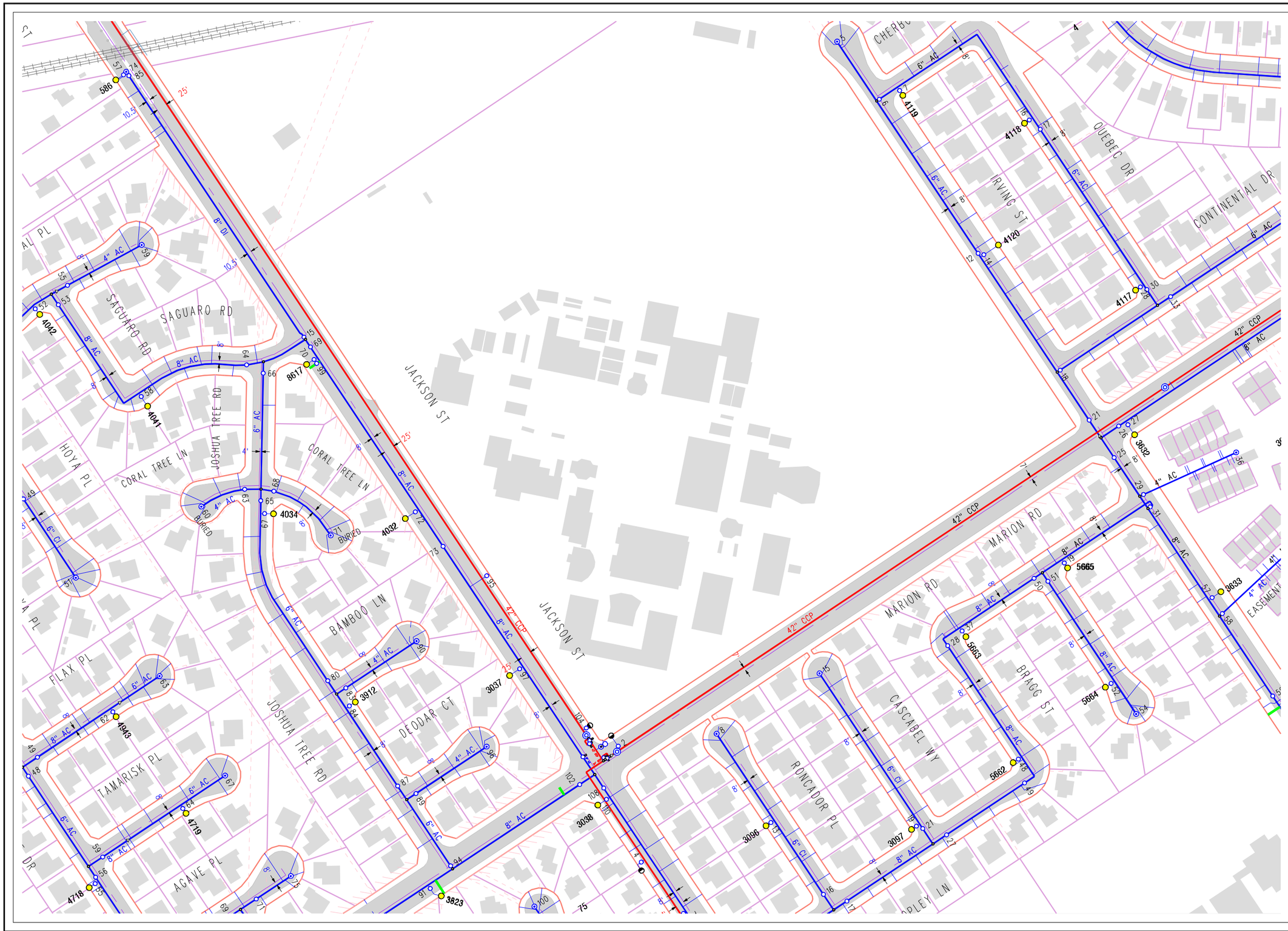
Printed by: CGROSS



Symbology

- Distribution Main
- Supply Main
- Transmission Main
- Facility Main
- Recycled Main
- Irrigation Main/Canal
- Abandoned Main
- Service
- Fire Service
- Landscape Service
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- Air Valve
- Booster Pump
- Well Pump
- PRV
- Check Valve
- Relief Valve
- Manhole
- DC Meter
- Fire Hydrant
- Valve Open
- Valve Closed
- EOM/BO Valve
- BO Valve
- BO/PO Valve
- PO/BO Valve
- PO
- Mat'l Change
- Reducer
- Tee/Cross

N

1 inch = 200 feet

December 14, 2018

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Printed by: MCASTRO

When recorded mail to:

City Clerk's Office
City of Riverside
City Hall, 3900 Main Street
Riverside, California 92522

60050

FREE RECORDING
This instrument is for the benefit of the City of Riverside and is entitled to be recorded without fee (Government Code 6103)

RECEIVED FOR RECORD
AT 11:00 O'CLOCK A.M.

FEB 17 1993

Recorded in Official Records of Riverside County, California
Recorder
Fees $

FOR RECORDER'S OFFICE USE ONLY

Project: Toronto Road Storm Drain
A.P.N. 233-250-001 &
233-220-010

13465

E A S E M E N T

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, RIVERSIDE UNIFIED SCHOOL DISTRICT, who acquired title as Riverside City High School District, as Grantor, grants to the CITY OF RIVERSIDE, a municipal corporation, as Grantee, its successors and assigns, an easement for the construction, reconstruction, maintenance, inspection, repair, and removal of an earthen drainage course, together with all necessary appurtenances, in, upon, over and along that certain real property as described in Exhibit "A" attached hereto and incorporated herein by this reference, located in the City of Riverside, County of Riverside, State of California.

TOGETHER WITH the right to clear and keep clear said easement from any structures or trees, to enter upon and to pass and repass over and along said real property, and to deposit tools, implements and other material thereon by Grantee, its officers, agents and employees and by persons under contract with said Grantee and their officers, agents and

13465

employees, whenever and wherever necessary for the purpose of constructing, reconstructing, maintaining, inspecting, repairing, and removing said earthen drainage course.

Dated February 1, 1993

RIVERSIDE UNIFIED SCHOOL DISTRICT

By _____
David S. Bail, Associate Superintendent
Business & Governmental Relations

By _____

CONSENT TO RECORDATION

THIS IS TO CERTIFY that the interest in real property conveyed by the within instrument to the City of Riverside, California, a municipal corporation, is hereby accepted by the undersigned officer on behalf of the City Council of said City pursuant to authority conferred by Resolution No. 14883 of said City Council adopted January 25, 1983, and the grantee consents to recordation thereof by its duly authorized officer.

Dated 2/16/93

Real Property Services Manager
of the City of Riverside

RIVRSIDE.E/a

APPROVED AS TO FORM

Stan T. Yamamoto, City Attorney

1340

EXHIBIT "A"

That portion of Lot 2 in Block 29 of Arlington Heights, as shown by map on file in Book 11, Pages 20 and 21 of Maps, records of San Bernardino County, California, and that portion of Lot 12 in Block 31 of the Lands of W. T. Sayward & S. C. Evans, as shown by map on file in Book 3, Page 2 of Maps, records of San Bernardino County, California, described as follows:

COMMENCING at the most westerly corner of Lot 1 of Tract No. 8266, as shown by map on file in Book 89, Pages 53 through 55 of Maps, records of Riverside County, California;

THENCE South 76°59'22" West, along the southerly line of the Riverside Water Company's Canal right-of-way, a distance of 16.07 feet to a line parallel with and distant 15.00 feet southwesterly, as measured at right angles, from the southwesterly line of said Lot 1, and the **POINT OF BEGINNING** of the parcel of land being described;

THENCE South 76°59'22" West, a distance of 8.13 feet to the beginning of a tangent curve concaving northerly and having a radius of 204.27 feet;

THENCE southwesterly to the right along said curve through a central angle of 31°32'00" an arc length of 112.42 feet;

THENCE North 71°28'38" West, a distance of 150.48 feet to the beginning of a non-tangent curve concaving northeasterly and having a radius of 39.50 feet; the radial line to the beginning of said non-tangent curve bears South 78°56'26" West; the preceding three courses being along said southerly line;

THENCE southeasterly to the left along said non-tangent curve through a central angle of 60°25'04" an arc length of 41.65 feet to a line parallel with and distant 20.00 feet southwesterly, as measured at right angles, from said southerly line;

THENCE South 71°28'38" East, along said last mentioned parallel line, a distance of 116.12 feet to the beginning of a tangent curve concaving northerly and having a radius of 224.27 feet;

THENCE southeasterly to the left along said last mentioned curve through a central angle of 30°05'31" an arc length of 117.79 feet to a line parallel with and distant 35.00 feet southwesterly, as measured at right angles, from said

southwesterly line of Lot 1;

THENCE South 34°00'00" East, along said last mentioned parallel line, a distance of 107.36 feet to the beginning of a non-tangent curve concaving southeasterly and having a radius of 51.00 feet; the radial line to the beginning of said non-tangent curve bears North 77°20'09" West;

THENCE northeasterly to the right along said last mentioned curve through a central angle of 26°13'53" an arc length of 23.35 feet to said line parallel with and distant 15.00 feet southwesterly from the southwesterly line of Lot 1;

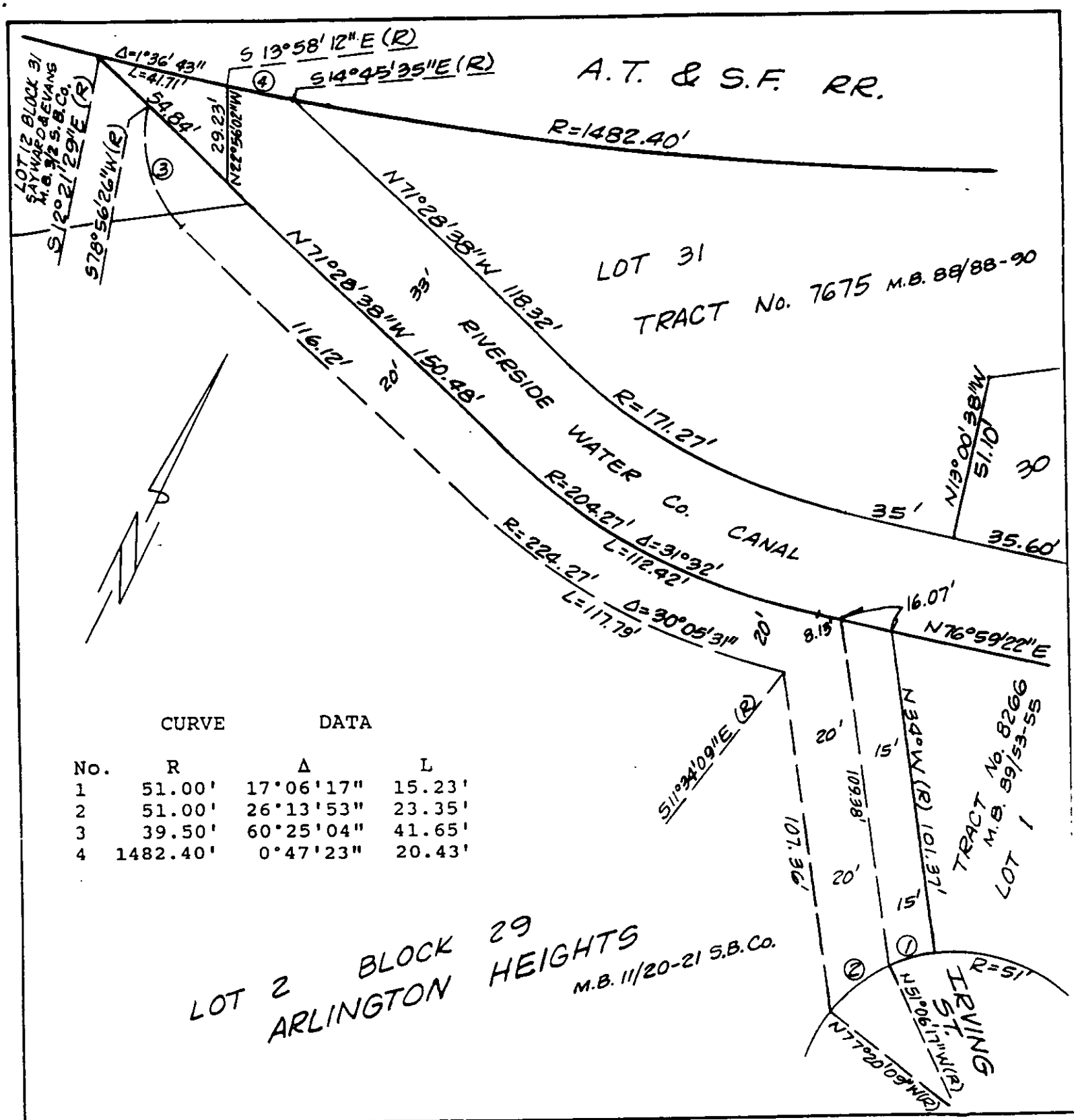
THENCE North 34°00'00" West, along said last mentioned parallel line, a distance of 109.38 feet to the **POINT OF BEGINNING.**

Area - 7340.1 square feet, more or less.

DESCRIPTION APPROVAL 10/22/92
George P. Hutchinson by Kap
SURVEYOR, CITY OF RIVERSIDE

LICENSED LAND SURVEYOR
GEORGE P. HUTCHINSON
L. S. 3593
Exp 6/30/94
STATE OF CALIFORNIA

60050



CURVE DATA

No.	R	Δ	L
1	51.00'	17°06'17"	15.23'
2	51.00'	26°13'53"	23.35'
3	39.50'	60°25'04"	41.65'
4	1482.40'	0°47'23"	20.43'

• CITY OF RIVERSIDE, CALIFORNIA •

THIS PLAT IS SOLELY AN AID IN LOCATING THE PARCEL(S) DESCRIBED IN THE ATTACHED DOCUMENT. IT IS NOT A PART OF THE WRITTEN DESCRIPTION THEREIN.	SHEET 1 OF 1	5/40-4
SCALE: 1" = NTS	DRAWN BY KGS DATE 10/11/90	SUBJECT TORONTO RD. S.D.

13605

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

MWD Upper Feeder
Sta. 258+00 to 290+00
Substr. Job No. 2002-18-038

December 4, 2018

Ms. Danielle Clendening
Intern
PlaceWorks
2850 Inland Empire Boulevard, Suite B
Ontario, CA 91764

Dear Ms. Clendening:

Arlington High School – Utility Request

Thank you for your email dated November 16, 2018, and a map showing the location of your utility request within 1,500 feet radius of Arlington High School located in the city of Riverside.

As shown on the enclosed map, Metropolitan's 124- inch-inside-diameter welded steel Upper Feeder pipeline, appurtenant manhole structures and accompanying 40-foot-wide permanent easement right-of-way cross Jackson Street to the west and the Atchison, Topeka & Santa Fe Railway to the north in the vicinity of Arlington High School. Our pipeline was designed to operate with an approximate optimum pressure of 183 psi and a maximum flow capacity of 805 cfs in this area.

We are transmitting a copy of our "Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way," and prints of our Drawings B-21247, B-21248, B-21249, H-1398, and Right-of-Way Maps 1400-15, 1400-16, and 1400-17, for your information and use.

We request that our facilities and right-of-way be fully shown and identified as Metropolitan's on your project plans and that prints of the preliminary plans be submitted for our review and written approval as they pertain to our facilities. All applicable portions of the enclosed guidelines should be incorporated into your plans.

We also request that a stipulation be added to your plans and/or specifications to notify John Osornia of our Water System Operations Group, cell phone (951) 710-5570, at least two working days prior to starting any work in the vicinity of our facilities.

For any further correspondence with Metropolitan relating to this project, please make reference to the Substructures Job Number shown in the upper right-hand corner of this letter. Should you require any additional information, please contact Clay Anderson via email at Canderson@mwdh2o.com.

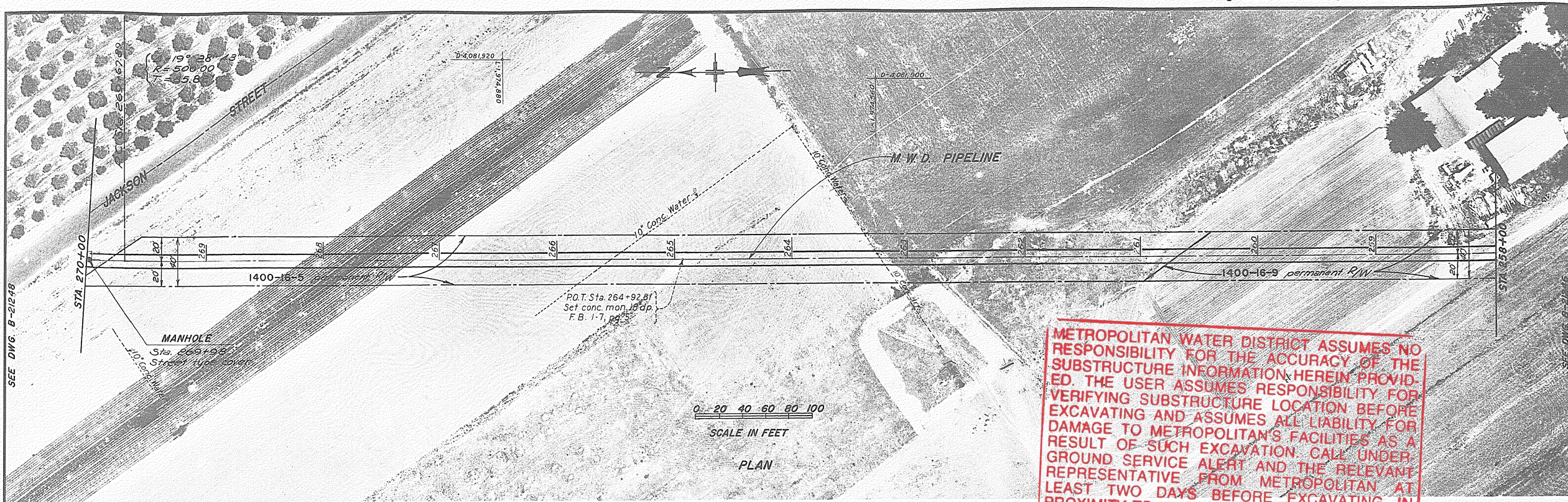
Very truly yours,

Ken Chung
Substructures Team

CA/dl
DOC#: 2002-18-038

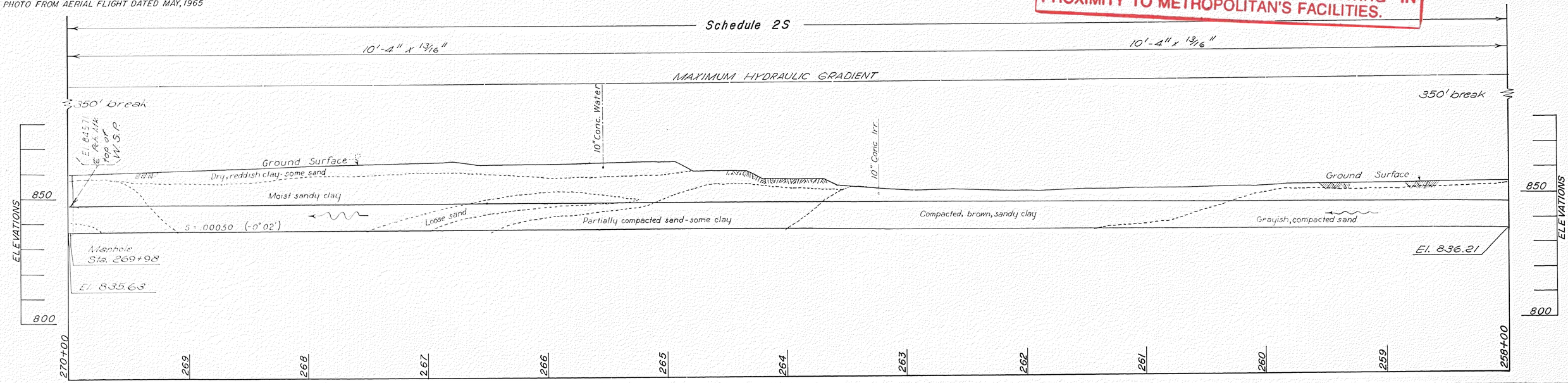
Enclosures (9)

bcc: C. Anderson
Substructures File



METROPOLITAN WATER DISTRICT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE SUBSTRUCTURE INFORMATION HEREIN PROVIDED. THE USER ASSUMES RESPONSIBILITY FOR VERIFYING SUBSTRUCTURE LOCATION BEFORE EXCAVATING AND ASSUMES ALL LIABILITY FOR DAMAGE TO METROPOLITAN'S FACILITIES AS A RESULT OF SUCH EXCAVATION. CALL UNDERGROUND SERVICE ALERT AND THE RELEVANT REPRESENTATIVE FROM METROPOLITAN AT LEAST TWO DAYS BEFORE EXCAVATING IN PROXIMITY TO METROPOLITAN'S FACILITIES.

PHOTO FROM AERIAL FLIGHT DATED MAY, 1965



PROFILE

FIELD BOOKS:
Monuments and ties 1-7
Final Profile 2-25
Construction grades 2-21

REFERENCE DRAWINGS H-1397 & H-1398

Stations and elevations apply to invert of pipe

Nº	DATE	DWN.	CKD.	REVISION	REC.	APP.

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

COLORADO RIVER AQUEDUCT
UPPER FEEDER

CAJALCO RES. TO SANTA ANA RIVER
STA. 258+00 TO STA 270+00

PLAN AND PROFILE

DRAWN
TRACED F.J.D. RECOMMENDED
CHECKED E.R.T. LRC APPROVED

LOS ANGELES 1966 B-21247

Upper Feeder

Sta. 258+00 to 290+00

From:	Holt, Taylor
To:	Danielle Clendening
Cc:	York, Tina; Keys, Chase; "Stella Ceballos"
Subject:	RE: Title 5 Information Request for a School Site in Arlington Riverside, CA
Date:	Tuesday, November 20, 2018 10:53:44 AM
Attachments:	image008.png

On behalf of Western Municipal Water District, HR Green is responding to the above referenced request.

Western does not have any facilities within the project area.

If you have any questions or further requests please contact utilityrequests@wmwd.com

Regards,

Taylor Holt
HR GREEN, INC.

1260 Corona Pointe Court | Suite 305 | Corona, CA 92879
Main 855.900.4742 | **Fax** 855.641.5877 | **Cell** 626.587.6094
HRGREEN.COM

The contents of this transmission and any attachments are confidential and intended for the use of the individual or entity to which it is addressed. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is prohibited.

From: Danielle Clendening <dbclendening@placeworks.com>
Sent: Friday, November 16, 2018 7:25 AM
To: Stella Ceballos <sceballos@wmwd.com>
Subject: Title 5 Information Request for a School Site in Arlington Riverside, CA

Good morning,

Riverside Unified School District, in compliance with CCR Title V Section 14010 (h), has contracted the services of PlaceWorks to complete safety hazard assessments related to water pipelines that are 12-inches in diameter or greater located within a 1,500-foot radius of a site in Arlington in Riverside County. The address for the site is 2951 Jackson Street, Riverside, CA.

I have attached a pdf of a map showing the exact location of the site outlined in red and an approximately 1,500-foot radius marked around the site in yellow.

This email is requesting information about any water lines 12-inches in diameter or greater operated by the Western Municipal Water District located within a 1,500-foot radius of the site.

If there are no water lines that meet those specifications within the radius of the site, could I get a

response stating such for the school district's safety hazard report.

If this not the correct email to be sending such a request, could you please help direct this inquiry to the proper division.

Thank you so much for your help, please contact me if you have any questions or need more information!

Best regards,

DANIELLE CLENDENING
Intern

http://www.placeworks.com/" style='position:absolute;margin-left:0;margin-top:127.85pt;width:108pt;height:21.55pt;z-index:251659264;visibility:visible;mso-wrap-style:square;mso-width-percent:0;mso-height-percent:0;mso-wrap-distance-left:0;mso-wrap-distance-top:0;mso-wrap-distance-right:9.35pt;mso-wrap-distance-bottom:0;mso-position-horizontal:left;mso-position-horizontal-relative:text;mso-position-vertical:absolute;mso-position-vertical-relative:text;mso-width-percent:0;mso-height-percent:0;mso-width-relative:page;mso-height-relative:page' o:button="t">>

2850 Inland Empire Boulevard, Suite B | Ontario, California 91764
909.989.4449 | dbclendening@placeworks.com | placeworks.com

Appendix H-1 Geotechnical Investigation (2018)

Appendices

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RMA Group
Every Project Matters | www.rmacompanies.com

GEOTECHNICAL INVESTIGATION
FOR
PROPOSED CLASSROOM, RESTROOM, BLEACHERS AND FITNESS-TRAINING BUILDING
ARLINGTON HIGH SCHOOL
2951 JACKSON STREET
RIVERSIDE, CA

for

Riverside Unified School District
3380 14th Street
Riverside, CA 92501-3810

September 20, 2018

18-1214-01

RMA Group
Every *Project* **Matters** | *www.rmacompanies.com*

September 20, 2018

Riverside Unified School District
3380 14th Street
Riverside, CA 92501-3810

Attention: Daniel Rodriguez
Assistant Director, Facilities Projects

Subject: Geotechnical Investigation for
Proposed Classroom, Restroom, Bleachers and Fitness-Training Building
Arlington High School
2951 Jackson Street
Riverside, CA

Dear Mr. Rodriguez:

In accordance with your request, a geotechnical investigation has been completed for the above referenced project. The report addresses both engineering geologic and geotechnical conditions. The results of the investigation are presented in the accompanying report, which includes a description of site conditions, results of our field exploration, laboratory testing, conclusions, and recommendations.

We appreciate this opportunity to be of continued service to you. If you have any questions regarding this report, please do not hesitate to contact us at your convenience.

Respectfully submitted,

RMA Group

Gary Wallace, PG|CEG
Vice President - Geology
CEG 1255

PROFESSIONAL GEOLOGIST
GARY W. WALLACE
No. 1255
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Jorge Meneses, PE|GE|PhD|D.GE|F. ASCE
Principal Geotechnical Engineer
GE 3041

REGISTERED PROFESSIONAL ENGINEER
JORGE F. MENESES
No. GE 3041
GEOTECHNICAL
STATE OF CALIFORNIA

RMA Group
Every Project Matters | www.rmacompanies.com

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1.00 INTRODUCTION

1.01 Purpose

A geotechnical investigation has been completed for the proposed Classroom Building, Restroom, Bleachers and Auxiliary Gym/Fitness-Training Building at Arlington High School in Riverside, California. The purpose of the investigation was to summarize geotechnical and geologic conditions at the site, to assess their potential impact on the proposed development, and to develop geotechnical and engineering geologic design parameters.

1.02 Scope of the Investigation

The general scope of this investigation included the following:

- Review of published and unpublished geologic, seismic, groundwater and geotechnical literature.
- Examination of aerial photographs.
- Contacting of underground service alert and District personnel to locate onsite utility lines.
- Logging, sampling and backfilling of 13 exploratory borings drilled with a track mounted CME-55 drill rig.
- Laboratory testing of representative soil samples.
- Geotechnical evaluation of the compiled data.
- Preparation of this report presenting our findings, conclusions and recommendations.

Our scope of work did not include a preliminary site assessment for the potential of hazardous materials onsite.

1.03 Site Location and Description

The proposed development will be located within the central portion of Arlington High School in the City of Riverside, Riverside County, California. The address of the school is 2951 Jackson Street.

The school is bounded by railroad tracks to the northwest, Irving Street to the northeast, Lincoln Avenue to the southeast, and Jackson Street to the southwest (Figure 1). The geographic position of the approximate center of the school is at Latitude 33.9149° and Longitude –117.4283°.

The overall gradient of the property is about 1% to the north. Elevations within the proposed development areas range from approximately 850 to 868 feet above sea level.

1.04 Current and Past Land Usage

Arlington High School is an operating public school. The site of the proposed bleachers, restroom, and fitness-training building are currently covered with grass. The proposed classroom area is currently paved and occupied by portable classrooms and a covered sitting area.

Historic aerial photographs indicate the campus property was an orchard prior to development of the school.

1.05 Planned Usage

An Option 2 Site Plan prepared by Ruhnau Clarke Architects indicates the proposed construction will consist of a one story classroom building (approximately 9,300 square feet), a restroom (approximately 1,350 square feet), visitor bleachers (6,425 square feet), expanded home bleachers (approximately 8,000 square feet) with a press box (approximately 1,275 square feet) and a fitness and training center building (approximately 12,200 square feet) covering approximately a total of 38,550 square feet of land.

Our investigation was performed prior to the preparation of grading or foundation plans. To aid in preparation of this report, we utilized the following assumptions:

- Maximum foundation loads of 2 to 3 kips per linear foot for continuous footings and 60 kips for isolated spread footings.
- Cuts and fills will be less than 5 feet.

1.06 Investigation Methods

Our investigation consisted of office research, field exploration, laboratory testing, review of the compiled data, and preparation of this report. It has been performed in a manner consistent with generally accepted engineering and geologic principles and practices, and has incorporated requirements of California Geological Survey Note 48 and the California Buildings Code (CBC). Definitions of technical terms and symbols used in this report include those of the ASTM International, the California Building Code, and commonly used geologic nomenclature.

Technical supporting data are presented in the attached appendices. Appendix A presents a description of the methods and equipment used in performing the field exploration and logs of our subsurface exploration. Appendix B presents a description of our laboratory testing and the test results. Liquefaction and seismically induced settlement calculations, standard grading specifications and references are presented in Appendices C, D and E, respectively.

2.00 FINDINGS

2.01 Geologic Setting

The site is located within a large geologic structural mass known as the Perris Block. This block is composed of granitic bedrock that in places is overlain by alluvium and thin sedimentary and volcanic units. The granitic bedrock was formed during Cretaceous time, some 90 to 100 million years ago, and is part of a much larger mass of plutonic rocks known as the Southern California Batholith. After formation of the granitic rocks, the Perris Block experienced vertical movements that produced several nearly flat erosional surfaces. Sediments emanating from the elevated portions of the Perris Block fill low lying areas in the region.

The Perris Block is bounded by the San Jacinto fault on the northeast, the Elsinore fault on the southwest and the Cucamonga fault on the north. The southeast boundary of the Perris Block is vague, but is believed to coincide with a complex group of faults extending southeast from Murrieta.

According to regional geologic mapping by Morton and Cox (2001), the site is underlain by late to middle

Pleistocene age older alluvial fan deposits (Figure 2).

2.02 Earth Materials

Our subsurface investigation encountered artificial fill and older alluvium.

Artificial Fill

Borings B-11 through B-13 encountered 2 inches of asphalt over 3 to 4 inches of base. Approximately 15 feet of trench backfill was encountered over a sewer line in Boring B-13. The backfill material was found to consist of silty sand and sand.

Older Alluvium

Older alluvium (map symbol Qoal) was encountered in each of our borings. The stratigraphy of the soils encountered in the borings was fairly consistent generally consisting of a layer of silty sand overlying on a sand layer resting on silty sand with layers of silt and sand.

The upper silty sand generally consists of brown to dark yellowish brown silty, fine to medium grained sand with some coarse sand. It ranges from about 4 to 16 feet thick.

The intermediate sand layer generally consists of dark yellowish brown to brown fine to course grained sand with silt. The unit generally ranges from about 1 ½ to 7 feet thick expect on the western side of the site where it is about 14 feet thick.

The lower silty sand layer generally consists of brown, dark yellowish brown and reddish brown silty fine to medium grained sand with notable layers of silt and sand. In particular, a brown to yellowish brown sandy silt was encountered in Borings B-1 from 26 to 30 feet, B-7 from 30 to 34 feet, B-9 from 26 to 33 feet and B-12 from 34 to 36 feet. In addition, brown to yellowish brown sand with silt was encountered in Borings B-9 from 41 to 47 feet and B-12 from 29 to 34 feet.

A Site Geologic Map showing the locations of our borings and cross sections is presented as Figure 3. Geologic cross sections are presented as Figures 4 through 7. The subsurface soils encountered in the exploratory borings drilled at the site are described in greater detail on the logs contained in Appendix A.

2.03 Expansive Soils

Expansion index testing indicates that near surface soils has a very low expansion potential.

Results of expansion test and other soil index tests are presented in Appendix B. Since site grading will redistribute earth materials, potential expansive properties should be verified at the completion of rough grading.

2.04 Surface and Groundwater Conditions

No areas of ponding or water were present at the time of our study. Further, no springs or areas of natural seepage were found.

Groundwater was not encountered in borings drilled during this study. A regional groundwater study by the U.S. Geological Survey (Carson and Matti, 1985) indicates the minimum depth to groundwater beneath the site from 1973 to 1979 was approximately 35 to 45 feet. According to the California State Water Resources Control Board Geotracker website, the depth to groundwater in monitoring wells located about 3,000 feet to the west ranged from about 45 to 60 feet from 1999 to 2003. The Western Municipal Water District (2010) reported the depth to groundwater in the vicinity of the site was about 85 feet in 2009.

2.05 Faults

The site is not located within the boundaries of an Earthquake Fault Zone for fault-rupture hazard as defined by the Alquist-Priolo Earthquake Fault Zoning Act and no faults are known to pass through the property. The nearest Earthquake Fault zones are located about 11 miles to the southwest along the Elsinore fault and about 13 miles to the northeast along the San Jacinto fault.

The accompanying Regional Fault Map (Figure 8) illustrates the location of the site with respect to major faults in the region. The distance to notable faults within 100 kilometers of the site is presented on Table 1.

2.06 Historic Seismicity

There have been four historic strong earthquakes have been epicentered within about 25 miles of the site. The most recent event was the 1990 Upland Earthquake. It had a magnitude of 5.5 and was epicentered about 22 miles to the northwest.

The other nearby earthquakes occurred in San Bernardino area in 1858 and 1923, and Elsinore region in 1910. Each of these earthquakes had magnitudes of about 6. However, since these events occurred prior to the development of seismic monitoring networks, their locations and magnitudes are only approximate.

Strong earthquakes that have occurred in this region in historic time and their approximate epicentral distances are summarized in Table 2.

Seismic design parameters relative to the requirements of the 2016 California Building Code, ASCE 7-10 and California Geological Survey Note 48 are presented in Section 3.09 and Appendix C.

2.07 Flooding Potential

According to Federal Emergency Management Agent (2008), the site is located within Flood Zone X, which is an area defined as area of minimal flood hazard.

Control of surface runoff originating from within and outside of the site should, of course, be included in design of the project.

2.08 Landslides

Landslides were not encountered during the current subsurface investigation or during prior site grading. Topographic landforms suggestive of landslides were not apparent in the field or on aerial photographs.

Due to the low gradient of the site and surrounding area, landsliding is not a hazard at this property.

2.09 Other Geologic Hazard Considerations

California Geological Survey Note 48 (2013) identifies a number of exceptional geologic hazards that can occur at individual sites, but do not occur statewide. Evaluation of these exceptional conditions is referred to as a conditional geologic assessment by Note 48. Specific assessment items listed in Note 48 are addressed in the table below.

CONDITIONAL GEOLOGIC ASSESSMENT

Hazard	Assessment	Reference
Methane gas, hydrogen-sulfide gas, tar seeps	Not applicable, site is not located within an oil field identified as a high risk area for hazardous gas accumulations.	Sections 2.01 and 2.02
Volcanic eruption	Not applicable, site is not is a known hazard area for volcanic eruptions.	Miller, 1989 (U.S.G.S. Bulletin 1847)
Flooding	The proposed development area is not located within the boundaries of a 100-year flood zone.	See Section 2.07
Tsunami and seiches inundation	Not applicable.	See Section 3.10
Radon-222 gas	Not applicable, typically a concern in the California Coast Ranges.	See Section 2.01 and CGS Note 48.
Naturally occurring asbestos	Not applicable, site is not is an area more likely to contain naturally occurring asbestos.	Churchill and Hill, 2000 (DMG OFR 2000-19).
Hydrocollapse due to anthropic use of water	The regional geologic setting, drilling data and field observation indicate that soils are not likely to experience hydrocollapse, rather concerns are potential seismically induced settlement.	See Sections 2.01, 2.02 and 3.10. Appendices A, B and D.
Regional land subsidence	According to a Riverside County Map My County online map, the site is in an area "susceptible" to subsidence. Control of subsidence is a function of groundwater management practices which are beyond the control of the School District.	Riverside County online map.
Clays and cyclic softening	The site is underlain primarily by sand-like soils, therefore cyclic softening of clay is not a concern.	See Section 2.02 and Appendix A

3.00 Conclusions and Recommendations

3.01 General Conclusion

Based on specific data and information contained in this report, our understanding of the project and our general experience in engineering geology and geotechnical engineering, it is our professional judgment that the proposed development is geologically and geotechnically feasible. This is provided that the recommendations presented below are fully implemented during design, grading and construction.

3.02 General Earthwork and Grading

All grading should be performed in accordance with the General Earthwork and Grading Specifications outlined in Appendix C, unless specifically revised or amended below. Recommendations contained in Appendix C are general specifications for typical grading projects and may not be entirely applicable to this project.

It is also recommended that all earthwork and grading be performed in accordance with Appendix J of the 2016A California Building Code (CBC) and all applicable governmental agency requirements. In the event of conflicts between this report and CBC Appendix J, this report shall govern.

3.03 Earthwork Shrinkage and Subsidence

Shrinkage is the decrease in volume of soil upon removal and recompaction expressed as a percentage of the original in-place volume. Subsidence occurs as natural ground is densified to receive fill. These factors account for changes in earth volumes that will occur during grading. Our estimates are as follows:

- Shrinkage factor = 5%-10% for soil removed and replaced as compacted fill.
- Subsidence factor = 0.1 foot.

The degree to which fill soils are compacted and variations in the insitu density of existing soils will influence earth volume changes. Consequently, some adjustments in grades near the completion of grading could be required to balance the earthwork.

3.04 Removals and Overexcavation

All vegetation, trash and debris should be cleared from the grading area and removed from the site. Prior to placement of compacted fills, all non-engineered fills and loose, porous, or compressible soils will need to be removed down to competent ground. Removal and requirements will also apply to cut areas, if the depth of cut is not sufficient to reach competent ground. Removed and/or overexcavated soils may be moisture-conditioned and recompacted as engineered fill, except for soils containing detrimental amounts of organic material. Estimated depths of removals are as follows:

- Approximately 13 feet of trench backfill was encountered in Boring B-13. Since it is recommended that this building be supported by a mat foundation, removal and recompaction of the fill is not expected to be necessary. This should be further evaluated after foundation plans have been prepared and at the time of grading. Any non-engineered fills are encountered during grading will also need to be removed down to competent ground along with any underlying compressible native soils.

- Loose, porous and compressible native soils were encountered to depths of about 1 to 3 feet below existing grades. The average depth of removal of these soils is expected to be 1 to 2 feet with some local areas extending to 3 feet below the existing ground surface or the base of existing non-engineered fill.

- It is expected that competent native soils will be encountered in cuts deeper than approximately 1 to 3 feet below existing grade or the base of existing non-engineered fill. Provided competent soils are exposed, these cut surfaces should be scarified to a minimum depth of 12 inches, moisture conditioned and compacted to at least 90 percent of the maximum dry density, provided that footing overexcavation requirements are met.

- Soils disturbed by demolition of existing structures will need to be over-excavated to competent native ground and then scarified to a minimum depth of 12 inches, moisture conditioned and compacted to at least 90 percent of the maximum dry density

- The asphalt and concrete currently onsite may be either processed and placed in the compacted fill, or hauled off the site. If the asphalt and concrete is use as fill material, it must be broken down to approximately 4 to 8-inch particles and mixed thoroughly with on-site soils. No large and flat pieces are to be used for fill. If asphalt is processed by grinding, it cannot be used in fills and must be removed from the site.

In addition to the above requirements, overexcavation will also need to meet the following criteria for the building pads, concrete flatwork and pavement areas:

- All continuous and spread footings shall be undercut, moistened, and compacted as necessary to produce soils compacted to a minimum of 90% relative compaction to a depth equal to the width of the footing below the bottom of the footing or to a depth of 3 feet below the bottom of the footing, whichever is less. Footing areas shall be defined as the area extending from the edge of the footing for a distance of 5 feet.

- All floor slabs, mat foundations, concrete flatwork and paved areas shall be underlain by a minimum of 12 inches of soil compacted to a minimum of 90% relative compaction.

The exposed soils beneath all overexcavation should be scarified an additional 12 inches, moisture conditioned and compacted to a minimum of 90% relative compaction.

The above recommendations are based on the assumption that soils encountered during field exploration are representative of soils throughout the site. However, there can be unforeseen and unanticipated variations in soils between points of subsurface exploration. Hence, overexcavation depths must be verified, and adjusted if necessary, at the time of grading. The overexcavated materials may be moisture-conditioned and re-compacted as engineered fill.

3.05 Rippability and Rock Disposal

Our exploratory borings were advanced without difficulty and no oversize materials were encountered in our subsurface investigation. Accordingly we expect that all earth materials will be rippable with conventional heavy duty grading equipment and oversized materials are not expected.

3.06 Subdrains

Ground water and surface water were not encountered during the course of our investigation, the proposed grading is not expected to fill any large canyons and the underlying soils are fairly permeable. Consequently, installation of canyon subdrains is not expected to be necessary.

3.07 Fill and Cut Slopes

Fill and cut slopes, if necessary, should be constructed at inclinations of 2 horizontal to1 vertical or flatter.

Due to the low gradient of the property, it appears that construction of cut and fill slopes will not be required. If such slopes are proposed, they should be inclined no steeper than 2 horizontal to1 vertical.

3.08 Faulting

Since the site is not located within the boundaries of an Earthquake Fault Zone and no faults are known to pass through the property, surface fault rupture within the site is considered unlikely.

3.09 Seismic Design Parameters

The potential damaging effects of regional earthquake activity must be considered in the design of structures.

Mapped seismic design parameters have been developed in accordance with Section 1613A of the 2016 California Building Code (CBC) using the online U.S. Geological Survey Seismic Design Maps Calculator (ASCE 10 Standard), a site location based on latitude and longitude, and site characterization as Site Class D based on our preliminary geotechnical investigation.

The parameters generated for the subject site are presented below:

2016 California Building Code Seismic Parameters

Parameter	Value
Site Location	Latitude = 33.9149 degrees Longitude = -117.4283 degrees
Site Class	Site Class = D Soil Profile Name = Stiff Soil
Mapped Spectral Accelerations (Site Class B)	S_s (0.2- second period) = 1.500g S_1 (1-second period) = 0.600g
Site Coefficients (Site Class D)	F_a = 1.000 F_v = 1.500
Risk-Targeted Maximum Considered Earthquake Spectral Accelerations (Site Class D)	S_{MS} (short, 0.2- second period) = 1.500g S_{M1} (1-second period) = 0.900g
Risk-Targeted Design Earthquake Spectral Accelerations (Site Class D)	S_{DS} (short, 0.2- second period) = 1.000g S_{D1} (1-second period) = 0.600g

The above table shows that the mapped spectral response acceleration parameter a 1-second period (S_1) <

0.75g. Therefore, for the Seismic Design Category is D for all Risk Categories (CBC Section 1613A.5.6). Consequently, as required for Seismic Design Categories D through F by CBC Section 1803A.5.12, lateral pressures for earthquake ground motions, liquefaction and soil strength loss have been evaluated (see Sections 3.10 and 3.16).

Peak earthquake ground acceleration adjusted for site class effects (PGA_M) has been determine in accordance with ASCE 7-10 Section 11.8.3 as follows: $PGA_M = F_{PGA} \times PGA = 1.000 \times 0.500 = 0.5g$.

3.10 Liquefaction and Secondary Earthquake Hazards

Potential secondary seismic hazards that can affect land development projects include liquefaction, tsunamis, seiches, seismically induced settlement, seismically induced flooding and seismically induced landsliding.

Liquefaction

Liquefaction is a phenomenon where earthquake- induced ground motions increase the pore pressure in saturated, sand-like soils until it is equal to the confining, overburden pressure. When this occurs, the soil can completely lose its shear strength and enter a liquefied state. The possibility of liquefaction is dependent upon grain size, relative density, confining pressure, saturation of the soils, and intensity and duration of ground shaking. In order for liquefaction to occur, three criteria must be met: underlying loose, sand-like soils, a groundwater depth of less than about 50 feet, and a potential for seismic shaking from nearby large-magnitude earthquake.

Conditions favorable to the occurrence of liquefaction at the site include the potential for intense ground shaking from regional seismic activity and the historic occurrence of groundwater within about 35 feet of the ground surface. A peak ground acceleration value PGA_M = 0.50g and a modal magnitude Mw=7.7 were used in the calculations. This magnitude was evaluated from seismic deaggregation using the USGS application. Appendix C presents our methodology, calculations and results. Liquefaction triggering was evaluated using the procedure by Youd et al (2001) using a factor of safety of 1.3 and a design ground water depth of 35 ft based on the historic high (Section 2.04). We used the commercially available computer program LiquefyPro, developed by CivilTech Corporation. The liquefaction evaluation at the site was performed using geotechnical information from Borings B-1, B-4, B-7, B-9, and B-12. Our analysis indicates that liquefaction may trigger below the design ground water table. Since the groundwater table was not encountered during our field investigation in the upper 50 feet, potential surface manifestation of liquefaction is unlikely.

Liquefaction and seismically induced settlement calculations are presented in Appendix C and potential for seismically induced settlement is discussed below.

It should be noted that the California Geological Survey has not yet prepared a Seismic Hazard Zone Map of potential liquefaction hazards for the quadrangle in which the site is located.

Tsunamis and Seiches

Tsunamis are sea waves that are generated in response to large-magnitude earthquakes. When these waves reach shorelines, they sometimes produce coastal flooding. Seiches are the oscillation of large bodies of standing water, such as lakes, that can occur in response to ground shaking. Tsunamis and seiches do not pose hazards due to the inland location of the site and lack of nearby bodies of standing water.

Seismically Induced Settlement

Seismically induced settlement occurs most frequently in areas underlain by loose sand-like soils. Damage as a result of seismically induced settlement is most dramatic when differential settlement occurs in areas with large variations in the thickness of underlying soil layers. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement.

Seismic settlement was evaluated for the same ground motions used for liquefaction triggering using an empirical method developed by Tokimatsu and Seed (1987) based on site-specific SPT blow count and grain size data obtained from our borings B-1, B-4, B-7, B-9, and B-12. We estimate 1/4-inch, ¾-inch, ½-inch, 3 ½-inch, and 3-inch of total seismically induced ground settlement respectively. Soils are looser at borings B-9 and B-12. In our opinion, differential seismic settlement may be taken as one-half of the computed total seismic settlement. Calculations of seismically induced settlements are presented in Appendix C.

Seismically Induced Flooding

According to the City of Riverside General Plan (February, 2018), the site is not located within a potential dam inundation area.

Seismically Induced Landsliding

Due to the low gradient of the site, the potential for seismically induced landsliding is very low to nil. This assumes that any slopes created during development of the school site will be properly designed and constructed. It should be noted that the California Geological Survey has not yet prepared a Seismic Hazard Zone Map of potential earthquake-induced landslide hazards for the quadrangle in which the site is located.

3.11 Foundations

Auxiliary Gym/Fitness & Training Building, Restrooms, and Visitor Bleachers

Isolated spread footings and/or continuous wall footings are recommended to support the proposed structures. If the recommendations in the section on grading are followed and footings are established in firm native soils or compacted fill materials, footings may be designed using the following allowable soil bearing values:

- Continuous Wall Footings:

  Footings having a minimum width of 12 inches and a minimum depth of 18 inches below the lowest adjacent grade have allowable bearing capacity of 2,000 pounds per square foot (psf). This value may be increased by 10% for each additional foot of width and/or depth to a maximum value of 3,000 psf.

- Isolated Spread Footings:

  Footings having a minimum width of 18 inches and a minimum depth of 18 inches below the lowest adjacent grade have allowable bearing capacity of 2,000 psf. This value may be increased by 8% for each additional foot of width or depth to a maximum value of 3,000 psf.

- Retaining Wall Footings:

  Footings for retaining walls should be founded a minimum depth of 18 inches and have a minimum width of 12 inches. Footings may be designed using the allowable bearing capacity and lateral resistance values recommended for building footings. However, when calculating passive resistance, the upper 6 inches of the footings should be ignored in areas where the footings will not be covered with concrete flatwork. This value may also be increased by 5% for each additional foot of width or depth to a maximum value of 3,000 psf. Reinforcement should be provided for structural considerations as determined by the design engineer.

The above bearing capacities represent an allowable net increase in soil pressure over existing soil pressure and may be increased by one-third for short-term wind or seismic loads. The maximum static settlement of footings designed with the recommended allowable bearing capacity is expected to be on the order of ½ inch with differential settlement on the order of ¼ inch over a horizontal distance of 30 ft. The total estimated seismic settlements at the Auxiliary Gym/Fitness & Training Building, Restrooms, and Visitor Bleachers are ¼-inch, ¾-inch, and ½-inch respectively. The estimated seismic differential settlement is estimated to be one-half the total seismic settlement over a horizontal distance of 30ft.
Expansion testing indicates near surface soils at the site have a few low expansion potential. Therefore, reinforcement of footings for expansive soil is not required. Due to the preliminary nature of the expansion tests performed for this study, we recommend additional testing be performed near the completion of rough grading to verify the test results and recommended foundation design criteria.

Press Box, Expanded Home Bleachers, and One-story Classroom Building

We recommend mat foundation to accommodate the large seismic settlements estimated at these locations. Mat foundation may be designed using an allowable soil bearing value of 3,000 psf. The minimum depth is recommended at 4 feet below the lowest adjacent grade. The bearing capacity represents an allowable net increase in soil pressure over existing soil pressure and may be increased by one-third for short-term wind or seismic loads.

The maximum static settlement is expected to be on the order of 1 inch with differential settlement on the order of ½ inch over a horizontal distance of 30 ft. The total seismic settlement at the Press Box/Expanded Home Bleachers, and One-story Classroom Building are estimated at 3½-inch and 3-inch respectively. The estimated seismic differential settlement is estimated to be one-half the total seismic settlement over a horizontal distance of 30ft.

A modulus of subgrade reaction K_{v1} = 100 kip/ft^3 is recommended. This value should be scaled down depending on the width of the mat as follows: $K_v = K_{v1} * ((B+1) / (2*B))^2$; where B is the width in foot.

Due to the preliminary nature of the expansion tests performed for this study, we recommend additional testing be performed near the completion of rough grading to verify the test results and recommended foundation design criteria.

3.12 Foundation Setbacks from Slopes

Setbacks for footings adjacent to slopes should conform to the requirements of the California Building Code. Specifically, footings should maintain a horizontal distance or setback between any adjacent slope face and the bottom outer edge of the footing.

For slopes descending away from the foundation, the horizontal distance may be calculated by using h/3, where h is the height of the slope. The horizontal setback should not be less than 5 feet, nor need not be greater than 40 feet per the California Building Code. Where structures encroach within the zone of h/3 from the top of the slope the setback may be maintained by deepening the foundations. Flatwork and utilities within the zone of h/3 from the top of slope may be subject to lateral distortion caused by gradual downslope creep. Walls, fences and landscaping improvements constructed at the top of descending slopes should be designed with consideration of the potential for gradual downslope creep.

For ascending slopes, the horizontal setback required may be calculated by using h/2 where h is the height of the slope. The horizontal setback need not be greater than 15 feet per the California Building Code.

3.13 Slabs on Grade

We recommend the use of unreinforced slabs on grade for the Auxiliary Gym/Fitness & Training Building, Restrooms, and Visitor Bleachers. These floor slabs should have a minimum thickness of 4 inches and should be divided into squares or rectangles using weakened plane joints (contraction joints), each with maximum dimensions not exceeding 15 feet. Contraction joints should be made in accordance with American Concrete Institute (ACI) guidelines. If weakened plane joints are not used, then the slabs shall be reinforced with 6x6-10/10 welded wire fabric placed at mid-height of the slab.

Special care should be taken on floors slabs to be covered with thin-set tile or other inflexible coverings. These areas may be reinforced with 6x6-10/10 welded wire fabric placed at mid-height of the slab, to mitigate drying shrinkage cracks. Alternatively, inflexible flooring may be installed with unbonded fabric or liners to prevent reflection of slab cracks through the flooring.

3.14 Moisture Vapor Retarder/Barrier

A moisture vapor retarder/barrier is recommended beneath all slabs-on-grade and mat foundation that will be covered by moisture-sensitive flooring materials such as vinyl, linoleum, wood, carpet, rubber, rubber-backed carpet, tile, impermeable floor coatings, adhesives, or where moisture-sensitive equipment, products, or environments will exist. We recommend that design and construction of the moisture vapor retarder/barrier conform to Section 1805A of the 2016 California Building Code and pertinent sections of American Concrete Institute (ACI) guidance documents 302.1R-04, 302.2R-06 and 360R-10.

The moisture vapor retarder/barrier should consist of a minimum 10 mils thick polyethylene with a maximum perm rating of 0.3 in accordance with ASTM E 1745. Seams in the moisture vapor retarder/barrier should be overlapped no less than 6 inches or in accordance with the manufacturer's recommendations. Joints and penetrations should be sealed with the manufacturer's recommended adhesives, pressure-sensitive tape, or both. The contractor must avoid damaging or puncturing the moisture vapor retarder/barrier and repair any punctures with additional polyethylene properly lapped and sealed.

The moisture vapor retarder/barrier may be placed directly beneath the floor slab with no intermediate granular fill layer. This method of construction will provide improved curing of the slab bottom and will eliminate potential problems caused by water being trapped in a granular fill layer. However, concrete slabs poured directly on a moisture vapor retarder/barrier can experience shrinkage cracking and curling due to differential rates of curing through the thickness of the slab. Therefore, for concrete placed directly on the moisture vapor

retarder/barrier, we recommend a maximum water cement ratio of 0.45 and the use of water-reducing admixtures to increase workability and decrease bleeding.

Alternatively, the slabs may be constructed by placing a 4-inch layer of granular soil over the moisture vapor retarder/barrier in accordance with ACI 302.1R-04. Granular fill should consist of clean, fine-graded materials with 10% to 30% passing the No. 100 sieve and free from clay or silt. The granular layer should be uniformly compacted and trimmed to provide the full design thickness of the proposed slab. The granular fill layer should not be left exposed to rain or other sources of water such as wet-grinding, power washing, pipe leaks or other processes, and should be dry at the time of concrete placement. Granular fill layers that become saturated should be removed and replaced prior to concrete placement.

3.15 Miscellaneous Concrete Flatwork

Miscellaneous concrete flatwork and walkways may be designed with a minimum thickness of 4 inches. Large slabs should be reinforced with a minimum of 6x6-10/10 welded wire mesh placed at mid-height in the slab. Control joints should be constructed to create squares or rectangles with a maximum spacing of 15 feet.

Walkways may be constructed without reinforcement. Walkways should be separated from foundations with a thick expansion joint filler. Control joints should be constructed into non-reinforced walkways at a maximum of 5 feet spacing.

The subgrade soils beneath all miscellaneous concrete flatwork should be compacted to a minimum of 90 percent relative compaction for a minimum depth of 12 inches. The geotechnical engineer should monitor the compaction of the subgrade soils and perform testing to verify that proper compaction has been obtained.

3.16 Footing Excavation and Slab Preparations

All footing excavations should be observed by the geotechnical consultant to verify that they have been excavated into competent soils. The foundation excavations should be observed prior to the placement of forms, reinforcement steel, or concrete. These excavations should be evenly trimmed and level. Prior to concrete placement, any loose or soft soils should be removed. Excavated soils should not be placed on slab or footing areas unless properly compacted.

Prior to the placement of the moisture barrier and sand, the subgrade soils underlying the slab should be observed by the geotechnical consultant to verify that all under-slab utility trenches have been properly backfilled and compacted, that no loose or soft soils are present, and that the slab subgrade has been properly compacted to a minimum of 90 percent relative compaction within the upper 12 inches.

Footings may experience and overall loss in bearing capacity or an increased potential to settle where located in close proximity to existing or future utility trenches. Furthermore, stresses imposed by the footings on the utility lines may cause cracking, collapse and/or a loss of serviceability. To reduce this risk, footings should extend below a 1:1 plane projected upward from the closest bottom of the trench.

Slabs on grade and walkways should be brought to a minimum of 2% and a maximum of 6% above their optimum moisture content for a depth of 18 inches prior to the placement of concrete. The geotechnical consultant should perform insitu moisture tests to verify that the appropriate moisture content has been achieved a maximum of 24 hours prior to the placement of concrete or moisture barriers.

3.17 Lateral Load Resistance

Lateral loads may be resisted by soil friction and the passive resistance of the soil. The following parameters are recommended.

- Passive Earth Pressure = 420 pcf (equivalent fluid weight).
- Coefficient of Friction (soil to footing) = 0.39
- Retaining structures should be designed to resist the following lateral active earth pressures:

Surface Slope of Retained Materials (Horizontal:Vertical)	Equivalent Fluid Weight (pcf)
Level	40
5:1	42
4:1	44
3:1	47
2:1	60

These active earth pressures are only applicable if the retained earth is allowed to strain sufficiently to achieve the active state. The required minimum horizontal strain to achieve the active state is approximately 0.0025H. Retaining structures should be designed to resist an at-rest lateral earth pressure if this horizontal strain cannot be achieved.

- At-rest Lateral Earth Pressure = 61 pcf (equivalent fluid weight)

The Mononobe-Okabe method is commonly utilized for determining seismically induced active and passive lateral earth pressures and is based on the limit equilibrium Coulomb theory for static stress conditions. This method entails three fundamental assumptions (e.g., Seed and Whitman, 1970): Wall movement is sufficient to ensure either active or passive conditions, the driving soil wedge inducing the lateral earth pressures is formed by a planar failure surface starting at the heel of the wall and extending to the free surface of the backfill, and the driving soil wedge and the retaining structure act as rigid bodies, and therefore, experiences uniform accelerations throughout the respective bodies (U.S. Army Corps of Engineers, 2003, Engineering and Design - Stability Analysis of Concrete Structures).

- Seismic Lateral Earth Pressure = 24 pcf (equivalent fluid weight).

The seismic lateral earth pressure given above is an inverted triangle, and the resultant of this pressure is an increment of force which should be applied to the back of the wall in the upper 1/3 of the wall height.

3.18 Drainage and Moisture Proofing

Surface drainage should be directed away from the proposed structure into suitable drainage devices. Neither excess irrigation nor rainwater should be allowed to collect or pond against building foundations or within low-lying

Surface drainage should be directed away from the proposed structure into suitable drainage devices. Neither excess irrigation nor rainwater should be allowed to collect or pond against building foundations or within low-lying or level areas of the lot. Surface waters should be diverted away from the tops of slopes and prevented from draining over the top of slopes and down the slope face.

Walls and portions thereof that retain soil and enclose interior spaces and floors below grade should be waterproofed and dampproofed in accordance with CBC Section 1805A.

Retaining structures should be drained to prevent the accumulation of subsurface water behind the walls. Backdrains should be installed behind all retaining walls exceeding 3 feet in height. A typical detail for retaining wall back drains is presented in Appendix D. All backdrains should be outlet to suitable drainage devices. Retaining wall less than 3 feet in height should be provided with backdrains or weep holes. Dampproofing and/or waterproofing should also be provided on all retaining walls exceeding 3 feet in height.

3.19 Cement Type and Corrosion Potential

Soluble sulfate tests indicate that concrete at the subject site will have a negligible exposure to water-soluble sulfate in the soil. Our recommendations for concrete exposed to sulfate-containing soils are presented in the table below.

Recommendations for Concrete exposed to Sulfate-containing Soils

Sulfate Exposure	Water Soluble Sulfate (SO_4) in Soil (% by Weight)	Sulfate (SO_4) in Water (ppm)	Cement Type (ASTM C150)	Maximum Water-Cement Ratio (by Weight)	Minimum Compressive Strength (psi)
Negligible	0.00 - 0.10	0-150	--	--	2,500
Moderate	0.10 - 0.20	150-1,500	II	0.50	4,000
Severe	0.20 - 2.00	1,500-10,000	V	0.45	4,500
Very Severe	Over 2.00	Over 10,000	V plus pozzolan or slag	0.45	4,500

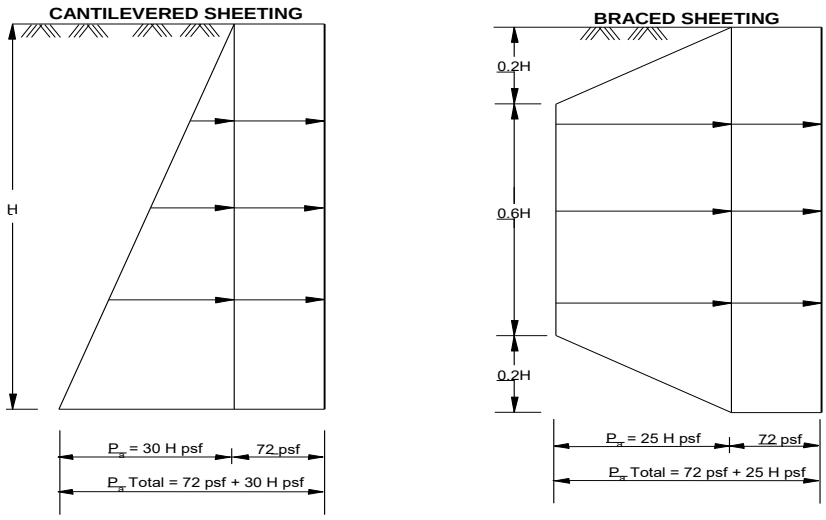
Use of alternate combinations of cementitious materials may be permitted if the combinations meet design recommendations contained in American Concrete Institute guideline ACI 318-11.

The soils were also tested for soil reactivity (pH) and electrical resistivity (ohm-cm). The test results indicate that the on-site soils have a soil reactivity ranging from 7.3 to 7.8, an electrical resistivity ranging from 1,400 to 12,000 ohm-cm and a chloride content ranging from 38 to 104 ppm. A neutral or non-corrosive soil has a value ranging from 5.5 to 8.4. Generally, soils that could be considered moderately corrosive to ferrous metals have resistivity values of about 3,000 ohm-cm to 10,000 ohm-cm. Soils with resistivity values less than 3,000 ohm-cm can be considered corrosive and soils with resistivity values less than 1,000 ohm-cm can be considered extremely corrosive. Chloride contents of approximately 500 ppm or greater are generally considered corrosive.

system can be effective in controlling corrosion. A qualified corrosion engineer may be consulted to further assess the corrosive properties of the soil.

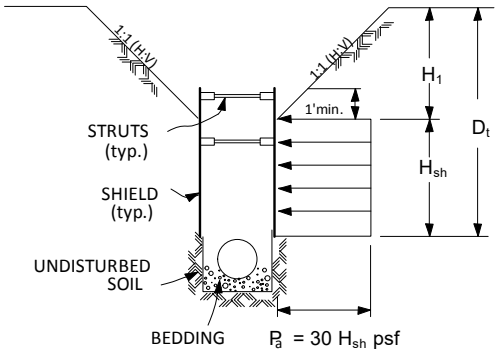
3.20 Temporary Slopes

Excavation of utility trenches will require either temporary sloped excavations or shoring. Temporary excavations in existing alluvial soils may be safely made at an inclination of 1:1 or flatter. If vertical sidewalls are required in excavations greater than 5 feet in depth, the use of cantilevered or braced shoring is recommended. Excavations less than 5 feet in depth may be constructed with vertical sidewalls without shoring or shielding. Our recommendations for lateral earth pressures to be used in the design of cantilevered and/or braced shoring are presented below. These values incorporate a uniform lateral pressure of 72 psf to provide for the normal construction loads imposed by vehicles, equipment, materials, and workmen on the surface adjacent to the trench excavation. However, if vehicles, equipment, materials, etc., are kept a minimum distance equal to the height of the excavation away from the edge of the excavation, this surcharge load need not be applied.



SHORING DESIGN: LATERAL SHORING PRESSURES

Design of the shield struts should be based on a value of 0.65 times the indicated pressure, Pa, for the approximate trench depth. The wales and sheeting can be designed for a value of 2/3 the design strut value.



HEIGHT OF SHIELD, H_{sh} = DEPTH OF TRENCH, D_t , MINUS DEPTH OF SLOPE, H_1

TYPICAL SHORING DETAIL

Placement of the shield may be made after the excavation is completed or driven down as the material is excavated from inside of the shield. If placed after the excavation, some overexcavation may be required to allow for the shield width and advancement of the shield. The shield may be placed at either the top or the bottom of the pipe zone. Due to the anticipated thinness of the shield walls, removal of the shield after construction should have negligible effects on the load factor of pipes. Shields may be successively placed with conventional trenching equipment.

Vehicles, equipment, materials, etc. should be set back away from the edge of temporary excavations a minimum distance of 15 feet from the top edge of the excavation. Surface waters should be diverted away from temporary excavations and prevented from draining over the top of the excavation and down the slope face. During periods of heavy rain, the slope face should be protected with sandbags to prevent drainage over the edge of the slope, and a visqueen liner placed on the slope face to prevent erosion of the slope face.

Periodic observations of the excavations should be made by the geotechnical consultant to verify that the soil conditions have not varied from those anticipated and to monitor the overall condition of the temporary excavations over time. If at any time during construction conditions are encountered which differ from those anticipated, the geotechnical consultant should be contacted and allowed to analyze the field conditions prior to commencing work within the excavation.

Cal/OSHA construction safety orders should be observed during all underground work.

3.21 Utility Trench Backfill

The onsite fill soils will not be suitable for use as pipe bedding for buried utilities. All pipes should be bedded in a sand, gravel or crushed aggregate imported material complying with the requirements of the Standard Specifications for Public Works Construction Section 306-1.2.1. Bedding materials should be densified to at least 90% relative compaction (ASTM D1557) by mechanical methods. The geotechnical consultant should review and approve of proposed bedding materials prior to use.

The on-site soils are expected to be suitable as trench backfill provided they are screened of organic matter and

cobbles over 12 inches in diameter. Trench backfill should be densified to at least 90% relative compaction (ASTM D1557).

All utility trench backfill within street right of way, utility easements, under or adjacent to sidewalks, driveways, or building pads should be observed and tested by the geotechnical consultant to verify proper compaction. Trenches excavated adjacent to foundations should not extend within the footing influence zone defined as the area within a line projected at a 1:1 drawn from the bottom edge of the footing. Trenches crossing perpendicular to foundations should be excavated and backfilled prior to the construction of the foundations. The excavations should be backfilled in the presence of the geotechnical engineer and tested to verify adequate compaction beneath the proposed footing.

Cal/OSHA construction safety orders should be observed during all underground work.

3.22 Pavement Sections

R-value test was performed on anticipated subgrade soils at the site in order to provide information on their soil properties for design of pavement structural sections. Structural sections were designed using the procedures outlined in Chapter 630 of the California Highway Design Manual (Caltrans, 2017). This procedure uses the principle that the pavement structural section must be of adequate thickness to distribute the load from the design traffic index (TI) to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value).

Development of the design traffic indexes on the basis of a traffic study is beyond the scope of this report; however, our experience indicates that traffic indexes of 5 is typical for auto traffic parking and driving lanes streets and 7 is typical for bus/truck parking lots and driving lanes. We have provided alternate structural sections for each traffic index. Selection of the final pavement structural section should be based on economic considerations which are beyond the scope of this investigation. Recommended structural sections are as follows:

- <u>Auto Traffic Lanes and Parking (TI=5, R-Value=29):</u>
  4.0 inches of asphaltic concrete over
  4.0 inches of crushed aggregate base

- <u>Truck and Bus Lanes and Parking (TI=7, R-Value=29):</u>
  6.0 inches of asphaltic concrete over
  5.5 inches of crushed aggregate base

Portland cement concrete (PCC) pavements for areas which are not subject to traffic loads may be designed with a minimum thickness of 4.0 inches of Portland cement concrete on compacted native soils. If traffic loads are anticipated, PCC pavements should be designed for a minimum thickness of 8.0 inches of Portland cement concrete on 4.0 inches of crushed aggregate base.

Prior to paving, the subgrade soils should be scarified and the moisture adjusted to within 2% of the optimum moisture content. The subgrade soils should be compacted to a minimum of 90% relative compaction. All aggregate base courses should be compacted to a minimum of 95% relative compaction.

3.23 Plan Review

Once a formal grading and foundation plans are prepared for the subject property, this office should review the plans from a geotechnical viewpoint, comment on changes from the plan used during preparation of this report and revise the recommendations of this report where necessary.

3.24 Geotechnical Observation and Testing During Rough Grading

The geotechnical engineer should be contacted to provide observation and testing during the following stages of grading:

- During the clearing and grubbing of the site.
- During the demolition of any existing structures, buried utilities or other existing improvements.
- During excavation and overexcavation of compressible soils.
- During all phases of grading including ground preparation and filling operations.
- When any unusual conditions are encountered during grading.

A final geotechnical report summarizing conditions encountered during grading should be submitted upon completion of the rough grading operations.

3.25 Post-Grading Geotechnical Observation and Testing

After the completion of grading the geotechnical engineer should be contacted to provide additional observation and testing during the following construction activities:

- During trenching and backfilling operations of buried improvements and utilities to verify proper backfill and compaction of the utility trenches.
- After excavation and prior to placement of reinforcing steel or concrete within footing trenches to verify that footings are properly founded in competent materials.
- During fine or precise grading involving the placement of any fills underlying driveways, sidewalks, walkways, or other miscellaneous concrete flatwork to verify proper placement, mixing and compaction of fills.
- When any unusual conditions are encountered during construction.

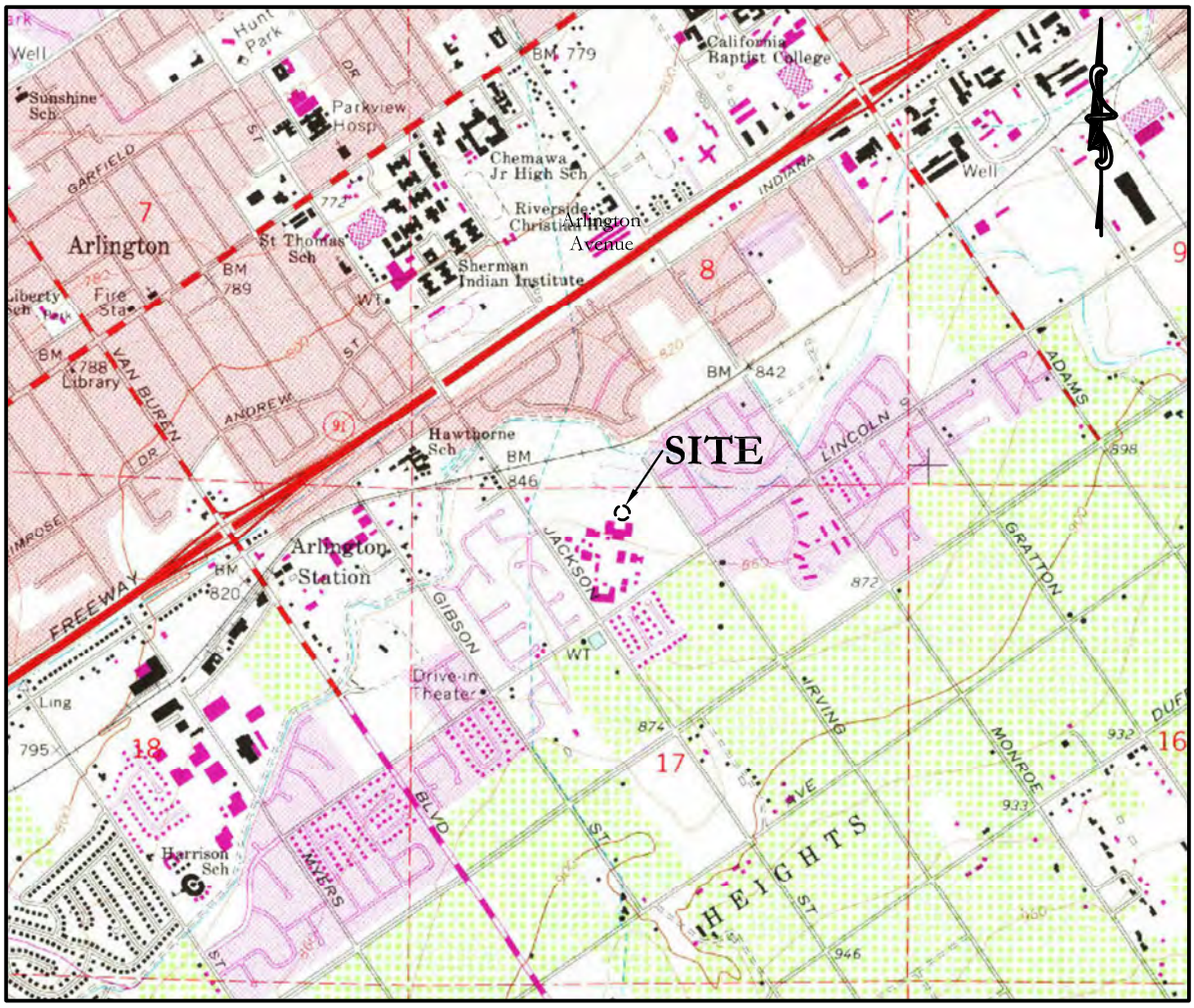
4.00 CLOSURE

The findings, conclusions and recommendations in this report were prepared in accordance with generally accepted engineering and geologic principles and practices. No other warranty, either expressed or implied, is made. This report has been prepared for Riverside Unified School District to be used solely for design purposes. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

The geotechnical and geologic consultant should be retained during the earthwork and foundation phases of

construction to monitor compliance with the design concepts and recommendations and to provide additional recommendations as needed. Should subsurface conditions be encountered during construction that are different from those described in this report, this office should be notified immediately so that our recommendations may be re-evaluated.

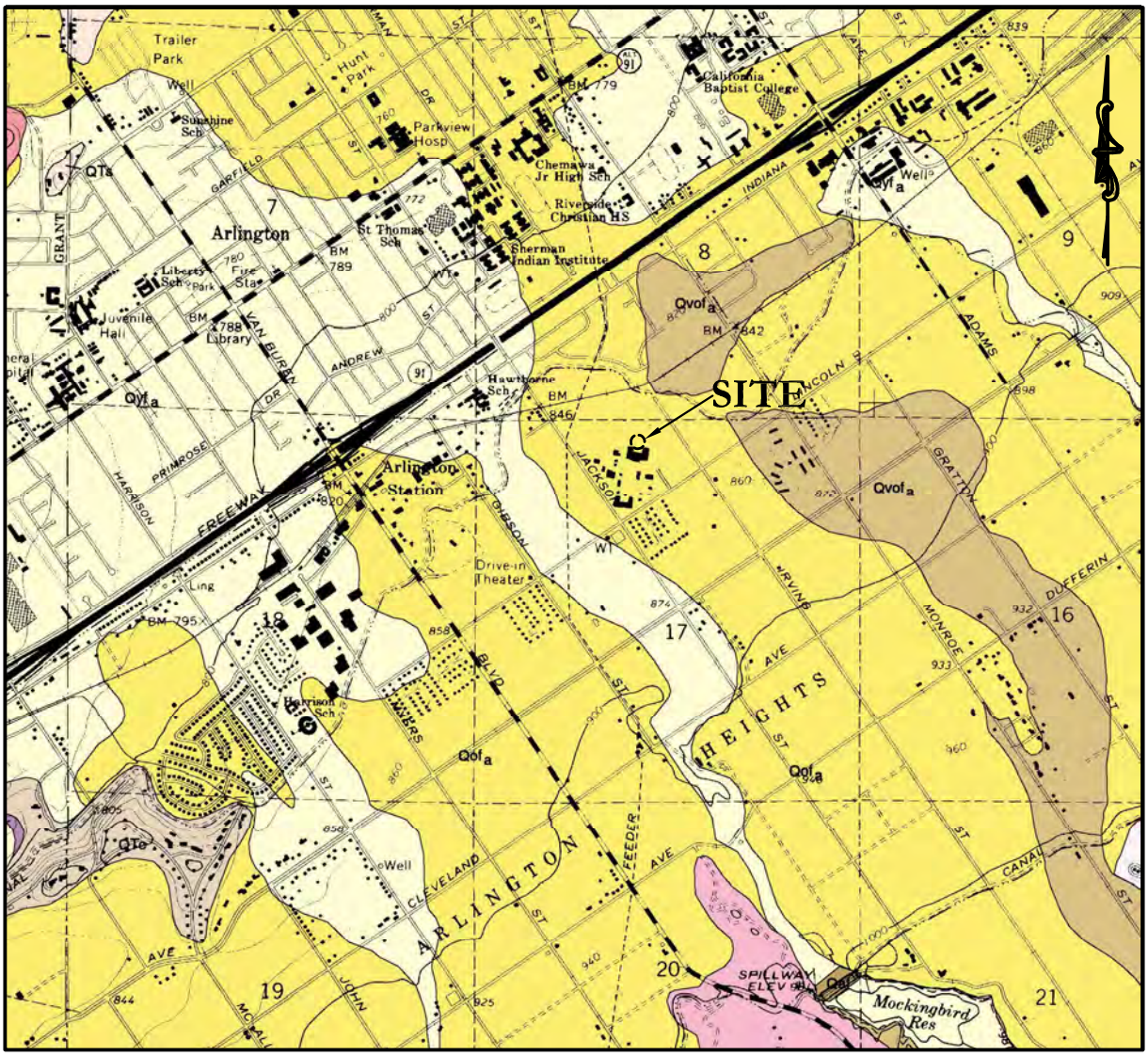
FIGURES AND TABLES



SITE LOCATION MAP

Scale: 1" = 2,000'

Base Map: U.S. Geological Survey Riverside West 7.5' Quadrangle



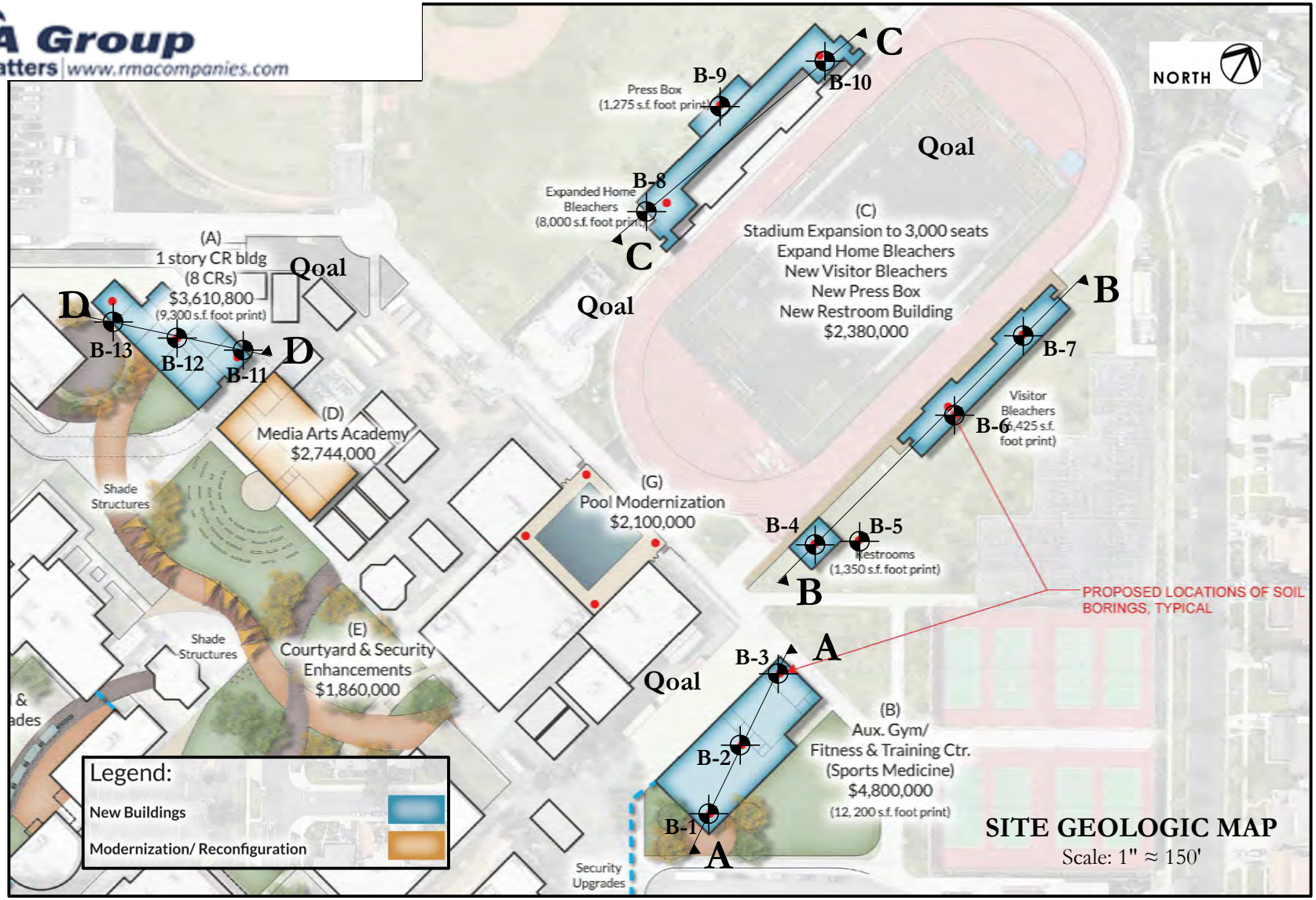
REGIONAL GEOLOGIC MAP

Scale: 1" ≈ 2,500'

Partial Legend

Qaf - Artificial fill
Qyf_a- Younger alluvium
Qof_a, $Qvof_a$ - Older alluvium
QTs - Sandstone
Kgb, Kqd, Kt, Krg - Granitic bedrock

Source: Morton and Cox, 2002.



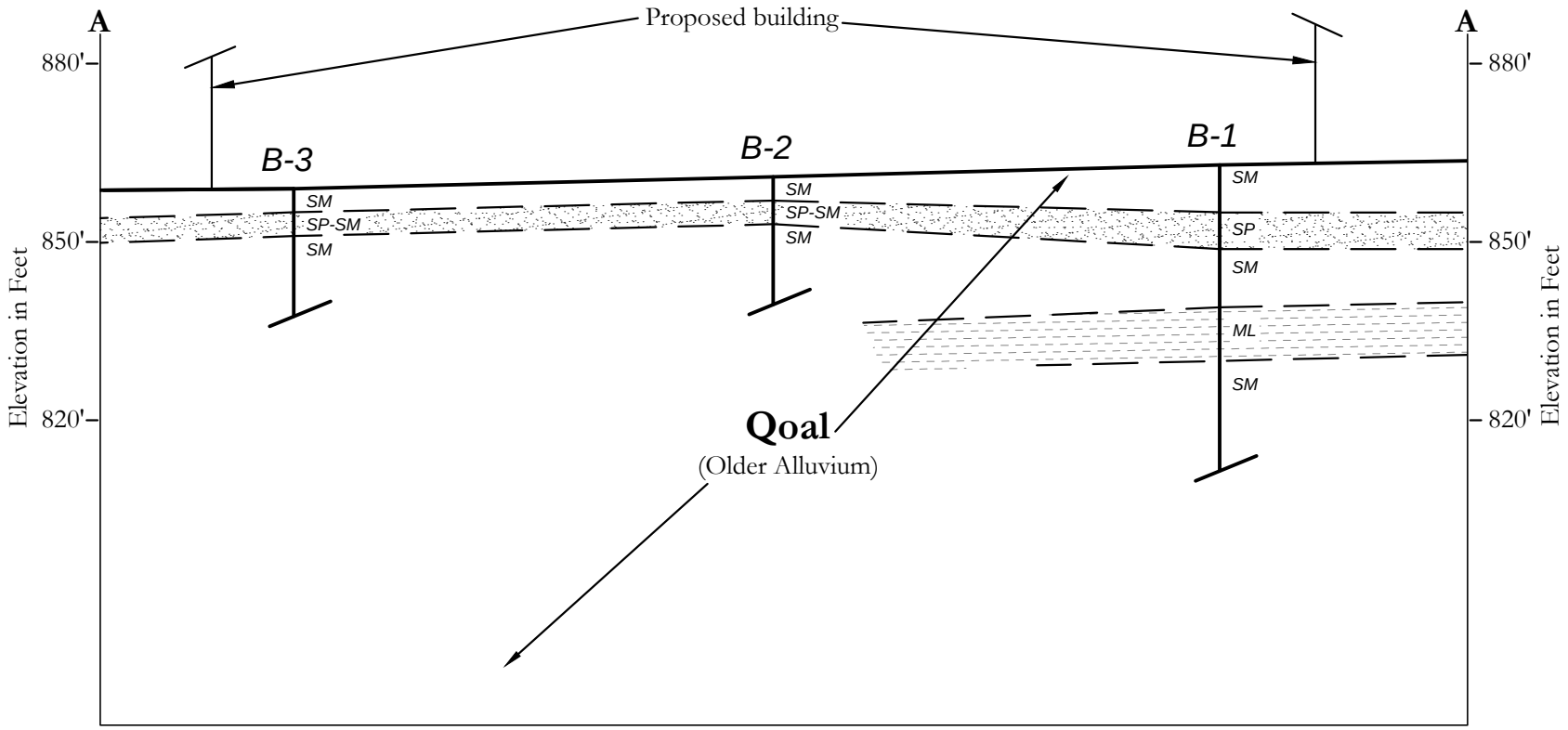
Geologic Legend

Qoal - Older alluvium

B-13 - Approximate location of exploratory boring

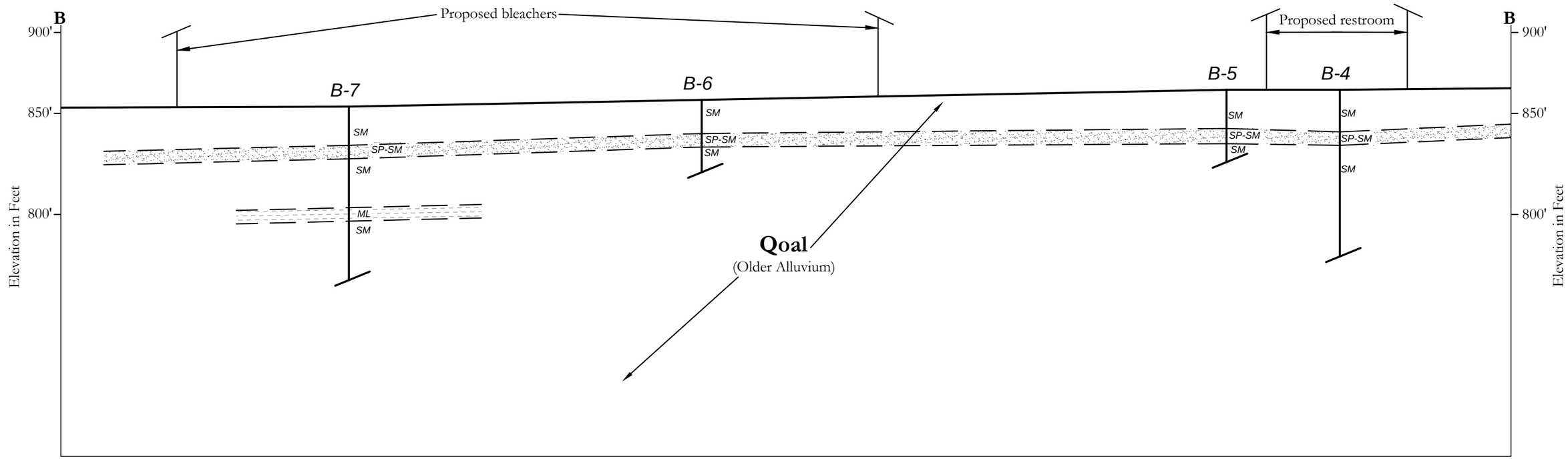
D D - Geologic cross-section

Base map provided by Ruhnau Clarke Architects

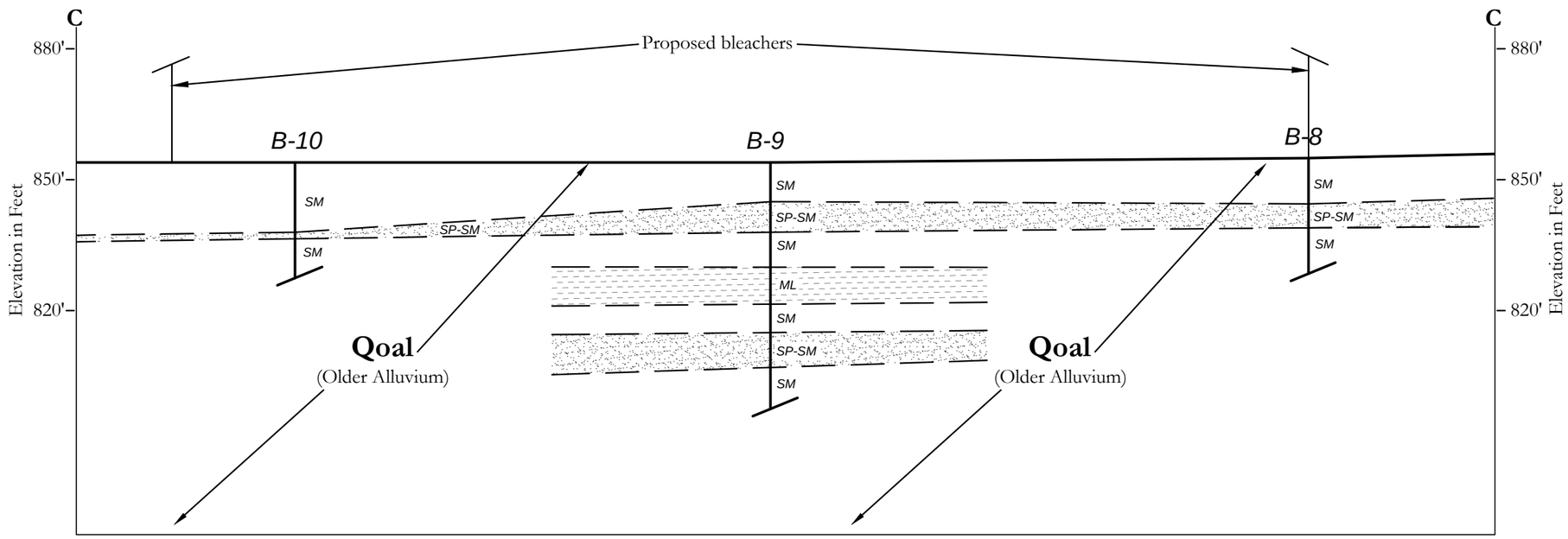


GEOLOGIC CROSS SECTION

Scale: 1" ≈ 30'



GEOLOGIC CROSS SECTION
Scale: 1" ≈ 30'



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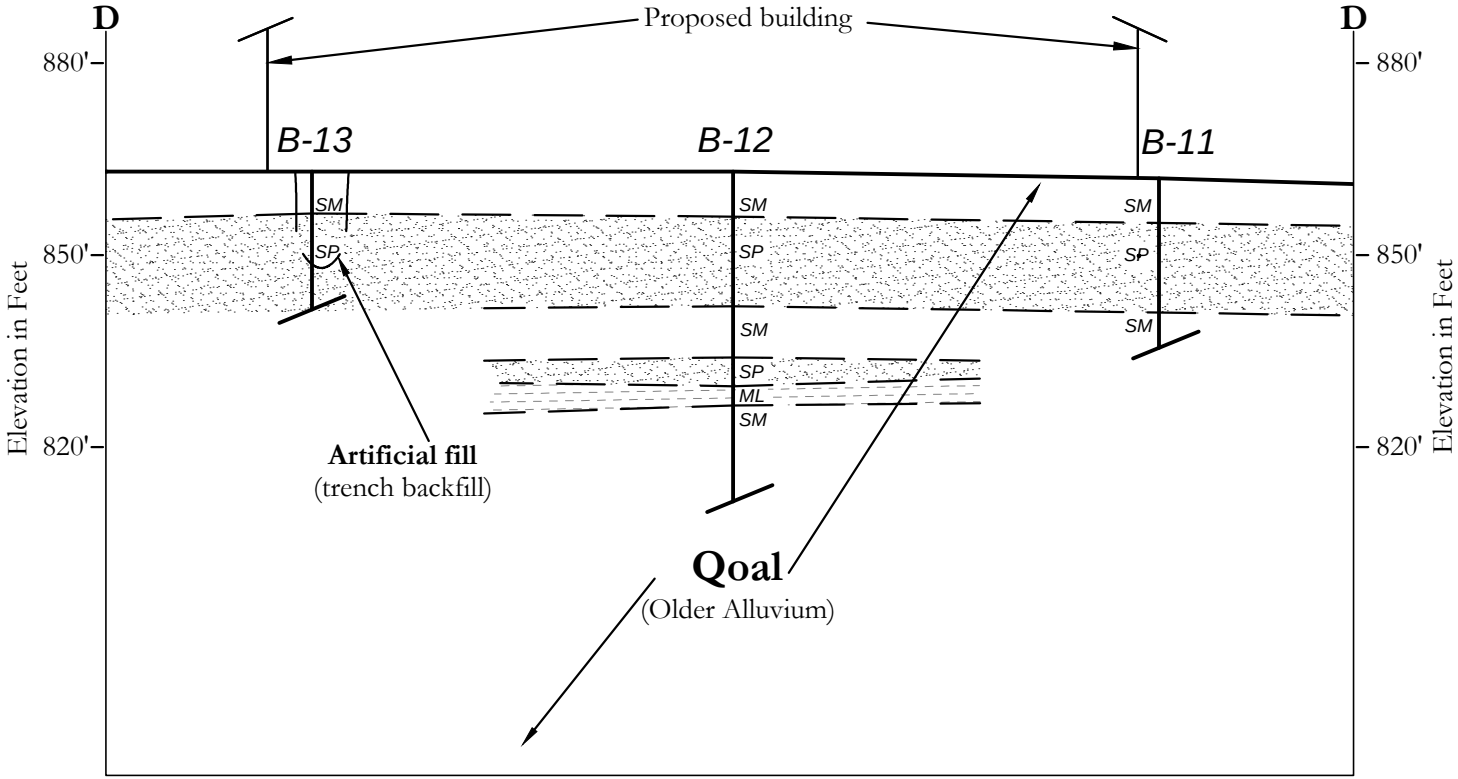
Scale: 1" ≈ 30'



GEOLOGIC CROSS SECTION

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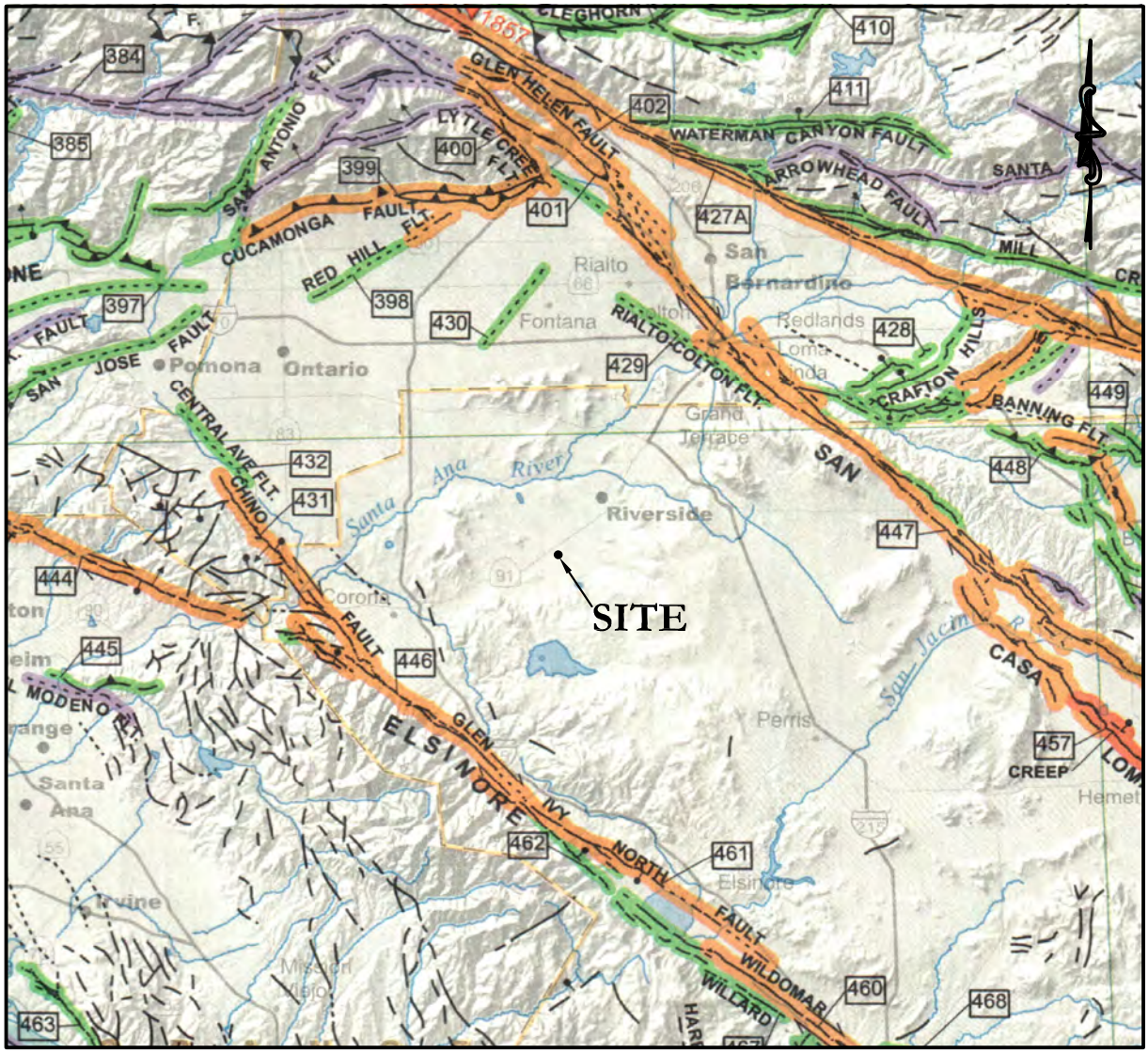


REGIONAL FAULT MAP

Scale: 1" ≈ 8.5 miles

Partial Legend

Orange - Holocene fault displacement

Green - Late Quaternary fault displacement

Purple - Quaternary fault

Black - Pre-Quaternary fault

Base Map: California Geological Survey Fault Activity Map of California, 2010

NOTABLE FAULTS WITHIN 100 KILOMETERS AND SEISMIC DATA

Fault Zone & geometry	Distance (km)	Distance (mi.)	Maximum Moment Magnitude	Slip Rate (mm/yr)
Chino-Central Ave. (rl-r-o)	16	10	6.7	1.0
Clamshell-Sawpit (r)	53	33	6.5	0.5
Cleghorn (ll-ss)	41	25	6.5	3.0
Coronado Bank (rl-ss)	85	53	7.4	3.0
Cucamonga (r)	28	17	6.9	5.0
Elsinore - Glen Ivy (rl-ss)	18	11	6.8	5.0
Eureka Peak (rl-ss)	98	61	6.4	0.6
Helendale - S Lockhart (rl-ss)	72	45	7.3	0.6
Hollywood (ll-r-o)	77	48	6.4	1.0
Johnson Valley (rl-ss)	96	60	6.7	0.6
Landers (rl-ss)	97	60	7.3	0.6
Lenwood-Lockhart (rl-ss)	88	55	7.5	0.6
Newport-Inglewood (rl-ss)	57	35	6.9	1.5
North Frontal - Western (r)	47	29	7.2	1.0
North Frontal - Eastern (r)	75	47	6.7	0.5
Northridge (r)	99	62	7.0	1.5
Palos Verde (rl-ss)	76	47	7.3	3.0
Pinto Mountain (ll-ss)	67	42	7.2	2.5
Puente Hills Blind Thrust (r)	41	25	7.1	0.7
Raymond (ll-r-o)	59	37	6.5	1.5
Rose Canyon (rl-ss)	88	55	6.9	1.5
San Andreas (rl-ss)	32	20	7.5	24.0
San Gabriel (rl-ss)	91	57	7.2	1.0
San Jacinto (rl-ss)	21	13	6.7	12.0
San Joaquin Hills (r)	41	25	6.6	0.5
San Jose (ll-r-o)	33	21	6.4	0.5
Santa Monica (ll-r-o)	93	58	6.6	1.0
Sierra Madre (r)	37	23	7.2	2.0
San Fernando (r)	90	56	6.7	2.0
Verdugo (r)	71	44	6.9	0.5
Whittier (rl-ss)	21	13	6.8	2.5

Notes:

Fault geometry - (ss) strike slip, (r) reverse, (n) normal, (rl) right lateral, (ll) left lateral, (o) obique

Fault and Seismic Data - California Geological Survey (Cao), 2003

HISTORIC STRONG EARTHQUAKES IN SOUTHERN CALIFORNIA SINCE 1812

Date	Event	Causitive Fault	Magnitude	Epicentral Distance (miles)
Dec. 12, 1812	Wrightwood	San Andreas?	7.3	40
Jan. 9, 1857	Fort Tejon	San Andreas	7.9	255
Dec. 16, 1858	San Bernardino Area	uncertain	6.0	10
Feb. 9,1890	San Jacinto	uncertain	6.3	75
May 28, 1892	San Jacinto	uncertain	6.3	76
July 30, 1894	Lytle Creek	uncertain	6.0	29
July 22, 1899	Cajon Pass	uncertain	6.4	27
Dec.25, 1899	San Jacinto	San Jacinto	6.7	27
Sept. 20, 1907	San Bernardino Area	uncertain	5.3	28
May 15, 1910	Elsinore	Elsinore	6.0	15
April 21, 1918	Hemet	San Jacinto	6.8	28
July 23, 1923	San Bernardino	San Jacinto	6.0	10
March 11, 1933	Long Beach	Newport-Inglewood	6.4	37
April 10, 1947	Manix	Manix	6.4	91
Dec. 4, 1948	Desert Hot Springs	San Andreas or Banning	6.5	62
July 21, 1952	Wheeler Ridge	White Wolf	7.3	120
Feb. 9, 1971	San Fernando	San Fernando	6.6	67
July 8, 1986	North Palm Springs	Banning or Garnet Hills	5.6	49
Oct. 1, 1987	Whittier Narrows	Puente Hills Thrust	6.0	40
Feb. 28, 1990	Upland	San Jose	5.5	22
June 28, 1991	Sierra Madre	Clamshell Sawpit	5.8	41
April 22, 1992	Joshua Tree	Eureka Peak	6.1	66
June 28, 1992	Landers	Johnson Valley & others	7.3	62
June 28, 1992	Big Bear	uncertain	6.5	40
Jan. 17, 1994	Northridge	Northridge Thrust	6.7	69
Oct. 16, 1999	Hector Mine	Lavic Lake	7.1	83

Notes:

Earthquake data: U.S. Geological Survey P.P. 1515 & online data, Southern California Earthquake Center & California Geological Survey online data

Magnitudes prior to 1932 are estimated from intensity.

Magnitudes after 1932 are moment, local or surface wave magnitudes.

Site Location:

Site Longitude: - 117.4283

Site Latitude: 33.9149

APPENDIX A

FIELD INVESTIGATION

APPENDIX A

FIELD INVESTIGATION

A-1.00 FIELD EXPLORATION

A-1.01 Number of Borings

Our subsurface investigation consisted of 13 borings drilled with a track mounted CME-55 drill rig.

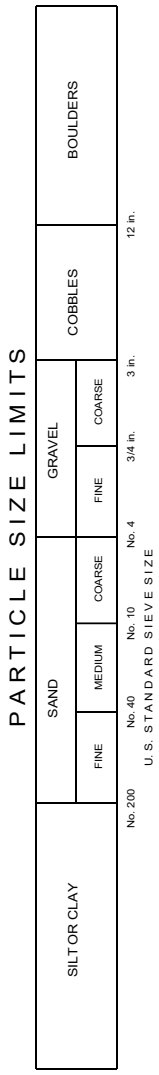
A-1.02 Location of Borings

A Geologic Map showing the approximate locations of the borings is presented as Figure 3.

A-1.03 Boring Logging

Logs of borings were prepared by one of our staff and are attached in this appendix. The logs contain factual information and interpretation of subsurface conditions between samples. The strata indicated on these logs represent the approximate boundary between earth units and the transition may be gradual. The logs show subsurface conditions at the dates and locations indicated, and may not be representative of subsurface conditions at other locations and times.

Identification of the soils encountered during the subsurface exploration was made using the field identification procedure of the Unified Soils Classification System (ASTM D2488). A legend indicating the symbols and definitions used in this classification system and a legend defining the terms used in describing the relative compaction, consistency or firmness of the soil are attached in this appendix. Bag samples of the major earth units were obtained for laboratory inspection and testing, and the in-place density of the various strata encountered in the exploration was determined



MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size.	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravel, gravel-sand mixtures. little or no fines.
			GP	Poorly graded gravel or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatamaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

UNIFIED SOIL CLASSIFICATION SYSTEM

I. SOIL STRENGTH/DENSITY

BASED ON STANDARD PENETRATION TESTS

Apparent density of sand		Consistency of clay	
Penetration Resistance N (blows/Ft)	Apparent density	Penetration Resistance N (blows/ft)	Consistency
0-4	Very Loose	<2	Very Soft
4-10	Loose	2-4	Soft
10-30	Medium Dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
>50	Very Dense	15-30	Very Stiff
		>30	Hard

N = Number of blows of 140 lb. weight falling 30 in. to drive 2-in OD sampler 1 ft.

BASED ON RELATIVE COMPACTION

Compactness of sand		Consistency of clay	
% Compaction	Compactness	% Compaction	Consistency
<75	Loose	<80	Soft
75-83	Medium Dense	80-85	Medium Stiff
83-90	Dense	85-90	Stiff
>90	Very Dense	>90	Very Stiff

II. SOIL MOISTURE

Moisture of sands		Moisture of clays	
% Moisture	Description	% Moisture	Description
<5%	Dry	<12%	Dry
5-12%	Moist	12-20%	Moist
>12%	Very Moist	>20%	Very Moist, wet

SOIL DESCRIPTION LEGEND

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Exploratory Boring Log

Boring No. B-1

Date Drilled:	8-27-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	863'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 3', dry to damp below 6", wet near surface, gravels encountered from 1' to 1.5' and at 3', slight petroleum odor encountered at 3'.
5	S	12		3.9				Becomes brown to dark yellowish brown, increase in coarse grains, moist, medium dense. 26.0% Passing #200.
						SP		Yellowish brown fine to coarse sand with silt, micaceous, dry to damp, medium dense.
10	S	12		1.6				3.8% Passing #200.
						SM		Dark yellowish brown to brown silty fine to medium sand, micaceous, dry to damp, medium dense. 37.1% Passing #200.
15	S	17		4.6				
20	S	33		5.8				Becomes strong brown to reddish brown to dark yellowish brown, fine grained, dry to damp, dense.
						ML		Light yellowish brown to strong brown, fine grained sandy silt, micaceous, damp, medium dense. 67.8% Passing #200.
25	S	24		5.4				

Material Description: This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

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Exploratory Boring Log

Boring No. B-1

Date Drilled:	8-27-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	863'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
	S	53		3.6		SM		Brown silty fine grained sand to fine grained sandy silt, micaceous, damp to moist, medium dense.
35	S	57		4.6				Becomes strong brown to reddish brown silty fine to coarse sand, calcium carbonate staining, damp to moist, very dense.
40	S	59		5.8				Trace clay encountered. 36.6% Passing #200.
45	S	65		7.4				Decrease in coarse sand. Difficulty drilling at 47'.
50	S	27		5.6				Becomes medium dense.

Material Description: This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Notes: Total depth = 51.5 ft.
No groundwater encountered.
Backfilled and pressed with soil cuttings same day.

Sample Types:
R - Ring Sample
Bulk Sample
Groundwater
T - Tube Sample
S - SPT Sample
End of Boring

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Exploratory Boring Log

Boring No. B-2

Sheet 1 of 1

Date Drilled:	8-27-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	861'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 3', dry to damp below 6", wet near surface, gravels encountered from 1' to 1.5' and at 3'. 34.0% Passing #200.
5	R	18		3.4	122.4	SP-SM		Brown fine to coarse sand with silt, micaceous, damp to moist, medium dense.
						SM		Brown silty fine to medium sand, damp to moist, medium dense.
10	R	28		8.1	102.7			
15	R	32		1.7	122.9			Becomes strong brown to reddish brown, fine grained.
20	S	20		5.9				
25								Notes: Total depth = 21.5 ft. No groundwater encountered. Backfilled and pressed with soil cuttings same day.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

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Exploratory Boring Log

Boring No. B-3

Sheet 1 of 1

Date Drilled:	8-27-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	859'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 3', dry to damp below 6", wet near surface, gravels encountered from 1' to 1.5' and at 3'.
5	R	18		4.0	111.6	SP-SM		Brown fine to coarse sand with silt, micaceous, damp to moist, medium dense.
						SM		Dark brown to brown silty fine to medium sand, decrease in coarse grains and an increase in fines, micaceous, damp, medium dense.
10	R	16		3.9	113.2			
15	R	27		9.1	119.9			Very coarse grains encountered at 15', then grades to silty fine to medium grained sand, moist, medium dense.
20	S	12		10.3				Strong brown to reddish brown silty fine grained sand with trace clay, moist, medium dense.
25								Notes: Total depth = 21.5 ft. No groundwater encountered. Backfilled and pressed with soil cuttings same day.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample
Bulk Sample - Bulk Sample
Groundwater - Groundwater
T - Tube Sample
S - SPT Sample
End of Boring - End of Boring

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Exploratory Boring Log

Boring No. B-4

Sheet 1 of 1

Date Drilled:	8-27-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	857'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 2', dry to damp below 6", wet near surface.
5	S	7		8.7				Becomes moist and loose.
10	S	13		14.0				Becomes medium dense.
						SP-SM		Brown fine to coarse sand with silt, micaceous, damp to moist, medium dense.
15	S	15		3.7				9.0% Passing #200.
						SM		Strong brown to reddish brown very fine grained silty sand, micaceous, damp to moist, medium dense.
20	S	18		9.3				Becomes silty fine grained sand, very moist, medium dense. 39.0% Passing #200.
25	S	10		17.0				

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

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Exploratory Boring Log

Boring No. B-4

Date Drilled:	8-27-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	857'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
	S	15		10.4		SM		Becomes sandier, moist to very moist, medium dense.
35	S	18		6.4				
40	S	54		10.9				Strong brown to reddish brown silty fine to coarse sand, calcium carbonate staining, damp to moist, very dense.
45	S	50/5"		10.9				Calcium carbonate staining encountered.
	S	65		8.6				34.3% Passing #200.
50								Notes: Total depth = 49.5 ft. No groundwater encountered. Backfilled and pressed with soil cuttings same day.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample
Bulk Sample - Bulk Sample
Groundwater - Groundwater
T - Tube Sample
S - SPT Sample
End of Boring - End of Boring

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Exploratory Boring Log

Boring No. B-5

Sheet 1 of 1

Date Drilled:	8-28-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	857'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 2', dry to damp below 6", wet near surface.
5	R	17	▨	6.4	110.9			19.7% Passing #200. Becomes medium dense.
10	R	24		12.7	119.9			Becomes moist to very moist, medium dense.
						SP-SM		Brown fine to coarse sand with silt, micaceous, damp to moist, medium dense.
15	R	23		4.1	108.3	SM		Strong brown to reddish brown silty fine grained sand, micaceous, moist, medium dense. 23.4% Passing #200.
20	S	16		9.5				Becomes dark yellowish brown silty fine to medium grained sand.
25								Notes: Total depth = 21.5 ft. No groundwater encountered. Backfilled and pressed with soil cuttings same day.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample ▨ - Bulk Sample ▽ - Groundwater

T - Tube Sample S - SPT Sample ◣ - End of Boring

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Exploratory Boring Log

Boring No. B-6

Sheet 1 of 1

Date Drilled:	8-28-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	854'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Dark grayish brown silty fine to medium grained sand, micaceous, dry, very dense.
								@3.5', Grayish slurry encountered. Hole moved 18' east.
5	R	75		10.3	128.1			Becomes brown, moist, very dense.
10	R	17		6.0	115.6	SP-SM		Brown silty fine to medium grained sand, micaceous, moist, medium dense.
						SM		
15	R	30		5.4	123.8			Strong brown silty fine grained sand, micaceous, moist, medium dense.
20	S	13		7.6				Becomes dark yellowish brown.
25								Notes: Total depth = 21.5 ft. No groundwater encountered. Backfilled and pressed with soil cuttings same day.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

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Exploratory Boring Log

Boring No. B-7

Date Drilled:	8-28-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	852'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 2', dry to damp below 6", wet near surface.
5	S	20		9.3				Dark brown to grayish brown silty fine to medium grained sand, micaceous, damp, medium dense. 42.6% Passing #200.
10	S	10		11.5				Dark yellowish brown to strong brown silty fine to medium grained sand, micaceous, moist, loose to medium dense.
						SP-SM		Brown fine to coarse sand with silt, micaceous, damp to moist
15	S	11		8.9		SM		Strong brown to dark brown silty fine grained sand, micaceous, moist, medium dense. 39.2% Passing #200.
20	S	21		11.1				Becomes brown.
25	S	17		10.8				Becomes dark yellowish brown.

Material Description: This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

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Exploratory Boring Log

Boring No. B-7

Date Drilled:	8-28-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	852'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
	S	14		13.5		ML		Sandy silt continued, trace clay encountered, moist, medium dense. 65.6% Passing #200.
35	S	23		9.5		SM		Becomes slightly coarser (medium sand grains).
40	S	33		5.7				Becomes silty fine to coarse grained sand, damp, dense. 24.5% Passing #200.
45	S	34		10.6				Reddish brown to dark brown silty fine to coarse sand, moist, dense.
								Becomes very dense.
50	S	64		8.3				Becomes strong brown. 23.3% Passing #200.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Notes: Total depth = 51.5 ft.
No groundwater encountered.
Backfilled and pressed with soil cuttings same day.

Sample Types:
R - Ring Sample
Bulk Sample
Groundwater
T - Tube Sample
S - SPT Sample
End of Boring

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Exploratory Boring Log

Boring No. B-8

Sheet 1 of 1

Date Drilled:	8-30-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	855'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 2', dry to damp below 6", wet near surface.
5	R	13		7.3	121.2			Dark yellowish brown to dark brown, silty fine to medium sand, moist, medium dense.
10	R	14		7.6	118.5			Becomes sandier, moist to very moist.
						SP-SM		Dark yellowish brown to brown fine to medium sand with silt, micaceous, moist to very moist, loose.
15	S	8		11.4				
						SM		Dark yellowish brown finer silty sand, moist to very moist, loose.
20	S	14		13.3				Becomes medium dense, increase in coarse sand grains.
25	S	18		10.7				Becomes fine grained.

Notes: Total depth = 26.5 ft.
No groundwater encountered.
Backfilled and pressed with soil cuttings same day.

Sample Types:
R - Ring Sample
Bulk Sample
Groundwater
T - Tube Sample
S - SPT Sample
End of Boring

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Exploratory Boring Log

Boring No. B-9

Date Drilled:	8-28-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	854'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 2', dry to damp below 6", wet near surface. 45.6% Passing #200.
5	S	6		10.7				Dark yellowish brown to dark brown silty fine to medium sand, moist to very moist, loose.
10	S	7		3.6		SP-SM		Dark yellowish brown fine to medium sand with silt, micaceous, damp to moist, loose. 10.3% Passing #200.
15	S	7		8.7		SM		Dark yellowish brown finer silty sand, moist to very moist, loose.
20	S	13		7.7				Becomes medium dense, increase in coarse sand grains. @21.5, slight clay encountered.
25	S	17		11.6		ML		Dark yellowish brown fine grained sandy silt, moist to very moist.

Material Description: This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

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Exploratory Boring Log

Boring No. B-9

Date Drilled:	8-28-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	854'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
	S	12		15.5		ML		Dark yellowish brown fine grained sandy silt, very moist. 73.3% Passing #200.
35	S	10		16.7		SM		Dark yellowish brown silty fine to coarse grained sand, very moist, loose to medium dense. Slight increase in coarse sand grains.
40	S	30		3.0		SP-SM		Brown fine to coarse sand with silt, dry to damp, dense. 7.0% Passing #200.
45	S	28		3.2				Slight decrease in coarse grains, medium dense.
						SM		Strong brown silty fine to medium grained sand, moist, medium dense.
50	S	14		12.8				44.1% Passing #200.
	S	43		10.1				Becomes reddish brown, increase in coarse sand grains, dense.

Material Description: This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Notes: Total depth = 56.5 ft.
No groundwater encountered.
Backfilled and pressed with soil cuttings same day.

Sample Types:
R - Ring Sample
Bulk Sample
- Groundwater
T - Tube Sample
S - SPT Sample
- End of Boring

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Exploratory Boring Log

Boring No. B-10

Sheet 1 of 1

Date Drilled:	8-30-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	854'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		Older alluvium (Qoal): Brown silty fine to medium sand, micaceous, rootlets encountered within upper 2', dry to damp below 6", wet near surface.
5	R	7		7.8	120.3			Dark yellowish brown to dark brown silty fine to medium sand, moist, loose.
10	R	11		6.6	121.2			
15	R	17		7.2	122.2			Becomes medium dense.
						SP-SM		Dark yellowish brown to brown fine to medium sand with silt, micaceous, damp to moist, medium dense.
						SM		Dark yellowish brown finer silty sand, moist.
20	R	35		5.7	124.9			Becomes medium dense, increase in coarse sand grains.
25	S	18		11.0				Becomes fine grained.

Notes: Total depth = 26.5 ft.
No groundwater encountered.
Backfilled and pressed with soil cuttings same day.

Sample Types:

R - Ring Sample
Bulk Sample
Groundwater
T - Tube Sample
S - SPT Sample
End of Boring

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Exploratory Boring Log

Boring No. B-11

Sheet 1 of 1

Date Drilled:	8-30-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	862'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		2" Asphaltic Concrete, 3" Base. Older alluvium (Qoal): Brown silty fine to coarse sand, micaceous, dry to damp, loose.
5	R	9		7.7	119.5			
						SP		Brown to yellowish brown fine to coarse sand with silt, dry to damp, loose.
10	S	9		3.2				
15	S	15		4.2				Becomes medium dense.
20	S	15		5.7				
						SM		Yellowish brown silty fine sand, moist, medium dense.
25	S	23		3.2				Becomes dark yellowish brown silty fine to coarse grained sand, damp.

Material Description: This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Notes: Total depth = 26.5 ft.
No groundwater encountered.
Backfilled and pressed with soil cuttings same day.

Sample Types:
R - Ring Sample
Bulk Sample
Groundwater
T - Tube Sample
S - SPT Sample
End of Boring

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Exploratory Boring Log

Boring No. B-12

Date Drilled:	8-30-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	863'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
								2" Asphaltic Concrete, 4" Base.
								Older alluvium (Qoal):
						SM		Brown silty fine to medium sand, micaceous, upper 3' difficulty augering, lower 2' easier augering, moist, loose.
								37.6% Passing #200.
5	S	4		7.4				Becomes strong brown, trace coarse sand grains encountered, loose.
						SP		Dark yellowish brown fine to very coarse sand with silt, dry to damp, loose.
10	S	9		2.8				4.7% Passing #200.
15	S	11		3.0				Becomes yellowish brown, medium dense.
20	S	12		2.2				4.3% Passing #200.
25	S	15		6.7		SM		Dark yellowish brown silty fine to coarse grained sand, damp, medium dense.
						SP		Yellowish brown fine to very coarse sand with silt, dry to damp.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

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Exploratory Boring Log

Boring No. B-12

Date Drilled:	8-30-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	863'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
	S	20		1.7		SP		Yellowish brown fine to very coarse sand with silt, dry to damp, medium dense. 4.2% Passing #200.
35	S	19		9.3		ML		Dark yellowish brown fine grained sandy silt, trace clay, moist. 61.8% Passing #200.
						SM		Strong brown to dark yellowish brown silty fine to coarse sand with trace clay, calcium carbonate staining, moist, medium dense.
40	S	25		12.0				
45	S	24		3.2				Becomes yellowish brown silty fine to coarse grained sand, damp to moist, medium dense. 14.9% Passing #200.
50	S	24		9.1				Becomes dark yellowish brown silty fine grained sand, moist, medium dense.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Notes: Total depth = 51.5 ft.
No groundwater encountered.
Backfilled and pressed with soil cuttings same day.

Sample Types:
R - Ring Sample
Bulk Sample
- Groundwater
T - Tube Sample
S - SPT Sample
- End of Boring

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Exploratory Boring Log

Boring No. B-13

Date Drilled:	8-31-18	Drilling Equipment:	CME -55
Logged By:	ATS	Boring Hole Diameter:	8"
Location:	See Site Geologic Map	Drive Weights:	140 lbs.
Elevation (ft):	863'	Drop:	30"

Depth (ft)	Samples: Sample Type	Samples: Blows (blows/ft)	Samples: Bulk Sample	Moisture Content (%)	Dry Density (pcf)	USCS	Graphic Symbol	Material Description
						SM		2" Asphaltic Concrete, 4" Base. Artificial fill (af): Brown silty fine to medium sand, micaceous, upper 3' difficulty augering, lower 2' easier augering, moist, loose.
5	R	2		5.9	112.4			Brown silty fine to medium grained sand, moist, very loose.
10	R	3		6.9	98.4			
						SP		Yellowish brown fine to very coarse sand with silt, moist, clay brick encountered, medium dense.
15	R	29		2.3	126.9			Water intrusion from clay pipe. Clay pipe encountered, as observed from auger cuttings.
20	S	18		8.4				Drilling stopped due to utility conflict.
25								Notes: Total depth = 21.5 ft. No groundwater encountered. Utility encountered at approximately 14 to 15 feet below grade. Call and met with local authority to resolve. Hole left open for utility repair.

This log contains factual information and interpretation of the subsurface conditions between the samples. The stratum indicated on this log represent the approximate boundary between earth units and the transition may be gradual. The log show subsurface conditions at the date and location indicated, and may not be representative of subsurface conditions at other locations and times.

Sample Types:

R - Ring Sample - Bulk Sample - Groundwater

T - Tube Sample S - SPT Sample - End of Boring

APPENDIX B

LABORATORY TESTS

APPENDIX B

LABORATORY TESTS

B-1.00 LABORATORY TESTS

B-1.01 Maximum Density

Maximum density - optimum moisture relationships for the major soil types encountered during the field exploration were performed in the laboratory using the standard procedures of ASTM D1557.

B-1.02 Expansion Tests

Expansion index tests were performed on representative samples of the major soil types encountered by the test methods outlined in ASTM D4829.

B-1.03 Soluble Sulfates and Chlorides

Tests were performed on representative samples encountered during the investigation using the Caltrans Test Methods CTM 417 and CTM 422.

B-1.04 Soil Reactivity (pH) and Electrical Resistivity

Representative soil samples were tested for soil reactivity (pH) and electrical resistivity using California Test Method 643. The pH measurement determines the degree of acidity or alkalinity in the soils.

B-1.05 Particle Size Analysis

Particle size analysis was performed on representative samples of the major soils types in accordance to the standard test methods of the ASTM D422. The hydrometer portion of the standard procedure was not performed and the material retained on the #200 screen was washed.

B-1.06 Direct Shear

Direct shear tests were performed on representative samples of the major soil types encountered in the test holes using the standard test method of ASTM D3080 (consolidated and drained). Tests were performed on samples remolded at 90 percent relative compaction.

Shear tests were performed on a direct shear machine of the strain-controlled type. To simulate possible adverse field conditions, the samples were saturated prior to shearing. Several specimens were sheared at varying normal loads and the results plotted to establish the angle of the internal friction and cohesion of the tested samples.

B-1.07 Resistance Value (R-Value)

A Resistance Value test was performed on a representative soil sample by the test methods outlined in California 301.

B-1.08 Moisture Determination

Moisture content of the soil samples was performed in accordance to standard method for determination of water content of soil by drying oven, ASTM D2216. The mass of material remaining after oven drying is used as the mass

of the solid particles.

B-1.09 Density of Split-Barrel Samples

Soil samples were obtained by using a split-barrel sampler in accordance to standard method of ASTM D1586

B-1.10 Test Results

Test results for all laboratory tests performed on the subject project are presented in this appendix.

SAMPLE INFORMATION

Sample Number	Sample Description	Sample Location	
		Boring No.	Depth (ft)
1	Brown silty fine to medium sand	2	1-4
2	Brown silty fine to medium sand	5	3-6
3	Brown silty fine to medium sand	9	1-4
4	Brown silty fine to medium sand	12	1-4

MAXIMUM DENSITY - OPTIMUM MOISTURE

Test Method: ASTM D1557

Sample Number	Optimum Moisture (Percent)	Maximum Density (lbs/ft^3)
1	6.9	137.0
2	6.7	137.4
4	8.8	127.5

EXPANSION TEST

Test Method: ASTM D4829

Sample Number	Molding Moisture Content (Percent)	Final Moisture Content (Percent)	Initial Dry Density (lbs/ft^3)	Expansion Index	Expansion Classification
1	8.0	21.9	121.3	3	Very Low
2	7.5	14.7	120.6	1	Very Low
4	7.0	12.3	117.0	0	Very Low

SOLUBLE SULFATES AND CHLORIDES

Test Method: CTM 417 and CTM 422

Sample Number	Soluble Sulfate (ppm)	Soluble Chlorides (ppm)
1	218	104
2	112	38
3	157	102
4	145	97

SOIL REACTIVITY (pH) AND ELECTRICAL RESISTIVITY

Test Method: CTM 643

Sample Number	pH	Resistivity (Ohm-cm)
1	7.3	1,400
2	7.7	7,900
3	7.6	3,100
4	7.8	12,000

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PERCENT PASSING #200 SIEVE

Test Method: ASTM D422

Sample Location	Percent Passing #200 Sieve
B-1 @ 5 ft.	26.0
B-1 @ 10 ft.	3.8
B-1 @ 15 ft.	37.1
B-1 @ 25 ft.	67.8
B-1 @ 40 ft.	36.6
B-4 @ 15 ft.	9.0
B-4 @ 20 ft.	39.0
B-4 @ 48 ft.	34.3
B-5 @ 15 ft.	23.4
B-7 @ 5 ft.	42.6
B-7 @ 15 ft.	39.2
B-7 @ 30 ft.	65.6
B-7 @ 40 ft.	24.5
B-7 @ 50 ft.	23.3
B-9 @ 10 ft.	10.3
B-9 @ 30 ft.	73.3
B-9 @ 40 ft.	7.0
B-9 @ 50 ft.	44.1
B-12 @ 10 ft.	4.7
B-12 @ 20 ft.	4.3
B-12 @ 30 ft.	4.2
B-12 @ 35 ft.	61.8
B-12 @ 45 ft.	14.9

PARTICLE SIZE ANALYSIS

ASTM D422

Sample ID: 1
Location: B-2 @ 1-4 ft

Fraction A: Dry Net Weight (gms): 326
Fraction B: Dry Net Weight (gms): 502.8

	Screen Size	Net Retained Weight (gms)	Net Passing Weight (gms)	% Passing
Fraction A:	3"	0	326.3	100
	1-1/2"	0	326.3	100
	1/2"	3.4	322.9	99
	3/8"	4.8	321.5	99
	#4	12.9	313.4	96

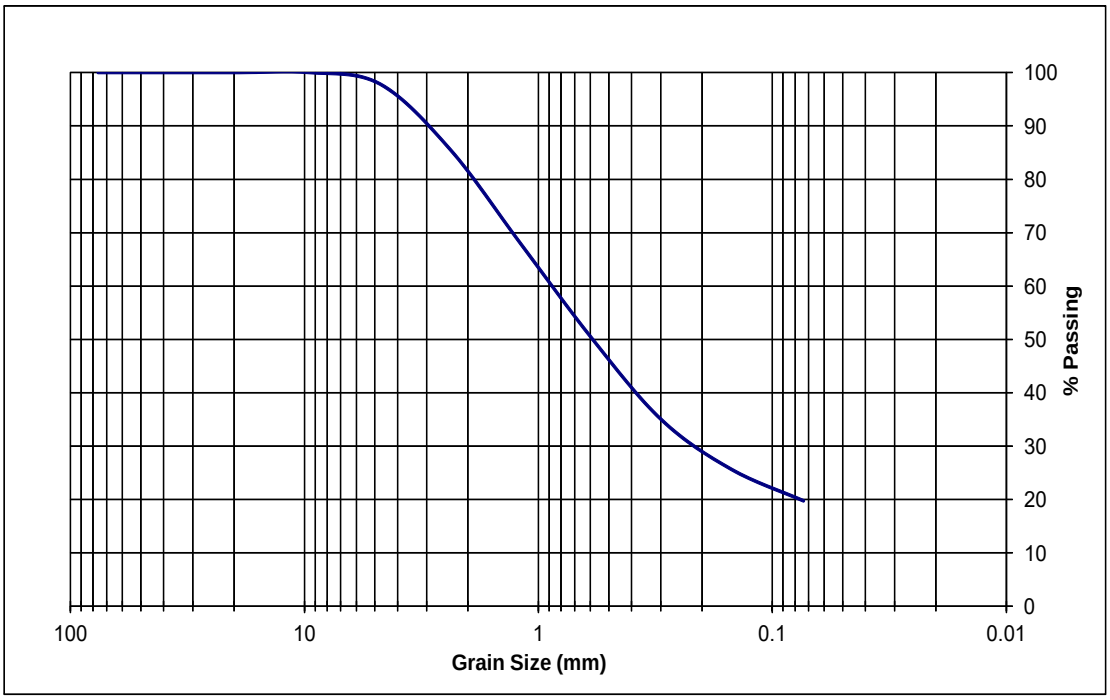
	Screen Size	Net Retained Weight (gms)	Net Passing Weight (gms)	% Passing
Fraction B:	#8	26.0	476.8	91
	#16	73.8	429.0	82
	#30	131.7	371.1	71
	#50	198.8	304.0	58
	#100	266.2	236.6	45
	#200	324.4	178.4	34

PARTICLE SIZE ANALYSIS
ASTM D422

Sample ID: 2
Location: B-5 @ 3-6 ft

Dry Net Weight (gms): 522.7

Screen Size	Net Retained Weight (lbs)	Net Passing Weight (lbs)	% Passing
3"	0	522.7	100
1-1/2"	0	522.7	100
3/4"	0	522.7	100
3/8"	0	522.7	100
#4	11.4	511.3	98
#8	75.6	447.1	86
#16	167.7	355.0	68
#30	260.8	261.9	50
#50	340.4	182.3	35
#100	388.6	134.1	26
#200	419.5	103.2	19.7

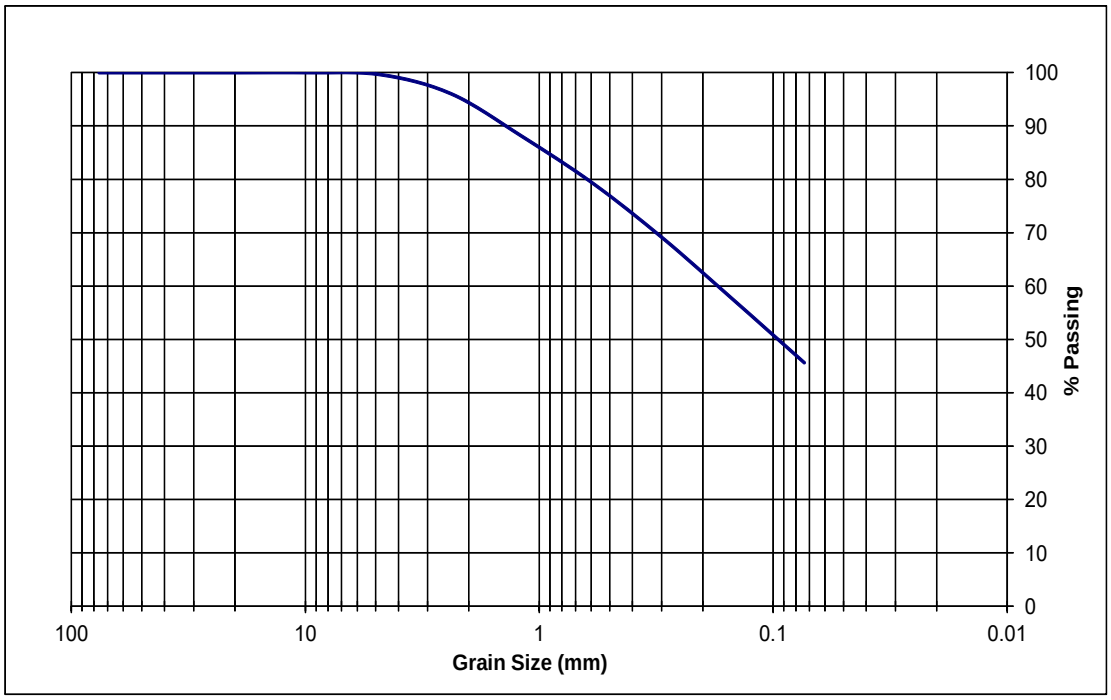


PARTICLE SIZE ANALYSIS
ASTM D422

Sample ID: 3
Location: B-9 @ 1-4 ft

Dry Net Weight (gms): 470.9

Screen Size	Net Retained Weight (lbs)	Net Passing Weight (lbs)	% Passing
3"	0	470.9	100
1-1/2"	0	470.9	100
3/4"	0	470.9	100
3/8"	0	470.9	100
#4	1.8	469.1	100
#8	18.7	452.2	96
#16	56.0	414.9	88
#30	97.8	373.1	79
#50	146.0	324.9	69
#100	199.6	271.3	58
#200	256.1	214.8	45.6

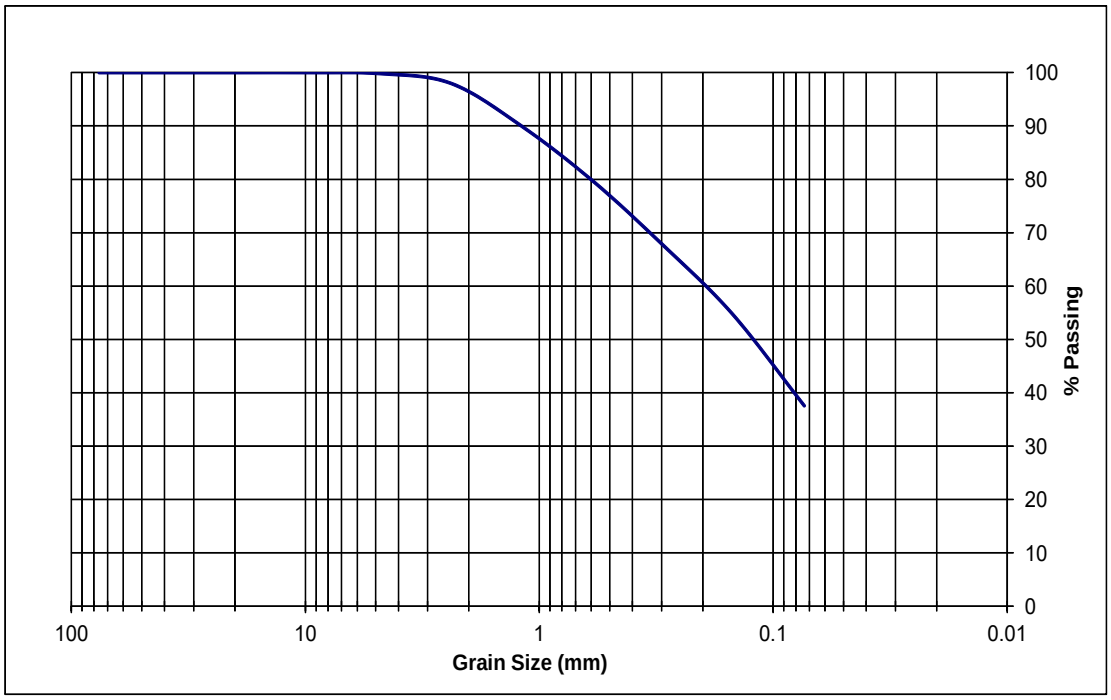


PARTICLE SIZE ANALYSIS
ASTM D422

Sample ID: 4
Location: B-12 @ 1-4 ft

Dry Net Weight (gms): 516.3

Screen Size	Net Retained Weight (lbs)	Net Passing Weight (lbs)	% Passing
3"	0	516.3	100
1-1/2"	0	516.3	100
3/4"	0	516.3	100
3/8"	0	516.3	100
#4	1	515.3	100
#8	10.5	505.8	98
#16	51.7	464.6	90
#30	105.0	411.3	80
#50	166.5	349.8	68
#100	233.2	283.1	55
#200	322.3	194.0	37.6



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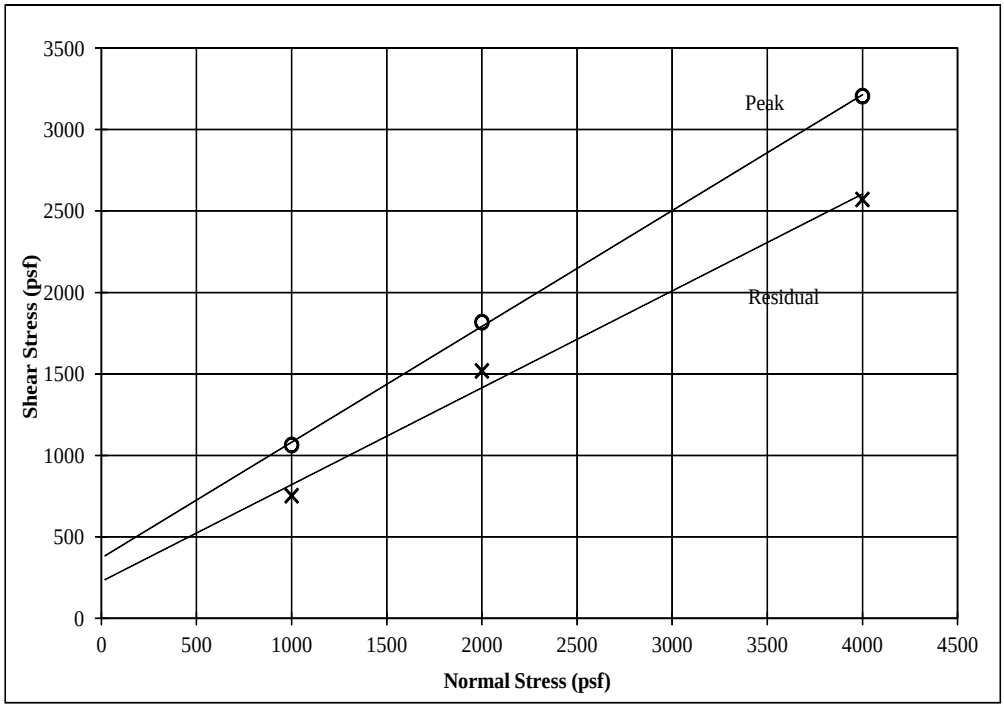
DIRECT SHEAR TEST
ASTM D3080

Sample ID: 1
Location: B-2 @ 1-4 ft

Maximum Dry Density (pcf) =	137.0
Optimum Moisture Content (%) =	6.9
Initial Dry Density (pcf) =	123.3
Initial Moisture Content (%) =	6.9
Final Moisture Content (%) =	13.3

Normal Pressure	Peak Shear Resist	Residual Shear Resist
1000	1064	753
2000	1818	1519
4000	3205	2571

	Peak	Residual
Cohesion (psf) =	370	230
Friction Angle (deg) =	35	31



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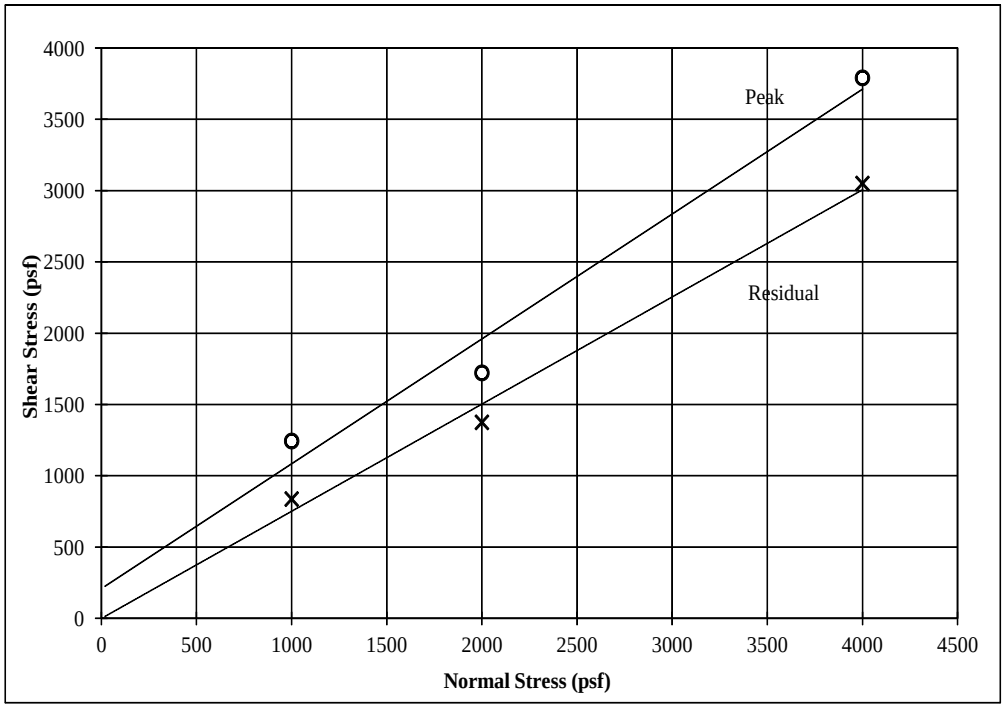
DIRECT SHEAR TEST
ASTM D3080

Sample ID: 2
Location: B-5 @ 3-6 ft

Maximum Dry Density (pcf) = 137.4
Optimum Moisture Content (%) = 6.7
Initial Dry Density (pcf) = 123.7
Initial Moisture Content (%) = 6.7
Final Moisture Content (%) = 11.8

Normal Pressure	Peak Shear Resist	Residual Shear Resist
1000	1244	837
2000	1722	1375
4000	3791	3050

	Peak	Residual
Cohesion (psf) =	210	0
Friction Angle (deg) =	41	37



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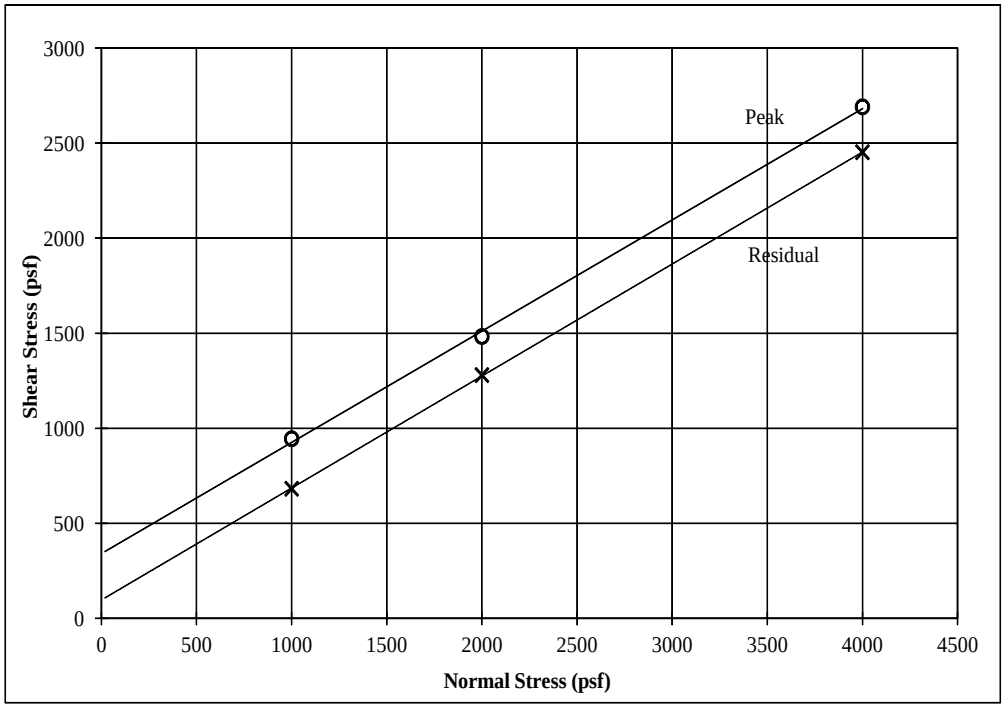
DIRECT SHEAR TEST
ASTM D3080

Sample ID: 4
Location: B-12 @ 1-4 ft

Maximum Dry Density (pcf) =	127.5
Optimum Moisture Content (%) =	8.8
Initial Dry Density (pcf) =	114.8
Initial Moisture Content (%) =	8.8
Final Moisture Content (%) =	14.6

Normal Pressure	Peak Shear Resist	Residual Shear Resist
1000	945	682
2000	1483	1280
4000	2691	2452

	Peak	Residual
Cohesion (psf) =	340	100
Friction Angle (deg) =	30	31



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CTM 301 - DETERMINATION OF RESISTANCE "R" VALUE OF TREATED AND UNTREATED BASES, SUBBASES, AND BASEMENT SOILS BY THE STABILOMETER

Sample ID: 3

Specimen No	A	B	C
Moisture Content (%)	13.1	11.0	9.4
Dry Density (pcf)	120.7	126.0	130.3
Exudation Pressure (psi)	185	301	748
Stabilometer R Value	7	29	56
Expansion Pressure Dial	0	10	42

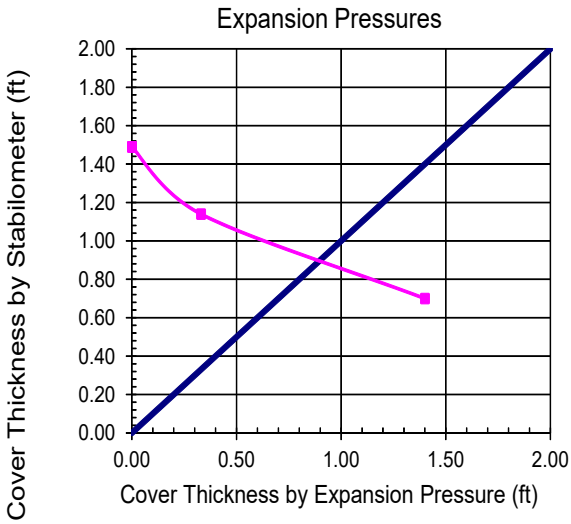
Use: Traffic Index = 5.0 Gravel Factor = 1.00

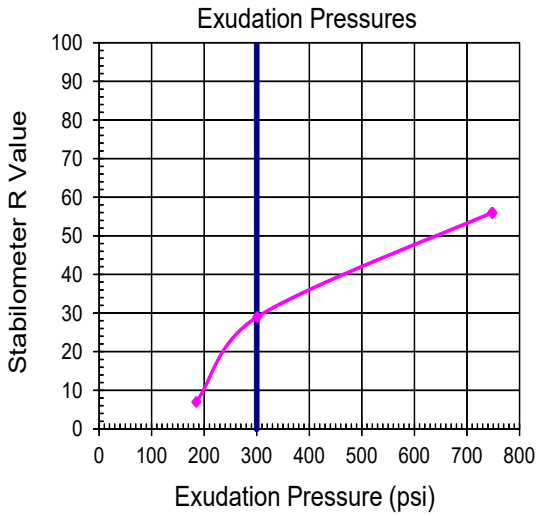
Thickness by Expansion (ft)	0.00	0.33	1.40
Thickness by Stabilometer (ft)	1.49	1.14	0.70

Equilibrium Thick (ft) 0.90

Equilibrium Pressure R Value **44**
Exudation Pressure R Value @ 300 psi **29**

Use Exudation R Value





Expansion Pressure R-Value is based on the following structural section:

Thickness of AC (ft)=	**0.25**	G_f(ac) =	2.50	W(ac) =	145
Thickness of Aggregate Base (ft)=	**0.42**	G_f(base) =	1.10	W(base) =	130
		G_f(avg) =	1.62	W(avg) =	136

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APPENDIX C

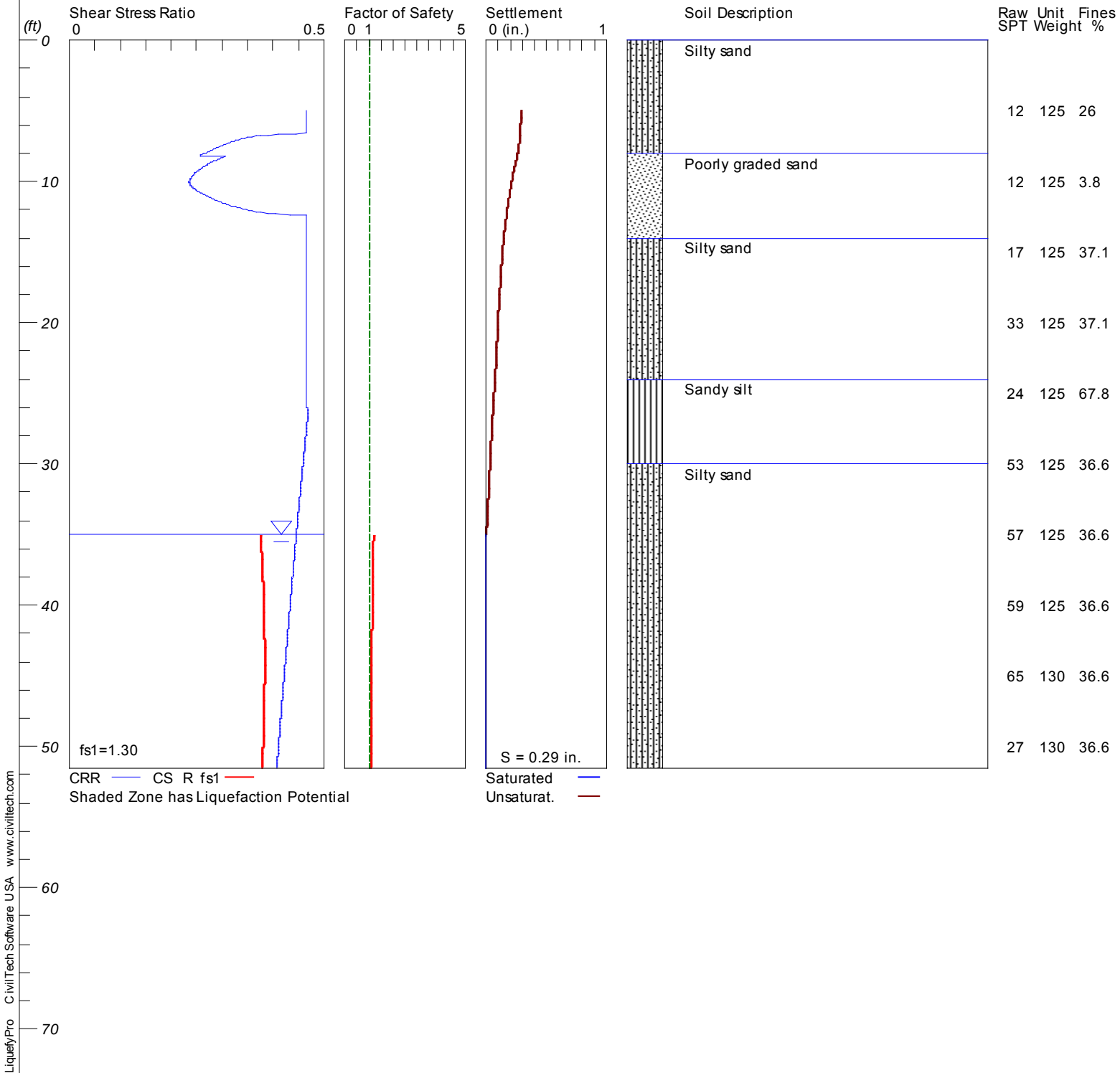
LIQUEFACTION AND DYNAMIC SETTLEMENT ANALYSIS

LIQUEFACTION ANALYSIS

Arlington High School

Hole No.=B-1 Water Depth=35 ft

Magnitude=7.7
Acceleration=0.50g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: C:\Users\jmeneses\Desktop\Liquefaction Runs\18-1214-0 Arlington High\Boring B-1.liq
Title: Arlington High School
Subtitle: Boring B-1

Surface Elev.=
Hole No.=B-1
Depth of Hole= 51.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 7.70

Input Data:

Surface Elev.=
Hole No.=B-1
Depth of Hole=51.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
5.00	12.00	125.00	26.00
10.00	12.00	125.00	3.80
15.00	17.00	125.00	37.10
20.00	33.00	125.00	37.10
25.00	24.00	125.00	67.80
30.00	53.00	125.00	36.60
35.00	57.00	125.00	36.60
40.00	59.00	125.00	36.60
45.00	65.00	130.00	36.60
50.00	27.00	130.00	36.60

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.29 in.
Total Settlement of Saturated and Unsaturated Sands=0.29 in.
Differential Settlement=0.145 to 0.191 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
5.00	0.47	0.42	5.00	0.00	0.29	0.29
5.05	0.47	0.42	5.00	0.00	0.29	0.29
5.10	0.47	0.42	5.00	0.00	0.29	0.29
5.15	0.47	0.42	5.00	0.00	0.29	0.29
5.20	0.47	0.42	5.00	0.00	0.29	0.29
5.25	0.47	0.42	5.00	0.00	0.29	0.29
5.30	0.47	0.42	5.00	0.00	0.29	0.29
5.35	0.47	0.42	5.00	0.00	0.29	0.29
5.40	0.47	0.42	5.00	0.00	0.29	0.29
5.45	0.47	0.42	5.00	0.00	0.29	0.29
5.50	0.47	0.42	5.00	0.00	0.29	0.29
5.55	0.47	0.42	5.00	0.00	0.29	0.29
5.60	0.47	0.42	5.00	0.00	0.29	0.29
5.65	0.47	0.42	5.00	0.00	0.29	0.29
5.70	0.47	0.42	5.00	0.00	0.29	0.29
5.75	0.47	0.42	5.00	0.00	0.29	0.29
5.80	0.47	0.42	5.00	0.00	0.29	0.29
5.85	0.47	0.42	5.00	0.00	0.29	0.29
5.90	0.47	0.42	5.00	0.00	0.29	0.29
5.95	0.47	0.42	5.00	0.00	0.29	0.29
6.00	0.47	0.42	5.00	0.00	0.28	0.28
6.05	0.47	0.42	5.00	0.00	0.28	0.28
6.10	0.47	0.42	5.00	0.00	0.28	0.28
6.15	0.47	0.42	5.00	0.00	0.28	0.28
6.20	0.47	0.42	5.00	0.00	0.28	0.28
6.25	0.47	0.42	5.00	0.00	0.28	0.28
6.30	0.47	0.42	5.00	0.00	0.28	0.28
6.35	0.47	0.42	5.00	0.00	0.28	0.28
6.40	0.47	0.42	5.00	0.00	0.28	0.28
6.45	0.47	0.42	5.00	0.00	0.28	0.28
6.50	0.47	0.42	5.00	0.00	0.28	0.28
6.55	0.47	0.42	5.00	0.00	0.28	0.28
6.60	0.45	0.42	5.00	0.00	0.28	0.28
6.65	0.41	0.42	5.00	0.00	0.28	0.28
6.70	0.39	0.42	5.00	0.00	0.28	0.28
6.75	0.38	0.42	5.00	0.00	0.28	0.28
6.80	0.37	0.42	5.00	0.00	0.28	0.28
6.85	0.36	0.42	5.00	0.00	0.28	0.28
6.90	0.35	0.42	5.00	0.00	0.28	0.28
6.95	0.34	0.42	5.00	0.00	0.28	0.28
7.00	0.34	0.42	5.00	0.00	0.28	0.28
7.05	0.33	0.42	5.00	0.00	0.28	0.28
7.10	0.33	0.42	5.00	0.00	0.28	0.28
7.15	0.32	0.42	5.00	0.00	0.28	0.28
7.20	0.32	0.42	5.00	0.00	0.28	0.28
7.25	0.32	0.42	5.00	0.00	0.27	0.27
7.30	0.31	0.42	5.00	0.00	0.27	0.27
7.35	0.31	0.42	5.00	0.00	0.27	0.27
7.40	0.30	0.42	5.00	0.00	0.27	0.27
7.45	0.30	0.42	5.00	0.00	0.27	0.27

7.50	0.30	0.42	5.00	0.00	0.27	0.27
7.55	0.29	0.42	5.00	0.00	0.27	0.27
7.60	0.29	0.42	5.00	0.00	0.27	0.27
7.65	0.29	0.41	5.00	0.00	0.27	0.27
7.70	0.28	0.41	5.00	0.00	0.27	0.27
7.75	0.28	0.41	5.00	0.00	0.27	0.27
7.80	0.28	0.41	5.00	0.00	0.27	0.27
7.85	0.27	0.41	5.00	0.00	0.27	0.27
7.90	0.27	0.41	5.00	0.00	0.26	0.26
7.95	0.27	0.41	5.00	0.00	0.26	0.26
8.00	0.27	0.41	5.00	0.00	0.26	0.26
8.05	0.26	0.41	5.00	0.00	0.26	0.26
8.10	0.26	0.41	5.00	0.00	0.26	0.26
8.15	0.26	0.41	5.00	0.00	0.26	0.26
8.20	0.26	0.41	5.00	0.00	0.26	0.26
8.25	0.31	0.41	5.00	0.00	0.26	0.26
8.30	0.30	0.41	5.00	0.00	0.25	0.25
8.35	0.30	0.41	5.00	0.00	0.25	0.25
8.40	0.29	0.41	5.00	0.00	0.25	0.25
8.45	0.29	0.41	5.00	0.00	0.25	0.25
8.50	0.29	0.41	5.00	0.00	0.25	0.25
8.55	0.28	0.41	5.00	0.00	0.25	0.25
8.60	0.28	0.41	5.00	0.00	0.25	0.25
8.65	0.28	0.41	5.00	0.00	0.25	0.25
8.70	0.28	0.41	5.00	0.00	0.24	0.24
8.75	0.27	0.41	5.00	0.00	0.24	0.24
8.80	0.27	0.41	5.00	0.00	0.24	0.24
8.85	0.27	0.41	5.00	0.00	0.24	0.24
8.90	0.27	0.41	5.00	0.00	0.24	0.24
8.95	0.26	0.41	5.00	0.00	0.24	0.24
9.00	0.26	0.41	5.00	0.00	0.23	0.23
9.05	0.26	0.41	5.00	0.00	0.23	0.23
9.10	0.26	0.41	5.00	0.00	0.23	0.23
9.15	0.26	0.41	5.00	0.00	0.23	0.23
9.20	0.25	0.41	5.00	0.00	0.23	0.23
9.25	0.25	0.41	5.00	0.00	0.23	0.23
9.30	0.25	0.41	5.00	0.00	0.23	0.23
9.35	0.25	0.41	5.00	0.00	0.22	0.22
9.40	0.25	0.41	5.00	0.00	0.22	0.22
9.45	0.25	0.41	5.00	0.00	0.22	0.22
9.50	0.24	0.41	5.00	0.00	0.22	0.22
9.55	0.24	0.41	5.00	0.00	0.22	0.22
9.60	0.24	0.41	5.00	0.00	0.22	0.22
9.65	0.24	0.41	5.00	0.00	0.22	0.22
9.70	0.24	0.41	5.00	0.00	0.22	0.22
9.75	0.24	0.41	5.00	0.00	0.22	0.22
9.80	0.24	0.41	5.00	0.00	0.22	0.22
9.85	0.24	0.41	5.00	0.00	0.21	0.21
9.90	0.24	0.41	5.00	0.00	0.21	0.21
9.95	0.24	0.41	5.00	0.00	0.21	0.21
10.00	0.24	0.41	5.00	0.00	0.21	0.21
10.05	0.24	0.41	5.00	0.00	0.21	0.21
10.10	0.24	0.41	5.00	0.00	0.21	0.21
10.15	0.24	0.41	5.00	0.00	0.21	0.21
10.20	0.24	0.41	5.00	0.00	0.21	0.21
10.25	0.24	0.41	5.00	0.00	0.21	0.21
10.30	0.24	0.41	5.00	0.00	0.21	0.21
10.35	0.24	0.41	5.00	0.00	0.20	0.20
10.40	0.24	0.41	5.00	0.00	0.20	0.20

10.45	0.24	0.41	5.00	0.00	0.20	0.20
10.50	0.24	0.41	5.00	0.00	0.20	0.20
10.55	0.25	0.41	5.00	0.00	0.20	0.20
10.60	0.25	0.41	5.00	0.00	0.20	0.20
10.65	0.25	0.41	5.00	0.00	0.20	0.20
10.70	0.25	0.41	5.00	0.00	0.20	0.20
10.75	0.25	0.41	5.00	0.00	0.20	0.20
10.80	0.26	0.41	5.00	0.00	0.19	0.19
10.85	0.26	0.41	5.00	0.00	0.19	0.19
10.90	0.26	0.41	5.00	0.00	0.19	0.19
10.95	0.26	0.41	5.00	0.00	0.19	0.19
11.00	0.27	0.41	5.00	0.00	0.19	0.19
11.05	0.27	0.41	5.00	0.00	0.19	0.19
11.10	0.27	0.41	5.00	0.00	0.19	0.19
11.15	0.28	0.41	5.00	0.00	0.19	0.19
11.20	0.28	0.41	5.00	0.00	0.19	0.19
11.25	0.28	0.41	5.00	0.00	0.19	0.19
11.30	0.29	0.41	5.00	0.00	0.19	0.19
11.35	0.29	0.41	5.00	0.00	0.18	0.18
11.40	0.29	0.41	5.00	0.00	0.18	0.18
11.45	0.30	0.41	5.00	0.00	0.18	0.18
11.50	0.30	0.41	5.00	0.00	0.18	0.18
11.55	0.31	0.41	5.00	0.00	0.18	0.18
11.60	0.31	0.41	5.00	0.00	0.18	0.18
11.65	0.31	0.41	5.00	0.00	0.18	0.18
11.70	0.32	0.41	5.00	0.00	0.18	0.18
11.75	0.32	0.41	5.00	0.00	0.18	0.18
11.80	0.33	0.41	5.00	0.00	0.18	0.18
11.85	0.33	0.41	5.00	0.00	0.18	0.18
11.90	0.34	0.41	5.00	0.00	0.17	0.17
11.95	0.34	0.41	5.00	0.00	0.17	0.17
12.00	0.35	0.41	5.00	0.00	0.17	0.17
12.05	0.35	0.41	5.00	0.00	0.17	0.17
12.10	0.36	0.41	5.00	0.00	0.17	0.17
12.15	0.37	0.41	5.00	0.00	0.17	0.17
12.20	0.38	0.41	5.00	0.00	0.17	0.17
12.25	0.39	0.41	5.00	0.00	0.17	0.17
12.30	0.41	0.41	5.00	0.00	0.17	0.17
12.35	0.43	0.41	5.00	0.00	0.17	0.17
12.40	0.47	0.41	5.00	0.00	0.17	0.17
12.45	0.47	0.41	5.00	0.00	0.17	0.17
12.50	0.47	0.41	5.00	0.00	0.17	0.17
12.55	0.47	0.41	5.00	0.00	0.16	0.16
12.60	0.47	0.41	5.00	0.00	0.16	0.16
12.65	0.47	0.41	5.00	0.00	0.16	0.16
12.70	0.47	0.41	5.00	0.00	0.16	0.16
12.75	0.47	0.41	5.00	0.00	0.16	0.16
12.80	0.47	0.41	5.00	0.00	0.16	0.16
12.85	0.47	0.41	5.00	0.00	0.16	0.16
12.90	0.47	0.41	5.00	0.00	0.16	0.16
12.95	0.47	0.41	5.00	0.00	0.16	0.16
13.00	0.47	0.41	5.00	0.00	0.16	0.16
13.05	0.47	0.41	5.00	0.00	0.16	0.16
13.10	0.47	0.41	5.00	0.00	0.16	0.16
13.15	0.47	0.41	5.00	0.00	0.16	0.16
13.20	0.47	0.41	5.00	0.00	0.16	0.16
13.25	0.47	0.41	5.00	0.00	0.15	0.15
13.30	0.47	0.41	5.00	0.00	0.15	0.15
13.35	0.47	0.41	5.00	0.00	0.15	0.15

13.40	0.47	0.41	5.00	0.00	0.15	0.15
13.45	0.47	0.41	5.00	0.00	0.15	0.15
13.50	0.47	0.41	5.00	0.00	0.15	0.15
13.55	0.47	0.41	5.00	0.00	0.15	0.15
13.60	0.47	0.41	5.00	0.00	0.15	0.15
13.65	0.47	0.41	5.00	0.00	0.15	0.15
13.70	0.47	0.41	5.00	0.00	0.15	0.15
13.75	0.47	0.41	5.00	0.00	0.15	0.15
13.80	0.47	0.41	5.00	0.00	0.15	0.15
13.85	0.47	0.41	5.00	0.00	0.15	0.15
13.90	0.47	0.41	5.00	0.00	0.15	0.15
13.95	0.47	0.41	5.00	0.00	0.15	0.15
14.00	0.47	0.41	5.00	0.00	0.14	0.14
14.05	0.47	0.41	5.00	0.00	0.14	0.14
14.10	0.47	0.41	5.00	0.00	0.14	0.14
14.15	0.47	0.41	5.00	0.00	0.14	0.14
14.20	0.47	0.41	5.00	0.00	0.14	0.14
14.25	0.47	0.41	5.00	0.00	0.14	0.14
14.30	0.47	0.41	5.00	0.00	0.14	0.14
14.35	0.47	0.41	5.00	0.00	0.14	0.14
14.40	0.47	0.41	5.00	0.00	0.14	0.14
14.45	0.47	0.41	5.00	0.00	0.14	0.14
14.50	0.47	0.41	5.00	0.00	0.14	0.14
14.55	0.47	0.41	5.00	0.00	0.14	0.14
14.60	0.47	0.41	5.00	0.00	0.14	0.14
14.65	0.47	0.41	5.00	0.00	0.14	0.14
14.70	0.47	0.41	5.00	0.00	0.14	0.14
14.75	0.47	0.41	5.00	0.00	0.14	0.14
14.80	0.47	0.41	5.00	0.00	0.14	0.14
14.85	0.47	0.41	5.00	0.00	0.14	0.14
14.90	0.47	0.41	5.00	0.00	0.13	0.13
14.95	0.47	0.41	5.00	0.00	0.13	0.13
15.00	0.47	0.41	5.00	0.00	0.13	0.13
15.05	0.47	0.41	5.00	0.00	0.13	0.13
15.10	0.47	0.41	5.00	0.00	0.13	0.13
15.15	0.47	0.41	5.00	0.00	0.13	0.13
15.20	0.47	0.41	5.00	0.00	0.13	0.13
15.25	0.47	0.41	5.00	0.00	0.13	0.13
15.30	0.47	0.41	5.00	0.00	0.13	0.13
15.35	0.47	0.41	5.00	0.00	0.13	0.13
15.40	0.47	0.41	5.00	0.00	0.13	0.13
15.45	0.47	0.41	5.00	0.00	0.13	0.13
15.50	0.47	0.41	5.00	0.00	0.13	0.13
15.55	0.47	0.41	5.00	0.00	0.13	0.13
15.60	0.47	0.41	5.00	0.00	0.13	0.13
15.65	0.47	0.41	5.00	0.00	0.13	0.13
15.70	0.47	0.41	5.00	0.00	0.13	0.13
15.75	0.47	0.41	5.00	0.00	0.13	0.13
15.80	0.47	0.41	5.00	0.00	0.13	0.13
15.85	0.47	0.41	5.00	0.00	0.13	0.13
15.90	0.47	0.41	5.00	0.00	0.13	0.13
15.95	0.47	0.41	5.00	0.00	0.13	0.13
16.00	0.47	0.41	5.00	0.00	0.13	0.13
16.05	0.47	0.41	5.00	0.00	0.13	0.13
16.10	0.47	0.41	5.00	0.00	0.12	0.12
16.15	0.47	0.41	5.00	0.00	0.12	0.12
16.20	0.47	0.41	5.00	0.00	0.12	0.12
16.25	0.47	0.41	5.00	0.00	0.12	0.12
16.30	0.47	0.41	5.00	0.00	0.12	0.12

16.35	0.47	0.41	5.00	0.00	0.12	0.12
16.40	0.47	0.41	5.00	0.00	0.12	0.12
16.45	0.47	0.41	5.00	0.00	0.12	0.12
16.50	0.47	0.41	5.00	0.00	0.12	0.12
16.55	0.47	0.41	5.00	0.00	0.12	0.12
16.60	0.47	0.41	5.00	0.00	0.12	0.12
16.65	0.47	0.41	5.00	0.00	0.12	0.12
16.70	0.47	0.41	5.00	0.00	0.12	0.12
16.75	0.47	0.41	5.00	0.00	0.12	0.12
16.80	0.47	0.41	5.00	0.00	0.12	0.12
16.85	0.47	0.41	5.00	0.00	0.12	0.12
16.90	0.47	0.41	5.00	0.00	0.12	0.12
16.95	0.47	0.41	5.00	0.00	0.12	0.12
17.00	0.47	0.41	5.00	0.00	0.12	0.12
17.05	0.47	0.41	5.00	0.00	0.12	0.12
17.10	0.47	0.41	5.00	0.00	0.12	0.12
17.15	0.47	0.41	5.00	0.00	0.12	0.12
17.20	0.47	0.41	5.00	0.00	0.12	0.12
17.25	0.47	0.41	5.00	0.00	0.12	0.12
17.30	0.47	0.41	5.00	0.00	0.12	0.12
17.35	0.47	0.41	5.00	0.00	0.12	0.12
17.40	0.47	0.41	5.00	0.00	0.11	0.11
17.45	0.47	0.41	5.00	0.00	0.11	0.11
17.50	0.47	0.41	5.00	0.00	0.11	0.11
17.55	0.47	0.41	5.00	0.00	0.11	0.11
17.60	0.47	0.41	5.00	0.00	0.11	0.11
17.65	0.47	0.41	5.00	0.00	0.11	0.11
17.70	0.47	0.41	5.00	0.00	0.11	0.11
17.75	0.47	0.41	5.00	0.00	0.11	0.11
17.80	0.47	0.40	5.00	0.00	0.11	0.11
17.85	0.47	0.40	5.00	0.00	0.11	0.11
17.90	0.47	0.40	5.00	0.00	0.11	0.11
17.95	0.47	0.40	5.00	0.00	0.11	0.11
18.00	0.47	0.40	5.00	0.00	0.11	0.11
18.05	0.47	0.40	5.00	0.00	0.11	0.11
18.10	0.47	0.40	5.00	0.00	0.11	0.11
18.15	0.47	0.40	5.00	0.00	0.11	0.11
18.20	0.47	0.40	5.00	0.00	0.11	0.11
18.25	0.47	0.40	5.00	0.00	0.11	0.11
18.30	0.47	0.40	5.00	0.00	0.11	0.11
18.35	0.47	0.40	5.00	0.00	0.11	0.11
18.40	0.47	0.40	5.00	0.00	0.11	0.11
18.45	0.47	0.40	5.00	0.00	0.11	0.11
18.50	0.47	0.40	5.00	0.00	0.11	0.11
18.55	0.47	0.40	5.00	0.00	0.11	0.11
18.60	0.47	0.40	5.00	0.00	0.11	0.11
18.65	0.47	0.40	5.00	0.00	0.11	0.11
18.70	0.47	0.40	5.00	0.00	0.11	0.11
18.75	0.47	0.40	5.00	0.00	0.10	0.10
18.80	0.47	0.40	5.00	0.00	0.10	0.10
18.85	0.47	0.40	5.00	0.00	0.10	0.10
18.90	0.47	0.40	5.00	0.00	0.10	0.10
18.95	0.47	0.40	5.00	0.00	0.10	0.10
19.00	0.47	0.40	5.00	0.00	0.10	0.10
19.05	0.47	0.40	5.00	0.00	0.10	0.10
19.10	0.47	0.40	5.00	0.00	0.10	0.10
19.15	0.47	0.40	5.00	0.00	0.10	0.10
19.20	0.47	0.40	5.00	0.00	0.10	0.10
19.25	0.47	0.40	5.00	0.00	0.10	0.10

19.30	0.47	0.40	5.00	0.00	0.10	0.10
19.35	0.47	0.40	5.00	0.00	0.10	0.10
19.40	0.47	0.40	5.00	0.00	0.10	0.10
19.45	0.47	0.40	5.00	0.00	0.10	0.10
19.50	0.47	0.40	5.00	0.00	0.10	0.10
19.55	0.47	0.40	5.00	0.00	0.10	0.10
19.60	0.47	0.40	5.00	0.00	0.10	0.10
19.65	0.47	0.40	5.00	0.00	0.10	0.10
19.70	0.47	0.40	5.00	0.00	0.10	0.10
19.75	0.47	0.40	5.00	0.00	0.10	0.10
19.80	0.47	0.40	5.00	0.00	0.10	0.10
19.85	0.47	0.40	5.00	0.00	0.10	0.10
19.90	0.47	0.40	5.00	0.00	0.10	0.10
19.95	0.47	0.40	5.00	0.00	0.10	0.10
20.00	0.47	0.40	5.00	0.00	0.10	0.10
20.05	0.47	0.40	5.00	0.00	0.10	0.10
20.10	0.47	0.40	5.00	0.00	0.10	0.10
20.15	0.47	0.40	5.00	0.00	0.10	0.10
20.20	0.47	0.40	5.00	0.00	0.10	0.10
20.25	0.47	0.40	5.00	0.00	0.10	0.10
20.30	0.47	0.40	5.00	0.00	0.09	0.09
20.35	0.47	0.40	5.00	0.00	0.09	0.09
20.40	0.47	0.40	5.00	0.00	0.09	0.09
20.45	0.47	0.40	5.00	0.00	0.09	0.09
20.50	0.47	0.40	5.00	0.00	0.09	0.09
20.55	0.47	0.40	5.00	0.00	0.09	0.09
20.60	0.47	0.40	5.00	0.00	0.09	0.09
20.65	0.47	0.40	5.00	0.00	0.09	0.09
20.70	0.47	0.40	5.00	0.00	0.09	0.09
20.75	0.47	0.40	5.00	0.00	0.09	0.09
20.80	0.47	0.40	5.00	0.00	0.09	0.09
20.85	0.47	0.40	5.00	0.00	0.09	0.09
20.90	0.47	0.40	5.00	0.00	0.09	0.09
20.95	0.47	0.40	5.00	0.00	0.09	0.09
21.00	0.47	0.40	5.00	0.00	0.09	0.09
21.05	0.47	0.40	5.00	0.00	0.09	0.09
21.10	0.47	0.40	5.00	0.00	0.09	0.09
21.15	0.47	0.40	5.00	0.00	0.09	0.09
21.20	0.47	0.40	5.00	0.00	0.09	0.09
21.25	0.47	0.40	5.00	0.00	0.09	0.09
21.30	0.47	0.40	5.00	0.00	0.09	0.09
21.35	0.47	0.40	5.00	0.00	0.09	0.09
21.40	0.47	0.40	5.00	0.00	0.09	0.09
21.45	0.47	0.40	5.00	0.00	0.09	0.09
21.50	0.47	0.40	5.00	0.00	0.09	0.09
21.55	0.47	0.40	5.00	0.00	0.09	0.09
21.60	0.47	0.40	5.00	0.00	0.09	0.09
21.65	0.47	0.40	5.00	0.00	0.09	0.09
21.70	0.47	0.40	5.00	0.00	0.09	0.09
21.75	0.47	0.40	5.00	0.00	0.09	0.09
21.80	0.47	0.40	5.00	0.00	0.09	0.09
21.85	0.47	0.40	5.00	0.00	0.09	0.09
21.90	0.47	0.40	5.00	0.00	0.09	0.09
21.95	0.47	0.40	5.00	0.00	0.09	0.09
22.00	0.47	0.40	5.00	0.00	0.09	0.09
22.05	0.47	0.40	5.00	0.00	0.09	0.09
22.10	0.47	0.40	5.00	0.00	0.08	0.08
22.15	0.47	0.40	5.00	0.00	0.08	0.08
22.20	0.47	0.40	5.00	0.00	0.08	0.08

22.25	0.47	0.40	5.00	0.00	0.08	0.08
22.30	0.47	0.40	5.00	0.00	0.08	0.08
22.35	0.47	0.40	5.00	0.00	0.08	0.08
22.40	0.47	0.40	5.00	0.00	0.08	0.08
22.45	0.47	0.40	5.00	0.00	0.08	0.08
22.50	0.47	0.40	5.00	0.00	0.08	0.08
22.55	0.47	0.40	5.00	0.00	0.08	0.08
22.60	0.47	0.40	5.00	0.00	0.08	0.08
22.65	0.47	0.40	5.00	0.00	0.08	0.08
22.70	0.47	0.40	5.00	0.00	0.08	0.08
22.75	0.47	0.40	5.00	0.00	0.08	0.08
22.80	0.47	0.40	5.00	0.00	0.08	0.08
22.85	0.47	0.40	5.00	0.00	0.08	0.08
22.90	0.47	0.40	5.00	0.00	0.08	0.08
22.95	0.47	0.40	5.00	0.00	0.08	0.08
23.00	0.47	0.40	5.00	0.00	0.08	0.08
23.05	0.47	0.40	5.00	0.00	0.08	0.08
23.10	0.47	0.40	5.00	0.00	0.08	0.08
23.15	0.47	0.40	5.00	0.00	0.08	0.08
23.20	0.47	0.40	5.00	0.00	0.08	0.08
23.25	0.47	0.40	5.00	0.00	0.08	0.08
23.30	0.47	0.40	5.00	0.00	0.08	0.08
23.35	0.47	0.40	5.00	0.00	0.08	0.08
23.40	0.47	0.40	5.00	0.00	0.08	0.08
23.45	0.47	0.40	5.00	0.00	0.08	0.08
23.50	0.47	0.40	5.00	0.00	0.08	0.08
23.55	0.47	0.40	5.00	0.00	0.08	0.08
23.60	0.47	0.40	5.00	0.00	0.08	0.08
23.65	0.47	0.40	5.00	0.00	0.07	0.07
23.70	0.47	0.40	5.00	0.00	0.07	0.07
23.75	0.47	0.40	5.00	0.00	0.07	0.07
23.80	0.47	0.40	5.00	0.00	0.07	0.07
23.85	0.47	0.40	5.00	0.00	0.07	0.07
23.90	0.47	0.40	5.00	0.00	0.07	0.07
23.95	0.47	0.40	5.00	0.00	0.07	0.07
24.00	0.47	0.40	5.00	0.00	0.07	0.07
24.05	0.47	0.40	5.00	0.00	0.07	0.07
24.10	0.47	0.40	5.00	0.00	0.07	0.07
24.15	0.47	0.40	5.00	0.00	0.07	0.07
24.20	0.47	0.40	5.00	0.00	0.07	0.07
24.25	0.47	0.40	5.00	0.00	0.07	0.07
24.30	0.47	0.40	5.00	0.00	0.07	0.07
24.35	0.47	0.40	5.00	0.00	0.07	0.07
24.40	0.47	0.40	5.00	0.00	0.07	0.07
24.45	0.47	0.40	5.00	0.00	0.07	0.07
24.50	0.47	0.40	5.00	0.00	0.07	0.07
24.55	0.47	0.40	5.00	0.00	0.07	0.07
24.60	0.47	0.40	5.00	0.00	0.07	0.07
24.65	0.47	0.40	5.00	0.00	0.07	0.07
24.70	0.47	0.40	5.00	0.00	0.07	0.07
24.75	0.47	0.40	5.00	0.00	0.07	0.07
24.80	0.47	0.40	5.00	0.00	0.07	0.07
24.85	0.47	0.40	5.00	0.00	0.07	0.07
24.90	0.47	0.40	5.00	0.00	0.07	0.07
24.95	0.47	0.40	5.00	0.00	0.06	0.06
25.00	0.47	0.40	5.00	0.00	0.06	0.06
25.05	0.47	0.40	5.00	0.00	0.06	0.06
25.10	0.47	0.40	5.00	0.00	0.06	0.06
25.15	0.47	0.40	5.00	0.00	0.06	0.06

25.20	0.47	0.40	5.00	0.00	0.06	0.06
25.25	0.47	0.40	5.00	0.00	0.06	0.06
25.30	0.47	0.40	5.00	0.00	0.06	0.06
25.35	0.47	0.40	5.00	0.00	0.06	0.06
25.40	0.47	0.40	5.00	0.00	0.06	0.06
25.45	0.47	0.40	5.00	0.00	0.06	0.06
25.50	0.47	0.40	5.00	0.00	0.06	0.06
25.55	0.47	0.40	5.00	0.00	0.06	0.06
25.60	0.47	0.40	5.00	0.00	0.06	0.06
25.65	0.47	0.40	5.00	0.00	0.06	0.06
25.70	0.47	0.40	5.00	0.00	0.06	0.06
25.75	0.47	0.40	5.00	0.00	0.06	0.06
25.80	0.47	0.40	5.00	0.00	0.06	0.06
25.85	0.47	0.40	5.00	0.00	0.06	0.06
25.90	0.47	0.40	5.00	0.00	0.06	0.06
25.95	0.47	0.40	5.00	0.00	0.06	0.06
26.00	0.47	0.40	5.00	0.00	0.06	0.06
26.05	0.47	0.40	5.00	0.00	0.06	0.06
26.10	0.47	0.40	5.00	0.00	0.06	0.06
26.15	0.47	0.40	5.00	0.00	0.06	0.06
26.20	0.47	0.40	5.00	0.00	0.06	0.06
26.25	0.47	0.40	5.00	0.00	0.05	0.05
26.30	0.47	0.40	5.00	0.00	0.05	0.05
26.35	0.47	0.40	5.00	0.00	0.05	0.05
26.40	0.47	0.40	5.00	0.00	0.05	0.05
26.45	0.47	0.40	5.00	0.00	0.05	0.05
26.50	0.47	0.40	5.00	0.00	0.05	0.05
26.55	0.47	0.40	5.00	0.00	0.05	0.05
26.60	0.47	0.40	5.00	0.00	0.05	0.05
26.65	0.47	0.40	5.00	0.00	0.05	0.05
26.70	0.47	0.40	5.00	0.00	0.05	0.05
26.75	0.47	0.40	5.00	0.00	0.05	0.05
26.80	0.47	0.40	5.00	0.00	0.05	0.05
26.85	0.47	0.40	5.00	0.00	0.05	0.05
26.90	0.47	0.40	5.00	0.00	0.05	0.05
26.95	0.47	0.40	5.00	0.00	0.05	0.05
27.00	0.47	0.40	5.00	0.00	0.05	0.05
27.05	0.47	0.40	5.00	0.00	0.05	0.05
27.10	0.47	0.40	5.00	0.00	0.05	0.05
27.15	0.47	0.40	5.00	0.00	0.05	0.05
27.20	0.47	0.40	5.00	0.00	0.05	0.05
27.25	0.47	0.40	5.00	0.00	0.05	0.05
27.30	0.47	0.40	5.00	0.00	0.05	0.05
27.35	0.47	0.40	5.00	0.00	0.05	0.05
27.40	0.47	0.40	5.00	0.00	0.05	0.05
27.45	0.47	0.40	5.00	0.00	0.05	0.05
27.50	0.47	0.40	5.00	0.00	0.05	0.05
27.55	0.47	0.40	5.00	0.00	0.05	0.05
27.60	0.47	0.40	5.00	0.00	0.05	0.05
27.65	0.47	0.40	5.00	0.00	0.04	0.04
27.70	0.47	0.40	5.00	0.00	0.04	0.04
27.75	0.47	0.40	5.00	0.00	0.04	0.04
27.80	0.47	0.40	5.00	0.00	0.04	0.04
27.85	0.47	0.40	5.00	0.00	0.04	0.04
27.90	0.46	0.40	5.00	0.00	0.04	0.04
27.95	0.46	0.39	5.00	0.00	0.04	0.04
28.00	0.46	0.39	5.00	0.00	0.04	0.04
28.05	0.46	0.39	5.00	0.00	0.04	0.04
28.10	0.46	0.39	5.00	0.00	0.04	0.04

28.15	0.46	0.39	5.00	0.00	0.04	0.04
28.20	0.46	0.39	5.00	0.00	0.04	0.04
28.25	0.46	0.39	5.00	0.00	0.04	0.04
28.30	0.46	0.39	5.00	0.00	0.04	0.04
28.35	0.46	0.39	5.00	0.00	0.04	0.04
28.40	0.46	0.39	5.00	0.00	0.04	0.04
28.45	0.46	0.39	5.00	0.00	0.04	0.04
28.50	0.46	0.39	5.00	0.00	0.04	0.04
28.55	0.46	0.39	5.00	0.00	0.04	0.04
28.60	0.46	0.39	5.00	0.00	0.04	0.04
28.65	0.46	0.39	5.00	0.00	0.04	0.04
28.70	0.46	0.39	5.00	0.00	0.04	0.04
28.75	0.46	0.39	5.00	0.00	0.04	0.04
28.80	0.46	0.39	5.00	0.00	0.04	0.04
28.85	0.46	0.39	5.00	0.00	0.04	0.04
28.90	0.46	0.39	5.00	0.00	0.04	0.04
28.95	0.46	0.39	5.00	0.00	0.04	0.04
29.00	0.46	0.39	5.00	0.00	0.04	0.04
29.05	0.46	0.39	5.00	0.00	0.04	0.04
29.10	0.46	0.39	5.00	0.00	0.04	0.04
29.15	0.46	0.39	5.00	0.00	0.04	0.04
29.20	0.46	0.39	5.00	0.00	0.04	0.04
29.25	0.46	0.39	5.00	0.00	0.03	0.03
29.30	0.46	0.39	5.00	0.00	0.03	0.03
29.35	0.46	0.39	5.00	0.00	0.03	0.03
29.40	0.46	0.39	5.00	0.00	0.03	0.03
29.45	0.46	0.39	5.00	0.00	0.03	0.03
29.50	0.46	0.39	5.00	0.00	0.03	0.03
29.55	0.46	0.39	5.00	0.00	0.03	0.03
29.60	0.46	0.39	5.00	0.00	0.03	0.03
29.65	0.46	0.39	5.00	0.00	0.03	0.03
29.70	0.46	0.39	5.00	0.00	0.03	0.03
29.75	0.46	0.39	5.00	0.00	0.03	0.03
29.80	0.46	0.39	5.00	0.00	0.03	0.03
29.85	0.46	0.39	5.00	0.00	0.03	0.03
29.90	0.46	0.39	5.00	0.00	0.03	0.03
29.95	0.46	0.39	5.00	0.00	0.03	0.03
30.00	0.46	0.39	5.00	0.00	0.03	0.03
30.05	0.46	0.39	5.00	0.00	0.03	0.03
30.10	0.46	0.39	5.00	0.00	0.03	0.03
30.15	0.46	0.39	5.00	0.00	0.03	0.03
30.20	0.46	0.39	5.00	0.00	0.03	0.03
30.25	0.46	0.39	5.00	0.00	0.03	0.03
30.30	0.46	0.39	5.00	0.00	0.03	0.03
30.35	0.46	0.39	5.00	0.00	0.03	0.03
30.40	0.46	0.39	5.00	0.00	0.03	0.03
30.45	0.46	0.39	5.00	0.00	0.03	0.03
30.50	0.46	0.39	5.00	0.00	0.03	0.03
30.55	0.46	0.39	5.00	0.00	0.03	0.03
30.60	0.46	0.39	5.00	0.00	0.03	0.03
30.65	0.46	0.39	5.00	0.00	0.03	0.03
30.70	0.46	0.39	5.00	0.00	0.03	0.03
30.75	0.46	0.39	5.00	0.00	0.03	0.03
30.80	0.46	0.39	5.00	0.00	0.03	0.03
30.85	0.46	0.39	5.00	0.00	0.03	0.03
30.90	0.46	0.39	5.00	0.00	0.03	0.03
30.95	0.46	0.39	5.00	0.00	0.02	0.02
31.00	0.46	0.39	5.00	0.00	0.02	0.02
31.05	0.46	0.39	5.00	0.00	0.02	0.02

31.10	0.46	0.39	5.00	0.00	0.02	0.02
31.15	0.46	0.39	5.00	0.00	0.02	0.02
31.20	0.46	0.39	5.00	0.00	0.02	0.02
31.25	0.46	0.39	5.00	0.00	0.02	0.02
31.30	0.46	0.39	5.00	0.00	0.02	0.02
31.35	0.46	0.39	5.00	0.00	0.02	0.02
31.40	0.46	0.39	5.00	0.00	0.02	0.02
31.45	0.46	0.39	5.00	0.00	0.02	0.02
31.50	0.46	0.39	5.00	0.00	0.02	0.02
31.55	0.45	0.39	5.00	0.00	0.02	0.02
31.60	0.45	0.39	5.00	0.00	0.02	0.02
31.65	0.45	0.39	5.00	0.00	0.02	0.02
31.70	0.45	0.39	5.00	0.00	0.02	0.02
31.75	0.45	0.39	5.00	0.00	0.02	0.02
31.80	0.45	0.39	5.00	0.00	0.02	0.02
31.85	0.45	0.39	5.00	0.00	0.02	0.02
31.90	0.45	0.39	5.00	0.00	0.02	0.02
31.95	0.45	0.39	5.00	0.00	0.02	0.02
32.00	0.45	0.39	5.00	0.00	0.02	0.02
32.05	0.45	0.39	5.00	0.00	0.02	0.02
32.10	0.45	0.39	5.00	0.00	0.02	0.02
32.15	0.45	0.39	5.00	0.00	0.02	0.02
32.20	0.45	0.39	5.00	0.00	0.02	0.02
32.25	0.45	0.39	5.00	0.00	0.02	0.02
32.30	0.45	0.38	5.00	0.00	0.02	0.02
32.35	0.45	0.38	5.00	0.00	0.02	0.02
32.40	0.45	0.38	5.00	0.00	0.02	0.02
32.45	0.45	0.38	5.00	0.00	0.02	0.02
32.50	0.45	0.38	5.00	0.00	0.02	0.02
32.55	0.45	0.38	5.00	0.00	0.02	0.02
32.60	0.45	0.38	5.00	0.00	0.02	0.02
32.65	0.45	0.38	5.00	0.00	0.01	0.01
32.70	0.45	0.38	5.00	0.00	0.01	0.01
32.75	0.45	0.38	5.00	0.00	0.01	0.01
32.80	0.45	0.38	5.00	0.00	0.01	0.01
32.85	0.45	0.38	5.00	0.00	0.01	0.01
32.90	0.45	0.38	5.00	0.00	0.01	0.01
32.95	0.45	0.38	5.00	0.00	0.01	0.01
33.00	0.45	0.38	5.00	0.00	0.01	0.01
33.05	0.45	0.38	5.00	0.00	0.01	0.01
33.10	0.45	0.38	5.00	0.00	0.01	0.01
33.15	0.45	0.38	5.00	0.00	0.01	0.01
33.20	0.45	0.38	5.00	0.00	0.01	0.01
33.25	0.45	0.38	5.00	0.00	0.01	0.01
33.30	0.45	0.38	5.00	0.00	0.01	0.01
33.35	0.45	0.38	5.00	0.00	0.01	0.01
33.40	0.45	0.38	5.00	0.00	0.01	0.01
33.45	0.45	0.38	5.00	0.00	0.01	0.01
33.50	0.45	0.38	5.00	0.00	0.01	0.01
33.55	0.45	0.38	5.00	0.00	0.01	0.01
33.60	0.45	0.38	5.00	0.00	0.01	0.01
33.65	0.45	0.38	5.00	0.00	0.01	0.01
33.70	0.45	0.38	5.00	0.00	0.01	0.01
33.75	0.45	0.38	5.00	0.00	0.01	0.01
33.80	0.45	0.38	5.00	0.00	0.01	0.01
33.85	0.45	0.38	5.00	0.00	0.01	0.01
33.90	0.45	0.38	5.00	0.00	0.01	0.01
33.95	0.45	0.38	5.00	0.00	0.01	0.01
34.00	0.45	0.38	5.00	0.00	0.01	0.01

34.05	0.45	0.38	5.00	0.00	0.01	0.01
34.10	0.45	0.38	5.00	0.00	0.01	0.01
34.15	0.45	0.38	5.00	0.00	0.01	0.01
34.20	0.45	0.38	5.00	0.00	0.01	0.01
34.25	0.45	0.38	5.00	0.00	0.00	0.00
34.30	0.45	0.38	5.00	0.00	0.00	0.00
34.35	0.45	0.38	5.00	0.00	0.00	0.00
34.40	0.45	0.38	5.00	0.00	0.00	0.00
34.45	0.45	0.38	5.00	0.00	0.00	0.00
34.50	0.45	0.38	5.00	0.00	0.00	0.00
34.55	0.45	0.38	5.00	0.00	0.00	0.00
34.60	0.45	0.38	5.00	0.00	0.00	0.00
34.65	0.45	0.38	5.00	0.00	0.00	0.00
34.70	0.45	0.38	5.00	0.00	0.00	0.00
34.75	0.45	0.38	5.00	0.00	0.00	0.00
34.80	0.45	0.38	5.00	0.00	0.00	0.00
34.85	0.45	0.38	5.00	0.00	0.00	0.00
34.90	0.45	0.38	5.00	0.00	0.00	0.00
34.95	0.45	0.38	5.00	0.00	0.00	0.00
35.00	0.45	0.38	5.00	0.00	0.00	0.00
35.05	0.45	0.38	1.19	0.00	0.00	0.00
35.10	0.45	0.38	1.19	0.00	0.00	0.00
35.15	0.45	0.38	1.19	0.00	0.00	0.00
35.20	0.45	0.38	1.19	0.00	0.00	0.00
35.25	0.45	0.38	1.18	0.00	0.00	0.00
35.30	0.45	0.38	1.18	0.00	0.00	0.00
35.35	0.45	0.38	1.18	0.00	0.00	0.00
35.40	0.44	0.38	1.18	0.00	0.00	0.00
35.45	0.44	0.38	1.18	0.00	0.00	0.00
35.50	0.44	0.38	1.18	0.00	0.00	0.00
35.55	0.44	0.38	1.18	0.00	0.00	0.00
35.60	0.44	0.38	1.18	0.00	0.00	0.00
35.65	0.44	0.38	1.18	0.00	0.00	0.00
35.70	0.44	0.38	1.18	0.00	0.00	0.00
35.75	0.44	0.38	1.18	0.00	0.00	0.00
35.80	0.44	0.38	1.18	0.00	0.00	0.00
35.85	0.44	0.38	1.18	0.00	0.00	0.00
35.90	0.44	0.38	1.18	0.00	0.00	0.00
35.95	0.44	0.38	1.18	0.00	0.00	0.00
36.00	0.44	0.38	1.18	0.00	0.00	0.00
36.05	0.44	0.38	1.17	0.00	0.00	0.00
36.10	0.44	0.38	1.17	0.00	0.00	0.00
36.15	0.44	0.38	1.17	0.00	0.00	0.00
36.20	0.44	0.38	1.17	0.00	0.00	0.00
36.25	0.44	0.38	1.17	0.00	0.00	0.00
36.30	0.44	0.38	1.17	0.00	0.00	0.00
36.35	0.44	0.38	1.17	0.00	0.00	0.00
36.40	0.44	0.38	1.17	0.00	0.00	0.00
36.45	0.44	0.38	1.17	0.00	0.00	0.00
36.50	0.44	0.38	1.17	0.00	0.00	0.00
36.55	0.44	0.38	1.17	0.00	0.00	0.00
36.60	0.44	0.38	1.17	0.00	0.00	0.00
36.65	0.44	0.38	1.17	0.00	0.00	0.00
36.70	0.44	0.38	1.17	0.00	0.00	0.00
36.75	0.44	0.38	1.17	0.00	0.00	0.00
36.80	0.44	0.38	1.17	0.00	0.00	0.00
36.85	0.44	0.38	1.17	0.00	0.00	0.00
36.90	0.44	0.38	1.17	0.00	0.00	0.00
36.95	0.44	0.38	1.16	0.00	0.00	0.00

37.00	0.44	0.38	1.16	0.00	0.00	0.00
37.05	0.44	0.38	1.16	0.00	0.00	0.00
37.10	0.44	0.38	1.16	0.00	0.00	0.00
37.15	0.44	0.38	1.16	0.00	0.00	0.00
37.20	0.44	0.38	1.16	0.00	0.00	0.00
37.25	0.44	0.38	1.16	0.00	0.00	0.00
37.30	0.44	0.38	1.16	0.00	0.00	0.00
37.35	0.44	0.38	1.16	0.00	0.00	0.00
37.40	0.44	0.38	1.16	0.00	0.00	0.00
37.45	0.44	0.38	1.16	0.00	0.00	0.00
37.50	0.44	0.38	1.16	0.00	0.00	0.00
37.55	0.44	0.38	1.16	0.00	0.00	0.00
37.60	0.44	0.38	1.16	0.00	0.00	0.00
37.65	0.44	0.38	1.16	0.00	0.00	0.00
37.70	0.44	0.38	1.16	0.00	0.00	0.00
37.75	0.44	0.38	1.16	0.00	0.00	0.00
37.80	0.44	0.38	1.16	0.00	0.00	0.00
37.85	0.44	0.38	1.16	0.00	0.00	0.00
37.90	0.44	0.38	1.15	0.00	0.00	0.00
37.95	0.44	0.38	1.15	0.00	0.00	0.00
38.00	0.44	0.38	1.15	0.00	0.00	0.00
38.05	0.44	0.38	1.15	0.00	0.00	0.00
38.10	0.44	0.38	1.15	0.00	0.00	0.00
38.15	0.44	0.38	1.15	0.00	0.00	0.00
38.20	0.44	0.38	1.15	0.00	0.00	0.00
38.25	0.44	0.38	1.15	0.00	0.00	0.00
38.30	0.44	0.38	1.15	0.00	0.00	0.00
38.35	0.44	0.38	1.15	0.00	0.00	0.00
38.40	0.44	0.38	1.15	0.00	0.00	0.00
38.45	0.44	0.38	1.15	0.00	0.00	0.00
38.50	0.44	0.38	1.15	0.00	0.00	0.00
38.55	0.44	0.38	1.15	0.00	0.00	0.00
38.60	0.44	0.38	1.15	0.00	0.00	0.00
38.65	0.44	0.38	1.15	0.00	0.00	0.00
38.70	0.44	0.38	1.15	0.00	0.00	0.00
38.75	0.44	0.38	1.15	0.00	0.00	0.00
38.80	0.44	0.38	1.15	0.00	0.00	0.00
38.85	0.44	0.38	1.15	0.00	0.00	0.00
38.90	0.44	0.38	1.14	0.00	0.00	0.00
38.95	0.44	0.38	1.14	0.00	0.00	0.00
39.00	0.44	0.38	1.14	0.00	0.00	0.00
39.05	0.44	0.38	1.14	0.00	0.00	0.00
39.10	0.44	0.38	1.14	0.00	0.00	0.00
39.15	0.44	0.38	1.14	0.00	0.00	0.00
39.20	0.44	0.38	1.14	0.00	0.00	0.00
39.25	0.44	0.38	1.14	0.00	0.00	0.00
39.30	0.44	0.38	1.14	0.00	0.00	0.00
39.35	0.44	0.38	1.14	0.00	0.00	0.00
39.40	0.44	0.38	1.14	0.00	0.00	0.00
39.45	0.43	0.38	1.14	0.00	0.00	0.00
39.50	0.43	0.38	1.14	0.00	0.00	0.00
39.55	0.43	0.38	1.14	0.00	0.00	0.00
39.60	0.43	0.38	1.14	0.00	0.00	0.00
39.65	0.43	0.38	1.14	0.00	0.00	0.00
39.70	0.43	0.38	1.14	0.00	0.00	0.00
39.75	0.43	0.38	1.14	0.00	0.00	0.00
39.80	0.43	0.38	1.14	0.00	0.00	0.00
39.85	0.43	0.38	1.14	0.00	0.00	0.00
39.90	0.43	0.38	1.14	0.00	0.00	0.00

39.95	0.43	0.38	1.14	0.00	0.00	0.00
40.00	0.43	0.38	1.13	0.00	0.00	0.00
40.05	0.43	0.38	1.13	0.00	0.00	0.00
40.10	0.43	0.38	1.13	0.00	0.00	0.00
40.15	0.43	0.38	1.13	0.00	0.00	0.00
40.20	0.43	0.38	1.13	0.00	0.00	0.00
40.25	0.43	0.38	1.13	0.00	0.00	0.00
40.30	0.43	0.38	1.13	0.00	0.00	0.00
40.35	0.43	0.38	1.13	0.00	0.00	0.00
40.40	0.43	0.38	1.13	0.00	0.00	0.00
40.45	0.43	0.38	1.13	0.00	0.00	0.00
40.50	0.43	0.38	1.13	0.00	0.00	0.00
40.55	0.43	0.38	1.13	0.00	0.00	0.00
40.60	0.43	0.38	1.13	0.00	0.00	0.00
40.65	0.43	0.38	1.13	0.00	0.00	0.00
40.70	0.43	0.38	1.13	0.00	0.00	0.00
40.75	0.43	0.38	1.13	0.00	0.00	0.00
40.80	0.43	0.38	1.13	0.00	0.00	0.00
40.85	0.43	0.38	1.13	0.00	0.00	0.00
40.90	0.43	0.38	1.13	0.00	0.00	0.00
40.95	0.43	0.38	1.13	0.00	0.00	0.00
41.00	0.43	0.38	1.13	0.00	0.00	0.00
41.05	0.43	0.38	1.13	0.00	0.00	0.00
41.10	0.43	0.38	1.13	0.00	0.00	0.00
41.15	0.43	0.38	1.13	0.00	0.00	0.00
41.20	0.43	0.38	1.13	0.00	0.00	0.00
41.25	0.43	0.38	1.12	0.00	0.00	0.00
41.30	0.43	0.38	1.12	0.00	0.00	0.00
41.35	0.43	0.38	1.12	0.00	0.00	0.00
41.40	0.43	0.38	1.12	0.00	0.00	0.00
41.45	0.43	0.38	1.12	0.00	0.00	0.00
41.50	0.43	0.38	1.12	0.00	0.00	0.00
41.55	0.43	0.38	1.12	0.00	0.00	0.00
41.60	0.43	0.38	1.12	0.00	0.00	0.00
41.65	0.43	0.38	1.12	0.00	0.00	0.00
41.70	0.43	0.38	1.12	0.00	0.00	0.00
41.75	0.43	0.38	1.12	0.00	0.00	0.00
41.80	0.43	0.38	1.12	0.00	0.00	0.00
41.85	0.43	0.38	1.12	0.00	0.00	0.00
41.90	0.43	0.38	1.12	0.00	0.00	0.00
41.95	0.43	0.38	1.12	0.00	0.00	0.00
42.00	0.43	0.38	1.12	0.00	0.00	0.00
42.05	0.43	0.38	1.12	0.00	0.00	0.00
42.10	0.43	0.38	1.12	0.00	0.00	0.00
42.15	0.43	0.38	1.12	0.00	0.00	0.00
42.20	0.43	0.38	1.12	0.00	0.00	0.00
42.25	0.43	0.38	1.12	0.00	0.00	0.00
42.30	0.43	0.38	1.12	0.00	0.00	0.00
42.35	0.43	0.38	1.12	0.00	0.00	0.00
42.40	0.43	0.38	1.12	0.00	0.00	0.00
42.45	0.43	0.38	1.12	0.00	0.00	0.00
42.50	0.43	0.38	1.12	0.00	0.00	0.00
42.55	0.43	0.38	1.12	0.00	0.00	0.00
42.60	0.43	0.38	1.11	0.00	0.00	0.00
42.65	0.43	0.38	1.11	0.00	0.00	0.00
42.70	0.43	0.38	1.11	0.00	0.00	0.00
42.75	0.43	0.38	1.11	0.00	0.00	0.00
42.80	0.43	0.38	1.11	0.00	0.00	0.00
42.85	0.43	0.38	1.11	0.00	0.00	0.00

42.90	0.43	0.38	1.11	0.00	0.00	0.00
42.95	0.43	0.38	1.11	0.00	0.00	0.00
43.00	0.43	0.38	1.11	0.00	0.00	0.00
43.05	0.43	0.38	1.11	0.00	0.00	0.00
43.10	0.43	0.38	1.11	0.00	0.00	0.00
43.15	0.43	0.38	1.11	0.00	0.00	0.00
43.20	0.43	0.38	1.11	0.00	0.00	0.00
43.25	0.43	0.38	1.11	0.00	0.00	0.00
43.30	0.43	0.38	1.11	0.00	0.00	0.00
43.35	0.43	0.38	1.11	0.00	0.00	0.00
43.40	0.43	0.38	1.11	0.00	0.00	0.00
43.45	0.43	0.38	1.11	0.00	0.00	0.00
43.50	0.43	0.38	1.11	0.00	0.00	0.00
43.55	0.43	0.38	1.11	0.00	0.00	0.00
43.60	0.43	0.38	1.11	0.00	0.00	0.00
43.65	0.43	0.38	1.11	0.00	0.00	0.00
43.70	0.42	0.38	1.11	0.00	0.00	0.00
43.75	0.42	0.38	1.11	0.00	0.00	0.00
43.80	0.42	0.38	1.11	0.00	0.00	0.00
43.85	0.42	0.38	1.11	0.00	0.00	0.00
43.90	0.42	0.38	1.11	0.00	0.00	0.00
43.95	0.42	0.38	1.11	0.00	0.00	0.00
44.00	0.42	0.38	1.11	0.00	0.00	0.00
44.05	0.42	0.38	1.11	0.00	0.00	0.00
44.10	0.42	0.38	1.11	0.00	0.00	0.00
44.15	0.42	0.38	1.11	0.00	0.00	0.00
44.20	0.42	0.38	1.10	0.00	0.00	0.00
44.25	0.42	0.38	1.10	0.00	0.00	0.00
44.30	0.42	0.38	1.10	0.00	0.00	0.00
44.35	0.42	0.38	1.10	0.00	0.00	0.00
44.40	0.42	0.38	1.10	0.00	0.00	0.00
44.45	0.42	0.38	1.10	0.00	0.00	0.00
44.50	0.42	0.38	1.10	0.00	0.00	0.00
44.55	0.42	0.38	1.10	0.00	0.00	0.00
44.60	0.42	0.38	1.10	0.00	0.00	0.00
44.65	0.42	0.38	1.10	0.00	0.00	0.00
44.70	0.42	0.38	1.10	0.00	0.00	0.00
44.75	0.42	0.38	1.10	0.00	0.00	0.00
44.80	0.42	0.38	1.10	0.00	0.00	0.00
44.85	0.42	0.38	1.10	0.00	0.00	0.00
44.90	0.42	0.38	1.10	0.00	0.00	0.00
44.95	0.42	0.38	1.10	0.00	0.00	0.00
45.00	0.42	0.38	1.10	0.00	0.00	0.00
45.05	0.42	0.38	1.10	0.00	0.00	0.00
45.10	0.42	0.38	1.10	0.00	0.00	0.00
45.15	0.42	0.38	1.10	0.00	0.00	0.00
45.20	0.42	0.38	1.10	0.00	0.00	0.00
45.25	0.42	0.38	1.10	0.00	0.00	0.00
45.30	0.42	0.38	1.10	0.00	0.00	0.00
45.35	0.42	0.38	1.10	0.00	0.00	0.00
45.40	0.42	0.38	1.10	0.00	0.00	0.00
45.45	0.42	0.38	1.10	0.00	0.00	0.00
45.50	0.42	0.38	1.10	0.00	0.00	0.00
45.55	0.42	0.38	1.10	0.00	0.00	0.00
45.60	0.42	0.38	1.10	0.00	0.00	0.00
45.65	0.42	0.38	1.10	0.00	0.00	0.00
45.70	0.42	0.38	1.10	0.00	0.00	0.00
45.75	0.42	0.38	1.10	0.00	0.00	0.00
45.80	0.42	0.38	1.10	0.00	0.00	0.00

45.85	0.42	0.38	1.10	0.00	0.00	0.00
45.90	0.42	0.38	1.10	0.00	0.00	0.00
45.95	0.42	0.38	1.10	0.00	0.00	0.00
46.00	0.42	0.38	1.10	0.00	0.00	0.00
46.05	0.42	0.38	1.09	0.00	0.00	0.00
46.10	0.42	0.38	1.09	0.00	0.00	0.00
46.15	0.42	0.38	1.09	0.00	0.00	0.00
46.20	0.42	0.38	1.09	0.00	0.00	0.00
46.25	0.42	0.38	1.09	0.00	0.00	0.00
46.30	0.42	0.38	1.09	0.00	0.00	0.00
46.35	0.42	0.38	1.09	0.00	0.00	0.00
46.40	0.42	0.38	1.09	0.00	0.00	0.00
46.45	0.42	0.38	1.09	0.00	0.00	0.00
46.50	0.42	0.38	1.09	0.00	0.00	0.00
46.55	0.42	0.38	1.09	0.00	0.00	0.00
46.60	0.42	0.38	1.09	0.00	0.00	0.00
46.65	0.42	0.38	1.09	0.00	0.00	0.00
46.70	0.42	0.38	1.09	0.00	0.00	0.00
46.75	0.42	0.38	1.09	0.00	0.00	0.00
46.80	0.42	0.38	1.09	0.00	0.00	0.00
46.85	0.42	0.38	1.09	0.00	0.00	0.00
46.90	0.42	0.38	1.09	0.00	0.00	0.00
46.95	0.42	0.38	1.09	0.00	0.00	0.00
47.00	0.42	0.38	1.09	0.00	0.00	0.00
47.05	0.42	0.38	1.09	0.00	0.00	0.00
47.10	0.42	0.38	1.09	0.00	0.00	0.00
47.15	0.42	0.38	1.09	0.00	0.00	0.00
47.20	0.42	0.38	1.09	0.00	0.00	0.00
47.25	0.42	0.38	1.09	0.00	0.00	0.00
47.30	0.42	0.38	1.09	0.00	0.00	0.00
47.35	0.42	0.38	1.09	0.00	0.00	0.00
47.40	0.42	0.38	1.09	0.00	0.00	0.00
47.45	0.42	0.38	1.09	0.00	0.00	0.00
47.50	0.42	0.38	1.09	0.00	0.00	0.00
47.55	0.42	0.38	1.09	0.00	0.00	0.00
47.60	0.42	0.38	1.09	0.00	0.00	0.00
47.65	0.42	0.38	1.09	0.00	0.00	0.00
47.70	0.42	0.38	1.09	0.00	0.00	0.00
47.75	0.42	0.38	1.09	0.00	0.00	0.00
47.80	0.42	0.38	1.09	0.00	0.00	0.00
47.85	0.42	0.38	1.09	0.00	0.00	0.00
47.90	0.42	0.38	1.09	0.00	0.00	0.00
47.95	0.42	0.38	1.09	0.00	0.00	0.00
48.00	0.42	0.38	1.09	0.00	0.00	0.00
48.05	0.42	0.38	1.09	0.00	0.00	0.00
48.10	0.42	0.38	1.09	0.00	0.00	0.00
48.15	0.41	0.38	1.09	0.00	0.00	0.00
48.20	0.41	0.38	1.09	0.00	0.00	0.00
48.25	0.41	0.38	1.09	0.00	0.00	0.00
48.30	0.41	0.38	1.09	0.00	0.00	0.00
48.35	0.41	0.38	1.09	0.00	0.00	0.00
48.40	0.41	0.38	1.08	0.00	0.00	0.00
48.45	0.41	0.38	1.08	0.00	0.00	0.00
48.50	0.41	0.38	1.08	0.00	0.00	0.00
48.55	0.41	0.38	1.08	0.00	0.00	0.00
48.60	0.41	0.38	1.08	0.00	0.00	0.00
48.65	0.41	0.38	1.08	0.00	0.00	0.00
48.70	0.41	0.38	1.08	0.00	0.00	0.00
48.75	0.41	0.38	1.08	0.00	0.00	0.00

48.80	0.41	0.38	1.08	0.00	0.00	0.00
48.85	0.41	0.38	1.08	0.00	0.00	0.00
48.90	0.41	0.38	1.08	0.00	0.00	0.00
48.95	0.41	0.38	1.08	0.00	0.00	0.00
49.00	0.41	0.38	1.08	0.00	0.00	0.00
49.05	0.41	0.38	1.08	0.00	0.00	0.00
49.10	0.41	0.38	1.08	0.00	0.00	0.00
49.15	0.41	0.38	1.08	0.00	0.00	0.00
49.20	0.41	0.38	1.08	0.00	0.00	0.00
49.25	0.41	0.38	1.08	0.00	0.00	0.00
49.30	0.41	0.38	1.08	0.00	0.00	0.00
49.35	0.41	0.38	1.08	0.00	0.00	0.00
49.40	0.41	0.38	1.08	0.00	0.00	0.00
49.45	0.41	0.38	1.08	0.00	0.00	0.00
49.50	0.41	0.38	1.08	0.00	0.00	0.00
49.55	0.41	0.38	1.08	0.00	0.00	0.00
49.60	0.41	0.38	1.08	0.00	0.00	0.00
49.65	0.41	0.38	1.08	0.00	0.00	0.00
49.70	0.41	0.38	1.08	0.00	0.00	0.00
49.75	0.41	0.38	1.08	0.00	0.00	0.00
49.80	0.41	0.38	1.08	0.00	0.00	0.00
49.85	0.41	0.38	1.08	0.00	0.00	0.00
49.90	0.41	0.38	1.08	0.00	0.00	0.00
49.95	0.41	0.38	1.08	0.00	0.00	0.00
50.00	0.41	0.38	1.08	0.00	0.00	0.00
50.05	0.41	0.38	1.08	0.00	0.00	0.00
50.10	0.41	0.38	1.08	0.00	0.00	0.00
50.15	0.41	0.38	1.08	0.00	0.00	0.00
50.20	0.41	0.38	1.08	0.00	0.00	0.00
50.25	0.41	0.38	1.08	0.00	0.00	0.00
50.30	0.41	0.38	1.08	0.00	0.00	0.00
50.35	0.41	0.38	1.08	0.00	0.00	0.00
50.40	0.41	0.38	1.08	0.00	0.00	0.00
50.45	0.41	0.38	1.08	0.00	0.00	0.00
50.50	0.41	0.38	1.08	0.00	0.00	0.00
50.55	0.41	0.38	1.08	0.00	0.00	0.00
50.60	0.41	0.38	1.08	0.00	0.00	0.00
50.65	0.41	0.38	1.08	0.00	0.00	0.00
50.70	0.41	0.38	1.08	0.00	0.00	0.00
50.75	0.41	0.38	1.08	0.00	0.00	0.00
50.80	0.41	0.38	1.08	0.00	0.00	0.00
50.85	0.41	0.38	1.08	0.00	0.00	0.00
50.90	0.41	0.38	1.08	0.00	0.00	0.00
50.95	0.41	0.38	1.08	0.00	0.00	0.00
51.00	0.41	0.38	1.08	0.00	0.00	0.00
51.05	0.41	0.38	1.08	0.00	0.00	0.00
51.10	0.41	0.38	1.08	0.00	0.00	0.00
51.15	0.41	0.38	1.08	0.00	0.00	0.00
51.20	0.41	0.38	1.08	0.00	0.00	0.00
51.25	0.41	0.38	1.08	0.00	0.00	0.00
51.30	0.41	0.38	1.08	0.00	0.00	0.00
51.35	0.41	0.38	1.08	0.00	0.00	0.00
51.40	0.41	0.38	1.08	0.00	0.00	0.00
51.45	0.41	0.38	1.08	0.00	0.00	0.00
51.50	0.41	0.38	1.08	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Welcome to LiquefyPro!

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1 atm (atmosphere) = 1 tsf (ton/ft2)

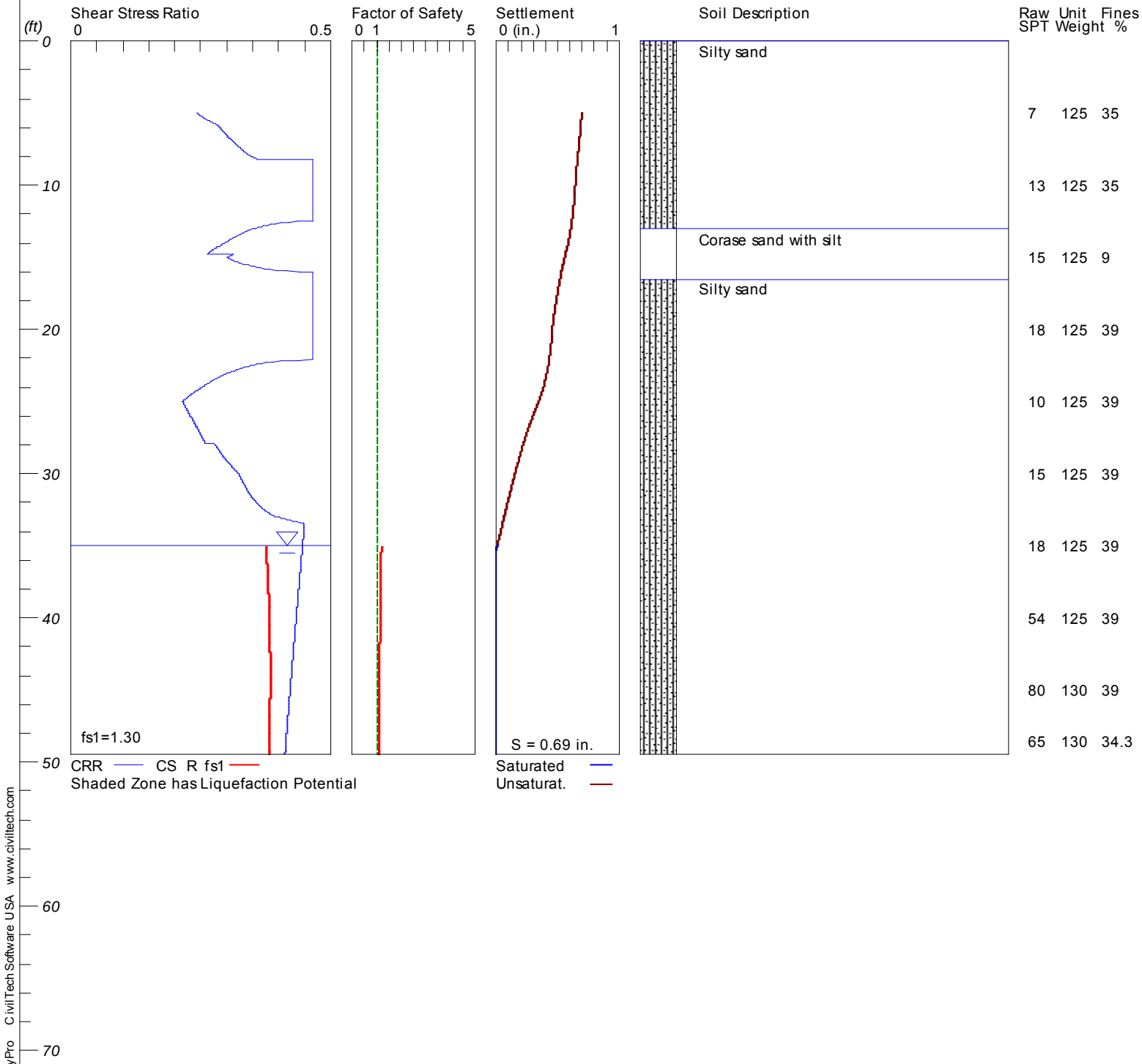
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Arlington High School

Hole No.=B-4 Water Depth=35 ft

Magnitude=7.7
Acceleration=0.50g



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LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.
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Input File Name: C:\Users\jmeneses\Desktop\Liquefaction Runs\18-1214-0 Arlington High\Boring B-4.liq
Title: Arlington High School
Subtitle: Boring B-4

Surface Elev.=
Hole No.=B-4
Depth of Hole= 49.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 7.70

Input Data:

Surface Elev.=
Hole No.=B-4
Depth of Hole=49.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
5.00	7.00	125.00	35.00
10.00	13.00	125.00	35.00
15.00	15.00	125.00	9.00
20.00	18.00	125.00	39.00
25.00	10.00	125.00	39.00
30.00	15.00	125.00	39.00
35.00	18.00	125.00	39.00
40.00	54.00	125.00	39.00
45.00	80.00	130.00	39.00
48.50	65.00	130.00	34.30

Output Results:

Settlement of Saturated Sands=0.01 in.
Settlement of Unsaturated Sands=0.69 in.
Total Settlement of Saturated and Unsaturated Sands=0.69 in.
Differential Settlement=0.347 to 0.458 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
5.00	0.24	0.42	5.00	0.01	0.69	0.69
5.05	0.24	0.42	5.00	0.01	0.69	0.69
5.10	0.25	0.42	5.00	0.01	0.69	0.69
5.15	0.25	0.42	5.00	0.01	0.69	0.69
5.20	0.25	0.42	5.00	0.01	0.69	0.69
5.25	0.25	0.42	5.00	0.01	0.69	0.69
5.30	0.26	0.42	5.00	0.01	0.69	0.69
5.35	0.26	0.42	5.00	0.01	0.69	0.69
5.40	0.26	0.42	5.00	0.01	0.69	0.69
5.45	0.26	0.42	5.00	0.01	0.68	0.69
5.50	0.27	0.42	5.00	0.01	0.68	0.69
5.55	0.27	0.42	5.00	0.01	0.68	0.69
5.60	0.27	0.42	5.00	0.01	0.68	0.69
5.65	0.27	0.42	5.00	0.01	0.68	0.69
5.70	0.28	0.42	5.00	0.01	0.68	0.69
5.75	0.28	0.42	5.00	0.01	0.68	0.69
5.80	0.28	0.42	5.00	0.01	0.68	0.69
5.85	0.28	0.42	5.00	0.01	0.68	0.69
5.90	0.28	0.42	5.00	0.01	0.68	0.69
5.95	0.29	0.42	5.00	0.01	0.68	0.68
6.00	0.29	0.42	5.00	0.01	0.68	0.68
6.05	0.29	0.42	5.00	0.01	0.68	0.68
6.10	0.29	0.42	5.00	0.01	0.68	0.68
6.15	0.29	0.42	5.00	0.01	0.68	0.68
6.20	0.29	0.42	5.00	0.01	0.68	0.68
6.25	0.29	0.42	5.00	0.01	0.68	0.68
6.30	0.29	0.42	5.00	0.01	0.68	0.68
6.35	0.30	0.42	5.00	0.01	0.68	0.68
6.40	0.30	0.42	5.00	0.01	0.68	0.68
6.45	0.30	0.42	5.00	0.01	0.67	0.68
6.50	0.30	0.42	5.00	0.01	0.67	0.68
6.55	0.30	0.42	5.00	0.01	0.67	0.68
6.60	0.30	0.42	5.00	0.01	0.67	0.68
6.65	0.30	0.42	5.00	0.01	0.67	0.68
6.70	0.30	0.42	5.00	0.01	0.67	0.68
6.75	0.31	0.42	5.00	0.01	0.67	0.68
6.80	0.31	0.42	5.00	0.01	0.67	0.68
6.85	0.31	0.42	5.00	0.01	0.67	0.68
6.90	0.31	0.42	5.00	0.01	0.67	0.67
6.95	0.31	0.42	5.00	0.01	0.67	0.67
7.00	0.31	0.42	5.00	0.01	0.67	0.67
7.05	0.31	0.42	5.00	0.01	0.67	0.67
7.10	0.32	0.42	5.00	0.01	0.67	0.67
7.15	0.32	0.42	5.00	0.01	0.67	0.67
7.20	0.32	0.42	5.00	0.01	0.67	0.67
7.25	0.32	0.42	5.00	0.01	0.67	0.67
7.30	0.32	0.42	5.00	0.01	0.67	0.67
7.35	0.32	0.42	5.00	0.01	0.66	0.67
7.40	0.33	0.42	5.00	0.01	0.66	0.67
7.45	0.33	0.42	5.00	0.01	0.66	0.67

7.50	0.33	0.42	5.00	0.01	0.66	0.67
7.55	0.33	0.42	5.00	0.01	0.66	0.67
7.60	0.33	0.42	5.00	0.01	0.66	0.67
7.65	0.33	0.41	5.00	0.01	0.66	0.67
7.70	0.34	0.41	5.00	0.01	0.66	0.67
7.75	0.34	0.41	5.00	0.01	0.66	0.66
7.80	0.34	0.41	5.00	0.01	0.66	0.66
7.85	0.34	0.41	5.00	0.01	0.66	0.66
7.90	0.34	0.41	5.00	0.01	0.66	0.66
7.95	0.35	0.41	5.00	0.01	0.66	0.66
8.00	0.35	0.41	5.00	0.01	0.66	0.66
8.05	0.35	0.41	5.00	0.01	0.66	0.66
8.10	0.35	0.41	5.00	0.01	0.65	0.66
8.15	0.36	0.41	5.00	0.01	0.65	0.66
8.20	0.36	0.41	5.00	0.01	0.65	0.66
8.25	0.47	0.41	5.00	0.01	0.65	0.66
8.30	0.47	0.41	5.00	0.01	0.65	0.66
8.35	0.47	0.41	5.00	0.01	0.65	0.66
8.40	0.47	0.41	5.00	0.01	0.65	0.66
8.45	0.47	0.41	5.00	0.01	0.65	0.66
8.50	0.47	0.41	5.00	0.01	0.65	0.65
8.55	0.47	0.41	5.00	0.01	0.65	0.65
8.60	0.47	0.41	5.00	0.01	0.65	0.65
8.65	0.47	0.41	5.00	0.01	0.65	0.65
8.70	0.47	0.41	5.00	0.01	0.65	0.65
8.75	0.47	0.41	5.00	0.01	0.65	0.65
8.80	0.47	0.41	5.00	0.01	0.65	0.65
8.85	0.47	0.41	5.00	0.01	0.65	0.65
8.90	0.47	0.41	5.00	0.01	0.65	0.65
8.95	0.47	0.41	5.00	0.01	0.64	0.65
9.00	0.47	0.41	5.00	0.01	0.64	0.65
9.05	0.47	0.41	5.00	0.01	0.64	0.65
9.10	0.47	0.41	5.00	0.01	0.64	0.65
9.15	0.47	0.41	5.00	0.01	0.64	0.65
9.20	0.47	0.41	5.00	0.01	0.64	0.65
9.25	0.47	0.41	5.00	0.01	0.64	0.65
9.30	0.47	0.41	5.00	0.01	0.64	0.65
9.35	0.47	0.41	5.00	0.01	0.64	0.65
9.40	0.47	0.41	5.00	0.01	0.64	0.65
9.45	0.47	0.41	5.00	0.01	0.64	0.65
9.50	0.47	0.41	5.00	0.01	0.64	0.64
9.55	0.47	0.41	5.00	0.01	0.64	0.64
9.60	0.47	0.41	5.00	0.01	0.64	0.64
9.65	0.47	0.41	5.00	0.01	0.64	0.64
9.70	0.47	0.41	5.00	0.01	0.64	0.64
9.75	0.47	0.41	5.00	0.01	0.64	0.64
9.80	0.47	0.41	5.00	0.01	0.64	0.64
9.85	0.47	0.41	5.00	0.01	0.64	0.64
9.90	0.47	0.41	5.00	0.01	0.64	0.64
9.95	0.47	0.41	5.00	0.01	0.64	0.64
10.00	0.47	0.41	5.00	0.01	0.64	0.64
10.05	0.47	0.41	5.00	0.01	0.64	0.64
10.10	0.47	0.41	5.00	0.01	0.64	0.64
10.15	0.47	0.41	5.00	0.01	0.64	0.64
10.20	0.47	0.41	5.00	0.01	0.63	0.64
10.25	0.47	0.41	5.00	0.01	0.63	0.64
10.30	0.47	0.41	5.00	0.01	0.63	0.64
10.35	0.47	0.41	5.00	0.01	0.63	0.64
10.40	0.47	0.41	5.00	0.01	0.63	0.64

10.45	0.47	0.41	5.00	0.01	0.63	0.64
10.50	0.47	0.41	5.00	0.01	0.63	0.64
10.55	0.47	0.41	5.00	0.01	0.63	0.64
10.60	0.47	0.41	5.00	0.01	0.63	0.64
10.65	0.47	0.41	5.00	0.01	0.63	0.64
10.70	0.47	0.41	5.00	0.01	0.63	0.64
10.75	0.47	0.41	5.00	0.01	0.63	0.64
10.80	0.47	0.41	5.00	0.01	0.63	0.63
10.85	0.47	0.41	5.00	0.01	0.63	0.63
10.90	0.47	0.41	5.00	0.01	0.63	0.63
10.95	0.47	0.41	5.00	0.01	0.63	0.63
11.00	0.47	0.41	5.00	0.01	0.63	0.63
11.05	0.47	0.41	5.00	0.01	0.63	0.63
11.10	0.47	0.41	5.00	0.01	0.63	0.63
11.15	0.47	0.41	5.00	0.01	0.63	0.63
11.20	0.47	0.41	5.00	0.01	0.63	0.63
11.25	0.47	0.41	5.00	0.01	0.62	0.63
11.30	0.47	0.41	5.00	0.01	0.62	0.63
11.35	0.47	0.41	5.00	0.01	0.62	0.63
11.40	0.47	0.41	5.00	0.01	0.62	0.63
11.45	0.47	0.41	5.00	0.01	0.62	0.63
11.50	0.47	0.41	5.00	0.01	0.62	0.63
11.55	0.47	0.41	5.00	0.01	0.62	0.63
11.60	0.47	0.41	5.00	0.01	0.62	0.63
11.65	0.47	0.41	5.00	0.01	0.62	0.63
11.70	0.47	0.41	5.00	0.01	0.62	0.62
11.75	0.47	0.41	5.00	0.01	0.62	0.62
11.80	0.47	0.41	5.00	0.01	0.62	0.62
11.85	0.47	0.41	5.00	0.01	0.62	0.62
11.90	0.47	0.41	5.00	0.01	0.62	0.62
11.95	0.47	0.41	5.00	0.01	0.62	0.62
12.00	0.47	0.41	5.00	0.01	0.62	0.62
12.05	0.47	0.41	5.00	0.01	0.62	0.62
12.10	0.47	0.41	5.00	0.01	0.61	0.62
12.15	0.47	0.41	5.00	0.01	0.61	0.62
12.20	0.47	0.41	5.00	0.01	0.61	0.62
12.25	0.47	0.41	5.00	0.01	0.61	0.62
12.30	0.47	0.41	5.00	0.01	0.61	0.62
12.35	0.47	0.41	5.00	0.01	0.61	0.62
12.40	0.47	0.41	5.00	0.01	0.61	0.62
12.45	0.47	0.41	5.00	0.01	0.61	0.61
12.50	0.44	0.41	5.00	0.01	0.61	0.61
12.55	0.42	0.41	5.00	0.01	0.61	0.61
12.60	0.40	0.41	5.00	0.01	0.61	0.61
12.65	0.39	0.41	5.00	0.01	0.61	0.61
12.70	0.39	0.41	5.00	0.01	0.61	0.61
12.75	0.38	0.41	5.00	0.01	0.60	0.61
12.80	0.37	0.41	5.00	0.01	0.60	0.61
12.85	0.37	0.41	5.00	0.01	0.60	0.61
12.90	0.36	0.41	5.00	0.01	0.60	0.61
12.95	0.36	0.41	5.00	0.01	0.60	0.61
13.00	0.35	0.41	5.00	0.01	0.60	0.61
13.05	0.35	0.41	5.00	0.01	0.60	0.60
13.10	0.35	0.41	5.00	0.01	0.60	0.60
13.15	0.34	0.41	5.00	0.01	0.60	0.60
13.20	0.34	0.41	5.00	0.01	0.60	0.60
13.25	0.34	0.41	5.00	0.01	0.60	0.60
13.30	0.33	0.41	5.00	0.01	0.59	0.60
13.35	0.33	0.41	5.00	0.01	0.59	0.60

13.40	0.33	0.41	5.00	0.01	0.59	0.60
13.45	0.32	0.41	5.00	0.01	0.59	0.60
13.50	0.32	0.41	5.00	0.01	0.59	0.60
13.55	0.32	0.41	5.00	0.01	0.59	0.59
13.60	0.32	0.41	5.00	0.01	0.59	0.59
13.65	0.31	0.41	5.00	0.01	0.59	0.59
13.70	0.31	0.41	5.00	0.01	0.59	0.59
13.75	0.31	0.41	5.00	0.01	0.59	0.59
13.80	0.30	0.41	5.00	0.01	0.58	0.59
13.85	0.30	0.41	5.00	0.01	0.58	0.59
13.90	0.30	0.41	5.00	0.01	0.58	0.59
13.95	0.30	0.41	5.00	0.01	0.58	0.59
14.00	0.30	0.41	5.00	0.01	0.58	0.58
14.05	0.29	0.41	5.00	0.01	0.58	0.58
14.10	0.29	0.41	5.00	0.01	0.58	0.58
14.15	0.29	0.41	5.00	0.01	0.58	0.58
14.20	0.29	0.41	5.00	0.01	0.57	0.58
14.25	0.28	0.41	5.00	0.01	0.57	0.58
14.30	0.28	0.41	5.00	0.01	0.57	0.58
14.35	0.28	0.41	5.00	0.01	0.57	0.57
14.40	0.28	0.41	5.00	0.01	0.57	0.57
14.45	0.27	0.41	5.00	0.01	0.57	0.57
14.50	0.27	0.41	5.00	0.01	0.57	0.57
14.55	0.27	0.41	5.00	0.01	0.56	0.57
14.60	0.27	0.41	5.00	0.01	0.56	0.57
14.65	0.27	0.41	5.00	0.01	0.56	0.57
14.70	0.26	0.41	5.00	0.01	0.56	0.56
14.75	0.26	0.41	5.00	0.01	0.56	0.56
14.80	0.31	0.41	5.00	0.01	0.56	0.56
14.85	0.31	0.41	5.00	0.01	0.55	0.56
14.90	0.31	0.41	5.00	0.01	0.55	0.56
14.95	0.30	0.41	5.00	0.01	0.55	0.56
15.00	0.30	0.41	5.00	0.01	0.55	0.56
15.05	0.30	0.41	5.00	0.01	0.55	0.55
15.10	0.31	0.41	5.00	0.01	0.55	0.55
15.15	0.31	0.41	5.00	0.01	0.55	0.55
15.20	0.31	0.41	5.00	0.01	0.54	0.55
15.25	0.32	0.41	5.00	0.01	0.54	0.55
15.30	0.32	0.41	5.00	0.01	0.54	0.55
15.35	0.32	0.41	5.00	0.01	0.54	0.55
15.40	0.33	0.41	5.00	0.01	0.54	0.54
15.45	0.33	0.41	5.00	0.01	0.54	0.54
15.50	0.34	0.41	5.00	0.01	0.54	0.54
15.55	0.34	0.41	5.00	0.01	0.54	0.54
15.60	0.35	0.41	5.00	0.01	0.53	0.54
15.65	0.35	0.41	5.00	0.01	0.53	0.54
15.70	0.36	0.41	5.00	0.01	0.53	0.54
15.75	0.37	0.41	5.00	0.01	0.53	0.54
15.80	0.37	0.41	5.00	0.01	0.53	0.53
15.85	0.38	0.41	5.00	0.01	0.53	0.53
15.90	0.40	0.41	5.00	0.01	0.53	0.53
15.95	0.41	0.41	5.00	0.01	0.53	0.53
16.00	0.44	0.41	5.00	0.01	0.52	0.53
16.05	0.47	0.41	5.00	0.01	0.52	0.53
16.10	0.47	0.41	5.00	0.01	0.52	0.53
16.15	0.47	0.41	5.00	0.01	0.52	0.53
16.20	0.47	0.41	5.00	0.01	0.52	0.52
16.25	0.47	0.41	5.00	0.01	0.52	0.52
16.30	0.47	0.41	5.00	0.01	0.52	0.52

16.35	0.47	0.41	5.00	0.01	0.52	0.52
16.40	0.47	0.41	5.00	0.01	0.51	0.52
16.45	0.47	0.41	5.00	0.01	0.51	0.52
16.50	0.47	0.41	5.00	0.01	0.51	0.52
16.55	0.47	0.41	5.00	0.01	0.51	0.52
16.60	0.47	0.41	5.00	0.01	0.51	0.52
16.65	0.47	0.41	5.00	0.01	0.51	0.51
16.70	0.47	0.41	5.00	0.01	0.51	0.51
16.75	0.47	0.41	5.00	0.01	0.51	0.51
16.80	0.47	0.41	5.00	0.01	0.51	0.51
16.85	0.47	0.41	5.00	0.01	0.50	0.51
16.90	0.47	0.41	5.00	0.01	0.50	0.51
16.95	0.47	0.41	5.00	0.01	0.50	0.51
17.00	0.47	0.41	5.00	0.01	0.50	0.51
17.05	0.47	0.41	5.00	0.01	0.50	0.51
17.10	0.47	0.41	5.00	0.01	0.50	0.50
17.15	0.47	0.41	5.00	0.01	0.50	0.50
17.20	0.47	0.41	5.00	0.01	0.50	0.50
17.25	0.47	0.41	5.00	0.01	0.50	0.50
17.30	0.47	0.41	5.00	0.01	0.50	0.50
17.35	0.47	0.41	5.00	0.01	0.49	0.50
17.40	0.47	0.41	5.00	0.01	0.49	0.50
17.45	0.47	0.41	5.00	0.01	0.49	0.50
17.50	0.47	0.41	5.00	0.01	0.49	0.50
17.55	0.47	0.41	5.00	0.01	0.49	0.50
17.60	0.47	0.41	5.00	0.01	0.49	0.49
17.65	0.47	0.41	5.00	0.01	0.49	0.49
17.70	0.47	0.41	5.00	0.01	0.49	0.49
17.75	0.47	0.41	5.00	0.01	0.49	0.49
17.80	0.47	0.40	5.00	0.01	0.49	0.49
17.85	0.47	0.40	5.00	0.01	0.48	0.49
17.90	0.47	0.40	5.00	0.01	0.48	0.49
17.95	0.47	0.40	5.00	0.01	0.48	0.49
18.00	0.47	0.40	5.00	0.01	0.48	0.49
18.05	0.47	0.40	5.00	0.01	0.48	0.49
18.10	0.47	0.40	5.00	0.01	0.48	0.48
18.15	0.47	0.40	5.00	0.01	0.48	0.48
18.20	0.47	0.40	5.00	0.01	0.48	0.48
18.25	0.47	0.40	5.00	0.01	0.48	0.48
18.30	0.47	0.40	5.00	0.01	0.48	0.48
18.35	0.47	0.40	5.00	0.01	0.47	0.48
18.40	0.47	0.40	5.00	0.01	0.47	0.48
18.45	0.47	0.40	5.00	0.01	0.47	0.48
18.50	0.47	0.40	5.00	0.01	0.47	0.48
18.55	0.47	0.40	5.00	0.01	0.47	0.48
18.60	0.47	0.40	5.00	0.01	0.47	0.48
18.65	0.47	0.40	5.00	0.01	0.47	0.47
18.70	0.47	0.40	5.00	0.01	0.47	0.47
18.75	0.47	0.40	5.00	0.01	0.47	0.47
18.80	0.47	0.40	5.00	0.01	0.47	0.47
18.85	0.47	0.40	5.00	0.01	0.47	0.47
18.90	0.47	0.40	5.00	0.01	0.46	0.47
18.95	0.47	0.40	5.00	0.01	0.46	0.47
19.00	0.47	0.40	5.00	0.01	0.46	0.47
19.05	0.47	0.40	5.00	0.01	0.46	0.47
19.10	0.47	0.40	5.00	0.01	0.46	0.47
19.15	0.47	0.40	5.00	0.01	0.46	0.47
19.20	0.47	0.40	5.00	0.01	0.46	0.46
19.25	0.47	0.40	5.00	0.01	0.46	0.46

19.30	0.47	0.40	5.00	0.01	0.46	0.46
19.35	0.47	0.40	5.00	0.01	0.46	0.46
19.40	0.47	0.40	5.00	0.01	0.46	0.46
19.45	0.47	0.40	5.00	0.01	0.46	0.46
19.50	0.47	0.40	5.00	0.01	0.45	0.46
19.55	0.47	0.40	5.00	0.01	0.45	0.46
19.60	0.47	0.40	5.00	0.01	0.45	0.46
19.65	0.47	0.40	5.00	0.01	0.45	0.46
19.70	0.47	0.40	5.00	0.01	0.45	0.46
19.75	0.47	0.40	5.00	0.01	0.45	0.46
19.80	0.47	0.40	5.00	0.01	0.45	0.46
19.85	0.47	0.40	5.00	0.01	0.45	0.46
19.90	0.47	0.40	5.00	0.01	0.45	0.46
19.95	0.47	0.40	5.00	0.01	0.45	0.46
20.00	0.47	0.40	5.00	0.01	0.45	0.45
20.05	0.47	0.40	5.00	0.01	0.45	0.45
20.10	0.47	0.40	5.00	0.01	0.45	0.45
20.15	0.47	0.40	5.00	0.01	0.45	0.45
20.20	0.47	0.40	5.00	0.01	0.45	0.45
20.25	0.47	0.40	5.00	0.01	0.45	0.45
20.30	0.47	0.40	5.00	0.01	0.45	0.45
20.35	0.47	0.40	5.00	0.01	0.45	0.45
20.40	0.47	0.40	5.00	0.01	0.45	0.45
20.45	0.47	0.40	5.00	0.01	0.45	0.45
20.50	0.47	0.40	5.00	0.01	0.44	0.45
20.55	0.47	0.40	5.00	0.01	0.44	0.45
20.60	0.47	0.40	5.00	0.01	0.44	0.45
20.65	0.47	0.40	5.00	0.01	0.44	0.45
20.70	0.47	0.40	5.00	0.01	0.44	0.45
20.75	0.47	0.40	5.00	0.01	0.44	0.45
20.80	0.47	0.40	5.00	0.01	0.44	0.45
20.85	0.47	0.40	5.00	0.01	0.44	0.45
20.90	0.47	0.40	5.00	0.01	0.44	0.45
20.95	0.47	0.40	5.00	0.01	0.44	0.44
21.00	0.47	0.40	5.00	0.01	0.44	0.44
21.05	0.47	0.40	5.00	0.01	0.44	0.44
21.10	0.47	0.40	5.00	0.01	0.44	0.44
21.15	0.47	0.40	5.00	0.01	0.44	0.44
21.20	0.47	0.40	5.00	0.01	0.44	0.44
21.25	0.47	0.40	5.00	0.01	0.44	0.44
21.30	0.47	0.40	5.00	0.01	0.44	0.44
21.35	0.47	0.40	5.00	0.01	0.43	0.44
21.40	0.47	0.40	5.00	0.01	0.43	0.44
21.45	0.47	0.40	5.00	0.01	0.43	0.44
21.50	0.47	0.40	5.00	0.01	0.43	0.44
21.55	0.47	0.40	5.00	0.01	0.43	0.44
21.60	0.47	0.40	5.00	0.01	0.43	0.44
21.65	0.47	0.40	5.00	0.01	0.43	0.44
21.70	0.47	0.40	5.00	0.01	0.43	0.43
21.75	0.47	0.40	5.00	0.01	0.43	0.43
21.80	0.47	0.40	5.00	0.01	0.43	0.43
21.85	0.47	0.40	5.00	0.01	0.43	0.43
21.90	0.47	0.40	5.00	0.01	0.43	0.43
21.95	0.47	0.40	5.00	0.01	0.43	0.43
22.00	0.47	0.40	5.00	0.01	0.42	0.43
22.05	0.47	0.40	5.00	0.01	0.42	0.43
22.10	0.47	0.40	5.00	0.01	0.42	0.43
22.15	0.44	0.40	5.00	0.01	0.42	0.43
22.20	0.41	0.40	5.00	0.01	0.42	0.43

22.25	0.39	0.40	5.00	0.01	0.42	0.43
22.30	0.38	0.40	5.00	0.01	0.42	0.42
22.35	0.37	0.40	5.00	0.01	0.42	0.42
22.40	0.36	0.40	5.00	0.01	0.42	0.42
22.45	0.35	0.40	5.00	0.01	0.42	0.42
22.50	0.35	0.40	5.00	0.01	0.42	0.42
22.55	0.34	0.40	5.00	0.01	0.41	0.42
22.60	0.34	0.40	5.00	0.01	0.41	0.42
22.65	0.33	0.40	5.00	0.01	0.41	0.42
22.70	0.33	0.40	5.00	0.01	0.41	0.42
22.75	0.32	0.40	5.00	0.01	0.41	0.42
22.80	0.32	0.40	5.00	0.01	0.41	0.41
22.85	0.31	0.40	5.00	0.01	0.41	0.41
22.90	0.31	0.40	5.00	0.01	0.41	0.41
22.95	0.31	0.40	5.00	0.01	0.41	0.41
23.00	0.30	0.40	5.00	0.01	0.40	0.41
23.05	0.30	0.40	5.00	0.01	0.40	0.41
23.10	0.30	0.40	5.00	0.01	0.40	0.41
23.15	0.29	0.40	5.00	0.01	0.40	0.41
23.20	0.29	0.40	5.00	0.01	0.40	0.41
23.25	0.29	0.40	5.00	0.01	0.40	0.40
23.30	0.29	0.40	5.00	0.01	0.40	0.40
23.35	0.28	0.40	5.00	0.01	0.40	0.40
23.40	0.28	0.40	5.00	0.01	0.39	0.40
23.45	0.28	0.40	5.00	0.01	0.39	0.40
23.50	0.28	0.40	5.00	0.01	0.39	0.40
23.55	0.27	0.40	5.00	0.01	0.39	0.40
23.60	0.27	0.40	5.00	0.01	0.39	0.39
23.65	0.27	0.40	5.00	0.01	0.39	0.39
23.70	0.27	0.40	5.00	0.01	0.39	0.39
23.75	0.26	0.40	5.00	0.01	0.38	0.39
23.80	0.26	0.40	5.00	0.01	0.38	0.39
23.85	0.26	0.40	5.00	0.01	0.38	0.39
23.90	0.26	0.40	5.00	0.01	0.38	0.39
23.95	0.25	0.40	5.00	0.01	0.38	0.38
24.00	0.25	0.40	5.00	0.01	0.38	0.38
24.05	0.25	0.40	5.00	0.01	0.38	0.38
24.10	0.25	0.40	5.00	0.01	0.37	0.38
24.15	0.25	0.40	5.00	0.01	0.37	0.38
24.20	0.24	0.40	5.00	0.01	0.37	0.38
24.25	0.24	0.40	5.00	0.01	0.37	0.37
24.30	0.24	0.40	5.00	0.01	0.37	0.37
24.35	0.24	0.40	5.00	0.01	0.36	0.37
24.40	0.24	0.40	5.00	0.01	0.36	0.37
24.45	0.23	0.40	5.00	0.01	0.36	0.37
24.50	0.23	0.40	5.00	0.01	0.36	0.36
24.55	0.23	0.40	5.00	0.01	0.36	0.36
24.60	0.23	0.40	5.00	0.01	0.36	0.36
24.65	0.23	0.40	5.00	0.01	0.35	0.36
24.70	0.23	0.40	5.00	0.01	0.35	0.36
24.75	0.22	0.40	5.00	0.01	0.35	0.35
24.80	0.22	0.40	5.00	0.01	0.35	0.35
24.85	0.22	0.40	5.00	0.01	0.34	0.35
24.90	0.22	0.40	5.00	0.01	0.34	0.35
24.95	0.22	0.40	5.00	0.01	0.34	0.35
25.00	0.21	0.40	5.00	0.01	0.34	0.34
25.05	0.22	0.40	5.00	0.01	0.34	0.34
25.10	0.22	0.40	5.00	0.01	0.33	0.34
25.15	0.22	0.40	5.00	0.01	0.33	0.34

25.20	0.22	0.40	5.00	0.01	0.33	0.33
25.25	0.22	0.40	5.00	0.01	0.33	0.33
25.30	0.22	0.40	5.00	0.01	0.32	0.33
25.35	0.22	0.40	5.00	0.01	0.32	0.33
25.40	0.22	0.40	5.00	0.01	0.32	0.32
25.45	0.22	0.40	5.00	0.01	0.32	0.32
25.50	0.22	0.40	5.00	0.01	0.31	0.32
25.55	0.22	0.40	5.00	0.01	0.31	0.32
25.60	0.22	0.40	5.00	0.01	0.31	0.31
25.65	0.22	0.40	5.00	0.01	0.31	0.31
25.70	0.23	0.40	5.00	0.01	0.31	0.31
25.75	0.23	0.40	5.00	0.01	0.30	0.31
25.80	0.23	0.40	5.00	0.01	0.30	0.31
25.85	0.23	0.40	5.00	0.01	0.30	0.30
25.90	0.23	0.40	5.00	0.01	0.30	0.30
25.95	0.23	0.40	5.00	0.01	0.29	0.30
26.00	0.23	0.40	5.00	0.01	0.29	0.30
26.05	0.23	0.40	5.00	0.01	0.29	0.29
26.10	0.23	0.40	5.00	0.01	0.29	0.29
26.15	0.23	0.40	5.00	0.01	0.29	0.29
26.20	0.23	0.40	5.00	0.01	0.28	0.29
26.25	0.23	0.40	5.00	0.01	0.28	0.29
26.30	0.24	0.40	5.00	0.01	0.28	0.28
26.35	0.24	0.40	5.00	0.01	0.28	0.28
26.40	0.24	0.40	5.00	0.01	0.27	0.28
26.45	0.24	0.40	5.00	0.01	0.27	0.28
26.50	0.24	0.40	5.00	0.01	0.27	0.28
26.55	0.24	0.40	5.00	0.01	0.27	0.27
26.60	0.24	0.40	5.00	0.01	0.27	0.27
26.65	0.24	0.40	5.00	0.01	0.26	0.27
26.70	0.24	0.40	5.00	0.01	0.26	0.27
26.75	0.24	0.40	5.00	0.01	0.26	0.26
26.80	0.24	0.40	5.00	0.01	0.26	0.26
26.85	0.24	0.40	5.00	0.01	0.26	0.26
26.90	0.24	0.40	5.00	0.01	0.25	0.26
26.95	0.24	0.40	5.00	0.01	0.25	0.26
27.00	0.25	0.40	5.00	0.01	0.25	0.25
27.05	0.25	0.40	5.00	0.01	0.25	0.25
27.10	0.25	0.40	5.00	0.01	0.25	0.25
27.15	0.25	0.40	5.00	0.01	0.24	0.25
27.20	0.25	0.40	5.00	0.01	0.24	0.25
27.25	0.25	0.40	5.00	0.01	0.24	0.24
27.30	0.25	0.40	5.00	0.01	0.24	0.24
27.35	0.25	0.40	5.00	0.01	0.24	0.24
27.40	0.25	0.40	5.00	0.01	0.23	0.24
27.45	0.25	0.40	5.00	0.01	0.23	0.24
27.50	0.25	0.40	5.00	0.01	0.23	0.23
27.55	0.25	0.40	5.00	0.01	0.23	0.23
27.60	0.25	0.40	5.00	0.01	0.23	0.23
27.65	0.26	0.40	5.00	0.01	0.22	0.23
27.70	0.26	0.40	5.00	0.01	0.22	0.23
27.75	0.26	0.40	5.00	0.01	0.22	0.22
27.80	0.26	0.40	5.00	0.01	0.22	0.22
27.85	0.26	0.40	5.00	0.01	0.22	0.22
27.90	0.28	0.40	5.00	0.01	0.21	0.22
27.95	0.28	0.39	5.00	0.01	0.21	0.22
28.00	0.28	0.39	5.00	0.01	0.21	0.22
28.05	0.28	0.39	5.00	0.01	0.21	0.21
28.10	0.28	0.39	5.00	0.01	0.21	0.21

28.15	0.28	0.39	5.00	0.01	0.21	0.21
28.20	0.28	0.39	5.00	0.01	0.20	0.21
28.25	0.28	0.39	5.00	0.01	0.20	0.21
28.30	0.28	0.39	5.00	0.01	0.20	0.21
28.35	0.28	0.39	5.00	0.01	0.20	0.20
28.40	0.29	0.39	5.00	0.01	0.20	0.20
28.45	0.29	0.39	5.00	0.01	0.19	0.20
28.50	0.29	0.39	5.00	0.01	0.19	0.20
28.55	0.29	0.39	5.00	0.01	0.19	0.20
28.60	0.29	0.39	5.00	0.01	0.19	0.19
28.65	0.29	0.39	5.00	0.01	0.19	0.19
28.70	0.29	0.39	5.00	0.01	0.19	0.19
28.75	0.29	0.39	5.00	0.01	0.18	0.19
28.80	0.29	0.39	5.00	0.01	0.18	0.19
28.85	0.29	0.39	5.00	0.01	0.18	0.19
28.90	0.30	0.39	5.00	0.01	0.18	0.19
28.95	0.30	0.39	5.00	0.01	0.18	0.18
29.00	0.30	0.39	5.00	0.01	0.18	0.18
29.05	0.30	0.39	5.00	0.01	0.18	0.18
29.10	0.30	0.39	5.00	0.01	0.17	0.18
29.15	0.30	0.39	5.00	0.01	0.17	0.18
29.20	0.30	0.39	5.00	0.01	0.17	0.18
29.25	0.30	0.39	5.00	0.01	0.17	0.17
29.30	0.30	0.39	5.00	0.01	0.17	0.17
29.35	0.31	0.39	5.00	0.01	0.17	0.17
29.40	0.31	0.39	5.00	0.01	0.16	0.17
29.45	0.31	0.39	5.00	0.01	0.16	0.17
29.50	0.31	0.39	5.00	0.01	0.16	0.17
29.55	0.31	0.39	5.00	0.01	0.16	0.16
29.60	0.31	0.39	5.00	0.01	0.16	0.16
29.65	0.31	0.39	5.00	0.01	0.16	0.16
29.70	0.31	0.39	5.00	0.01	0.15	0.16
29.75	0.32	0.39	5.00	0.01	0.15	0.16
29.80	0.32	0.39	5.00	0.01	0.15	0.16
29.85	0.32	0.39	5.00	0.01	0.15	0.15
29.90	0.32	0.39	5.00	0.01	0.15	0.15
29.95	0.32	0.39	5.00	0.01	0.15	0.15
30.00	0.32	0.39	5.00	0.01	0.15	0.15
30.05	0.32	0.39	5.00	0.01	0.14	0.15
30.10	0.32	0.39	5.00	0.01	0.14	0.15
30.15	0.33	0.39	5.00	0.01	0.14	0.15
30.20	0.33	0.39	5.00	0.01	0.14	0.14
30.25	0.33	0.39	5.00	0.01	0.14	0.14
30.30	0.33	0.39	5.00	0.01	0.14	0.14
30.35	0.33	0.39	5.00	0.01	0.13	0.14
30.40	0.33	0.39	5.00	0.01	0.13	0.14
30.45	0.33	0.39	5.00	0.01	0.13	0.14
30.50	0.33	0.39	5.00	0.01	0.13	0.14
30.55	0.33	0.39	5.00	0.01	0.13	0.13
30.60	0.33	0.39	5.00	0.01	0.13	0.13
30.65	0.33	0.39	5.00	0.01	0.13	0.13
30.70	0.33	0.39	5.00	0.01	0.12	0.13
30.75	0.33	0.39	5.00	0.01	0.12	0.13
30.80	0.33	0.39	5.00	0.01	0.12	0.13
30.85	0.33	0.39	5.00	0.01	0.12	0.12
30.90	0.34	0.39	5.00	0.01	0.12	0.12
30.95	0.34	0.39	5.00	0.01	0.12	0.12
31.00	0.34	0.39	5.00	0.01	0.12	0.12
31.05	0.34	0.39	5.00	0.01	0.11	0.12

31.10	0.34	0.39	5.00	0.01	0.11	0.12
31.15	0.34	0.39	5.00	0.01	0.11	0.12
31.20	0.34	0.39	5.00	0.01	0.11	0.11
31.25	0.34	0.39	5.00	0.01	0.11	0.11
31.30	0.34	0.39	5.00	0.01	0.11	0.11
31.35	0.34	0.39	5.00	0.01	0.10	0.11
31.40	0.34	0.39	5.00	0.01	0.10	0.11
31.45	0.35	0.39	5.00	0.01	0.10	0.11
31.50	0.35	0.39	5.00	0.01	0.10	0.11
31.55	0.35	0.39	5.00	0.01	0.10	0.10
31.60	0.35	0.39	5.00	0.01	0.10	0.10
31.65	0.35	0.39	5.00	0.01	0.10	0.10
31.70	0.35	0.39	5.00	0.01	0.09	0.10
31.75	0.35	0.39	5.00	0.01	0.09	0.10
31.80	0.35	0.39	5.00	0.01	0.09	0.10
31.85	0.35	0.39	5.00	0.01	0.09	0.10
31.90	0.35	0.39	5.00	0.01	0.09	0.09
31.95	0.36	0.39	5.00	0.01	0.09	0.09
32.00	0.36	0.39	5.00	0.01	0.09	0.09
32.05	0.36	0.39	5.00	0.01	0.08	0.09
32.10	0.36	0.39	5.00	0.01	0.08	0.09
32.15	0.36	0.39	5.00	0.01	0.08	0.09
32.20	0.36	0.39	5.00	0.01	0.08	0.08
32.25	0.36	0.39	5.00	0.01	0.08	0.08
32.30	0.37	0.38	5.00	0.01	0.08	0.08
32.35	0.37	0.38	5.00	0.01	0.08	0.08
32.40	0.37	0.38	5.00	0.01	0.07	0.08
32.45	0.37	0.38	5.00	0.01	0.07	0.08
32.50	0.37	0.38	5.00	0.01	0.07	0.08
32.55	0.37	0.38	5.00	0.01	0.07	0.07
32.60	0.38	0.38	5.00	0.01	0.07	0.07
32.65	0.38	0.38	5.00	0.01	0.07	0.07
32.70	0.38	0.38	5.00	0.01	0.07	0.07
32.75	0.38	0.38	5.00	0.01	0.06	0.07
32.80	0.39	0.38	5.00	0.01	0.06	0.07
32.85	0.39	0.38	5.00	0.01	0.06	0.07
32.90	0.39	0.38	5.00	0.01	0.06	0.06
32.95	0.39	0.38	5.00	0.01	0.06	0.06
33.00	0.40	0.38	5.00	0.01	0.06	0.06
33.05	0.40	0.38	5.00	0.01	0.06	0.06
33.10	0.41	0.38	5.00	0.01	0.05	0.06
33.15	0.41	0.38	5.00	0.01	0.05	0.06
33.20	0.42	0.38	5.00	0.01	0.05	0.06
33.25	0.42	0.38	5.00	0.01	0.05	0.05
33.30	0.43	0.38	5.00	0.01	0.05	0.05
33.35	0.43	0.38	5.00	0.01	0.05	0.05
33.40	0.44	0.38	5.00	0.01	0.05	0.05
33.45	0.45	0.38	5.00	0.01	0.04	0.05
33.50	0.45	0.38	5.00	0.01	0.04	0.05
33.55	0.45	0.38	5.00	0.01	0.04	0.05
33.60	0.45	0.38	5.00	0.01	0.04	0.04
33.65	0.45	0.38	5.00	0.01	0.04	0.04
33.70	0.45	0.38	5.00	0.01	0.04	0.04
33.75	0.45	0.38	5.00	0.01	0.04	0.04
33.80	0.45	0.38	5.00	0.01	0.03	0.04
33.85	0.45	0.38	5.00	0.01	0.03	0.04
33.90	0.45	0.38	5.00	0.01	0.03	0.04
33.95	0.45	0.38	5.00	0.01	0.03	0.04
34.00	0.45	0.38	5.00	0.01	0.03	0.03

34.05	0.45	0.38	5.00	0.01	0.03	0.03
34.10	0.45	0.38	5.00	0.01	0.03	0.03
34.15	0.45	0.38	5.00	0.01	0.02	0.03
34.20	0.45	0.38	5.00	0.01	0.02	0.03
34.25	0.45	0.38	5.00	0.01	0.02	0.03
34.30	0.45	0.38	5.00	0.01	0.02	0.03
34.35	0.45	0.38	5.00	0.01	0.02	0.02
34.40	0.45	0.38	5.00	0.01	0.02	0.02
34.45	0.45	0.38	5.00	0.01	0.02	0.02
34.50	0.45	0.38	5.00	0.01	0.01	0.02
34.55	0.45	0.38	5.00	0.01	0.01	0.02
34.60	0.45	0.38	5.00	0.01	0.01	0.02
34.65	0.45	0.38	5.00	0.01	0.01	0.02
34.70	0.45	0.38	5.00	0.01	0.01	0.01
34.75	0.45	0.38	5.00	0.01	0.01	0.01
34.80	0.45	0.38	5.00	0.01	0.01	0.01
34.85	0.45	0.38	5.00	0.01	0.01	0.01
34.90	0.45	0.38	5.00	0.01	0.00	0.01
34.95	0.45	0.38	5.00	0.01	0.00	0.01
35.00	0.45	0.38	5.00	0.01	0.00	0.01
35.05	0.45	0.38	1.19	0.01	0.00	0.01
35.10	0.45	0.38	1.19	0.00	0.00	0.00
35.15	0.45	0.38	1.19	0.00	0.00	0.00
35.20	0.45	0.38	1.19	0.00	0.00	0.00
35.25	0.45	0.38	1.18	0.00	0.00	0.00
35.30	0.45	0.38	1.18	0.00	0.00	0.00
35.35	0.45	0.38	1.18	0.00	0.00	0.00
35.40	0.44	0.38	1.18	0.00	0.00	0.00
35.45	0.44	0.38	1.18	0.00	0.00	0.00
35.50	0.44	0.38	1.18	0.00	0.00	0.00
35.55	0.44	0.38	1.18	0.00	0.00	0.00
35.60	0.44	0.38	1.18	0.00	0.00	0.00
35.65	0.44	0.38	1.18	0.00	0.00	0.00
35.70	0.44	0.38	1.18	0.00	0.00	0.00
35.75	0.44	0.38	1.18	0.00	0.00	0.00
35.80	0.44	0.38	1.18	0.00	0.00	0.00
35.85	0.44	0.38	1.18	0.00	0.00	0.00
35.90	0.44	0.38	1.18	0.00	0.00	0.00
35.95	0.44	0.38	1.18	0.00	0.00	0.00
36.00	0.44	0.38	1.18	0.00	0.00	0.00
36.05	0.44	0.38	1.17	0.00	0.00	0.00
36.10	0.44	0.38	1.17	0.00	0.00	0.00
36.15	0.44	0.38	1.17	0.00	0.00	0.00
36.20	0.44	0.38	1.17	0.00	0.00	0.00
36.25	0.44	0.38	1.17	0.00	0.00	0.00
36.30	0.44	0.38	1.17	0.00	0.00	0.00
36.35	0.44	0.38	1.17	0.00	0.00	0.00
36.40	0.44	0.38	1.17	0.00	0.00	0.00
36.45	0.44	0.38	1.17	0.00	0.00	0.00
36.50	0.44	0.38	1.17	0.00	0.00	0.00
36.55	0.44	0.38	1.17	0.00	0.00	0.00
36.60	0.44	0.38	1.17	0.00	0.00	0.00
36.65	0.44	0.38	1.17	0.00	0.00	0.00
36.70	0.44	0.38	1.17	0.00	0.00	0.00
36.75	0.44	0.38	1.17	0.00	0.00	0.00
36.80	0.44	0.38	1.17	0.00	0.00	0.00
36.85	0.44	0.38	1.17	0.00	0.00	0.00
36.90	0.44	0.38	1.17	0.00	0.00	0.00
36.95	0.44	0.38	1.16	0.00	0.00	0.00

37.00	0.44	0.38	1.16	0.00	0.00	0.00
37.05	0.44	0.38	1.16	0.00	0.00	0.00
37.10	0.44	0.38	1.16	0.00	0.00	0.00
37.15	0.44	0.38	1.16	0.00	0.00	0.00
37.20	0.44	0.38	1.16	0.00	0.00	0.00
37.25	0.44	0.38	1.16	0.00	0.00	0.00
37.30	0.44	0.38	1.16	0.00	0.00	0.00
37.35	0.44	0.38	1.16	0.00	0.00	0.00
37.40	0.44	0.38	1.16	0.00	0.00	0.00
37.45	0.44	0.38	1.16	0.00	0.00	0.00
37.50	0.44	0.38	1.16	0.00	0.00	0.00
37.55	0.44	0.38	1.16	0.00	0.00	0.00
37.60	0.44	0.38	1.16	0.00	0.00	0.00
37.65	0.44	0.38	1.16	0.00	0.00	0.00
37.70	0.44	0.38	1.16	0.00	0.00	0.00
37.75	0.44	0.38	1.16	0.00	0.00	0.00
37.80	0.44	0.38	1.16	0.00	0.00	0.00
37.85	0.44	0.38	1.16	0.00	0.00	0.00
37.90	0.44	0.38	1.15	0.00	0.00	0.00
37.95	0.44	0.38	1.15	0.00	0.00	0.00
38.00	0.44	0.38	1.15	0.00	0.00	0.00
38.05	0.44	0.38	1.15	0.00	0.00	0.00
38.10	0.44	0.38	1.15	0.00	0.00	0.00
38.15	0.44	0.38	1.15	0.00	0.00	0.00
38.20	0.44	0.38	1.15	0.00	0.00	0.00
38.25	0.44	0.38	1.15	0.00	0.00	0.00
38.30	0.44	0.38	1.15	0.00	0.00	0.00
38.35	0.44	0.38	1.15	0.00	0.00	0.00
38.40	0.44	0.38	1.15	0.00	0.00	0.00
38.45	0.44	0.38	1.15	0.00	0.00	0.00
38.50	0.44	0.38	1.15	0.00	0.00	0.00
38.55	0.44	0.38	1.15	0.00	0.00	0.00
38.60	0.44	0.38	1.15	0.00	0.00	0.00
38.65	0.44	0.38	1.15	0.00	0.00	0.00
38.70	0.44	0.38	1.15	0.00	0.00	0.00
38.75	0.44	0.38	1.15	0.00	0.00	0.00
38.80	0.44	0.38	1.15	0.00	0.00	0.00
38.85	0.44	0.38	1.15	0.00	0.00	0.00
38.90	0.44	0.38	1.14	0.00	0.00	0.00
38.95	0.44	0.38	1.14	0.00	0.00	0.00
39.00	0.44	0.38	1.14	0.00	0.00	0.00
39.05	0.44	0.38	1.14	0.00	0.00	0.00
39.10	0.44	0.38	1.14	0.00	0.00	0.00
39.15	0.44	0.38	1.14	0.00	0.00	0.00
39.20	0.44	0.38	1.14	0.00	0.00	0.00
39.25	0.44	0.38	1.14	0.00	0.00	0.00
39.30	0.44	0.38	1.14	0.00	0.00	0.00
39.35	0.44	0.38	1.14	0.00	0.00	0.00
39.40	0.44	0.38	1.14	0.00	0.00	0.00
39.45	0.43	0.38	1.14	0.00	0.00	0.00
39.50	0.43	0.38	1.14	0.00	0.00	0.00
39.55	0.43	0.38	1.14	0.00	0.00	0.00
39.60	0.43	0.38	1.14	0.00	0.00	0.00
39.65	0.43	0.38	1.14	0.00	0.00	0.00
39.70	0.43	0.38	1.14	0.00	0.00	0.00
39.75	0.43	0.38	1.14	0.00	0.00	0.00
39.80	0.43	0.38	1.14	0.00	0.00	0.00
39.85	0.43	0.38	1.14	0.00	0.00	0.00
39.90	0.43	0.38	1.14	0.00	0.00	0.00

39.95	0.43	0.38	1.14	0.00	0.00	0.00
40.00	0.43	0.38	1.13	0.00	0.00	0.00
40.05	0.43	0.38	1.13	0.00	0.00	0.00
40.10	0.43	0.38	1.13	0.00	0.00	0.00
40.15	0.43	0.38	1.13	0.00	0.00	0.00
40.20	0.43	0.38	1.13	0.00	0.00	0.00
40.25	0.43	0.38	1.13	0.00	0.00	0.00
40.30	0.43	0.38	1.13	0.00	0.00	0.00
40.35	0.43	0.38	1.13	0.00	0.00	0.00
40.40	0.43	0.38	1.13	0.00	0.00	0.00
40.45	0.43	0.38	1.13	0.00	0.00	0.00
40.50	0.43	0.38	1.13	0.00	0.00	0.00
40.55	0.43	0.38	1.13	0.00	0.00	0.00
40.60	0.43	0.38	1.13	0.00	0.00	0.00
40.65	0.43	0.38	1.13	0.00	0.00	0.00
40.70	0.43	0.38	1.13	0.00	0.00	0.00
40.75	0.43	0.38	1.13	0.00	0.00	0.00
40.80	0.43	0.38	1.13	0.00	0.00	0.00
40.85	0.43	0.38	1.13	0.00	0.00	0.00
40.90	0.43	0.38	1.13	0.00	0.00	0.00
40.95	0.43	0.38	1.13	0.00	0.00	0.00
41.00	0.43	0.38	1.13	0.00	0.00	0.00
41.05	0.43	0.38	1.13	0.00	0.00	0.00
41.10	0.43	0.38	1.13	0.00	0.00	0.00
41.15	0.43	0.38	1.13	0.00	0.00	0.00
41.20	0.43	0.38	1.13	0.00	0.00	0.00
41.25	0.43	0.38	1.12	0.00	0.00	0.00
41.30	0.43	0.38	1.12	0.00	0.00	0.00
41.35	0.43	0.38	1.12	0.00	0.00	0.00
41.40	0.43	0.38	1.12	0.00	0.00	0.00
41.45	0.43	0.38	1.12	0.00	0.00	0.00
41.50	0.43	0.38	1.12	0.00	0.00	0.00
41.55	0.43	0.38	1.12	0.00	0.00	0.00
41.60	0.43	0.38	1.12	0.00	0.00	0.00
41.65	0.43	0.38	1.12	0.00	0.00	0.00
41.70	0.43	0.38	1.12	0.00	0.00	0.00
41.75	0.43	0.38	1.12	0.00	0.00	0.00
41.80	0.43	0.38	1.12	0.00	0.00	0.00
41.85	0.43	0.38	1.12	0.00	0.00	0.00
41.90	0.43	0.38	1.12	0.00	0.00	0.00
41.95	0.43	0.38	1.12	0.00	0.00	0.00
42.00	0.43	0.38	1.12	0.00	0.00	0.00
42.05	0.43	0.38	1.12	0.00	0.00	0.00
42.10	0.43	0.38	1.12	0.00	0.00	0.00
42.15	0.43	0.38	1.12	0.00	0.00	0.00
42.20	0.43	0.38	1.12	0.00	0.00	0.00
42.25	0.43	0.38	1.12	0.00	0.00	0.00
42.30	0.43	0.38	1.12	0.00	0.00	0.00
42.35	0.43	0.38	1.12	0.00	0.00	0.00
42.40	0.43	0.38	1.12	0.00	0.00	0.00
42.45	0.43	0.38	1.12	0.00	0.00	0.00
42.50	0.43	0.38	1.12	0.00	0.00	0.00
42.55	0.43	0.38	1.12	0.00	0.00	0.00
42.60	0.43	0.38	1.11	0.00	0.00	0.00
42.65	0.43	0.38	1.11	0.00	0.00	0.00
42.70	0.43	0.38	1.11	0.00	0.00	0.00
42.75	0.43	0.38	1.11	0.00	0.00	0.00
42.80	0.43	0.38	1.11	0.00	0.00	0.00
42.85	0.43	0.38	1.11	0.00	0.00	0.00

42.90	0.43	0.38	1.11	0.00	0.00	0.00
42.95	0.43	0.38	1.11	0.00	0.00	0.00
43.00	0.43	0.38	1.11	0.00	0.00	0.00
43.05	0.43	0.38	1.11	0.00	0.00	0.00
43.10	0.43	0.38	1.11	0.00	0.00	0.00
43.15	0.43	0.38	1.11	0.00	0.00	0.00
43.20	0.43	0.38	1.11	0.00	0.00	0.00
43.25	0.43	0.38	1.11	0.00	0.00	0.00
43.30	0.43	0.38	1.11	0.00	0.00	0.00
43.35	0.43	0.38	1.11	0.00	0.00	0.00
43.40	0.43	0.38	1.11	0.00	0.00	0.00
43.45	0.43	0.38	1.11	0.00	0.00	0.00
43.50	0.43	0.38	1.11	0.00	0.00	0.00
43.55	0.43	0.38	1.11	0.00	0.00	0.00
43.60	0.43	0.38	1.11	0.00	0.00	0.00
43.65	0.43	0.38	1.11	0.00	0.00	0.00
43.70	0.42	0.38	1.11	0.00	0.00	0.00
43.75	0.42	0.38	1.11	0.00	0.00	0.00
43.80	0.42	0.38	1.11	0.00	0.00	0.00
43.85	0.42	0.38	1.11	0.00	0.00	0.00
43.90	0.42	0.38	1.11	0.00	0.00	0.00
43.95	0.42	0.38	1.11	0.00	0.00	0.00
44.00	0.42	0.38	1.11	0.00	0.00	0.00
44.05	0.42	0.38	1.11	0.00	0.00	0.00
44.10	0.42	0.38	1.11	0.00	0.00	0.00
44.15	0.42	0.38	1.11	0.00	0.00	0.00
44.20	0.42	0.38	1.10	0.00	0.00	0.00
44.25	0.42	0.38	1.10	0.00	0.00	0.00
44.30	0.42	0.38	1.10	0.00	0.00	0.00
44.35	0.42	0.38	1.10	0.00	0.00	0.00
44.40	0.42	0.38	1.10	0.00	0.00	0.00
44.45	0.42	0.38	1.10	0.00	0.00	0.00
44.50	0.42	0.38	1.10	0.00	0.00	0.00
44.55	0.42	0.38	1.10	0.00	0.00	0.00
44.60	0.42	0.38	1.10	0.00	0.00	0.00
44.65	0.42	0.38	1.10	0.00	0.00	0.00
44.70	0.42	0.38	1.10	0.00	0.00	0.00
44.75	0.42	0.38	1.10	0.00	0.00	0.00
44.80	0.42	0.38	1.10	0.00	0.00	0.00
44.85	0.42	0.38	1.10	0.00	0.00	0.00
44.90	0.42	0.38	1.10	0.00	0.00	0.00
44.95	0.42	0.38	1.10	0.00	0.00	0.00
45.00	0.42	0.38	1.10	0.00	0.00	0.00
45.05	0.42	0.38	1.10	0.00	0.00	0.00
45.10	0.42	0.38	1.10	0.00	0.00	0.00
45.15	0.42	0.38	1.10	0.00	0.00	0.00
45.20	0.42	0.38	1.10	0.00	0.00	0.00
45.25	0.42	0.38	1.10	0.00	0.00	0.00
45.30	0.42	0.38	1.10	0.00	0.00	0.00
45.35	0.42	0.38	1.10	0.00	0.00	0.00
45.40	0.42	0.38	1.10	0.00	0.00	0.00
45.45	0.42	0.38	1.10	0.00	0.00	0.00
45.50	0.42	0.38	1.10	0.00	0.00	0.00
45.55	0.42	0.38	1.10	0.00	0.00	0.00
45.60	0.42	0.38	1.10	0.00	0.00	0.00
45.65	0.42	0.38	1.10	0.00	0.00	0.00
45.70	0.42	0.38	1.10	0.00	0.00	0.00
45.75	0.42	0.38	1.10	0.00	0.00	0.00
45.80	0.42	0.38	1.10	0.00	0.00	0.00

45.85	0.42	0.38	1.10	0.00	0.00	0.00
45.90	0.42	0.38	1.10	0.00	0.00	0.00
45.95	0.42	0.38	1.10	0.00	0.00	0.00
46.00	0.42	0.38	1.10	0.00	0.00	0.00
46.05	0.42	0.38	1.09	0.00	0.00	0.00
46.10	0.42	0.38	1.09	0.00	0.00	0.00
46.15	0.42	0.38	1.09	0.00	0.00	0.00
46.20	0.42	0.38	1.09	0.00	0.00	0.00
46.25	0.42	0.38	1.09	0.00	0.00	0.00
46.30	0.42	0.38	1.09	0.00	0.00	0.00
46.35	0.42	0.38	1.09	0.00	0.00	0.00
46.40	0.42	0.38	1.09	0.00	0.00	0.00
46.45	0.42	0.38	1.09	0.00	0.00	0.00
46.50	0.42	0.38	1.09	0.00	0.00	0.00
46.55	0.42	0.38	1.09	0.00	0.00	0.00
46.60	0.42	0.38	1.09	0.00	0.00	0.00
46.65	0.42	0.38	1.09	0.00	0.00	0.00
46.70	0.42	0.38	1.09	0.00	0.00	0.00
46.75	0.42	0.38	1.09	0.00	0.00	0.00
46.80	0.42	0.38	1.09	0.00	0.00	0.00
46.85	0.42	0.38	1.09	0.00	0.00	0.00
46.90	0.42	0.38	1.09	0.00	0.00	0.00
46.95	0.42	0.38	1.09	0.00	0.00	0.00
47.00	0.42	0.38	1.09	0.00	0.00	0.00
47.05	0.42	0.38	1.09	0.00	0.00	0.00
47.10	0.42	0.38	1.09	0.00	0.00	0.00
47.15	0.42	0.38	1.09	0.00	0.00	0.00
47.20	0.42	0.38	1.09	0.00	0.00	0.00
47.25	0.42	0.38	1.09	0.00	0.00	0.00
47.30	0.42	0.38	1.09	0.00	0.00	0.00
47.35	0.42	0.38	1.09	0.00	0.00	0.00
47.40	0.42	0.38	1.09	0.00	0.00	0.00
47.45	0.42	0.38	1.09	0.00	0.00	0.00
47.50	0.42	0.38	1.09	0.00	0.00	0.00
47.55	0.42	0.38	1.09	0.00	0.00	0.00
47.60	0.42	0.38	1.09	0.00	0.00	0.00
47.65	0.42	0.38	1.09	0.00	0.00	0.00
47.70	0.42	0.38	1.09	0.00	0.00	0.00
47.75	0.42	0.38	1.09	0.00	0.00	0.00
47.80	0.42	0.38	1.09	0.00	0.00	0.00
47.85	0.42	0.38	1.09	0.00	0.00	0.00
47.90	0.42	0.38	1.09	0.00	0.00	0.00
47.95	0.42	0.38	1.09	0.00	0.00	0.00
48.00	0.42	0.38	1.09	0.00	0.00	0.00
48.05	0.42	0.38	1.09	0.00	0.00	0.00
48.10	0.42	0.38	1.09	0.00	0.00	0.00
48.15	0.41	0.38	1.09	0.00	0.00	0.00
48.20	0.41	0.38	1.09	0.00	0.00	0.00
48.25	0.41	0.38	1.09	0.00	0.00	0.00
48.30	0.41	0.38	1.09	0.00	0.00	0.00
48.35	0.41	0.38	1.09	0.00	0.00	0.00
48.40	0.41	0.38	1.08	0.00	0.00	0.00
48.45	0.41	0.38	1.08	0.00	0.00	0.00
48.50	0.41	0.38	1.08	0.00	0.00	0.00
48.55	0.41	0.38	1.08	0.00	0.00	0.00
48.60	0.41	0.38	1.08	0.00	0.00	0.00
48.65	0.41	0.38	1.08	0.00	0.00	0.00
48.70	0.41	0.38	1.08	0.00	0.00	0.00
48.75	0.41	0.38	1.08	0.00	0.00	0.00

48.80	0.41	0.38	1.08	0.00	0.00	0.00
48.85	0.41	0.38	1.08	0.00	0.00	0.00
48.90	0.41	0.38	1.08	0.00	0.00	0.00
48.95	0.41	0.38	1.08	0.00	0.00	0.00
49.00	0.41	0.38	1.08	0.00	0.00	0.00
49.05	0.41	0.38	1.08	0.00	0.00	0.00
49.10	0.41	0.38	1.08	0.00	0.00	0.00
49.15	0.41	0.38	1.08	0.00	0.00	0.00
49.20	0.41	0.38	1.08	0.00	0.00	0.00
49.25	0.41	0.38	1.08	0.00	0.00	0.00
49.30	0.41	0.38	1.08	0.00	0.00	0.00
49.35	0.41	0.38	1.08	0.00	0.00	0.00
49.40	0.41	0.38	1.08	0.00	0.00	0.00
49.45	0.41	0.38	1.08	0.00	0.00	0.00
49.50	0.41	0.38	1.08	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Welcome to LiquefyPro!

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1 atm (atmosphere) = 1 tsf (ton/ft2)

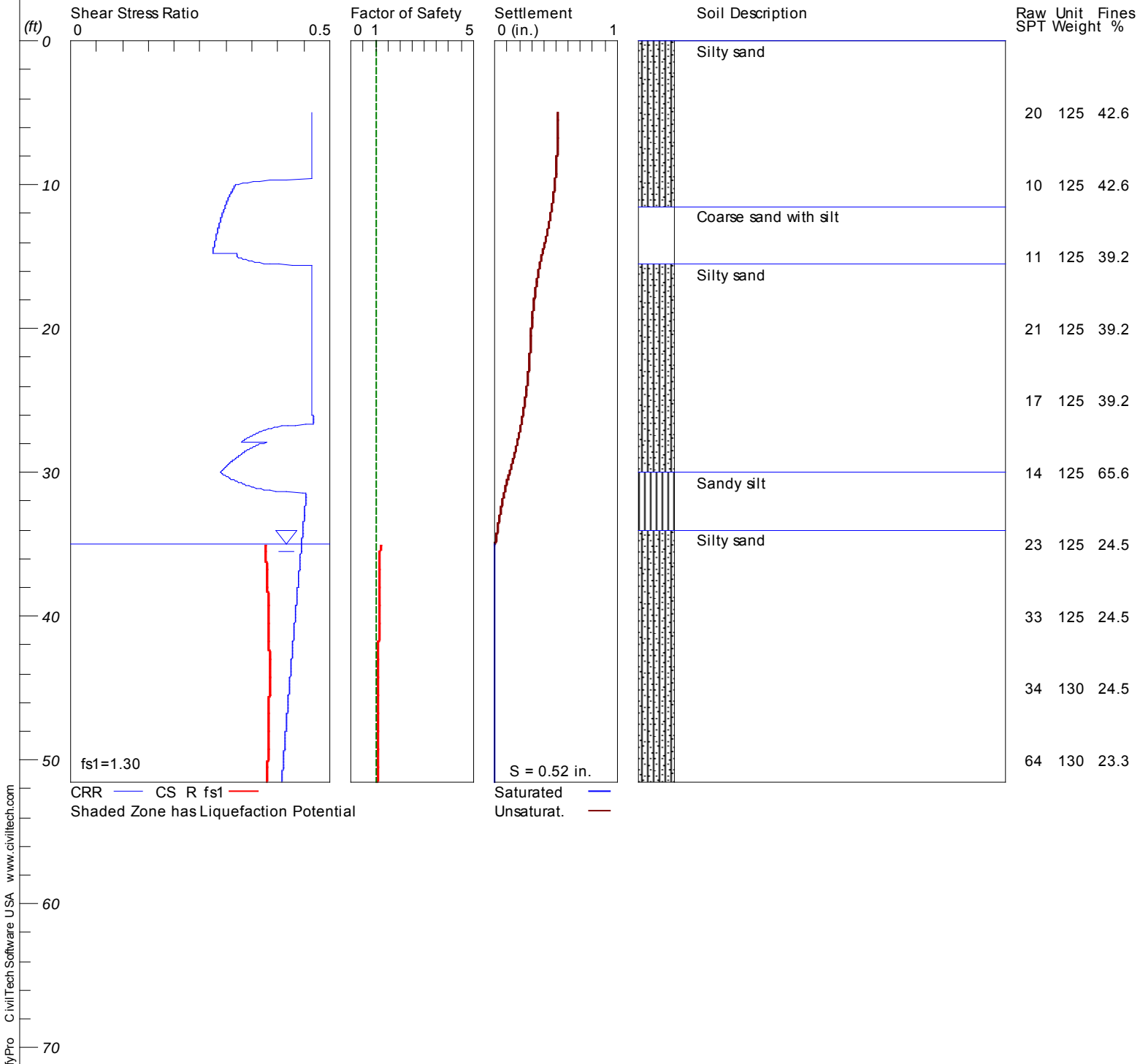
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Arlington High School

Hole No.=B-7 Water Depth=35 ft

Magnitude=7.7
Acceleration=0.50g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: C:\Users\jmeneses\Desktop\Liquefaction Runs\18-1214-0 Arlington High\Boring B-7.liq
Title: Arlington High School
Subtitle: Boring B-7

Surface Elev.=
Hole No.=B-7
Depth of Hole= 51.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 7.70

Input Data:

Surface Elev.=
Hole No.=B-7
Depth of Hole=51.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
5.00	20.00	125.00	42.60
10.00	10.00	125.00	42.60
15.00	11.00	125.00	39.20
20.00	21.00	125.00	39.20
25.00	17.00	125.00	39.20
30.00	14.00	125.00	65.60
35.00	23.00	125.00	24.50
40.00	33.00	125.00	24.50
45.00	34.00	130.00	24.50
50.00	64.00	130.00	23.30

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.52 in.
Total Settlement of Saturated and Unsaturated Sands=0.52 in.
Differential Settlement=0.258 to 0.341 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
5.00	0.47	0.42	5.00	0.00	0.52	0.52
5.05	0.47	0.42	5.00	0.00	0.52	0.52
5.10	0.47	0.42	5.00	0.00	0.52	0.52
5.15	0.47	0.42	5.00	0.00	0.52	0.52
5.20	0.47	0.42	5.00	0.00	0.52	0.52
5.25	0.47	0.42	5.00	0.00	0.52	0.52
5.30	0.47	0.42	5.00	0.00	0.52	0.52
5.35	0.47	0.42	5.00	0.00	0.52	0.52
5.40	0.47	0.42	5.00	0.00	0.52	0.52
5.45	0.47	0.42	5.00	0.00	0.52	0.52
5.50	0.47	0.42	5.00	0.00	0.52	0.52
5.55	0.47	0.42	5.00	0.00	0.51	0.51
5.60	0.47	0.42	5.00	0.00	0.51	0.51
5.65	0.47	0.42	5.00	0.00	0.51	0.51
5.70	0.47	0.42	5.00	0.00	0.51	0.51
5.75	0.47	0.42	5.00	0.00	0.51	0.51
5.80	0.47	0.42	5.00	0.00	0.51	0.51
5.85	0.47	0.42	5.00	0.00	0.51	0.51
5.90	0.47	0.42	5.00	0.00	0.51	0.51
5.95	0.47	0.42	5.00	0.00	0.51	0.51
6.00	0.47	0.42	5.00	0.00	0.51	0.51
6.05	0.47	0.42	5.00	0.00	0.51	0.51
6.10	0.47	0.42	5.00	0.00	0.51	0.51
6.15	0.47	0.42	5.00	0.00	0.51	0.51
6.20	0.47	0.42	5.00	0.00	0.51	0.51
6.25	0.47	0.42	5.00	0.00	0.51	0.51
6.30	0.47	0.42	5.00	0.00	0.51	0.51
6.35	0.47	0.42	5.00	0.00	0.51	0.51
6.40	0.47	0.42	5.00	0.00	0.51	0.51
6.45	0.47	0.42	5.00	0.00	0.51	0.51
6.50	0.47	0.42	5.00	0.00	0.51	0.51
6.55	0.47	0.42	5.00	0.00	0.51	0.51
6.60	0.47	0.42	5.00	0.00	0.51	0.51
6.65	0.47	0.42	5.00	0.00	0.51	0.51
6.70	0.47	0.42	5.00	0.00	0.51	0.51
6.75	0.47	0.42	5.00	0.00	0.51	0.51
6.80	0.47	0.42	5.00	0.00	0.51	0.51
6.85	0.47	0.42	5.00	0.00	0.51	0.51
6.90	0.47	0.42	5.00	0.00	0.51	0.51
6.95	0.47	0.42	5.00	0.00	0.51	0.51
7.00	0.47	0.42	5.00	0.00	0.51	0.51
7.05	0.47	0.42	5.00	0.00	0.51	0.51
7.10	0.47	0.42	5.00	0.00	0.51	0.51
7.15	0.47	0.42	5.00	0.00	0.51	0.51
7.20	0.47	0.42	5.00	0.00	0.51	0.51
7.25	0.47	0.42	5.00	0.00	0.51	0.51
7.30	0.47	0.42	5.00	0.00	0.51	0.51
7.35	0.47	0.42	5.00	0.00	0.51	0.51
7.40	0.47	0.42	5.00	0.00	0.51	0.51
7.45	0.47	0.42	5.00	0.00	0.51	0.51

7.50	0.47	0.42	5.00	0.00	0.51	0.51
7.55	0.47	0.42	5.00	0.00	0.51	0.51
7.60	0.47	0.42	5.00	0.00	0.51	0.51
7.65	0.47	0.41	5.00	0.00	0.51	0.51
7.70	0.47	0.41	5.00	0.00	0.51	0.51
7.75	0.47	0.41	5.00	0.00	0.51	0.51
7.80	0.47	0.41	5.00	0.00	0.51	0.51
7.85	0.47	0.41	5.00	0.00	0.51	0.51
7.90	0.47	0.41	5.00	0.00	0.51	0.51
7.95	0.47	0.41	5.00	0.00	0.51	0.51
8.00	0.47	0.41	5.00	0.00	0.51	0.51
8.05	0.47	0.41	5.00	0.00	0.51	0.51
8.10	0.47	0.41	5.00	0.00	0.51	0.51
8.15	0.47	0.41	5.00	0.00	0.51	0.51
8.20	0.47	0.41	5.00	0.00	0.50	0.50
8.25	0.47	0.41	5.00	0.00	0.50	0.50
8.30	0.47	0.41	5.00	0.00	0.50	0.50
8.35	0.47	0.41	5.00	0.00	0.50	0.50
8.40	0.47	0.41	5.00	0.00	0.50	0.50
8.45	0.47	0.41	5.00	0.00	0.50	0.50
8.50	0.47	0.41	5.00	0.00	0.50	0.50
8.55	0.47	0.41	5.00	0.00	0.50	0.50
8.60	0.47	0.41	5.00	0.00	0.50	0.50
8.65	0.47	0.41	5.00	0.00	0.50	0.50
8.70	0.47	0.41	5.00	0.00	0.50	0.50
8.75	0.47	0.41	5.00	0.00	0.50	0.50
8.80	0.47	0.41	5.00	0.00	0.50	0.50
8.85	0.47	0.41	5.00	0.00	0.50	0.50
8.90	0.47	0.41	5.00	0.00	0.50	0.50
8.95	0.47	0.41	5.00	0.00	0.50	0.50
9.00	0.47	0.41	5.00	0.00	0.50	0.50
9.05	0.47	0.41	5.00	0.00	0.50	0.50
9.10	0.47	0.41	5.00	0.00	0.50	0.50
9.15	0.47	0.41	5.00	0.00	0.50	0.50
9.20	0.47	0.41	5.00	0.00	0.50	0.50
9.25	0.47	0.41	5.00	0.00	0.50	0.50
9.30	0.47	0.41	5.00	0.00	0.50	0.50
9.35	0.47	0.41	5.00	0.00	0.50	0.50
9.40	0.47	0.41	5.00	0.00	0.49	0.49
9.45	0.47	0.41	5.00	0.00	0.49	0.49
9.50	0.47	0.41	5.00	0.00	0.49	0.49
9.55	0.47	0.41	5.00	0.00	0.49	0.49
9.60	0.47	0.41	5.00	0.00	0.49	0.49
9.65	0.42	0.41	5.00	0.00	0.49	0.49
9.70	0.38	0.41	5.00	0.00	0.49	0.49
9.75	0.37	0.41	5.00	0.00	0.49	0.49
9.80	0.35	0.41	5.00	0.00	0.49	0.49
9.85	0.34	0.41	5.00	0.00	0.49	0.49
9.90	0.33	0.41	5.00	0.00	0.49	0.49
9.95	0.33	0.41	5.00	0.00	0.49	0.49
10.00	0.32	0.41	5.00	0.00	0.49	0.49
10.05	0.32	0.41	5.00	0.00	0.49	0.49
10.10	0.32	0.41	5.00	0.00	0.49	0.49
10.15	0.32	0.41	5.00	0.00	0.49	0.49
10.20	0.31	0.41	5.00	0.00	0.49	0.49
10.25	0.31	0.41	5.00	0.00	0.49	0.49
10.30	0.31	0.41	5.00	0.00	0.48	0.48
10.35	0.31	0.41	5.00	0.00	0.48	0.48
10.40	0.31	0.41	5.00	0.00	0.48	0.48

10.45	0.31	0.41	5.00	0.00	0.48	0.48
10.50	0.31	0.41	5.00	0.00	0.48	0.48
10.55	0.31	0.41	5.00	0.00	0.48	0.48
10.60	0.31	0.41	5.00	0.00	0.48	0.48
10.65	0.31	0.41	5.00	0.00	0.48	0.48
10.70	0.31	0.41	5.00	0.00	0.48	0.48
10.75	0.31	0.41	5.00	0.00	0.48	0.48
10.80	0.31	0.41	5.00	0.00	0.48	0.48
10.85	0.31	0.41	5.00	0.00	0.48	0.48
10.90	0.31	0.41	5.00	0.00	0.48	0.48
10.95	0.30	0.41	5.00	0.00	0.47	0.47
11.00	0.30	0.41	5.00	0.00	0.47	0.47
11.05	0.30	0.41	5.00	0.00	0.47	0.47
11.10	0.30	0.41	5.00	0.00	0.47	0.47
11.15	0.30	0.41	5.00	0.00	0.47	0.47
11.20	0.30	0.41	5.00	0.00	0.47	0.47
11.25	0.30	0.41	5.00	0.00	0.47	0.47
11.30	0.30	0.41	5.00	0.00	0.47	0.47
11.35	0.30	0.41	5.00	0.00	0.47	0.47
11.40	0.30	0.41	5.00	0.00	0.47	0.47
11.45	0.30	0.41	5.00	0.00	0.47	0.47
11.50	0.30	0.41	5.00	0.00	0.47	0.47
11.55	0.30	0.41	5.00	0.00	0.46	0.46
11.60	0.30	0.41	5.00	0.00	0.46	0.46
11.65	0.30	0.41	5.00	0.00	0.46	0.46
11.70	0.30	0.41	5.00	0.00	0.46	0.46
11.75	0.30	0.41	5.00	0.00	0.46	0.46
11.80	0.30	0.41	5.00	0.00	0.46	0.46
11.85	0.29	0.41	5.00	0.00	0.46	0.46
11.90	0.29	0.41	5.00	0.00	0.46	0.46
11.95	0.29	0.41	5.00	0.00	0.46	0.46
12.00	0.29	0.41	5.00	0.00	0.46	0.46
12.05	0.29	0.41	5.00	0.00	0.46	0.46
12.10	0.29	0.41	5.00	0.00	0.45	0.45
12.15	0.29	0.41	5.00	0.00	0.45	0.45
12.20	0.29	0.41	5.00	0.00	0.45	0.45
12.25	0.29	0.41	5.00	0.00	0.45	0.45
12.30	0.29	0.41	5.00	0.00	0.45	0.45
12.35	0.29	0.41	5.00	0.00	0.45	0.45
12.40	0.29	0.41	5.00	0.00	0.45	0.45
12.45	0.29	0.41	5.00	0.00	0.45	0.45
12.50	0.29	0.41	5.00	0.00	0.45	0.45
12.55	0.29	0.41	5.00	0.00	0.44	0.44
12.60	0.29	0.41	5.00	0.00	0.44	0.44
12.65	0.29	0.41	5.00	0.00	0.44	0.44
12.70	0.29	0.41	5.00	0.00	0.44	0.44
12.75	0.29	0.41	5.00	0.00	0.44	0.44
12.80	0.29	0.41	5.00	0.00	0.44	0.44
12.85	0.29	0.41	5.00	0.00	0.44	0.44
12.90	0.29	0.41	5.00	0.00	0.44	0.44
12.95	0.29	0.41	5.00	0.00	0.44	0.44
13.00	0.29	0.41	5.00	0.00	0.43	0.43
13.05	0.28	0.41	5.00	0.00	0.43	0.43
13.10	0.28	0.41	5.00	0.00	0.43	0.43
13.15	0.28	0.41	5.00	0.00	0.43	0.43
13.20	0.28	0.41	5.00	0.00	0.43	0.43
13.25	0.28	0.41	5.00	0.00	0.43	0.43
13.30	0.28	0.41	5.00	0.00	0.43	0.43
13.35	0.28	0.41	5.00	0.00	0.43	0.43

13.40	0.28	0.41	5.00	0.00	0.42	0.42
13.45	0.28	0.41	5.00	0.00	0.42	0.42
13.50	0.28	0.41	5.00	0.00	0.42	0.42
13.55	0.28	0.41	5.00	0.00	0.42	0.42
13.60	0.28	0.41	5.00	0.00	0.42	0.42
13.65	0.28	0.41	5.00	0.00	0.42	0.42
13.70	0.28	0.41	5.00	0.00	0.42	0.42
13.75	0.28	0.41	5.00	0.00	0.42	0.42
13.80	0.28	0.41	5.00	0.00	0.41	0.41
13.85	0.28	0.41	5.00	0.00	0.41	0.41
13.90	0.28	0.41	5.00	0.00	0.41	0.41
13.95	0.28	0.41	5.00	0.00	0.41	0.41
14.00	0.28	0.41	5.00	0.00	0.41	0.41
14.05	0.28	0.41	5.00	0.00	0.41	0.41
14.10	0.28	0.41	5.00	0.00	0.41	0.41
14.15	0.28	0.41	5.00	0.00	0.40	0.40
14.20	0.28	0.41	5.00	0.00	0.40	0.40
14.25	0.28	0.41	5.00	0.00	0.40	0.40
14.30	0.28	0.41	5.00	0.00	0.40	0.40
14.35	0.28	0.41	5.00	0.00	0.40	0.40
14.40	0.28	0.41	5.00	0.00	0.40	0.40
14.45	0.28	0.41	5.00	0.00	0.40	0.40
14.50	0.28	0.41	5.00	0.00	0.39	0.39
14.55	0.28	0.41	5.00	0.00	0.39	0.39
14.60	0.28	0.41	5.00	0.00	0.39	0.39
14.65	0.27	0.41	5.00	0.00	0.39	0.39
14.70	0.27	0.41	5.00	0.00	0.39	0.39
14.75	0.27	0.41	5.00	0.00	0.39	0.39
14.80	0.32	0.41	5.00	0.00	0.39	0.39
14.85	0.32	0.41	5.00	0.00	0.38	0.38
14.90	0.32	0.41	5.00	0.00	0.38	0.38
14.95	0.32	0.41	5.00	0.00	0.38	0.38
15.00	0.32	0.41	5.00	0.00	0.38	0.38
15.05	0.32	0.41	5.00	0.00	0.38	0.38
15.10	0.33	0.41	5.00	0.00	0.38	0.38
15.15	0.33	0.41	5.00	0.00	0.38	0.38
15.20	0.34	0.41	5.00	0.00	0.37	0.37
15.25	0.34	0.41	5.00	0.00	0.37	0.37
15.30	0.35	0.41	5.00	0.00	0.37	0.37
15.35	0.36	0.41	5.00	0.00	0.37	0.37
15.40	0.36	0.41	5.00	0.00	0.37	0.37
15.45	0.37	0.41	5.00	0.00	0.37	0.37
15.50	0.39	0.41	5.00	0.00	0.37	0.37
15.55	0.40	0.41	5.00	0.00	0.37	0.37
15.60	0.43	0.41	5.00	0.00	0.37	0.37
15.65	0.47	0.41	5.00	0.00	0.36	0.36
15.70	0.47	0.41	5.00	0.00	0.36	0.36
15.75	0.47	0.41	5.00	0.00	0.36	0.36
15.80	0.47	0.41	5.00	0.00	0.36	0.36
15.85	0.47	0.41	5.00	0.00	0.36	0.36
15.90	0.47	0.41	5.00	0.00	0.36	0.36
15.95	0.47	0.41	5.00	0.00	0.36	0.36
16.00	0.47	0.41	5.00	0.00	0.36	0.36
16.05	0.47	0.41	5.00	0.00	0.36	0.36
16.10	0.47	0.41	5.00	0.00	0.35	0.35
16.15	0.47	0.41	5.00	0.00	0.35	0.35
16.20	0.47	0.41	5.00	0.00	0.35	0.35
16.25	0.47	0.41	5.00	0.00	0.35	0.35
16.30	0.47	0.41	5.00	0.00	0.35	0.35

16.35	0.47	0.41	5.00	0.00	0.35	0.35
16.40	0.47	0.41	5.00	0.00	0.35	0.35
16.45	0.47	0.41	5.00	0.00	0.35	0.35
16.50	0.47	0.41	5.00	0.00	0.35	0.35
16.55	0.47	0.41	5.00	0.00	0.35	0.35
16.60	0.47	0.41	5.00	0.00	0.34	0.34
16.65	0.47	0.41	5.00	0.00	0.34	0.34
16.70	0.47	0.41	5.00	0.00	0.34	0.34
16.75	0.47	0.41	5.00	0.00	0.34	0.34
16.80	0.47	0.41	5.00	0.00	0.34	0.34
16.85	0.47	0.41	5.00	0.00	0.34	0.34
16.90	0.47	0.41	5.00	0.00	0.34	0.34
16.95	0.47	0.41	5.00	0.00	0.34	0.34
17.00	0.47	0.41	5.00	0.00	0.34	0.34
17.05	0.47	0.41	5.00	0.00	0.34	0.34
17.10	0.47	0.41	5.00	0.00	0.34	0.34
17.15	0.47	0.41	5.00	0.00	0.33	0.33
17.20	0.47	0.41	5.00	0.00	0.33	0.33
17.25	0.47	0.41	5.00	0.00	0.33	0.33
17.30	0.47	0.41	5.00	0.00	0.33	0.33
17.35	0.47	0.41	5.00	0.00	0.33	0.33
17.40	0.47	0.41	5.00	0.00	0.33	0.33
17.45	0.47	0.41	5.00	0.00	0.33	0.33
17.50	0.47	0.41	5.00	0.00	0.33	0.33
17.55	0.47	0.41	5.00	0.00	0.33	0.33
17.60	0.47	0.41	5.00	0.00	0.33	0.33
17.65	0.47	0.41	5.00	0.00	0.33	0.33
17.70	0.47	0.41	5.00	0.00	0.33	0.33
17.75	0.47	0.41	5.00	0.00	0.32	0.32
17.80	0.47	0.40	5.00	0.00	0.32	0.32
17.85	0.47	0.40	5.00	0.00	0.32	0.32
17.90	0.47	0.40	5.00	0.00	0.32	0.32
17.95	0.47	0.40	5.00	0.00	0.32	0.32
18.00	0.47	0.40	5.00	0.00	0.32	0.32
18.05	0.47	0.40	5.00	0.00	0.32	0.32
18.10	0.47	0.40	5.00	0.00	0.32	0.32
18.15	0.47	0.40	5.00	0.00	0.32	0.32
18.20	0.47	0.40	5.00	0.00	0.32	0.32
18.25	0.47	0.40	5.00	0.00	0.32	0.32
18.30	0.47	0.40	5.00	0.00	0.32	0.32
18.35	0.47	0.40	5.00	0.00	0.32	0.32
18.40	0.47	0.40	5.00	0.00	0.32	0.32
18.45	0.47	0.40	5.00	0.00	0.31	0.31
18.50	0.47	0.40	5.00	0.00	0.31	0.31
18.55	0.47	0.40	5.00	0.00	0.31	0.31
18.60	0.47	0.40	5.00	0.00	0.31	0.31
18.65	0.47	0.40	5.00	0.00	0.31	0.31
18.70	0.47	0.40	5.00	0.00	0.31	0.31
18.75	0.47	0.40	5.00	0.00	0.31	0.31
18.80	0.47	0.40	5.00	0.00	0.31	0.31
18.85	0.47	0.40	5.00	0.00	0.31	0.31
18.90	0.47	0.40	5.00	0.00	0.31	0.31
18.95	0.47	0.40	5.00	0.00	0.31	0.31
19.00	0.47	0.40	5.00	0.00	0.31	0.31
19.05	0.47	0.40	5.00	0.00	0.31	0.31
19.10	0.47	0.40	5.00	0.00	0.31	0.31
19.15	0.47	0.40	5.00	0.00	0.31	0.31
19.20	0.47	0.40	5.00	0.00	0.30	0.30
19.25	0.47	0.40	5.00	0.00	0.30	0.30

19.30	0.47	0.40	5.00	0.00	0.30	0.30
19.35	0.47	0.40	5.00	0.00	0.30	0.30
19.40	0.47	0.40	5.00	0.00	0.30	0.30
19.45	0.47	0.40	5.00	0.00	0.30	0.30
19.50	0.47	0.40	5.00	0.00	0.30	0.30
19.55	0.47	0.40	5.00	0.00	0.30	0.30
19.60	0.47	0.40	5.00	0.00	0.30	0.30
19.65	0.47	0.40	5.00	0.00	0.30	0.30
19.70	0.47	0.40	5.00	0.00	0.30	0.30
19.75	0.47	0.40	5.00	0.00	0.30	0.30
19.80	0.47	0.40	5.00	0.00	0.30	0.30
19.85	0.47	0.40	5.00	0.00	0.30	0.30
19.90	0.47	0.40	5.00	0.00	0.30	0.30
19.95	0.47	0.40	5.00	0.00	0.30	0.30
20.00	0.47	0.40	5.00	0.00	0.30	0.30
20.05	0.47	0.40	5.00	0.00	0.30	0.30
20.10	0.47	0.40	5.00	0.00	0.30	0.30
20.15	0.47	0.40	5.00	0.00	0.30	0.30
20.20	0.47	0.40	5.00	0.00	0.30	0.30
20.25	0.47	0.40	5.00	0.00	0.30	0.30
20.30	0.47	0.40	5.00	0.00	0.30	0.30
20.35	0.47	0.40	5.00	0.00	0.30	0.30
20.40	0.47	0.40	5.00	0.00	0.29	0.29
20.45	0.47	0.40	5.00	0.00	0.29	0.29
20.50	0.47	0.40	5.00	0.00	0.29	0.29
20.55	0.47	0.40	5.00	0.00	0.29	0.29
20.60	0.47	0.40	5.00	0.00	0.29	0.29
20.65	0.47	0.40	5.00	0.00	0.29	0.29
20.70	0.47	0.40	5.00	0.00	0.29	0.29
20.75	0.47	0.40	5.00	0.00	0.29	0.29
20.80	0.47	0.40	5.00	0.00	0.29	0.29
20.85	0.47	0.40	5.00	0.00	0.29	0.29
20.90	0.47	0.40	5.00	0.00	0.29	0.29
20.95	0.47	0.40	5.00	0.00	0.29	0.29
21.00	0.47	0.40	5.00	0.00	0.29	0.29
21.05	0.47	0.40	5.00	0.00	0.29	0.29
21.10	0.47	0.40	5.00	0.00	0.29	0.29
21.15	0.47	0.40	5.00	0.00	0.29	0.29
21.20	0.47	0.40	5.00	0.00	0.29	0.29
21.25	0.47	0.40	5.00	0.00	0.29	0.29
21.30	0.47	0.40	5.00	0.00	0.29	0.29
21.35	0.47	0.40	5.00	0.00	0.29	0.29
21.40	0.47	0.40	5.00	0.00	0.29	0.29
21.45	0.47	0.40	5.00	0.00	0.29	0.29
21.50	0.47	0.40	5.00	0.00	0.29	0.29
21.55	0.47	0.40	5.00	0.00	0.29	0.29
21.60	0.47	0.40	5.00	0.00	0.29	0.29
21.65	0.47	0.40	5.00	0.00	0.29	0.29
21.70	0.47	0.40	5.00	0.00	0.29	0.29
21.75	0.47	0.40	5.00	0.00	0.28	0.28
21.80	0.47	0.40	5.00	0.00	0.28	0.28
21.85	0.47	0.40	5.00	0.00	0.28	0.28
21.90	0.47	0.40	5.00	0.00	0.28	0.28
21.95	0.47	0.40	5.00	0.00	0.28	0.28
22.00	0.47	0.40	5.00	0.00	0.28	0.28
22.05	0.47	0.40	5.00	0.00	0.28	0.28
22.10	0.47	0.40	5.00	0.00	0.28	0.28
22.15	0.47	0.40	5.00	0.00	0.28	0.28
22.20	0.47	0.40	5.00	0.00	0.28	0.28

22.25	0.47	0.40	5.00	0.00	0.28	0.28
22.30	0.47	0.40	5.00	0.00	0.28	0.28
22.35	0.47	0.40	5.00	0.00	0.28	0.28
22.40	0.47	0.40	5.00	0.00	0.28	0.28
22.45	0.47	0.40	5.00	0.00	0.28	0.28
22.50	0.47	0.40	5.00	0.00	0.28	0.28
22.55	0.47	0.40	5.00	0.00	0.28	0.28
22.60	0.47	0.40	5.00	0.00	0.28	0.28
22.65	0.47	0.40	5.00	0.00	0.28	0.28
22.70	0.47	0.40	5.00	0.00	0.28	0.28
22.75	0.47	0.40	5.00	0.00	0.28	0.28
22.80	0.47	0.40	5.00	0.00	0.27	0.27
22.85	0.47	0.40	5.00	0.00	0.27	0.27
22.90	0.47	0.40	5.00	0.00	0.27	0.27
22.95	0.47	0.40	5.00	0.00	0.27	0.27
23.00	0.47	0.40	5.00	0.00	0.27	0.27
23.05	0.47	0.40	5.00	0.00	0.27	0.27
23.10	0.47	0.40	5.00	0.00	0.27	0.27
23.15	0.47	0.40	5.00	0.00	0.27	0.27
23.20	0.47	0.40	5.00	0.00	0.27	0.27
23.25	0.47	0.40	5.00	0.00	0.27	0.27
23.30	0.47	0.40	5.00	0.00	0.27	0.27
23.35	0.47	0.40	5.00	0.00	0.27	0.27
23.40	0.47	0.40	5.00	0.00	0.27	0.27
23.45	0.47	0.40	5.00	0.00	0.27	0.27
23.50	0.47	0.40	5.00	0.00	0.27	0.27
23.55	0.47	0.40	5.00	0.00	0.27	0.27
23.60	0.47	0.40	5.00	0.00	0.27	0.27
23.65	0.47	0.40	5.00	0.00	0.27	0.27
23.70	0.47	0.40	5.00	0.00	0.26	0.26
23.75	0.47	0.40	5.00	0.00	0.26	0.26
23.80	0.47	0.40	5.00	0.00	0.26	0.26
23.85	0.47	0.40	5.00	0.00	0.26	0.26
23.90	0.47	0.40	5.00	0.00	0.26	0.26
23.95	0.47	0.40	5.00	0.00	0.26	0.26
24.00	0.47	0.40	5.00	0.00	0.26	0.26
24.05	0.47	0.40	5.00	0.00	0.26	0.26
24.10	0.47	0.40	5.00	0.00	0.26	0.26
24.15	0.47	0.40	5.00	0.00	0.26	0.26
24.20	0.47	0.40	5.00	0.00	0.26	0.26
24.25	0.47	0.40	5.00	0.00	0.26	0.26
24.30	0.47	0.40	5.00	0.00	0.26	0.26
24.35	0.47	0.40	5.00	0.00	0.26	0.26
24.40	0.47	0.40	5.00	0.00	0.25	0.25
24.45	0.47	0.40	5.00	0.00	0.25	0.25
24.50	0.47	0.40	5.00	0.00	0.25	0.25
24.55	0.47	0.40	5.00	0.00	0.25	0.25
24.60	0.47	0.40	5.00	0.00	0.25	0.25
24.65	0.47	0.40	5.00	0.00	0.25	0.25
24.70	0.47	0.40	5.00	0.00	0.25	0.25
24.75	0.47	0.40	5.00	0.00	0.25	0.25
24.80	0.47	0.40	5.00	0.00	0.25	0.25
24.85	0.47	0.40	5.00	0.00	0.25	0.25
24.90	0.47	0.40	5.00	0.00	0.25	0.25
24.95	0.47	0.40	5.00	0.00	0.25	0.25
25.00	0.47	0.40	5.00	0.00	0.25	0.25
25.05	0.47	0.40	5.00	0.00	0.24	0.24
25.10	0.47	0.40	5.00	0.00	0.24	0.24
25.15	0.47	0.40	5.00	0.00	0.24	0.24

25.20	0.47	0.40	5.00	0.00	0.24	0.24
25.25	0.47	0.40	5.00	0.00	0.24	0.24
25.30	0.47	0.40	5.00	0.00	0.24	0.24
25.35	0.47	0.40	5.00	0.00	0.24	0.24
25.40	0.47	0.40	5.00	0.00	0.24	0.24
25.45	0.47	0.40	5.00	0.00	0.24	0.24
25.50	0.47	0.40	5.00	0.00	0.24	0.24
25.55	0.47	0.40	5.00	0.00	0.24	0.24
25.60	0.47	0.40	5.00	0.00	0.23	0.23
25.65	0.47	0.40	5.00	0.00	0.23	0.23
25.70	0.47	0.40	5.00	0.00	0.23	0.23
25.75	0.47	0.40	5.00	0.00	0.23	0.23
25.80	0.47	0.40	5.00	0.00	0.23	0.23
25.85	0.47	0.40	5.00	0.00	0.23	0.23
25.90	0.47	0.40	5.00	0.00	0.23	0.23
25.95	0.47	0.40	5.00	0.00	0.23	0.23
26.00	0.47	0.40	5.00	0.00	0.23	0.23
26.05	0.47	0.40	5.00	0.00	0.23	0.23
26.10	0.47	0.40	5.00	0.00	0.22	0.22
26.15	0.47	0.40	5.00	0.00	0.22	0.22
26.20	0.47	0.40	5.00	0.00	0.22	0.22
26.25	0.47	0.40	5.00	0.00	0.22	0.22
26.30	0.47	0.40	5.00	0.00	0.22	0.22
26.35	0.47	0.40	5.00	0.00	0.22	0.22
26.40	0.47	0.40	5.00	0.00	0.22	0.22
26.45	0.47	0.40	5.00	0.00	0.22	0.22
26.50	0.47	0.40	5.00	0.00	0.22	0.22
26.55	0.47	0.40	5.00	0.00	0.22	0.22
26.60	0.47	0.40	5.00	0.00	0.21	0.21
26.65	0.45	0.40	5.00	0.00	0.21	0.21
26.70	0.43	0.40	5.00	0.00	0.21	0.21
26.75	0.42	0.40	5.00	0.00	0.21	0.21
26.80	0.41	0.40	5.00	0.00	0.21	0.21
26.85	0.40	0.40	5.00	0.00	0.21	0.21
26.90	0.39	0.40	5.00	0.00	0.21	0.21
26.95	0.39	0.40	5.00	0.00	0.21	0.21
27.00	0.38	0.40	5.00	0.00	0.20	0.20
27.05	0.38	0.40	5.00	0.00	0.20	0.20
27.10	0.37	0.40	5.00	0.00	0.20	0.20
27.15	0.37	0.40	5.00	0.00	0.20	0.20
27.20	0.36	0.40	5.00	0.00	0.20	0.20
27.25	0.36	0.40	5.00	0.00	0.20	0.20
27.30	0.36	0.40	5.00	0.00	0.20	0.20
27.35	0.35	0.40	5.00	0.00	0.20	0.20
27.40	0.35	0.40	5.00	0.00	0.20	0.20
27.45	0.35	0.40	5.00	0.00	0.19	0.19
27.50	0.35	0.40	5.00	0.00	0.19	0.19
27.55	0.34	0.40	5.00	0.00	0.19	0.19
27.60	0.34	0.40	5.00	0.00	0.19	0.19
27.65	0.34	0.40	5.00	0.00	0.19	0.19
27.70	0.34	0.40	5.00	0.00	0.19	0.19
27.75	0.33	0.40	5.00	0.00	0.19	0.19
27.80	0.33	0.40	5.00	0.00	0.18	0.18
27.85	0.33	0.40	5.00	0.00	0.18	0.18
27.90	0.38	0.40	5.00	0.00	0.18	0.18
27.95	0.37	0.39	5.00	0.00	0.18	0.18
28.00	0.37	0.39	5.00	0.00	0.18	0.18
28.05	0.37	0.39	5.00	0.00	0.18	0.18
28.10	0.36	0.39	5.00	0.00	0.18	0.18

28.15	0.36	0.39	5.00	0.00	0.18	0.18
28.20	0.36	0.39	5.00	0.00	0.17	0.17
28.25	0.35	0.39	5.00	0.00	0.17	0.17
28.30	0.35	0.39	5.00	0.00	0.17	0.17
28.35	0.35	0.39	5.00	0.00	0.17	0.17
28.40	0.34	0.39	5.00	0.00	0.17	0.17
28.45	0.34	0.39	5.00	0.00	0.17	0.17
28.50	0.34	0.39	5.00	0.00	0.17	0.17
28.55	0.34	0.39	5.00	0.00	0.16	0.16
28.60	0.33	0.39	5.00	0.00	0.16	0.16
28.65	0.33	0.39	5.00	0.00	0.16	0.16
28.70	0.33	0.39	5.00	0.00	0.16	0.16
28.75	0.33	0.39	5.00	0.00	0.16	0.16
28.80	0.33	0.39	5.00	0.00	0.16	0.16
28.85	0.32	0.39	5.00	0.00	0.16	0.16
28.90	0.32	0.39	5.00	0.00	0.15	0.15
28.95	0.32	0.39	5.00	0.00	0.15	0.15
29.00	0.32	0.39	5.00	0.00	0.15	0.15
29.05	0.32	0.39	5.00	0.00	0.15	0.15
29.10	0.32	0.39	5.00	0.00	0.15	0.15
29.15	0.31	0.39	5.00	0.00	0.15	0.15
29.20	0.31	0.39	5.00	0.00	0.15	0.15
29.25	0.31	0.39	5.00	0.00	0.14	0.14
29.30	0.31	0.39	5.00	0.00	0.14	0.14
29.35	0.31	0.39	5.00	0.00	0.14	0.14
29.40	0.31	0.39	5.00	0.00	0.14	0.14
29.45	0.30	0.39	5.00	0.00	0.14	0.14
29.50	0.30	0.39	5.00	0.00	0.14	0.14
29.55	0.30	0.39	5.00	0.00	0.13	0.13
29.60	0.30	0.39	5.00	0.00	0.13	0.13
29.65	0.30	0.39	5.00	0.00	0.13	0.13
29.70	0.30	0.39	5.00	0.00	0.13	0.13
29.75	0.30	0.39	5.00	0.00	0.13	0.13
29.80	0.29	0.39	5.00	0.00	0.13	0.13
29.85	0.29	0.39	5.00	0.00	0.13	0.13
29.90	0.29	0.39	5.00	0.00	0.12	0.12
29.95	0.29	0.39	5.00	0.00	0.12	0.12
30.00	0.29	0.39	5.00	0.00	0.12	0.12
30.05	0.29	0.39	5.00	0.00	0.12	0.12
30.10	0.29	0.39	5.00	0.00	0.12	0.12
30.15	0.30	0.39	5.00	0.00	0.11	0.11
30.20	0.30	0.39	5.00	0.00	0.11	0.11
30.25	0.30	0.39	5.00	0.00	0.11	0.11
30.30	0.30	0.39	5.00	0.00	0.11	0.11
30.35	0.31	0.39	5.00	0.00	0.11	0.11
30.40	0.31	0.39	5.00	0.00	0.11	0.11
30.45	0.31	0.39	5.00	0.00	0.10	0.10
30.50	0.31	0.39	5.00	0.00	0.10	0.10
30.55	0.32	0.39	5.00	0.00	0.10	0.10
30.60	0.32	0.39	5.00	0.00	0.10	0.10
30.65	0.32	0.39	5.00	0.00	0.10	0.10
30.70	0.33	0.39	5.00	0.00	0.10	0.10
30.75	0.33	0.39	5.00	0.00	0.10	0.10
30.80	0.33	0.39	5.00	0.00	0.09	0.09
30.85	0.34	0.39	5.00	0.00	0.09	0.09
30.90	0.34	0.39	5.00	0.00	0.09	0.09
30.95	0.34	0.39	5.00	0.00	0.09	0.09
31.00	0.35	0.39	5.00	0.00	0.09	0.09
31.05	0.35	0.39	5.00	0.00	0.09	0.09

31.10	0.36	0.39	5.00	0.00	0.08	0.08
31.15	0.37	0.39	5.00	0.00	0.08	0.08
31.20	0.37	0.39	5.00	0.00	0.08	0.08
31.25	0.38	0.39	5.00	0.00	0.08	0.08
31.30	0.40	0.39	5.00	0.00	0.08	0.08
31.35	0.42	0.39	5.00	0.00	0.08	0.08
31.40	0.45	0.39	5.00	0.00	0.08	0.08
31.45	0.46	0.39	5.00	0.00	0.08	0.08
31.50	0.46	0.39	5.00	0.00	0.07	0.07
31.55	0.45	0.39	5.00	0.00	0.07	0.07
31.60	0.45	0.39	5.00	0.00	0.07	0.07
31.65	0.45	0.39	5.00	0.00	0.07	0.07
31.70	0.45	0.39	5.00	0.00	0.07	0.07
31.75	0.45	0.39	5.00	0.00	0.07	0.07
31.80	0.45	0.39	5.00	0.00	0.07	0.07
31.85	0.45	0.39	5.00	0.00	0.06	0.06
31.90	0.45	0.39	5.00	0.00	0.06	0.06
31.95	0.45	0.39	5.00	0.00	0.06	0.06
32.00	0.45	0.39	5.00	0.00	0.06	0.06
32.05	0.45	0.39	5.00	0.00	0.06	0.06
32.10	0.45	0.39	5.00	0.00	0.06	0.06
32.15	0.45	0.39	5.00	0.00	0.06	0.06
32.20	0.45	0.39	5.00	0.00	0.06	0.06
32.25	0.45	0.39	5.00	0.00	0.06	0.06
32.30	0.45	0.38	5.00	0.00	0.05	0.05
32.35	0.45	0.38	5.00	0.00	0.05	0.05
32.40	0.45	0.38	5.00	0.00	0.05	0.05
32.45	0.45	0.38	5.00	0.00	0.05	0.05
32.50	0.45	0.38	5.00	0.00	0.05	0.05
32.55	0.45	0.38	5.00	0.00	0.05	0.05
32.60	0.45	0.38	5.00	0.00	0.05	0.05
32.65	0.45	0.38	5.00	0.00	0.05	0.05
32.70	0.45	0.38	5.00	0.00	0.04	0.04
32.75	0.45	0.38	5.00	0.00	0.04	0.04
32.80	0.45	0.38	5.00	0.00	0.04	0.04
32.85	0.45	0.38	5.00	0.00	0.04	0.04
32.90	0.45	0.38	5.00	0.00	0.04	0.04
32.95	0.45	0.38	5.00	0.00	0.04	0.04
33.00	0.45	0.38	5.00	0.00	0.04	0.04
33.05	0.45	0.38	5.00	0.00	0.04	0.04
33.10	0.45	0.38	5.00	0.00	0.04	0.04
33.15	0.45	0.38	5.00	0.00	0.04	0.04
33.20	0.45	0.38	5.00	0.00	0.03	0.03
33.25	0.45	0.38	5.00	0.00	0.03	0.03
33.30	0.45	0.38	5.00	0.00	0.03	0.03
33.35	0.45	0.38	5.00	0.00	0.03	0.03
33.40	0.45	0.38	5.00	0.00	0.03	0.03
33.45	0.45	0.38	5.00	0.00	0.03	0.03
33.50	0.45	0.38	5.00	0.00	0.03	0.03
33.55	0.45	0.38	5.00	0.00	0.03	0.03
33.60	0.45	0.38	5.00	0.00	0.03	0.03
33.65	0.45	0.38	5.00	0.00	0.03	0.03
33.70	0.45	0.38	5.00	0.00	0.03	0.03
33.75	0.45	0.38	5.00	0.00	0.02	0.02
33.80	0.45	0.38	5.00	0.00	0.02	0.02
33.85	0.45	0.38	5.00	0.00	0.02	0.02
33.90	0.45	0.38	5.00	0.00	0.02	0.02
33.95	0.45	0.38	5.00	0.00	0.02	0.02
34.00	0.45	0.38	5.00	0.00	0.02	0.02

34.05	0.45	0.38	5.00	0.00	0.02	0.02
34.10	0.45	0.38	5.00	0.00	0.02	0.02
34.15	0.45	0.38	5.00	0.00	0.02	0.02
34.20	0.45	0.38	5.00	0.00	0.02	0.02
34.25	0.45	0.38	5.00	0.00	0.02	0.02
34.30	0.45	0.38	5.00	0.00	0.01	0.01
34.35	0.45	0.38	5.00	0.00	0.01	0.01
34.40	0.45	0.38	5.00	0.00	0.01	0.01
34.45	0.45	0.38	5.00	0.00	0.01	0.01
34.50	0.45	0.38	5.00	0.00	0.01	0.01
34.55	0.45	0.38	5.00	0.00	0.01	0.01
34.60	0.45	0.38	5.00	0.00	0.01	0.01
34.65	0.45	0.38	5.00	0.00	0.01	0.01
34.70	0.45	0.38	5.00	0.00	0.01	0.01
34.75	0.45	0.38	5.00	0.00	0.01	0.01
34.80	0.45	0.38	5.00	0.00	0.00	0.00
34.85	0.45	0.38	5.00	0.00	0.00	0.00
34.90	0.45	0.38	5.00	0.00	0.00	0.00
34.95	0.45	0.38	5.00	0.00	0.00	0.00
35.00	0.45	0.38	5.00	0.00	0.00	0.00
35.05	0.45	0.38	1.19	0.00	0.00	0.00
35.10	0.45	0.38	1.19	0.00	0.00	0.00
35.15	0.45	0.38	1.19	0.00	0.00	0.00
35.20	0.45	0.38	1.19	0.00	0.00	0.00
35.25	0.45	0.38	1.18	0.00	0.00	0.00
35.30	0.45	0.38	1.18	0.00	0.00	0.00
35.35	0.45	0.38	1.18	0.00	0.00	0.00
35.40	0.44	0.38	1.18	0.00	0.00	0.00
35.45	0.44	0.38	1.18	0.00	0.00	0.00
35.50	0.44	0.38	1.18	0.00	0.00	0.00
35.55	0.44	0.38	1.18	0.00	0.00	0.00
35.60	0.44	0.38	1.18	0.00	0.00	0.00
35.65	0.44	0.38	1.18	0.00	0.00	0.00
35.70	0.44	0.38	1.18	0.00	0.00	0.00
35.75	0.44	0.38	1.18	0.00	0.00	0.00
35.80	0.44	0.38	1.18	0.00	0.00	0.00
35.85	0.44	0.38	1.18	0.00	0.00	0.00
35.90	0.44	0.38	1.18	0.00	0.00	0.00
35.95	0.44	0.38	1.18	0.00	0.00	0.00
36.00	0.44	0.38	1.18	0.00	0.00	0.00
36.05	0.44	0.38	1.17	0.00	0.00	0.00
36.10	0.44	0.38	1.17	0.00	0.00	0.00
36.15	0.44	0.38	1.17	0.00	0.00	0.00
36.20	0.44	0.38	1.17	0.00	0.00	0.00
36.25	0.44	0.38	1.17	0.00	0.00	0.00
36.30	0.44	0.38	1.17	0.00	0.00	0.00
36.35	0.44	0.38	1.17	0.00	0.00	0.00
36.40	0.44	0.38	1.17	0.00	0.00	0.00
36.45	0.44	0.38	1.17	0.00	0.00	0.00
36.50	0.44	0.38	1.17	0.00	0.00	0.00
36.55	0.44	0.38	1.17	0.00	0.00	0.00
36.60	0.44	0.38	1.17	0.00	0.00	0.00
36.65	0.44	0.38	1.17	0.00	0.00	0.00
36.70	0.44	0.38	1.17	0.00	0.00	0.00
36.75	0.44	0.38	1.17	0.00	0.00	0.00
36.80	0.44	0.38	1.17	0.00	0.00	0.00
36.85	0.44	0.38	1.17	0.00	0.00	0.00
36.90	0.44	0.38	1.17	0.00	0.00	0.00
36.95	0.44	0.38	1.16	0.00	0.00	0.00

37.00	0.44	0.38	1.16	0.00	0.00	0.00
37.05	0.44	0.38	1.16	0.00	0.00	0.00
37.10	0.44	0.38	1.16	0.00	0.00	0.00
37.15	0.44	0.38	1.16	0.00	0.00	0.00
37.20	0.44	0.38	1.16	0.00	0.00	0.00
37.25	0.44	0.38	1.16	0.00	0.00	0.00
37.30	0.44	0.38	1.16	0.00	0.00	0.00
37.35	0.44	0.38	1.16	0.00	0.00	0.00
37.40	0.44	0.38	1.16	0.00	0.00	0.00
37.45	0.44	0.38	1.16	0.00	0.00	0.00
37.50	0.44	0.38	1.16	0.00	0.00	0.00
37.55	0.44	0.38	1.16	0.00	0.00	0.00
37.60	0.44	0.38	1.16	0.00	0.00	0.00
37.65	0.44	0.38	1.16	0.00	0.00	0.00
37.70	0.44	0.38	1.16	0.00	0.00	0.00
37.75	0.44	0.38	1.16	0.00	0.00	0.00
37.80	0.44	0.38	1.16	0.00	0.00	0.00
37.85	0.44	0.38	1.16	0.00	0.00	0.00
37.90	0.44	0.38	1.15	0.00	0.00	0.00
37.95	0.44	0.38	1.15	0.00	0.00	0.00
38.00	0.44	0.38	1.15	0.00	0.00	0.00
38.05	0.44	0.38	1.15	0.00	0.00	0.00
38.10	0.44	0.38	1.15	0.00	0.00	0.00
38.15	0.44	0.38	1.15	0.00	0.00	0.00
38.20	0.44	0.38	1.15	0.00	0.00	0.00
38.25	0.44	0.38	1.15	0.00	0.00	0.00
38.30	0.44	0.38	1.15	0.00	0.00	0.00
38.35	0.44	0.38	1.15	0.00	0.00	0.00
38.40	0.44	0.38	1.15	0.00	0.00	0.00
38.45	0.44	0.38	1.15	0.00	0.00	0.00
38.50	0.44	0.38	1.15	0.00	0.00	0.00
38.55	0.44	0.38	1.15	0.00	0.00	0.00
38.60	0.44	0.38	1.15	0.00	0.00	0.00
38.65	0.44	0.38	1.15	0.00	0.00	0.00
38.70	0.44	0.38	1.15	0.00	0.00	0.00
38.75	0.44	0.38	1.15	0.00	0.00	0.00
38.80	0.44	0.38	1.15	0.00	0.00	0.00
38.85	0.44	0.38	1.15	0.00	0.00	0.00
38.90	0.44	0.38	1.14	0.00	0.00	0.00
38.95	0.44	0.38	1.14	0.00	0.00	0.00
39.00	0.44	0.38	1.14	0.00	0.00	0.00
39.05	0.44	0.38	1.14	0.00	0.00	0.00
39.10	0.44	0.38	1.14	0.00	0.00	0.00
39.15	0.44	0.38	1.14	0.00	0.00	0.00
39.20	0.44	0.38	1.14	0.00	0.00	0.00
39.25	0.44	0.38	1.14	0.00	0.00	0.00
39.30	0.44	0.38	1.14	0.00	0.00	0.00
39.35	0.44	0.38	1.14	0.00	0.00	0.00
39.40	0.44	0.38	1.14	0.00	0.00	0.00
39.45	0.43	0.38	1.14	0.00	0.00	0.00
39.50	0.43	0.38	1.14	0.00	0.00	0.00
39.55	0.43	0.38	1.14	0.00	0.00	0.00
39.60	0.43	0.38	1.14	0.00	0.00	0.00
39.65	0.43	0.38	1.14	0.00	0.00	0.00
39.70	0.43	0.38	1.14	0.00	0.00	0.00
39.75	0.43	0.38	1.14	0.00	0.00	0.00
39.80	0.43	0.38	1.14	0.00	0.00	0.00
39.85	0.43	0.38	1.14	0.00	0.00	0.00
39.90	0.43	0.38	1.14	0.00	0.00	0.00

39.95	0.43	0.38	1.14	0.00	0.00	0.00
40.00	0.43	0.38	1.13	0.00	0.00	0.00
40.05	0.43	0.38	1.13	0.00	0.00	0.00
40.10	0.43	0.38	1.13	0.00	0.00	0.00
40.15	0.43	0.38	1.13	0.00	0.00	0.00
40.20	0.43	0.38	1.13	0.00	0.00	0.00
40.25	0.43	0.38	1.13	0.00	0.00	0.00
40.30	0.43	0.38	1.13	0.00	0.00	0.00
40.35	0.43	0.38	1.13	0.00	0.00	0.00
40.40	0.43	0.38	1.13	0.00	0.00	0.00
40.45	0.43	0.38	1.13	0.00	0.00	0.00
40.50	0.43	0.38	1.13	0.00	0.00	0.00
40.55	0.43	0.38	1.13	0.00	0.00	0.00
40.60	0.43	0.38	1.13	0.00	0.00	0.00
40.65	0.43	0.38	1.13	0.00	0.00	0.00
40.70	0.43	0.38	1.13	0.00	0.00	0.00
40.75	0.43	0.38	1.13	0.00	0.00	0.00
40.80	0.43	0.38	1.13	0.00	0.00	0.00
40.85	0.43	0.38	1.13	0.00	0.00	0.00
40.90	0.43	0.38	1.13	0.00	0.00	0.00
40.95	0.43	0.38	1.13	0.00	0.00	0.00
41.00	0.43	0.38	1.13	0.00	0.00	0.00
41.05	0.43	0.38	1.13	0.00	0.00	0.00
41.10	0.43	0.38	1.13	0.00	0.00	0.00
41.15	0.43	0.38	1.13	0.00	0.00	0.00
41.20	0.43	0.38	1.13	0.00	0.00	0.00
41.25	0.43	0.38	1.12	0.00	0.00	0.00
41.30	0.43	0.38	1.12	0.00	0.00	0.00
41.35	0.43	0.38	1.12	0.00	0.00	0.00
41.40	0.43	0.38	1.12	0.00	0.00	0.00
41.45	0.43	0.38	1.12	0.00	0.00	0.00
41.50	0.43	0.38	1.12	0.00	0.00	0.00
41.55	0.43	0.38	1.12	0.00	0.00	0.00
41.60	0.43	0.38	1.12	0.00	0.00	0.00
41.65	0.43	0.38	1.12	0.00	0.00	0.00
41.70	0.43	0.38	1.12	0.00	0.00	0.00
41.75	0.43	0.38	1.12	0.00	0.00	0.00
41.80	0.43	0.38	1.12	0.00	0.00	0.00
41.85	0.43	0.38	1.12	0.00	0.00	0.00
41.90	0.43	0.38	1.12	0.00	0.00	0.00
41.95	0.43	0.38	1.12	0.00	0.00	0.00
42.00	0.43	0.38	1.12	0.00	0.00	0.00
42.05	0.43	0.38	1.12	0.00	0.00	0.00
42.10	0.43	0.38	1.12	0.00	0.00	0.00
42.15	0.43	0.38	1.12	0.00	0.00	0.00
42.20	0.43	0.38	1.12	0.00	0.00	0.00
42.25	0.43	0.38	1.12	0.00	0.00	0.00
42.30	0.43	0.38	1.12	0.00	0.00	0.00
42.35	0.43	0.38	1.12	0.00	0.00	0.00
42.40	0.43	0.38	1.12	0.00	0.00	0.00
42.45	0.43	0.38	1.12	0.00	0.00	0.00
42.50	0.43	0.38	1.12	0.00	0.00	0.00
42.55	0.43	0.38	1.12	0.00	0.00	0.00
42.60	0.43	0.38	1.11	0.00	0.00	0.00
42.65	0.43	0.38	1.11	0.00	0.00	0.00
42.70	0.43	0.38	1.11	0.00	0.00	0.00
42.75	0.43	0.38	1.11	0.00	0.00	0.00
42.80	0.43	0.38	1.11	0.00	0.00	0.00
42.85	0.43	0.38	1.11	0.00	0.00	0.00

42.90	0.43	0.38	1.11	0.00	0.00	0.00
42.95	0.43	0.38	1.11	0.00	0.00	0.00
43.00	0.43	0.38	1.11	0.00	0.00	0.00
43.05	0.43	0.38	1.11	0.00	0.00	0.00
43.10	0.43	0.38	1.11	0.00	0.00	0.00
43.15	0.43	0.38	1.11	0.00	0.00	0.00
43.20	0.43	0.38	1.11	0.00	0.00	0.00
43.25	0.43	0.38	1.11	0.00	0.00	0.00
43.30	0.43	0.38	1.11	0.00	0.00	0.00
43.35	0.43	0.38	1.11	0.00	0.00	0.00
43.40	0.43	0.38	1.11	0.00	0.00	0.00
43.45	0.43	0.38	1.11	0.00	0.00	0.00
43.50	0.43	0.38	1.11	0.00	0.00	0.00
43.55	0.43	0.38	1.11	0.00	0.00	0.00
43.60	0.43	0.38	1.11	0.00	0.00	0.00
43.65	0.43	0.38	1.11	0.00	0.00	0.00
43.70	0.42	0.38	1.11	0.00	0.00	0.00
43.75	0.42	0.38	1.11	0.00	0.00	0.00
43.80	0.42	0.38	1.11	0.00	0.00	0.00
43.85	0.42	0.38	1.11	0.00	0.00	0.00
43.90	0.42	0.38	1.11	0.00	0.00	0.00
43.95	0.42	0.38	1.11	0.00	0.00	0.00
44.00	0.42	0.38	1.11	0.00	0.00	0.00
44.05	0.42	0.38	1.11	0.00	0.00	0.00
44.10	0.42	0.38	1.11	0.00	0.00	0.00
44.15	0.42	0.38	1.11	0.00	0.00	0.00
44.20	0.42	0.38	1.10	0.00	0.00	0.00
44.25	0.42	0.38	1.10	0.00	0.00	0.00
44.30	0.42	0.38	1.10	0.00	0.00	0.00
44.35	0.42	0.38	1.10	0.00	0.00	0.00
44.40	0.42	0.38	1.10	0.00	0.00	0.00
44.45	0.42	0.38	1.10	0.00	0.00	0.00
44.50	0.42	0.38	1.10	0.00	0.00	0.00
44.55	0.42	0.38	1.10	0.00	0.00	0.00
44.60	0.42	0.38	1.10	0.00	0.00	0.00
44.65	0.42	0.38	1.10	0.00	0.00	0.00
44.70	0.42	0.38	1.10	0.00	0.00	0.00
44.75	0.42	0.38	1.10	0.00	0.00	0.00
44.80	0.42	0.38	1.10	0.00	0.00	0.00
44.85	0.42	0.38	1.10	0.00	0.00	0.00
44.90	0.42	0.38	1.10	0.00	0.00	0.00
44.95	0.42	0.38	1.10	0.00	0.00	0.00
45.00	0.42	0.38	1.10	0.00	0.00	0.00
45.05	0.42	0.38	1.10	0.00	0.00	0.00
45.10	0.42	0.38	1.10	0.00	0.00	0.00
45.15	0.42	0.38	1.10	0.00	0.00	0.00
45.20	0.42	0.38	1.10	0.00	0.00	0.00
45.25	0.42	0.38	1.10	0.00	0.00	0.00
45.30	0.42	0.38	1.10	0.00	0.00	0.00
45.35	0.42	0.38	1.10	0.00	0.00	0.00
45.40	0.42	0.38	1.10	0.00	0.00	0.00
45.45	0.42	0.38	1.10	0.00	0.00	0.00
45.50	0.42	0.38	1.10	0.00	0.00	0.00
45.55	0.42	0.38	1.10	0.00	0.00	0.00
45.60	0.42	0.38	1.10	0.00	0.00	0.00
45.65	0.42	0.38	1.10	0.00	0.00	0.00
45.70	0.42	0.38	1.10	0.00	0.00	0.00
45.75	0.42	0.38	1.10	0.00	0.00	0.00
45.80	0.42	0.38	1.10	0.00	0.00	0.00

45.85	0.42	0.38	1.10	0.00	0.00	0.00
45.90	0.42	0.38	1.10	0.00	0.00	0.00
45.95	0.42	0.38	1.10	0.00	0.00	0.00
46.00	0.42	0.38	1.10	0.00	0.00	0.00
46.05	0.42	0.38	1.09	0.00	0.00	0.00
46.10	0.42	0.38	1.09	0.00	0.00	0.00
46.15	0.42	0.38	1.09	0.00	0.00	0.00
46.20	0.42	0.38	1.09	0.00	0.00	0.00
46.25	0.42	0.38	1.09	0.00	0.00	0.00
46.30	0.42	0.38	1.09	0.00	0.00	0.00
46.35	0.42	0.38	1.09	0.00	0.00	0.00
46.40	0.42	0.38	1.09	0.00	0.00	0.00
46.45	0.42	0.38	1.09	0.00	0.00	0.00
46.50	0.42	0.38	1.09	0.00	0.00	0.00
46.55	0.42	0.38	1.09	0.00	0.00	0.00
46.60	0.42	0.38	1.09	0.00	0.00	0.00
46.65	0.42	0.38	1.09	0.00	0.00	0.00
46.70	0.42	0.38	1.09	0.00	0.00	0.00
46.75	0.42	0.38	1.09	0.00	0.00	0.00
46.80	0.42	0.38	1.09	0.00	0.00	0.00
46.85	0.42	0.38	1.09	0.00	0.00	0.00
46.90	0.42	0.38	1.09	0.00	0.00	0.00
46.95	0.42	0.38	1.09	0.00	0.00	0.00
47.00	0.42	0.38	1.09	0.00	0.00	0.00
47.05	0.42	0.38	1.09	0.00	0.00	0.00
47.10	0.42	0.38	1.09	0.00	0.00	0.00
47.15	0.42	0.38	1.09	0.00	0.00	0.00
47.20	0.42	0.38	1.09	0.00	0.00	0.00
47.25	0.42	0.38	1.09	0.00	0.00	0.00
47.30	0.42	0.38	1.09	0.00	0.00	0.00
47.35	0.42	0.38	1.09	0.00	0.00	0.00
47.40	0.42	0.38	1.09	0.00	0.00	0.00
47.45	0.42	0.38	1.09	0.00	0.00	0.00
47.50	0.42	0.38	1.09	0.00	0.00	0.00
47.55	0.42	0.38	1.09	0.00	0.00	0.00
47.60	0.42	0.38	1.09	0.00	0.00	0.00
47.65	0.42	0.38	1.09	0.00	0.00	0.00
47.70	0.42	0.38	1.09	0.00	0.00	0.00
47.75	0.42	0.38	1.09	0.00	0.00	0.00
47.80	0.42	0.38	1.09	0.00	0.00	0.00
47.85	0.42	0.38	1.09	0.00	0.00	0.00
47.90	0.42	0.38	1.09	0.00	0.00	0.00
47.95	0.42	0.38	1.09	0.00	0.00	0.00
48.00	0.42	0.38	1.09	0.00	0.00	0.00
48.05	0.42	0.38	1.09	0.00	0.00	0.00
48.10	0.42	0.38	1.09	0.00	0.00	0.00
48.15	0.41	0.38	1.09	0.00	0.00	0.00
48.20	0.41	0.38	1.09	0.00	0.00	0.00
48.25	0.41	0.38	1.09	0.00	0.00	0.00
48.30	0.41	0.38	1.09	0.00	0.00	0.00
48.35	0.41	0.38	1.09	0.00	0.00	0.00
48.40	0.41	0.38	1.08	0.00	0.00	0.00
48.45	0.41	0.38	1.08	0.00	0.00	0.00
48.50	0.41	0.38	1.08	0.00	0.00	0.00
48.55	0.41	0.38	1.08	0.00	0.00	0.00
48.60	0.41	0.38	1.08	0.00	0.00	0.00
48.65	0.41	0.38	1.08	0.00	0.00	0.00
48.70	0.41	0.38	1.08	0.00	0.00	0.00
48.75	0.41	0.38	1.08	0.00	0.00	0.00

48.80	0.41	0.38	1.08	0.00	0.00	0.00
48.85	0.41	0.38	1.08	0.00	0.00	0.00
48.90	0.41	0.38	1.08	0.00	0.00	0.00
48.95	0.41	0.38	1.08	0.00	0.00	0.00
49.00	0.41	0.38	1.08	0.00	0.00	0.00
49.05	0.41	0.38	1.08	0.00	0.00	0.00
49.10	0.41	0.38	1.08	0.00	0.00	0.00
49.15	0.41	0.38	1.08	0.00	0.00	0.00
49.20	0.41	0.38	1.08	0.00	0.00	0.00
49.25	0.41	0.38	1.08	0.00	0.00	0.00
49.30	0.41	0.38	1.08	0.00	0.00	0.00
49.35	0.41	0.38	1.08	0.00	0.00	0.00
49.40	0.41	0.38	1.08	0.00	0.00	0.00
49.45	0.41	0.38	1.08	0.00	0.00	0.00
49.50	0.41	0.38	1.08	0.00	0.00	0.00
49.55	0.41	0.38	1.08	0.00	0.00	0.00
49.60	0.41	0.38	1.08	0.00	0.00	0.00
49.65	0.41	0.38	1.08	0.00	0.00	0.00
49.70	0.41	0.38	1.08	0.00	0.00	0.00
49.75	0.41	0.38	1.08	0.00	0.00	0.00
49.80	0.41	0.38	1.08	0.00	0.00	0.00
49.85	0.41	0.38	1.08	0.00	0.00	0.00
49.90	0.41	0.38	1.08	0.00	0.00	0.00
49.95	0.41	0.38	1.08	0.00	0.00	0.00
50.00	0.41	0.38	1.08	0.00	0.00	0.00
50.05	0.41	0.38	1.08	0.00	0.00	0.00
50.10	0.41	0.38	1.08	0.00	0.00	0.00
50.15	0.41	0.38	1.08	0.00	0.00	0.00
50.20	0.41	0.38	1.08	0.00	0.00	0.00
50.25	0.41	0.38	1.08	0.00	0.00	0.00
50.30	0.41	0.38	1.08	0.00	0.00	0.00
50.35	0.41	0.38	1.08	0.00	0.00	0.00
50.40	0.41	0.38	1.08	0.00	0.00	0.00
50.45	0.41	0.38	1.08	0.00	0.00	0.00
50.50	0.41	0.38	1.08	0.00	0.00	0.00
50.55	0.41	0.38	1.08	0.00	0.00	0.00
50.60	0.41	0.38	1.08	0.00	0.00	0.00
50.65	0.41	0.38	1.08	0.00	0.00	0.00
50.70	0.41	0.38	1.08	0.00	0.00	0.00
50.75	0.41	0.38	1.08	0.00	0.00	0.00
50.80	0.41	0.38	1.08	0.00	0.00	0.00
50.85	0.41	0.38	1.08	0.00	0.00	0.00
50.90	0.41	0.38	1.08	0.00	0.00	0.00
50.95	0.41	0.38	1.08	0.00	0.00	0.00
51.00	0.41	0.38	1.08	0.00	0.00	0.00
51.05	0.41	0.38	1.08	0.00	0.00	0.00
51.10	0.41	0.38	1.08	0.00	0.00	0.00
51.15	0.41	0.38	1.08	0.00	0.00	0.00
51.20	0.41	0.38	1.08	0.00	0.00	0.00
51.25	0.41	0.38	1.08	0.00	0.00	0.00
51.30	0.41	0.38	1.08	0.00	0.00	0.00
51.35	0.41	0.38	1.08	0.00	0.00	0.00
51.40	0.41	0.38	1.08	0.00	0.00	0.00
51.45	0.41	0.38	1.08	0.00	0.00	0.00
51.50	0.41	0.38	1.08	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Welcome to LiquefyPro!

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1 atm (atmosphere) = 1 tsf (ton/ft2)

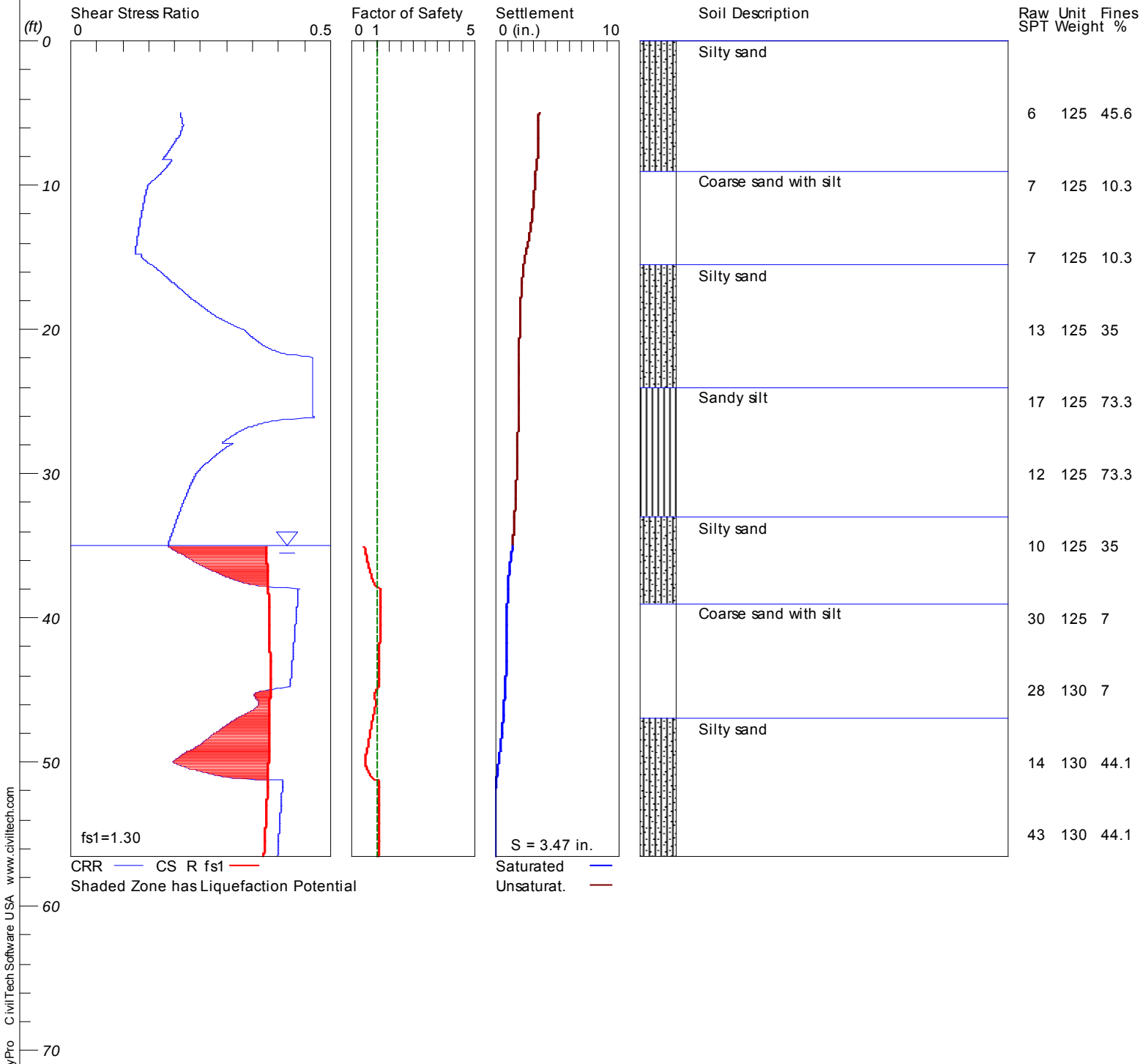
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Arlington High School

Hole No.=B-9 Water Depth=35 ft

Magnitude=7.7
Acceleration=0.50g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: C:\Users\jmeneses\Desktop\Liquefaction Runs\18-1214-0 Arlington High\Boring B-9.liq
Title: Arlington High School
Subtitle: Boring B-9

Surface Elev.=
Hole No.=B-9
Depth of Hole= 56.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 7.70

Input Data:

Surface Elev.=
Hole No.=B-9
Depth of Hole=56.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
5.00	6.00	125.00	45.60
10.00	7.00	125.00	10.30
15.00	7.00	125.00	10.30
20.00	13.00	125.00	35.00
25.00	17.00	125.00	73.30
30.00	12.00	125.00	73.30
35.00	10.00	125.00	35.00
40.00	30.00	125.00	7.00
45.00	28.00	130.00	7.00
50.00	14.00	130.00	44.10
55.00	43.00	130.00	44.10

Output Results:

Settlement of Saturated Sands=1.32 in.
Settlement of Unsaturated Sands=2.15 in.
Total Settlement of Saturated and Unsaturated Sands=3.47 in.
Differential Settlement=1.735 to 2.290 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
5.00	0.21	0.42	5.00	1.32	2.15	3.47
5.05	0.21	0.42	5.00	1.32	2.15	3.47
5.10	0.21	0.42	5.00	1.32	2.15	3.47
5.15	0.21	0.42	5.00	1.32	2.15	3.47
5.20	0.21	0.42	5.00	1.32	2.15	3.47
5.25	0.21	0.42	5.00	1.32	2.15	3.47
5.30	0.21	0.42	5.00	1.32	2.15	3.47
5.35	0.21	0.42	5.00	1.32	2.15	3.46
5.40	0.21	0.42	5.00	1.32	2.15	3.46
5.45	0.21	0.42	5.00	1.32	2.15	3.46
5.50	0.21	0.42	5.00	1.32	2.15	3.46
5.55	0.21	0.42	5.00	1.32	2.14	3.46
5.60	0.21	0.42	5.00	1.32	2.14	3.46
5.65	0.21	0.42	5.00	1.32	2.14	3.46
5.70	0.22	0.42	5.00	1.32	2.14	3.46
5.75	0.22	0.42	5.00	1.32	2.14	3.46
5.80	0.22	0.42	5.00	1.32	2.14	3.46
5.85	0.22	0.42	5.00	1.32	2.14	3.46
5.90	0.22	0.42	5.00	1.32	2.14	3.46
5.95	0.22	0.42	5.00	1.32	2.14	3.46
6.00	0.21	0.42	5.00	1.32	2.14	3.45
6.05	0.21	0.42	5.00	1.32	2.14	3.45
6.10	0.21	0.42	5.00	1.32	2.14	3.45
6.15	0.21	0.42	5.00	1.32	2.13	3.45
6.20	0.21	0.42	5.00	1.32	2.13	3.45
6.25	0.21	0.42	5.00	1.32	2.13	3.45
6.30	0.21	0.42	5.00	1.32	2.13	3.45
6.35	0.21	0.42	5.00	1.32	2.13	3.45
6.40	0.21	0.42	5.00	1.32	2.13	3.45
6.45	0.21	0.42	5.00	1.32	2.13	3.45
6.50	0.21	0.42	5.00	1.32	2.13	3.44
6.55	0.21	0.42	5.00	1.32	2.13	3.44
6.60	0.21	0.42	5.00	1.32	2.13	3.44
6.65	0.21	0.42	5.00	1.32	2.12	3.44
6.70	0.21	0.42	5.00	1.32	2.12	3.44
6.75	0.20	0.42	5.00	1.32	2.12	3.44
6.80	0.20	0.42	5.00	1.32	2.12	3.44
6.85	0.20	0.42	5.00	1.32	2.12	3.44
6.90	0.20	0.42	5.00	1.32	2.12	3.43
6.95	0.20	0.42	5.00	1.32	2.11	3.43
7.00	0.20	0.42	5.00	1.32	2.11	3.43
7.05	0.20	0.42	5.00	1.32	2.11	3.43
7.10	0.20	0.42	5.00	1.32	2.11	3.43
7.15	0.20	0.42	5.00	1.32	2.11	3.42
7.20	0.20	0.42	5.00	1.32	2.11	3.42
7.25	0.20	0.42	5.00	1.32	2.10	3.42
7.30	0.19	0.42	5.00	1.32	2.10	3.42
7.35	0.19	0.42	5.00	1.32	2.10	3.42
7.40	0.19	0.42	5.00	1.32	2.10	3.41

7.45	0.19	0.42	5.00	1.32	2.09	3.41
7.50	0.19	0.42	5.00	1.32	2.09	3.41
7.55	0.19	0.42	5.00	1.32	2.09	3.40
7.60	0.19	0.42	5.00	1.32	2.08	3.40
7.65	0.19	0.41	5.00	1.32	2.08	3.40
7.70	0.19	0.41	5.00	1.32	2.08	3.39
7.75	0.19	0.41	5.00	1.32	2.07	3.39
7.80	0.19	0.41	5.00	1.32	2.07	3.39
7.85	0.18	0.41	5.00	1.32	2.06	3.38
7.90	0.18	0.41	5.00	1.32	2.06	3.38
7.95	0.18	0.41	5.00	1.32	2.05	3.37
8.00	0.18	0.41	5.00	1.32	2.05	3.37
8.05	0.18	0.41	5.00	1.32	2.04	3.36
8.10	0.18	0.41	5.00	1.32	2.04	3.35
8.15	0.18	0.41	5.00	1.32	2.03	3.35
8.20	0.18	0.41	5.00	1.32	2.02	3.34
8.25	0.20	0.41	5.00	1.32	2.02	3.33
8.30	0.19	0.41	5.00	1.32	2.01	3.33
8.35	0.19	0.41	5.00	1.32	2.01	3.32
8.40	0.19	0.41	5.00	1.32	2.00	3.32
8.45	0.19	0.41	5.00	1.32	2.00	3.31
8.50	0.19	0.41	5.00	1.32	1.99	3.31
8.55	0.19	0.41	5.00	1.32	1.98	3.30
8.60	0.19	0.41	5.00	1.32	1.98	3.29
8.65	0.19	0.41	5.00	1.32	1.97	3.29
8.70	0.19	0.41	5.00	1.32	1.96	3.28
8.75	0.18	0.41	5.00	1.32	1.95	3.27
8.80	0.18	0.41	5.00	1.32	1.94	3.26
8.85	0.18	0.41	5.00	1.32	1.93	3.25
8.90	0.18	0.41	5.00	1.32	1.92	3.24
8.95	0.18	0.41	5.00	1.32	1.91	3.22
9.00	0.18	0.41	5.00	1.32	1.89	3.21
9.05	0.18	0.41	5.00	1.32	1.88	3.20
9.10	0.18	0.41	5.00	1.32	1.86	3.18
9.15	0.17	0.41	5.00	1.32	1.85	3.17
9.20	0.17	0.41	5.00	1.32	1.85	3.16
9.25	0.17	0.41	5.00	1.32	1.84	3.16
9.30	0.17	0.41	5.00	1.32	1.84	3.16
9.35	0.17	0.41	5.00	1.32	1.84	3.16
9.40	0.17	0.41	5.00	1.32	1.84	3.16
9.45	0.17	0.41	5.00	1.32	1.84	3.15
9.50	0.16	0.41	5.00	1.32	1.83	3.15
9.55	0.16	0.41	5.00	1.32	1.83	3.15
9.60	0.16	0.41	5.00	1.32	1.83	3.15
9.65	0.16	0.41	5.00	1.32	1.83	3.14
9.70	0.16	0.41	5.00	1.32	1.82	3.14
9.75	0.16	0.41	5.00	1.32	1.82	3.14
9.80	0.15	0.41	5.00	1.32	1.82	3.14
9.85	0.15	0.41	5.00	1.32	1.82	3.13
9.90	0.15	0.41	5.00	1.32	1.81	3.13
9.95	0.15	0.41	5.00	1.32	1.81	3.13
10.00	0.15	0.41	5.00	1.32	1.81	3.12
10.05	0.15	0.41	5.00	1.32	1.80	3.12
10.10	0.15	0.41	5.00	1.32	1.80	3.12
10.15	0.15	0.41	5.00	1.32	1.80	3.11
10.20	0.15	0.41	5.00	1.32	1.79	3.11
10.25	0.15	0.41	5.00	1.32	1.79	3.11
10.30	0.15	0.41	5.00	1.32	1.79	3.10
10.35	0.15	0.41	5.00	1.32	1.78	3.10

10.40	0.15	0.41	5.00	1.32	1.78	3.09
10.45	0.14	0.41	5.00	1.32	1.77	3.09
10.50	0.14	0.41	5.00	1.32	1.77	3.09
10.55	0.14	0.41	5.00	1.32	1.77	3.08
10.60	0.14	0.41	5.00	1.32	1.76	3.08
10.65	0.14	0.41	5.00	1.32	1.76	3.07
10.70	0.14	0.41	5.00	1.32	1.75	3.07
10.75	0.14	0.41	5.00	1.32	1.75	3.07
10.80	0.14	0.41	5.00	1.32	1.75	3.06
10.85	0.14	0.41	5.00	1.32	1.74	3.06
10.90	0.14	0.41	5.00	1.32	1.74	3.05
10.95	0.14	0.41	5.00	1.32	1.73	3.05
11.00	0.14	0.41	5.00	1.32	1.73	3.04
11.05	0.14	0.41	5.00	1.32	1.72	3.04
11.10	0.14	0.41	5.00	1.32	1.72	3.03
11.15	0.14	0.41	5.00	1.32	1.71	3.03
11.20	0.14	0.41	5.00	1.32	1.71	3.03
11.25	0.14	0.41	5.00	1.32	1.70	3.02
11.30	0.14	0.41	5.00	1.32	1.70	3.02
11.35	0.14	0.41	5.00	1.32	1.69	3.01
11.40	0.14	0.41	5.00	1.32	1.69	3.00
11.45	0.14	0.41	5.00	1.32	1.68	3.00
11.50	0.14	0.41	5.00	1.32	1.68	2.99
11.55	0.14	0.41	5.00	1.32	1.67	2.99
11.60	0.14	0.41	5.00	1.32	1.67	2.98
11.65	0.14	0.41	5.00	1.32	1.66	2.98
11.70	0.14	0.41	5.00	1.32	1.65	2.97
11.75	0.14	0.41	5.00	1.32	1.65	2.97
11.80	0.14	0.41	5.00	1.32	1.64	2.96
11.85	0.14	0.41	5.00	1.32	1.64	2.95
11.90	0.14	0.41	5.00	1.32	1.63	2.95
11.95	0.14	0.41	5.00	1.32	1.62	2.94
12.00	0.14	0.41	5.00	1.32	1.62	2.94
12.05	0.14	0.41	5.00	1.32	1.61	2.93
12.10	0.14	0.41	5.00	1.32	1.61	2.92
12.15	0.14	0.41	5.00	1.32	1.60	2.92
12.20	0.13	0.41	5.00	1.32	1.59	2.91
12.25	0.13	0.41	5.00	1.32	1.59	2.90
12.30	0.13	0.41	5.00	1.32	1.58	2.90
12.35	0.13	0.41	5.00	1.32	1.57	2.89
12.40	0.13	0.41	5.00	1.32	1.56	2.88
12.45	0.13	0.41	5.00	1.32	1.56	2.87
12.50	0.13	0.41	5.00	1.32	1.55	2.87
12.55	0.13	0.41	5.00	1.32	1.54	2.86
12.60	0.13	0.41	5.00	1.32	1.53	2.85
12.65	0.13	0.41	5.00	1.32	1.53	2.84
12.70	0.13	0.41	5.00	1.32	1.52	2.84
12.75	0.13	0.41	5.00	1.32	1.51	2.83
12.80	0.13	0.41	5.00	1.32	1.50	2.82
12.85	0.13	0.41	5.00	1.32	1.50	2.81
12.90	0.13	0.41	5.00	1.32	1.49	2.80
12.95	0.13	0.41	5.00	1.32	1.48	2.80
13.00	0.13	0.41	5.00	1.32	1.47	2.79
13.05	0.13	0.41	5.00	1.32	1.46	2.78
13.10	0.13	0.41	5.00	1.32	1.45	2.77
13.15	0.13	0.41	5.00	1.32	1.44	2.76
13.20	0.13	0.41	5.00	1.32	1.43	2.75
13.25	0.13	0.41	5.00	1.32	1.43	2.74
13.30	0.13	0.41	5.00	1.32	1.42	2.73

13.35	0.13	0.41	5.00	1.32	1.41	2.72
13.40	0.13	0.41	5.00	1.32	1.40	2.71
13.45	0.13	0.41	5.00	1.32	1.39	2.70
13.50	0.13	0.41	5.00	1.32	1.38	2.69
13.55	0.13	0.41	5.00	1.32	1.37	2.68
13.60	0.13	0.41	5.00	1.32	1.36	2.67
13.65	0.13	0.41	5.00	1.32	1.35	2.66
13.70	0.13	0.41	5.00	1.32	1.34	2.65
13.75	0.13	0.41	5.00	1.32	1.32	2.64
13.80	0.13	0.41	5.00	1.32	1.31	2.63
13.85	0.13	0.41	5.00	1.32	1.30	2.62
13.90	0.13	0.41	5.00	1.32	1.29	2.61
13.95	0.13	0.41	5.00	1.32	1.28	2.60
14.00	0.13	0.41	5.00	1.32	1.27	2.59
14.05	0.13	0.41	5.00	1.32	1.26	2.57
14.10	0.13	0.41	5.00	1.32	1.24	2.56
14.15	0.13	0.41	5.00	1.32	1.23	2.55
14.20	0.13	0.41	5.00	1.32	1.22	2.54
14.25	0.13	0.41	5.00	1.32	1.21	2.52
14.30	0.13	0.41	5.00	1.32	1.20	2.51
14.35	0.13	0.41	5.00	1.32	1.18	2.50
14.40	0.12	0.41	5.00	1.32	1.17	2.49
14.45	0.12	0.41	5.00	1.32	1.16	2.47
14.50	0.12	0.41	5.00	1.32	1.14	2.46
14.55	0.12	0.41	5.00	1.32	1.13	2.45
14.60	0.12	0.41	5.00	1.32	1.12	2.43
14.65	0.12	0.41	5.00	1.32	1.10	2.42
14.70	0.12	0.41	5.00	1.32	1.09	2.40
14.75	0.12	0.41	5.00	1.32	1.07	2.39
14.80	0.14	0.41	5.00	1.32	1.06	2.38
14.85	0.14	0.41	5.00	1.32	1.05	2.36
14.90	0.14	0.41	5.00	1.32	1.04	2.35
14.95	0.14	0.41	5.00	1.32	1.03	2.34
15.00	0.14	0.41	5.00	1.32	1.01	2.33
15.05	0.14	0.41	5.00	1.32	1.00	2.32
15.10	0.14	0.41	5.00	1.32	0.99	2.31
15.15	0.14	0.41	5.00	1.32	0.98	2.30
15.20	0.14	0.41	5.00	1.32	0.97	2.29
15.25	0.15	0.41	5.00	1.32	0.96	2.28
15.30	0.15	0.41	5.00	1.32	0.95	2.27
15.35	0.15	0.41	5.00	1.32	0.94	2.26
15.40	0.15	0.41	5.00	1.32	0.93	2.25
15.45	0.15	0.41	5.00	1.32	0.93	2.24
15.50	0.15	0.41	5.00	1.32	0.92	2.23
15.55	0.16	0.41	5.00	1.32	0.91	2.23
15.60	0.16	0.41	5.00	1.32	0.90	2.22
15.65	0.16	0.41	5.00	1.32	0.89	2.21
15.70	0.16	0.41	5.00	1.32	0.89	2.20
15.75	0.16	0.41	5.00	1.32	0.88	2.20
15.80	0.17	0.41	5.00	1.32	0.87	2.19
15.85	0.17	0.41	5.00	1.32	0.86	2.18
15.90	0.17	0.41	5.00	1.32	0.86	2.17
15.95	0.17	0.41	5.00	1.32	0.85	2.17
16.00	0.17	0.41	5.00	1.32	0.84	2.16
16.05	0.17	0.41	5.00	1.32	0.84	2.16
16.10	0.18	0.41	5.00	1.32	0.83	2.15
16.15	0.18	0.41	5.00	1.32	0.83	2.14
16.20	0.18	0.41	5.00	1.32	0.82	2.14
16.25	0.18	0.41	5.00	1.32	0.81	2.13

16.30	0.18	0.41	5.00	1.32	0.81	2.13
16.35	0.18	0.41	5.00	1.32	0.80	2.12
16.40	0.19	0.41	5.00	1.32	0.80	2.12
16.45	0.19	0.41	5.00	1.32	0.79	2.11
16.50	0.19	0.41	5.00	1.32	0.79	2.11
16.55	0.19	0.41	5.00	1.32	0.78	2.10
16.60	0.19	0.41	5.00	1.32	0.78	2.10
16.65	0.19	0.41	5.00	1.32	0.77	2.09
16.70	0.20	0.41	5.00	1.32	0.77	2.09
16.75	0.20	0.41	5.00	1.32	0.76	2.08
16.80	0.20	0.41	5.00	1.32	0.76	2.08
16.85	0.20	0.41	5.00	1.32	0.75	2.07
16.90	0.20	0.41	5.00	1.32	0.75	2.07
16.95	0.20	0.41	5.00	1.32	0.75	2.06
17.00	0.20	0.41	5.00	1.32	0.74	2.06
17.05	0.21	0.41	5.00	1.32	0.74	2.05
17.10	0.21	0.41	5.00	1.32	0.73	2.05
17.15	0.21	0.41	5.00	1.32	0.73	2.05
17.20	0.21	0.41	5.00	1.32	0.72	2.04
17.25	0.21	0.41	5.00	1.32	0.72	2.04
17.30	0.21	0.41	5.00	1.32	0.72	2.03
17.35	0.22	0.41	5.00	1.32	0.71	2.03
17.40	0.22	0.41	5.00	1.32	0.71	2.03
17.45	0.22	0.41	5.00	1.32	0.70	2.02
17.50	0.22	0.41	5.00	1.32	0.70	2.02
17.55	0.22	0.41	5.00	1.32	0.70	2.01
17.60	0.22	0.41	5.00	1.32	0.69	2.01
17.65	0.23	0.41	5.00	1.32	0.69	2.01
17.70	0.23	0.41	5.00	1.32	0.69	2.00
17.75	0.23	0.41	5.00	1.32	0.68	2.00
17.80	0.23	0.40	5.00	1.32	0.68	2.00
17.85	0.23	0.40	5.00	1.32	0.68	1.99
17.90	0.23	0.40	5.00	1.32	0.67	1.99
17.95	0.24	0.40	5.00	1.32	0.67	1.99
18.00	0.24	0.40	5.00	1.32	0.67	1.98
18.05	0.24	0.40	5.00	1.32	0.66	1.98
18.10	0.24	0.40	5.00	1.32	0.66	1.98
18.15	0.24	0.40	5.00	1.32	0.66	1.97
18.20	0.24	0.40	5.00	1.32	0.65	1.97
18.25	0.25	0.40	5.00	1.32	0.65	1.97
18.30	0.25	0.40	5.00	1.32	0.65	1.96
18.35	0.25	0.40	5.00	1.32	0.64	1.96
18.40	0.25	0.40	5.00	1.32	0.64	1.96
18.45	0.25	0.40	5.00	1.32	0.64	1.95
18.50	0.26	0.40	5.00	1.32	0.63	1.95
18.55	0.26	0.40	5.00	1.32	0.63	1.95
18.60	0.26	0.40	5.00	1.32	0.63	1.95
18.65	0.26	0.40	5.00	1.32	0.63	1.94
18.70	0.26	0.40	5.00	1.32	0.62	1.94
18.75	0.27	0.40	5.00	1.32	0.62	1.94
18.80	0.27	0.40	5.00	1.32	0.62	1.93
18.85	0.27	0.40	5.00	1.32	0.61	1.93
18.90	0.27	0.40	5.00	1.32	0.61	1.93
18.95	0.27	0.40	5.00	1.32	0.61	1.93
19.00	0.28	0.40	5.00	1.32	0.61	1.92
19.05	0.28	0.40	5.00	1.32	0.60	1.92
19.10	0.28	0.40	5.00	1.32	0.60	1.92
19.15	0.28	0.40	5.00	1.32	0.60	1.91
19.20	0.29	0.40	5.00	1.32	0.60	1.91

19.25	0.29	0.40	5.00	1.32	0.59	1.91
19.30	0.29	0.40	5.00	1.32	0.59	1.91
19.35	0.29	0.40	5.00	1.32	0.59	1.90
19.40	0.30	0.40	5.00	1.32	0.58	1.90
19.45	0.30	0.40	5.00	1.32	0.58	1.90
19.50	0.30	0.40	5.00	1.32	0.58	1.90
19.55	0.30	0.40	5.00	1.32	0.58	1.89
19.60	0.31	0.40	5.00	1.32	0.58	1.89
19.65	0.31	0.40	5.00	1.32	0.58	1.89
19.70	0.31	0.40	5.00	1.32	0.57	1.89
19.75	0.32	0.40	5.00	1.32	0.57	1.89
19.80	0.32	0.40	5.00	1.32	0.57	1.89
19.85	0.32	0.40	5.00	1.32	0.57	1.89
19.90	0.32	0.40	5.00	1.32	0.57	1.89
19.95	0.33	0.40	5.00	1.32	0.57	1.89
20.00	0.33	0.40	5.00	1.32	0.57	1.89
20.05	0.34	0.40	5.00	1.32	0.57	1.89
20.10	0.34	0.40	5.00	1.32	0.57	1.88
20.15	0.34	0.40	5.00	1.32	0.57	1.88
20.20	0.34	0.40	5.00	1.32	0.57	1.88
20.25	0.34	0.40	5.00	1.32	0.56	1.88
20.30	0.34	0.40	5.00	1.32	0.56	1.88
20.35	0.34	0.40	5.00	1.32	0.56	1.88
20.40	0.35	0.40	5.00	1.32	0.56	1.88
20.45	0.35	0.40	5.00	1.32	0.56	1.88
20.50	0.35	0.40	5.00	1.32	0.56	1.88
20.55	0.35	0.40	5.00	1.32	0.56	1.88
20.60	0.35	0.40	5.00	1.32	0.56	1.88
20.65	0.35	0.40	5.00	1.32	0.56	1.87
20.70	0.35	0.40	5.00	1.32	0.56	1.87
20.75	0.36	0.40	5.00	1.32	0.56	1.87
20.80	0.36	0.40	5.00	1.32	0.55	1.87
20.85	0.36	0.40	5.00	1.32	0.55	1.87
20.90	0.36	0.40	5.00	1.32	0.55	1.87
20.95	0.36	0.40	5.00	1.32	0.55	1.87
21.00	0.37	0.40	5.00	1.32	0.55	1.87
21.05	0.37	0.40	5.00	1.32	0.55	1.87
21.10	0.37	0.40	5.00	1.32	0.55	1.87
21.15	0.37	0.40	5.00	1.32	0.55	1.87
21.20	0.38	0.40	5.00	1.32	0.55	1.86
21.25	0.38	0.40	5.00	1.32	0.55	1.86
21.30	0.38	0.40	5.00	1.32	0.55	1.86
21.35	0.38	0.40	5.00	1.32	0.55	1.86
21.40	0.39	0.40	5.00	1.32	0.54	1.86
21.45	0.39	0.40	5.00	1.32	0.54	1.86
21.50	0.40	0.40	5.00	1.32	0.54	1.86
21.55	0.40	0.40	5.00	1.32	0.54	1.86
21.60	0.41	0.40	5.00	1.32	0.54	1.86
21.65	0.41	0.40	5.00	1.32	0.54	1.86
21.70	0.42	0.40	5.00	1.32	0.54	1.86
21.75	0.43	0.40	5.00	1.32	0.54	1.86
21.80	0.43	0.40	5.00	1.32	0.54	1.85
21.85	0.44	0.40	5.00	1.32	0.54	1.85
21.90	0.46	0.40	5.00	1.32	0.54	1.85
21.95	0.47	0.40	5.00	1.32	0.53	1.85
22.00	0.47	0.40	5.00	1.32	0.53	1.85
22.05	0.47	0.40	5.00	1.32	0.53	1.85
22.10	0.47	0.40	5.00	1.32	0.53	1.85
22.15	0.47	0.40	5.00	1.32	0.53	1.85

22.20	0.47	0.40	5.00	1.32	0.53	1.85
22.25	0.47	0.40	5.00	1.32	0.53	1.85
22.30	0.47	0.40	5.00	1.32	0.53	1.85
22.35	0.47	0.40	5.00	1.32	0.53	1.84
22.40	0.47	0.40	5.00	1.32	0.53	1.84
22.45	0.47	0.40	5.00	1.32	0.53	1.84
22.50	0.47	0.40	5.00	1.32	0.52	1.84
22.55	0.47	0.40	5.00	1.32	0.52	1.84
22.60	0.47	0.40	5.00	1.32	0.52	1.84
22.65	0.47	0.40	5.00	1.32	0.52	1.84
22.70	0.47	0.40	5.00	1.32	0.52	1.84
22.75	0.47	0.40	5.00	1.32	0.52	1.84
22.80	0.47	0.40	5.00	1.32	0.52	1.84
22.85	0.47	0.40	5.00	1.32	0.52	1.84
22.90	0.47	0.40	5.00	1.32	0.52	1.83
22.95	0.47	0.40	5.00	1.32	0.52	1.83
23.00	0.47	0.40	5.00	1.32	0.52	1.83
23.05	0.47	0.40	5.00	1.32	0.52	1.83
23.10	0.47	0.40	5.00	1.32	0.51	1.83
23.15	0.47	0.40	5.00	1.32	0.51	1.83
23.20	0.47	0.40	5.00	1.32	0.51	1.83
23.25	0.47	0.40	5.00	1.32	0.51	1.83
23.30	0.47	0.40	5.00	1.32	0.51	1.83
23.35	0.47	0.40	5.00	1.32	0.51	1.83
23.40	0.47	0.40	5.00	1.32	0.51	1.83
23.45	0.47	0.40	5.00	1.32	0.51	1.83
23.50	0.47	0.40	5.00	1.32	0.51	1.82
23.55	0.47	0.40	5.00	1.32	0.51	1.82
23.60	0.47	0.40	5.00	1.32	0.51	1.82
23.65	0.47	0.40	5.00	1.32	0.50	1.82
23.70	0.47	0.40	5.00	1.32	0.50	1.82
23.75	0.47	0.40	5.00	1.32	0.50	1.82
23.80	0.47	0.40	5.00	1.32	0.50	1.82
23.85	0.47	0.40	5.00	1.32	0.50	1.82
23.90	0.47	0.40	5.00	1.32	0.50	1.82
23.95	0.47	0.40	5.00	1.32	0.50	1.82
24.00	0.47	0.40	5.00	1.32	0.50	1.82
24.05	0.47	0.40	5.00	1.32	0.50	1.82
24.10	0.47	0.40	5.00	1.32	0.50	1.81
24.15	0.47	0.40	5.00	1.32	0.50	1.81
24.20	0.47	0.40	5.00	1.32	0.50	1.81
24.25	0.47	0.40	5.00	1.32	0.49	1.81
24.30	0.47	0.40	5.00	1.32	0.49	1.81
24.35	0.47	0.40	5.00	1.32	0.49	1.81
24.40	0.47	0.40	5.00	1.32	0.49	1.81
24.45	0.47	0.40	5.00	1.32	0.49	1.81
24.50	0.47	0.40	5.00	1.32	0.49	1.81
24.55	0.47	0.40	5.00	1.32	0.49	1.81
24.60	0.47	0.40	5.00	1.32	0.49	1.81
24.65	0.47	0.40	5.00	1.32	0.49	1.80
24.70	0.47	0.40	5.00	1.32	0.49	1.80
24.75	0.47	0.40	5.00	1.32	0.49	1.80
24.80	0.47	0.40	5.00	1.32	0.49	1.80
24.85	0.47	0.40	5.00	1.32	0.48	1.80
24.90	0.47	0.40	5.00	1.32	0.48	1.80
24.95	0.47	0.40	5.00	1.32	0.48	1.80
25.00	0.47	0.40	5.00	1.32	0.48	1.80
25.05	0.47	0.40	5.00	1.32	0.48	1.80
25.10	0.47	0.40	5.00	1.32	0.48	1.80

25.15	0.47	0.40	5.00	1.32	0.48	1.80
25.20	0.47	0.40	5.00	1.32	0.48	1.80
25.25	0.47	0.40	5.00	1.32	0.48	1.79
25.30	0.47	0.40	5.00	1.32	0.48	1.79
25.35	0.47	0.40	5.00	1.32	0.48	1.79
25.40	0.47	0.40	5.00	1.32	0.47	1.79
25.45	0.47	0.40	5.00	1.32	0.47	1.79
25.50	0.47	0.40	5.00	1.32	0.47	1.79
25.55	0.47	0.40	5.00	1.32	0.47	1.79
25.60	0.47	0.40	5.00	1.32	0.47	1.79
25.65	0.47	0.40	5.00	1.32	0.47	1.79
25.70	0.47	0.40	5.00	1.32	0.47	1.79
25.75	0.47	0.40	5.00	1.32	0.47	1.79
25.80	0.47	0.40	5.00	1.32	0.47	1.78
25.85	0.47	0.40	5.00	1.32	0.47	1.78
25.90	0.47	0.40	5.00	1.32	0.46	1.78
25.95	0.47	0.40	5.00	1.32	0.46	1.78
26.00	0.47	0.40	5.00	1.32	0.46	1.78
26.05	0.47	0.40	5.00	1.32	0.46	1.78
26.10	0.47	0.40	5.00	1.32	0.46	1.78
26.15	0.45	0.40	5.00	1.32	0.46	1.78
26.20	0.43	0.40	5.00	1.32	0.46	1.78
26.25	0.41	0.40	5.00	1.32	0.46	1.77
26.30	0.40	0.40	5.00	1.32	0.46	1.77
26.35	0.39	0.40	5.00	1.32	0.46	1.77
26.40	0.38	0.40	5.00	1.32	0.45	1.77
26.45	0.37	0.40	5.00	1.32	0.45	1.77
26.50	0.37	0.40	5.00	1.32	0.45	1.77
26.55	0.36	0.40	5.00	1.32	0.45	1.77
26.60	0.36	0.40	5.00	1.32	0.45	1.77
26.65	0.35	0.40	5.00	1.32	0.45	1.77
26.70	0.35	0.40	5.00	1.32	0.45	1.76
26.75	0.35	0.40	5.00	1.32	0.45	1.76
26.80	0.34	0.40	5.00	1.32	0.44	1.76
26.85	0.34	0.40	5.00	1.32	0.44	1.76
26.90	0.34	0.40	5.00	1.32	0.44	1.76
26.95	0.33	0.40	5.00	1.32	0.44	1.76
27.00	0.33	0.40	5.00	1.32	0.44	1.76
27.05	0.33	0.40	5.00	1.32	0.44	1.75
27.10	0.32	0.40	5.00	1.32	0.44	1.75
27.15	0.32	0.40	5.00	1.32	0.44	1.75
27.20	0.32	0.40	5.00	1.32	0.43	1.75
27.25	0.32	0.40	5.00	1.32	0.43	1.75
27.30	0.31	0.40	5.00	1.32	0.43	1.75
27.35	0.31	0.40	5.00	1.32	0.43	1.75
27.40	0.31	0.40	5.00	1.32	0.43	1.75
27.45	0.31	0.40	5.00	1.32	0.43	1.74
27.50	0.31	0.40	5.00	1.32	0.43	1.74
27.55	0.30	0.40	5.00	1.32	0.42	1.74
27.60	0.30	0.40	5.00	1.32	0.42	1.74
27.65	0.30	0.40	5.00	1.32	0.42	1.74
27.70	0.30	0.40	5.00	1.32	0.42	1.74
27.75	0.30	0.40	5.00	1.32	0.42	1.73
27.80	0.29	0.40	5.00	1.32	0.42	1.73
27.85	0.29	0.40	5.00	1.32	0.41	1.73
27.90	0.31	0.40	5.00	1.32	0.41	1.73
27.95	0.31	0.39	5.00	1.32	0.41	1.73
28.00	0.31	0.39	5.00	1.32	0.41	1.73
28.05	0.31	0.39	5.00	1.32	0.41	1.73

28.10	0.30	0.39	5.00	1.32	0.41	1.72
28.15	0.30	0.39	5.00	1.32	0.41	1.72
28.20	0.30	0.39	5.00	1.32	0.40	1.72
28.25	0.30	0.39	5.00	1.32	0.40	1.72
28.30	0.30	0.39	5.00	1.32	0.40	1.72
28.35	0.29	0.39	5.00	1.32	0.40	1.72
28.40	0.29	0.39	5.00	1.32	0.40	1.71
28.45	0.29	0.39	5.00	1.32	0.40	1.71
28.50	0.29	0.39	5.00	1.32	0.39	1.71
28.55	0.29	0.39	5.00	1.32	0.39	1.71
28.60	0.28	0.39	5.00	1.32	0.39	1.71
28.65	0.28	0.39	5.00	1.32	0.39	1.71
28.70	0.28	0.39	5.00	1.32	0.39	1.70
28.75	0.28	0.39	5.00	1.32	0.39	1.70
28.80	0.28	0.39	5.00	1.32	0.38	1.70
28.85	0.27	0.39	5.00	1.32	0.38	1.70
28.90	0.27	0.39	5.00	1.32	0.38	1.70
28.95	0.27	0.39	5.00	1.32	0.38	1.70
29.00	0.27	0.39	5.00	1.32	0.38	1.69
29.05	0.27	0.39	5.00	1.32	0.37	1.69
29.10	0.27	0.39	5.00	1.32	0.37	1.69
29.15	0.26	0.39	5.00	1.32	0.37	1.69
29.20	0.26	0.39	5.00	1.32	0.37	1.69
29.25	0.26	0.39	5.00	1.32	0.37	1.68
29.30	0.26	0.39	5.00	1.32	0.37	1.68
29.35	0.26	0.39	5.00	1.32	0.36	1.68
29.40	0.26	0.39	5.00	1.32	0.36	1.68
29.45	0.26	0.39	5.00	1.32	0.36	1.68
29.50	0.25	0.39	5.00	1.32	0.36	1.67
29.55	0.25	0.39	5.00	1.32	0.35	1.67
29.60	0.25	0.39	5.00	1.32	0.35	1.67
29.65	0.25	0.39	5.00	1.32	0.35	1.67
29.70	0.25	0.39	5.00	1.32	0.35	1.67
29.75	0.25	0.39	5.00	1.32	0.35	1.66
29.80	0.25	0.39	5.00	1.32	0.34	1.66
29.85	0.24	0.39	5.00	1.32	0.34	1.66
29.90	0.24	0.39	5.00	1.32	0.34	1.66
29.95	0.24	0.39	5.00	1.32	0.34	1.65
30.00	0.24	0.39	5.00	1.32	0.33	1.65
30.05	0.24	0.39	5.00	1.32	0.33	1.65
30.10	0.24	0.39	5.00	1.32	0.33	1.65
30.15	0.24	0.39	5.00	1.32	0.33	1.64
30.20	0.24	0.39	5.00	1.32	0.33	1.64
30.25	0.24	0.39	5.00	1.32	0.32	1.64
30.30	0.24	0.39	5.00	1.32	0.32	1.64
30.35	0.24	0.39	5.00	1.32	0.32	1.63
30.40	0.24	0.39	5.00	1.32	0.32	1.63
30.45	0.23	0.39	5.00	1.32	0.31	1.63
30.50	0.23	0.39	5.00	1.32	0.31	1.63
30.55	0.23	0.39	5.00	1.32	0.31	1.62
30.60	0.23	0.39	5.00	1.32	0.31	1.62
30.65	0.23	0.39	5.00	1.32	0.30	1.62
30.70	0.23	0.39	5.00	1.32	0.30	1.62
30.75	0.23	0.39	5.00	1.32	0.30	1.61
30.80	0.23	0.39	5.00	1.32	0.29	1.61
30.85	0.23	0.39	5.00	1.32	0.29	1.61
30.90	0.23	0.39	5.00	1.32	0.29	1.61
30.95	0.23	0.39	5.00	1.32	0.29	1.60
31.00	0.23	0.39	5.00	1.32	0.28	1.60

31.05	0.23	0.39	5.00	1.32	0.28	1.60
31.10	0.23	0.39	5.00	1.32	0.28	1.60
31.15	0.23	0.39	5.00	1.32	0.28	1.59
31.20	0.23	0.39	5.00	1.32	0.27	1.59
31.25	0.22	0.39	5.00	1.32	0.27	1.59
31.30	0.22	0.39	5.00	1.32	0.27	1.58
31.35	0.22	0.39	5.00	1.32	0.26	1.58
31.40	0.22	0.39	5.00	1.32	0.26	1.58
31.45	0.22	0.39	5.00	1.32	0.26	1.58
31.50	0.22	0.39	5.00	1.32	0.26	1.57
31.55	0.22	0.39	5.00	1.32	0.25	1.57
31.60	0.22	0.39	5.00	1.32	0.25	1.57
31.65	0.22	0.39	5.00	1.32	0.25	1.56
31.70	0.22	0.39	5.00	1.32	0.24	1.56
31.75	0.22	0.39	5.00	1.32	0.24	1.56
31.80	0.22	0.39	5.00	1.32	0.24	1.56
31.85	0.22	0.39	5.00	1.32	0.24	1.55
31.90	0.22	0.39	5.00	1.32	0.23	1.55
31.95	0.22	0.39	5.00	1.32	0.23	1.55
32.00	0.22	0.39	5.00	1.32	0.23	1.54
32.05	0.22	0.39	5.00	1.32	0.22	1.54
32.10	0.22	0.39	5.00	1.32	0.22	1.54
32.15	0.21	0.39	5.00	1.32	0.22	1.53
32.20	0.21	0.39	5.00	1.32	0.21	1.53
32.25	0.21	0.39	5.00	1.32	0.21	1.53
32.30	0.21	0.38	5.00	1.32	0.21	1.53
32.35	0.21	0.38	5.00	1.32	0.21	1.52
32.40	0.21	0.38	5.00	1.32	0.20	1.52
32.45	0.21	0.38	5.00	1.32	0.20	1.52
32.50	0.21	0.38	5.00	1.32	0.20	1.51
32.55	0.21	0.38	5.00	1.32	0.19	1.51
32.60	0.21	0.38	5.00	1.32	0.19	1.51
32.65	0.21	0.38	5.00	1.32	0.19	1.50
32.70	0.21	0.38	5.00	1.32	0.18	1.50
32.75	0.21	0.38	5.00	1.32	0.18	1.50
32.80	0.21	0.38	5.00	1.32	0.18	1.49
32.85	0.21	0.38	5.00	1.32	0.17	1.49
32.90	0.21	0.38	5.00	1.32	0.17	1.49
32.95	0.21	0.38	5.00	1.32	0.17	1.48
33.00	0.21	0.38	5.00	1.32	0.16	1.48
33.05	0.21	0.38	5.00	1.32	0.16	1.48
33.10	0.20	0.38	5.00	1.32	0.15	1.47
33.15	0.20	0.38	5.00	1.32	0.15	1.47
33.20	0.20	0.38	5.00	1.32	0.15	1.46
33.25	0.20	0.38	5.00	1.32	0.14	1.46
33.30	0.20	0.38	5.00	1.32	0.14	1.46
33.35	0.20	0.38	5.00	1.32	0.14	1.45
33.40	0.20	0.38	5.00	1.32	0.13	1.45
33.45	0.20	0.38	5.00	1.32	0.13	1.45
33.50	0.20	0.38	5.00	1.32	0.13	1.44
33.55	0.20	0.38	5.00	1.32	0.12	1.44
33.60	0.20	0.38	5.00	1.32	0.12	1.44
33.65	0.20	0.38	5.00	1.32	0.12	1.43
33.70	0.20	0.38	5.00	1.32	0.11	1.43
33.75	0.20	0.38	5.00	1.32	0.11	1.42
33.80	0.20	0.38	5.00	1.32	0.10	1.42
33.85	0.20	0.38	5.00	1.32	0.10	1.42
33.90	0.20	0.38	5.00	1.32	0.10	1.41
33.95	0.20	0.38	5.00	1.32	0.09	1.41

34.00	0.20	0.38	5.00	1.32	0.09	1.41
34.05	0.20	0.38	5.00	1.32	0.08	1.40
34.10	0.19	0.38	5.00	1.32	0.08	1.40
34.15	0.19	0.38	5.00	1.32	0.08	1.39
34.20	0.19	0.38	5.00	1.32	0.07	1.39
34.25	0.19	0.38	5.00	1.32	0.07	1.39
34.30	0.19	0.38	5.00	1.32	0.06	1.38
34.35	0.19	0.38	5.00	1.32	0.06	1.38
34.40	0.19	0.38	5.00	1.32	0.06	1.37
34.45	0.19	0.38	5.00	1.32	0.05	1.37
34.50	0.19	0.38	5.00	1.32	0.05	1.36
34.55	0.19	0.38	5.00	1.32	0.04	1.36
34.60	0.19	0.38	5.00	1.32	0.04	1.36
34.65	0.19	0.38	5.00	1.32	0.03	1.35
34.70	0.19	0.38	5.00	1.32	0.03	1.35
34.75	0.19	0.38	5.00	1.32	0.03	1.34
34.80	0.19	0.38	5.00	1.32	0.02	1.34
34.85	0.19	0.38	5.00	1.32	0.02	1.33
34.90	0.19	0.38	5.00	1.32	0.01	1.33
34.95	0.19	0.38	5.00	1.32	0.01	1.33
35.00	0.19	0.38	5.00	1.32	0.00	1.32
35.05	0.19	0.38	0.50*	1.32	0.00	1.32
35.10	0.19	0.38	0.51*	1.31	0.00	1.31
35.15	0.19	0.38	0.51*	1.30	0.00	1.30
35.20	0.20	0.38	0.52*	1.29	0.00	1.29
35.25	0.20	0.38	0.53*	1.28	0.00	1.28
35.30	0.20	0.38	0.53*	1.27	0.00	1.27
35.35	0.20	0.38	0.54*	1.26	0.00	1.26
35.40	0.20	0.38	0.54*	1.26	0.00	1.26
35.45	0.21	0.38	0.55*	1.25	0.00	1.25
35.50	0.21	0.38	0.56*	1.24	0.00	1.24
35.55	0.21	0.38	0.56*	1.23	0.00	1.23
35.60	0.21	0.38	0.57*	1.22	0.00	1.22
35.65	0.22	0.38	0.57*	1.21	0.00	1.21
35.70	0.22	0.38	0.58*	1.21	0.00	1.21
35.75	0.22	0.38	0.59*	1.20	0.00	1.20
35.80	0.22	0.38	0.59*	1.19	0.00	1.19
35.85	0.23	0.38	0.60*	1.18	0.00	1.18
35.90	0.23	0.38	0.61*	1.17	0.00	1.17
35.95	0.23	0.38	0.61*	1.17	0.00	1.17
36.00	0.23	0.38	0.62*	1.16	0.00	1.16
36.05	0.24	0.38	0.62*	1.15	0.00	1.15
36.10	0.24	0.38	0.63*	1.14	0.00	1.14
36.15	0.24	0.38	0.64*	1.14	0.00	1.14
36.20	0.24	0.38	0.64*	1.13	0.00	1.13
36.25	0.25	0.38	0.65*	1.12	0.00	1.12
36.30	0.25	0.38	0.66*	1.12	0.00	1.12
36.35	0.25	0.38	0.66*	1.11	0.00	1.11
36.40	0.25	0.38	0.67*	1.10	0.00	1.10
36.45	0.26	0.38	0.68*	1.10	0.00	1.10
36.50	0.26	0.38	0.69*	1.09	0.00	1.09
36.55	0.26	0.38	0.69*	1.08	0.00	1.08
36.60	0.26	0.38	0.70*	1.08	0.00	1.08
36.65	0.27	0.38	0.71*	1.07	0.00	1.07
36.70	0.27	0.38	0.72*	1.06	0.00	1.06
36.75	0.27	0.38	0.72*	1.06	0.00	1.06
36.80	0.28	0.38	0.73*	1.05	0.00	1.05
36.85	0.28	0.38	0.74*	1.04	0.00	1.04
36.90	0.28	0.38	0.75*	1.04	0.00	1.04

36.95	0.29	0.38	0.76*	1.03	0.00	1.03
37.00	0.29	0.38	0.76*	1.03	0.00	1.03
37.05	0.29	0.38	0.77*	1.02	0.00	1.02
37.10	0.30	0.38	0.78*	1.01	0.00	1.01
37.15	0.30	0.38	0.79*	1.01	0.00	1.01
37.20	0.30	0.38	0.80*	1.00	0.00	1.00
37.25	0.31	0.38	0.81*	1.00	0.00	1.00
37.30	0.31	0.38	0.82*	0.99	0.00	0.99
37.35	0.31	0.38	0.83*	0.99	0.00	0.99
37.40	0.32	0.38	0.84*	0.98	0.00	0.98
37.45	0.32	0.38	0.85*	0.98	0.00	0.98
37.50	0.33	0.38	0.86*	0.97	0.00	0.97
37.55	0.33	0.38	0.88*	0.97	0.00	0.97
37.60	0.34	0.38	0.89*	0.96	0.00	0.96
37.65	0.35	0.38	0.91*	0.96	0.00	0.96
37.70	0.35	0.38	0.93*	0.96	0.00	0.96
37.75	0.36	0.38	0.95*	0.95	0.00	0.95
37.80	0.37	0.38	0.99*	0.95	0.00	0.95
37.85	0.39	0.38	1.03	0.94	0.00	0.94
37.90	0.42	0.38	1.10	0.94	0.00	0.94
37.95	0.44	0.38	1.15	0.94	0.00	0.94
38.00	0.44	0.38	1.15	0.93	0.00	0.93
38.05	0.44	0.38	1.15	0.93	0.00	0.93
38.10	0.44	0.38	1.15	0.93	0.00	0.93
38.15	0.44	0.38	1.15	0.92	0.00	0.92
38.20	0.44	0.38	1.15	0.92	0.00	0.92
38.25	0.44	0.38	1.15	0.92	0.00	0.92
38.30	0.44	0.38	1.15	0.92	0.00	0.92
38.35	0.44	0.38	1.15	0.91	0.00	0.91
38.40	0.44	0.38	1.15	0.91	0.00	0.91
38.45	0.44	0.38	1.15	0.91	0.00	0.91
38.50	0.44	0.38	1.15	0.91	0.00	0.91
38.55	0.44	0.38	1.15	0.90	0.00	0.90
38.60	0.44	0.38	1.15	0.90	0.00	0.90
38.65	0.44	0.38	1.15	0.90	0.00	0.90
38.70	0.44	0.38	1.15	0.90	0.00	0.90
38.75	0.44	0.38	1.15	0.90	0.00	0.90
38.80	0.44	0.38	1.15	0.90	0.00	0.90
38.85	0.44	0.38	1.15	0.90	0.00	0.90
38.90	0.44	0.38	1.14	0.90	0.00	0.90
38.95	0.44	0.38	1.14	0.90	0.00	0.90
39.00	0.44	0.38	1.14	0.89	0.00	0.89
39.05	0.44	0.38	1.14	0.89	0.00	0.89
39.10	0.44	0.38	1.14	0.89	0.00	0.89
39.15	0.44	0.38	1.14	0.89	0.00	0.89
39.20	0.44	0.38	1.14	0.89	0.00	0.89
39.25	0.44	0.38	1.14	0.89	0.00	0.89
39.30	0.44	0.38	1.14	0.89	0.00	0.89
39.35	0.44	0.38	1.14	0.89	0.00	0.89
39.40	0.44	0.38	1.14	0.89	0.00	0.89
39.45	0.43	0.38	1.14	0.89	0.00	0.89
39.50	0.43	0.38	1.14	0.88	0.00	0.88
39.55	0.43	0.38	1.14	0.88	0.00	0.88
39.60	0.43	0.38	1.14	0.88	0.00	0.88
39.65	0.43	0.38	1.14	0.88	0.00	0.88
39.70	0.43	0.38	1.14	0.88	0.00	0.88
39.75	0.43	0.38	1.14	0.88	0.00	0.88
39.80	0.43	0.38	1.14	0.88	0.00	0.88
39.85	0.43	0.38	1.14	0.88	0.00	0.88

39.90	0.43	0.38	1.14	0.88	0.00	0.88
39.95	0.43	0.38	1.14	0.88	0.00	0.88
40.00	0.43	0.38	1.13	0.88	0.00	0.88
40.05	0.43	0.38	1.13	0.88	0.00	0.88
40.10	0.43	0.38	1.13	0.88	0.00	0.88
40.15	0.43	0.38	1.13	0.88	0.00	0.88
40.20	0.43	0.38	1.13	0.88	0.00	0.88
40.25	0.43	0.38	1.13	0.87	0.00	0.87
40.30	0.43	0.38	1.13	0.87	0.00	0.87
40.35	0.43	0.38	1.13	0.87	0.00	0.87
40.40	0.43	0.38	1.13	0.87	0.00	0.87
40.45	0.43	0.38	1.13	0.87	0.00	0.87
40.50	0.43	0.38	1.13	0.87	0.00	0.87
40.55	0.43	0.38	1.13	0.87	0.00	0.87
40.60	0.43	0.38	1.13	0.87	0.00	0.87
40.65	0.43	0.38	1.13	0.87	0.00	0.87
40.70	0.43	0.38	1.13	0.87	0.00	0.87
40.75	0.43	0.38	1.13	0.87	0.00	0.87
40.80	0.43	0.38	1.13	0.87	0.00	0.87
40.85	0.43	0.38	1.13	0.87	0.00	0.87
40.90	0.43	0.38	1.13	0.87	0.00	0.87
40.95	0.43	0.38	1.13	0.86	0.00	0.86
41.00	0.43	0.38	1.13	0.86	0.00	0.86
41.05	0.43	0.38	1.13	0.86	0.00	0.86
41.10	0.43	0.38	1.13	0.86	0.00	0.86
41.15	0.43	0.38	1.13	0.86	0.00	0.86
41.20	0.43	0.38	1.13	0.86	0.00	0.86
41.25	0.43	0.38	1.12	0.86	0.00	0.86
41.30	0.43	0.38	1.12	0.86	0.00	0.86
41.35	0.43	0.38	1.12	0.86	0.00	0.86
41.40	0.43	0.38	1.12	0.86	0.00	0.86
41.45	0.43	0.38	1.12	0.86	0.00	0.86
41.50	0.43	0.38	1.12	0.85	0.00	0.85
41.55	0.43	0.38	1.12	0.85	0.00	0.85
41.60	0.43	0.38	1.12	0.85	0.00	0.85
41.65	0.43	0.38	1.12	0.85	0.00	0.85
41.70	0.43	0.38	1.12	0.85	0.00	0.85
41.75	0.43	0.38	1.12	0.85	0.00	0.85
41.80	0.43	0.38	1.12	0.85	0.00	0.85
41.85	0.43	0.38	1.12	0.85	0.00	0.85
41.90	0.43	0.38	1.12	0.85	0.00	0.85
41.95	0.43	0.38	1.12	0.85	0.00	0.85
42.00	0.43	0.38	1.12	0.84	0.00	0.84
42.05	0.43	0.38	1.12	0.84	0.00	0.84
42.10	0.43	0.38	1.12	0.84	0.00	0.84
42.15	0.43	0.38	1.12	0.84	0.00	0.84
42.20	0.43	0.38	1.12	0.84	0.00	0.84
42.25	0.43	0.38	1.12	0.84	0.00	0.84
42.30	0.43	0.38	1.12	0.84	0.00	0.84
42.35	0.43	0.38	1.12	0.84	0.00	0.84
42.40	0.43	0.38	1.12	0.84	0.00	0.84
42.45	0.43	0.38	1.12	0.84	0.00	0.84
42.50	0.43	0.38	1.12	0.83	0.00	0.83
42.55	0.43	0.38	1.12	0.83	0.00	0.83
42.60	0.43	0.38	1.11	0.83	0.00	0.83
42.65	0.43	0.38	1.11	0.83	0.00	0.83
42.70	0.43	0.38	1.11	0.83	0.00	0.83
42.75	0.43	0.38	1.11	0.83	0.00	0.83
42.80	0.43	0.38	1.11	0.83	0.00	0.83

42.85	0.43	0.38	1.11	0.83	0.00	0.83
42.90	0.43	0.38	1.11	0.82	0.00	0.82
42.95	0.43	0.38	1.11	0.82	0.00	0.82
43.00	0.43	0.38	1.11	0.82	0.00	0.82
43.05	0.43	0.38	1.11	0.82	0.00	0.82
43.10	0.43	0.38	1.11	0.82	0.00	0.82
43.15	0.43	0.38	1.11	0.82	0.00	0.82
43.20	0.43	0.38	1.11	0.81	0.00	0.81
43.25	0.43	0.38	1.11	0.81	0.00	0.81
43.30	0.43	0.38	1.11	0.81	0.00	0.81
43.35	0.43	0.38	1.11	0.81	0.00	0.81
43.40	0.43	0.38	1.11	0.81	0.00	0.81
43.45	0.43	0.38	1.11	0.80	0.00	0.80
43.50	0.43	0.38	1.11	0.80	0.00	0.80
43.55	0.43	0.38	1.11	0.80	0.00	0.80
43.60	0.43	0.38	1.11	0.80	0.00	0.80
43.65	0.43	0.38	1.11	0.79	0.00	0.79
43.70	0.42	0.38	1.11	0.79	0.00	0.79
43.75	0.42	0.38	1.11	0.79	0.00	0.79
43.80	0.42	0.38	1.11	0.79	0.00	0.79
43.85	0.42	0.38	1.11	0.78	0.00	0.78
43.90	0.42	0.38	1.11	0.78	0.00	0.78
43.95	0.42	0.38	1.11	0.78	0.00	0.78
44.00	0.42	0.38	1.11	0.77	0.00	0.77
44.05	0.42	0.38	1.11	0.77	0.00	0.77
44.10	0.42	0.38	1.11	0.77	0.00	0.77
44.15	0.42	0.38	1.11	0.76	0.00	0.76
44.20	0.42	0.38	1.10	0.76	0.00	0.76
44.25	0.42	0.38	1.10	0.76	0.00	0.76
44.30	0.42	0.38	1.10	0.76	0.00	0.76
44.35	0.42	0.38	1.10	0.75	0.00	0.75
44.40	0.42	0.38	1.10	0.75	0.00	0.75
44.45	0.42	0.38	1.10	0.75	0.00	0.75
44.50	0.42	0.38	1.10	0.74	0.00	0.74
44.55	0.42	0.38	1.10	0.74	0.00	0.74
44.60	0.42	0.38	1.10	0.74	0.00	0.74
44.65	0.42	0.38	1.10	0.73	0.00	0.73
44.70	0.42	0.38	1.10	0.73	0.00	0.73
44.75	0.42	0.38	1.10	0.73	0.00	0.73
44.80	0.42	0.38	1.09	0.72	0.00	0.72
44.85	0.41	0.38	1.06	0.72	0.00	0.72
44.90	0.40	0.38	1.03	0.71	0.00	0.71
44.95	0.39	0.38	1.01	0.71	0.00	0.71
45.00	0.38	0.38	0.99*	0.71	0.00	0.71
45.05	0.37	0.38	0.97*	0.70	0.00	0.70
45.10	0.36	0.38	0.95*	0.70	0.00	0.70
45.15	0.36	0.38	0.94*	0.70	0.00	0.70
45.20	0.36	0.38	0.93*	0.69	0.00	0.69
45.25	0.36	0.38	0.93*	0.69	0.00	0.69
45.30	0.35	0.38	0.92*	0.68	0.00	0.68
45.35	0.35	0.38	0.92*	0.68	0.00	0.68
45.40	0.35	0.38	0.92*	0.68	0.00	0.68
45.45	0.35	0.38	0.92*	0.67	0.00	0.67
45.50	0.36	0.38	0.93*	0.67	0.00	0.67
45.55	0.36	0.38	0.93*	0.66	0.00	0.66
45.60	0.36	0.38	0.93*	0.66	0.00	0.66
45.65	0.36	0.38	0.94*	0.66	0.00	0.66
45.70	0.36	0.38	0.94*	0.65	0.00	0.65
45.75	0.36	0.38	0.94*	0.65	0.00	0.65

45.80	0.36	0.38	0.94*	0.65	0.00	0.65
45.85	0.36	0.38	0.94*	0.64	0.00	0.64
45.90	0.36	0.38	0.95*	0.64	0.00	0.64
45.95	0.36	0.38	0.95*	0.63	0.00	0.63
46.00	0.36	0.38	0.95*	0.63	0.00	0.63
46.05	0.36	0.38	0.94*	0.63	0.00	0.63
46.10	0.36	0.38	0.94*	0.62	0.00	0.62
46.15	0.36	0.38	0.94*	0.62	0.00	0.62
46.20	0.36	0.38	0.93*	0.62	0.00	0.62
46.25	0.36	0.38	0.93*	0.61	0.00	0.61
46.30	0.35	0.38	0.92*	0.61	0.00	0.61
46.35	0.35	0.38	0.92*	0.60	0.00	0.60
46.40	0.35	0.38	0.91*	0.60	0.00	0.60
46.45	0.35	0.38	0.91*	0.60	0.00	0.60
46.50	0.34	0.38	0.90*	0.59	0.00	0.59
46.55	0.34	0.38	0.89*	0.59	0.00	0.59
46.60	0.34	0.38	0.89*	0.58	0.00	0.58
46.65	0.34	0.38	0.88*	0.58	0.00	0.58
46.70	0.33	0.38	0.87*	0.58	0.00	0.58
46.75	0.33	0.38	0.87*	0.57	0.00	0.57
46.80	0.33	0.38	0.86*	0.57	0.00	0.57
46.85	0.33	0.38	0.85*	0.56	0.00	0.56
46.90	0.32	0.38	0.85*	0.56	0.00	0.56
46.95	0.32	0.38	0.84*	0.55	0.00	0.55
47.00	0.32	0.38	0.83*	0.55	0.00	0.55
47.05	0.32	0.38	0.83*	0.55	0.00	0.55
47.10	0.31	0.38	0.82*	0.54	0.00	0.54
47.15	0.31	0.38	0.82*	0.54	0.00	0.54
47.20	0.31	0.38	0.81*	0.53	0.00	0.53
47.25	0.31	0.38	0.81*	0.53	0.00	0.53
47.30	0.31	0.38	0.80*	0.52	0.00	0.52
47.35	0.30	0.38	0.79*	0.52	0.00	0.52
47.40	0.30	0.38	0.79*	0.51	0.00	0.51
47.45	0.30	0.38	0.78*	0.51	0.00	0.51
47.50	0.30	0.38	0.78*	0.50	0.00	0.50
47.55	0.30	0.38	0.77*	0.50	0.00	0.50
47.60	0.29	0.38	0.77*	0.49	0.00	0.49
47.65	0.29	0.38	0.76*	0.49	0.00	0.49
47.70	0.29	0.38	0.76*	0.48	0.00	0.48
47.75	0.29	0.38	0.75*	0.48	0.00	0.48
47.80	0.29	0.38	0.75*	0.47	0.00	0.47
47.85	0.28	0.38	0.74*	0.47	0.00	0.47
47.90	0.28	0.38	0.74*	0.46	0.00	0.46
47.95	0.28	0.38	0.73*	0.46	0.00	0.46
48.00	0.28	0.38	0.73*	0.45	0.00	0.45
48.05	0.28	0.38	0.72*	0.45	0.00	0.45
48.10	0.27	0.38	0.72*	0.44	0.00	0.44
48.15	0.27	0.38	0.71*	0.43	0.00	0.43
48.20	0.27	0.38	0.71*	0.43	0.00	0.43
48.25	0.27	0.38	0.70*	0.42	0.00	0.42
48.30	0.27	0.38	0.70*	0.42	0.00	0.42
48.35	0.26	0.38	0.69*	0.41	0.00	0.41
48.40	0.26	0.38	0.69*	0.40	0.00	0.40
48.45	0.26	0.38	0.68*	0.40	0.00	0.40
48.50	0.26	0.38	0.68*	0.39	0.00	0.39
48.55	0.26	0.38	0.68*	0.39	0.00	0.39
48.60	0.26	0.38	0.67*	0.38	0.00	0.38
48.65	0.25	0.38	0.67*	0.37	0.00	0.37
48.70	0.25	0.38	0.66*	0.37	0.00	0.37

48.75	0.25	0.38	0.66*	0.36	0.00	0.36
48.80	0.25	0.38	0.65*	0.35	0.00	0.35
48.85	0.25	0.38	0.65*	0.35	0.00	0.35
48.90	0.24	0.38	0.64*	0.34	0.00	0.34
48.95	0.24	0.38	0.63*	0.33	0.00	0.33
49.00	0.24	0.38	0.63*	0.33	0.00	0.33
49.05	0.24	0.38	0.62*	0.32	0.00	0.32
49.10	0.23	0.38	0.61*	0.31	0.00	0.31
49.15	0.23	0.38	0.61*	0.31	0.00	0.31
49.20	0.23	0.38	0.60*	0.30	0.00	0.30
49.25	0.23	0.38	0.59*	0.29	0.00	0.29
49.30	0.22	0.38	0.59*	0.29	0.00	0.29
49.35	0.22	0.38	0.58*	0.28	0.00	0.28
49.40	0.22	0.38	0.58*	0.27	0.00	0.27
49.45	0.22	0.38	0.57*	0.26	0.00	0.26
49.50	0.22	0.38	0.57*	0.26	0.00	0.26
49.55	0.21	0.38	0.56*	0.25	0.00	0.25
49.60	0.21	0.38	0.55*	0.24	0.00	0.24
49.65	0.21	0.38	0.55*	0.23	0.00	0.23
49.70	0.21	0.38	0.54*	0.23	0.00	0.23
49.75	0.21	0.38	0.54*	0.22	0.00	0.22
49.80	0.20	0.38	0.53*	0.21	0.00	0.21
49.85	0.20	0.38	0.53*	0.20	0.00	0.20
49.90	0.20	0.38	0.52*	0.19	0.00	0.19
49.95	0.20	0.38	0.52*	0.19	0.00	0.19
50.00	0.20	0.38	0.51*	0.18	0.00	0.18
50.05	0.20	0.38	0.52*	0.17	0.00	0.17
50.10	0.20	0.38	0.53*	0.16	0.00	0.16
50.15	0.21	0.38	0.54*	0.15	0.00	0.15
50.20	0.21	0.38	0.55*	0.15	0.00	0.15
50.25	0.21	0.38	0.56*	0.14	0.00	0.14
50.30	0.22	0.38	0.57*	0.13	0.00	0.13
50.35	0.22	0.38	0.58*	0.12	0.00	0.12
50.40	0.23	0.38	0.59*	0.12	0.00	0.12
50.45	0.23	0.38	0.60*	0.11	0.00	0.11
50.50	0.23	0.38	0.62*	0.10	0.00	0.10
50.55	0.24	0.38	0.63*	0.09	0.00	0.09
50.60	0.24	0.38	0.64*	0.09	0.00	0.09
50.65	0.25	0.38	0.65*	0.08	0.00	0.08
50.70	0.25	0.38	0.67*	0.08	0.00	0.08
50.75	0.26	0.38	0.68*	0.07	0.00	0.07
50.80	0.27	0.38	0.70*	0.06	0.00	0.06
50.85	0.27	0.38	0.71*	0.06	0.00	0.06
50.90	0.28	0.38	0.73*	0.05	0.00	0.05
50.95	0.28	0.38	0.75*	0.05	0.00	0.05
51.00	0.29	0.38	0.77*	0.04	0.00	0.04
51.05	0.30	0.38	0.80*	0.04	0.00	0.04
51.10	0.31	0.38	0.83*	0.03	0.00	0.03
51.15	0.33	0.38	0.87*	0.03	0.00	0.03
51.20	0.35	0.38	0.94*	0.02	0.00	0.02
51.25	0.41	0.38	1.08	0.02	0.00	0.02
51.30	0.41	0.38	1.08	0.02	0.00	0.02
51.35	0.41	0.38	1.08	0.01	0.00	0.01
51.40	0.41	0.38	1.08	0.01	0.00	0.01
51.45	0.41	0.38	1.08	0.01	0.00	0.01
51.50	0.41	0.38	1.08	0.01	0.00	0.01
51.55	0.41	0.38	1.08	0.01	0.00	0.01
51.60	0.41	0.38	1.08	0.00	0.00	0.00
51.65	0.41	0.38	1.08	0.00	0.00	0.00

51.70	0.41	0.38	1.08	0.00	0.00	0.00
51.75	0.41	0.38	1.08	0.00	0.00	0.00
51.80	0.41	0.38	1.08	0.00	0.00	0.00
51.85	0.41	0.38	1.08	0.00	0.00	0.00
51.90	0.41	0.38	1.08	0.00	0.00	0.00
51.95	0.41	0.38	1.08	0.00	0.00	0.00
52.00	0.41	0.38	1.08	0.00	0.00	0.00
52.05	0.41	0.38	1.07	0.00	0.00	0.00
52.10	0.41	0.38	1.07	0.00	0.00	0.00
52.15	0.41	0.38	1.07	0.00	0.00	0.00
52.20	0.41	0.38	1.07	0.00	0.00	0.00
52.25	0.41	0.38	1.07	0.00	0.00	0.00
52.30	0.41	0.38	1.07	0.00	0.00	0.00
52.35	0.41	0.38	1.07	0.00	0.00	0.00
52.40	0.41	0.38	1.07	0.00	0.00	0.00
52.45	0.41	0.38	1.07	0.00	0.00	0.00
52.50	0.41	0.38	1.07	0.00	0.00	0.00
52.55	0.41	0.38	1.07	0.00	0.00	0.00
52.60	0.41	0.38	1.07	0.00	0.00	0.00
52.65	0.41	0.38	1.07	0.00	0.00	0.00
52.70	0.41	0.38	1.07	0.00	0.00	0.00
52.75	0.41	0.38	1.07	0.00	0.00	0.00
52.80	0.41	0.38	1.07	0.00	0.00	0.00
52.85	0.41	0.38	1.07	0.00	0.00	0.00
52.90	0.40	0.38	1.07	0.00	0.00	0.00
52.95	0.40	0.38	1.07	0.00	0.00	0.00
53.00	0.40	0.38	1.07	0.00	0.00	0.00
53.05	0.40	0.38	1.07	0.00	0.00	0.00
53.10	0.40	0.38	1.07	0.00	0.00	0.00
53.15	0.40	0.38	1.07	0.00	0.00	0.00
53.20	0.40	0.38	1.07	0.00	0.00	0.00
53.25	0.40	0.38	1.07	0.00	0.00	0.00
53.30	0.40	0.38	1.07	0.00	0.00	0.00
53.35	0.40	0.38	1.07	0.00	0.00	0.00
53.40	0.40	0.38	1.07	0.00	0.00	0.00
53.45	0.40	0.38	1.07	0.00	0.00	0.00
53.50	0.40	0.38	1.07	0.00	0.00	0.00
53.55	0.40	0.38	1.07	0.00	0.00	0.00
53.60	0.40	0.38	1.07	0.00	0.00	0.00
53.65	0.40	0.38	1.07	0.00	0.00	0.00
53.70	0.40	0.38	1.07	0.00	0.00	0.00
53.75	0.40	0.38	1.07	0.00	0.00	0.00
53.80	0.40	0.38	1.07	0.00	0.00	0.00
53.85	0.40	0.38	1.07	0.00	0.00	0.00
53.90	0.40	0.38	1.07	0.00	0.00	0.00
53.95	0.40	0.38	1.07	0.00	0.00	0.00
54.00	0.40	0.38	1.07	0.00	0.00	0.00
54.05	0.40	0.38	1.07	0.00	0.00	0.00
54.10	0.40	0.38	1.07	0.00	0.00	0.00
54.15	0.40	0.38	1.07	0.00	0.00	0.00
54.20	0.40	0.38	1.07	0.00	0.00	0.00
54.25	0.40	0.38	1.07	0.00	0.00	0.00
54.30	0.40	0.38	1.07	0.00	0.00	0.00
54.35	0.40	0.38	1.07	0.00	0.00	0.00
54.40	0.40	0.37	1.07	0.00	0.00	0.00
54.45	0.40	0.37	1.07	0.00	0.00	0.00
54.50	0.40	0.37	1.07	0.00	0.00	0.00
54.55	0.40	0.37	1.07	0.00	0.00	0.00
54.60	0.40	0.37	1.07	0.00	0.00	0.00

54.65	0.40	0.37	1.07	0.00	0.00	0.00
54.70	0.40	0.37	1.07	0.00	0.00	0.00
54.75	0.40	0.37	1.07	0.00	0.00	0.00
54.80	0.40	0.37	1.07	0.00	0.00	0.00
54.85	0.40	0.37	1.07	0.00	0.00	0.00
54.90	0.40	0.37	1.07	0.00	0.00	0.00
54.95	0.40	0.37	1.07	0.00	0.00	0.00
55.00	0.40	0.37	1.07	0.00	0.00	0.00
55.05	0.40	0.37	1.07	0.00	0.00	0.00
55.10	0.40	0.37	1.07	0.00	0.00	0.00
55.15	0.40	0.37	1.07	0.00	0.00	0.00
55.20	0.40	0.37	1.07	0.00	0.00	0.00
55.25	0.40	0.37	1.07	0.00	0.00	0.00
55.30	0.40	0.37	1.07	0.00	0.00	0.00
55.35	0.40	0.37	1.07	0.00	0.00	0.00
55.40	0.40	0.37	1.07	0.00	0.00	0.00
55.45	0.40	0.37	1.07	0.00	0.00	0.00
55.50	0.40	0.37	1.07	0.00	0.00	0.00
55.55	0.40	0.37	1.07	0.00	0.00	0.00
55.60	0.40	0.37	1.07	0.00	0.00	0.00
55.65	0.40	0.37	1.07	0.00	0.00	0.00
55.70	0.40	0.37	1.07	0.00	0.00	0.00
55.75	0.40	0.37	1.07	0.00	0.00	0.00
55.80	0.40	0.37	1.07	0.00	0.00	0.00
55.85	0.40	0.37	1.07	0.00	0.00	0.00
55.90	0.40	0.37	1.07	0.00	0.00	0.00
55.95	0.40	0.37	1.07	0.00	0.00	0.00
56.00	0.40	0.37	1.07	0.00	0.00	0.00
56.05	0.40	0.37	1.07	0.00	0.00	0.00
56.10	0.40	0.37	1.07	0.00	0.00	0.00
56.15	0.40	0.37	1.07	0.00	0.00	0.00
56.20	0.40	0.37	1.07	0.00	0.00	0.00
56.25	0.40	0.37	1.07	0.00	0.00	0.00
56.30	0.40	0.37	1.07	0.00	0.00	0.00
56.35	0.40	0.37	1.07	0.00	0.00	0.00
56.40	0.40	0.37	1.07	0.00	0.00	0.00
56.45	0.40	0.37	1.07	0.00	0.00	0.00
56.50	0.40	0.37	1.07	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Welcome to LiquefyPro!

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1 atm (atmosphere) = 1 tsf (ton/ft2)

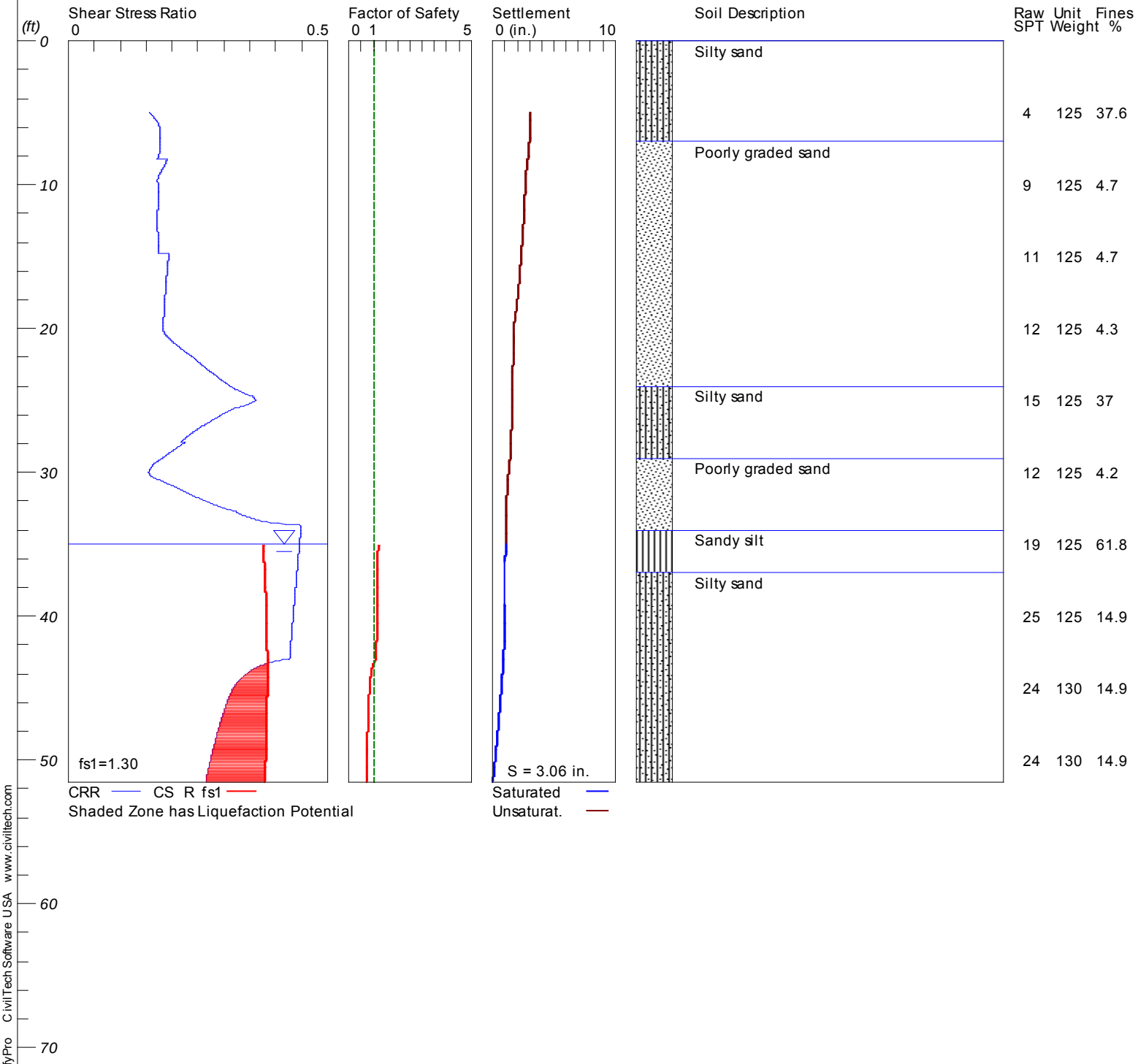
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Arlington High School

Hole No.=B-12 Water Depth=35 ft

Magnitude=7.7
Acceleration=0.50g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: C:\Users\jmeneses\Desktop\Liquefaction Runs\18-1214-0 Arlington High\Boring B-12.liq
Title: Arlington High School
Subtitle: Boring B-12

Surface Elev.=
Hole No.=B-12
Depth of Hole= 51.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 7.70

Input Data:

Surface Elev.=
Hole No.=B-12
Depth of Hole=51.50 ft
Water Table during Earthquake= 35.00 ft
Water Table during In-Situ Testing= 75.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
5.00	4.00	125.00	37.60
10.00	9.00	125.00	4.70
15.00	11.00	125.00	4.70
20.00	12.00	125.00	4.30
25.00	15.00	125.00	37.00
30.00	12.00	125.00	4.20
35.00	19.00	125.00	61.80
40.00	25.00	125.00	14.90
45.00	24.00	130.00	14.90
50.00	24.00	130.00	14.90

Output Results:

Settlement of Saturated Sands=1.03 in.
Settlement of Unsaturated Sands=2.03 in.
Total Settlement of Saturated and Unsaturated Sands=3.06 in.
Differential Settlement=1.528 to 2.017 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
5.00	0.16	0.42	5.00	1.03	2.03	3.06
5.05	0.16	0.42	5.00	1.03	2.02	3.05
5.10	0.16	0.42	5.00	1.03	2.02	3.05
5.15	0.16	0.42	5.00	1.03	2.02	3.05
5.20	0.16	0.42	5.00	1.03	2.02	3.05
5.25	0.16	0.42	5.00	1.03	2.02	3.05
5.30	0.16	0.42	5.00	1.03	2.02	3.05
5.35	0.17	0.42	5.00	1.03	2.02	3.05
5.40	0.17	0.42	5.00	1.03	2.01	3.04
5.45	0.17	0.42	5.00	1.03	2.01	3.04
5.50	0.17	0.42	5.00	1.03	2.01	3.04
5.55	0.17	0.42	5.00	1.03	2.01	3.04
5.60	0.17	0.42	5.00	1.03	2.01	3.04
5.65	0.17	0.42	5.00	1.03	2.01	3.04
5.70	0.17	0.42	5.00	1.03	2.00	3.04
5.75	0.17	0.42	5.00	1.03	2.00	3.03
5.80	0.17	0.42	5.00	1.03	2.00	3.03
5.85	0.17	0.42	5.00	1.03	2.00	3.03
5.90	0.17	0.42	5.00	1.03	2.00	3.03
5.95	0.18	0.42	5.00	1.03	2.00	3.03
6.00	0.18	0.42	5.00	1.03	2.00	3.03
6.05	0.18	0.42	5.00	1.03	1.99	3.02
6.10	0.18	0.42	5.00	1.03	1.99	3.02
6.15	0.18	0.42	5.00	1.03	1.99	3.02
6.20	0.18	0.42	5.00	1.03	1.99	3.02
6.25	0.18	0.42	5.00	1.03	1.99	3.02
6.30	0.18	0.42	5.00	1.03	1.98	3.01
6.35	0.18	0.42	5.00	1.03	1.98	3.01
6.40	0.18	0.42	5.00	1.03	1.98	3.01
6.45	0.18	0.42	5.00	1.03	1.98	3.01
6.50	0.18	0.42	5.00	1.03	1.98	3.01
6.55	0.18	0.42	5.00	1.03	1.97	3.00
6.60	0.18	0.42	5.00	1.03	1.97	3.00
6.65	0.18	0.42	5.00	1.03	1.97	3.00
6.70	0.18	0.42	5.00	1.03	1.97	3.00
6.75	0.18	0.42	5.00	1.03	1.96	2.99
6.80	0.18	0.42	5.00	1.03	1.96	2.99
6.85	0.18	0.42	5.00	1.03	1.96	2.99
6.90	0.18	0.42	5.00	1.03	1.96	2.99
6.95	0.18	0.42	5.00	1.03	1.95	2.98
7.00	0.18	0.42	5.00	1.03	1.95	2.98
7.05	0.18	0.42	5.00	1.03	1.95	2.98
7.10	0.18	0.42	5.00	1.03	1.94	2.98
7.15	0.18	0.42	5.00	1.03	1.94	2.97
7.20	0.18	0.42	5.00	1.03	1.94	2.97
7.25	0.18	0.42	5.00	1.03	1.93	2.96
7.30	0.18	0.42	5.00	1.03	1.93	2.96
7.35	0.18	0.42	5.00	1.03	1.93	2.96
7.40	0.18	0.42	5.00	1.03	1.92	2.95
7.45	0.18	0.42	5.00	1.03	1.92	2.95

7.50	0.18	0.42	5.00	1.03	1.91	2.95
7.55	0.18	0.42	5.00	1.03	1.91	2.94
7.60	0.18	0.42	5.00	1.03	1.91	2.94
7.65	0.18	0.41	5.00	1.03	1.90	2.93
7.70	0.18	0.41	5.00	1.03	1.90	2.93
7.75	0.18	0.41	5.00	1.03	1.89	2.92
7.80	0.18	0.41	5.00	1.03	1.88	2.91
7.85	0.17	0.41	5.00	1.03	1.88	2.91
7.90	0.17	0.41	5.00	1.03	1.87	2.90
7.95	0.17	0.41	5.00	1.03	1.87	2.90
8.00	0.17	0.41	5.00	1.03	1.86	2.89
8.05	0.17	0.41	5.00	1.03	1.85	2.88
8.10	0.17	0.41	5.00	1.03	1.84	2.87
8.15	0.17	0.41	5.00	1.03	1.84	2.87
8.20	0.17	0.41	5.00	1.03	1.83	2.86
8.25	0.19	0.41	5.00	1.03	1.82	2.85
8.30	0.19	0.41	5.00	1.03	1.81	2.84
8.35	0.19	0.41	5.00	1.03	1.81	2.84
8.40	0.19	0.41	5.00	1.03	1.80	2.83
8.45	0.19	0.41	5.00	1.03	1.79	2.83
8.50	0.19	0.41	5.00	1.03	1.79	2.82
8.55	0.19	0.41	5.00	1.03	1.78	2.81
8.60	0.19	0.41	5.00	1.03	1.77	2.80
8.65	0.19	0.41	5.00	1.03	1.77	2.80
8.70	0.18	0.41	5.00	1.03	1.76	2.79
8.75	0.18	0.41	5.00	1.03	1.75	2.78
8.80	0.18	0.41	5.00	1.03	1.74	2.77
8.85	0.18	0.41	5.00	1.03	1.73	2.76
8.90	0.18	0.41	5.00	1.03	1.72	2.75
8.95	0.18	0.41	5.00	1.03	1.71	2.74
9.00	0.18	0.41	5.00	1.03	1.69	2.72
9.05	0.18	0.41	5.00	1.03	1.68	2.71
9.10	0.18	0.41	5.00	1.03	1.66	2.69
9.15	0.18	0.41	5.00	1.03	1.65	2.68
9.20	0.18	0.41	5.00	1.03	1.65	2.68
9.25	0.18	0.41	5.00	1.03	1.65	2.68
9.30	0.18	0.41	5.00	1.03	1.64	2.67
9.35	0.17	0.41	5.00	1.03	1.64	2.67
9.40	0.17	0.41	5.00	1.03	1.64	2.67
9.45	0.17	0.41	5.00	1.03	1.64	2.67
9.50	0.17	0.41	5.00	1.03	1.64	2.67
9.55	0.17	0.41	5.00	1.03	1.63	2.66
9.60	0.17	0.41	5.00	1.03	1.63	2.66
9.65	0.17	0.41	5.00	1.03	1.63	2.66
9.70	0.17	0.41	5.00	1.03	1.63	2.66
9.75	0.17	0.41	5.00	1.03	1.63	2.66
9.80	0.17	0.41	5.00	1.03	1.62	2.65
9.85	0.17	0.41	5.00	1.03	1.62	2.65
9.90	0.17	0.41	5.00	1.03	1.62	2.65
9.95	0.17	0.41	5.00	1.03	1.62	2.65
10.00	0.17	0.41	5.00	1.03	1.61	2.65
10.05	0.17	0.41	5.00	1.03	1.61	2.64
10.10	0.17	0.41	5.00	1.03	1.61	2.64
10.15	0.17	0.41	5.00	1.03	1.61	2.64
10.20	0.17	0.41	5.00	1.03	1.61	2.64
10.25	0.17	0.41	5.00	1.03	1.60	2.63
10.30	0.17	0.41	5.00	1.03	1.60	2.63
10.35	0.17	0.41	5.00	1.03	1.60	2.63
10.40	0.17	0.41	5.00	1.03	1.60	2.63

10.45	0.17	0.41	5.00	1.03	1.59	2.62
10.50	0.17	0.41	5.00	1.03	1.59	2.62
10.55	0.17	0.41	5.00	1.03	1.59	2.62
10.60	0.17	0.41	5.00	1.03	1.59	2.62
10.65	0.17	0.41	5.00	1.03	1.58	2.61
10.70	0.17	0.41	5.00	1.03	1.58	2.61
10.75	0.17	0.41	5.00	1.03	1.58	2.61
10.80	0.17	0.41	5.00	1.03	1.58	2.61
10.85	0.17	0.41	5.00	1.03	1.57	2.60
10.90	0.17	0.41	5.00	1.03	1.57	2.60
10.95	0.17	0.41	5.00	1.03	1.57	2.60
11.00	0.17	0.41	5.00	1.03	1.57	2.60
11.05	0.17	0.41	5.00	1.03	1.56	2.59
11.10	0.17	0.41	5.00	1.03	1.56	2.59
11.15	0.17	0.41	5.00	1.03	1.56	2.59
11.20	0.17	0.41	5.00	1.03	1.56	2.59
11.25	0.17	0.41	5.00	1.03	1.55	2.58
11.30	0.17	0.41	5.00	1.03	1.55	2.58
11.35	0.17	0.41	5.00	1.03	1.55	2.58
11.40	0.17	0.41	5.00	1.03	1.54	2.57
11.45	0.17	0.41	5.00	1.03	1.54	2.57
11.50	0.17	0.41	5.00	1.03	1.54	2.57
11.55	0.17	0.41	5.00	1.03	1.54	2.57
11.60	0.17	0.41	5.00	1.03	1.53	2.56
11.65	0.17	0.41	5.00	1.03	1.53	2.56
11.70	0.17	0.41	5.00	1.03	1.53	2.56
11.75	0.17	0.41	5.00	1.03	1.52	2.55
11.80	0.17	0.41	5.00	1.03	1.52	2.55
11.85	0.17	0.41	5.00	1.03	1.52	2.55
11.90	0.17	0.41	5.00	1.03	1.51	2.54
11.95	0.17	0.41	5.00	1.03	1.51	2.54
12.00	0.17	0.41	5.00	1.03	1.51	2.54
12.05	0.17	0.41	5.00	1.03	1.50	2.54
12.10	0.17	0.41	5.00	1.03	1.50	2.53
12.15	0.17	0.41	5.00	1.03	1.50	2.53
12.20	0.17	0.41	5.00	1.03	1.49	2.53
12.25	0.17	0.41	5.00	1.03	1.49	2.52
12.30	0.17	0.41	5.00	1.03	1.49	2.52
12.35	0.17	0.41	5.00	1.03	1.48	2.52
12.40	0.17	0.41	5.00	1.03	1.48	2.51
12.45	0.17	0.41	5.00	1.03	1.48	2.51
12.50	0.17	0.41	5.00	1.03	1.47	2.50
12.55	0.17	0.41	5.00	1.03	1.47	2.50
12.60	0.17	0.41	5.00	1.03	1.47	2.50
12.65	0.17	0.41	5.00	1.03	1.46	2.49
12.70	0.17	0.41	5.00	1.03	1.46	2.49
12.75	0.17	0.41	5.00	1.03	1.46	2.49
12.80	0.17	0.41	5.00	1.03	1.45	2.48
12.85	0.17	0.41	5.00	1.03	1.45	2.48
12.90	0.17	0.41	5.00	1.03	1.45	2.48
12.95	0.17	0.41	5.00	1.03	1.44	2.47
13.00	0.17	0.41	5.00	1.03	1.44	2.47
13.05	0.17	0.41	5.00	1.03	1.43	2.46
13.10	0.17	0.41	5.00	1.03	1.43	2.46
13.15	0.17	0.41	5.00	1.03	1.43	2.46
13.20	0.17	0.41	5.00	1.03	1.42	2.45
13.25	0.17	0.41	5.00	1.03	1.42	2.45
13.30	0.17	0.41	5.00	1.03	1.41	2.44
13.35	0.17	0.41	5.00	1.03	1.41	2.44

13.40	0.17	0.41	5.00	1.03	1.41	2.44
13.45	0.17	0.41	5.00	1.03	1.40	2.43
13.50	0.17	0.41	5.00	1.03	1.40	2.43
13.55	0.17	0.41	5.00	1.03	1.39	2.42
13.60	0.17	0.41	5.00	1.03	1.39	2.42
13.65	0.17	0.41	5.00	1.03	1.39	2.42
13.70	0.17	0.41	5.00	1.03	1.38	2.41
13.75	0.17	0.41	5.00	1.03	1.38	2.41
13.80	0.17	0.41	5.00	1.03	1.37	2.40
13.85	0.17	0.41	5.00	1.03	1.37	2.40
13.90	0.17	0.41	5.00	1.03	1.36	2.39
13.95	0.17	0.41	5.00	1.03	1.36	2.39
14.00	0.17	0.41	5.00	1.03	1.35	2.39
14.05	0.17	0.41	5.00	1.03	1.35	2.38
14.10	0.17	0.41	5.00	1.03	1.35	2.38
14.15	0.17	0.41	5.00	1.03	1.34	2.37
14.20	0.17	0.41	5.00	1.03	1.34	2.37
14.25	0.17	0.41	5.00	1.03	1.33	2.36
14.30	0.17	0.41	5.00	1.03	1.33	2.36
14.35	0.17	0.41	5.00	1.03	1.32	2.35
14.40	0.17	0.41	5.00	1.03	1.32	2.35
14.45	0.17	0.41	5.00	1.03	1.31	2.34
14.50	0.17	0.41	5.00	1.03	1.31	2.34
14.55	0.17	0.41	5.00	1.03	1.30	2.33
14.60	0.17	0.41	5.00	1.03	1.30	2.33
14.65	0.17	0.41	5.00	1.03	1.29	2.32
14.70	0.17	0.41	5.00	1.03	1.29	2.32
14.75	0.17	0.41	5.00	1.03	1.28	2.31
14.80	0.19	0.41	5.00	1.03	1.28	2.31
14.85	0.19	0.41	5.00	1.03	1.27	2.30
14.90	0.19	0.41	5.00	1.03	1.27	2.30
14.95	0.19	0.41	5.00	1.03	1.27	2.30
15.00	0.19	0.41	5.00	1.03	1.26	2.29
15.05	0.19	0.41	5.00	1.03	1.26	2.29
15.10	0.19	0.41	5.00	1.03	1.26	2.29
15.15	0.19	0.41	5.00	1.03	1.25	2.28
15.20	0.19	0.41	5.00	1.03	1.25	2.28
15.25	0.19	0.41	5.00	1.03	1.24	2.27
15.30	0.19	0.41	5.00	1.03	1.24	2.27
15.35	0.19	0.41	5.00	1.03	1.24	2.27
15.40	0.19	0.41	5.00	1.03	1.23	2.26
15.45	0.19	0.41	5.00	1.03	1.23	2.26
15.50	0.19	0.41	5.00	1.03	1.22	2.25
15.55	0.19	0.41	5.00	1.03	1.22	2.25
15.60	0.19	0.41	5.00	1.03	1.22	2.25
15.65	0.19	0.41	5.00	1.03	1.21	2.24
15.70	0.19	0.41	5.00	1.03	1.21	2.24
15.75	0.19	0.41	5.00	1.03	1.20	2.23
15.80	0.19	0.41	5.00	1.03	1.20	2.23
15.85	0.19	0.41	5.00	1.03	1.19	2.22
15.90	0.19	0.41	5.00	1.03	1.19	2.22
15.95	0.19	0.41	5.00	1.03	1.18	2.22
16.00	0.19	0.41	5.00	1.03	1.18	2.21
16.05	0.19	0.41	5.00	1.03	1.18	2.21
16.10	0.19	0.41	5.00	1.03	1.17	2.20
16.15	0.19	0.41	5.00	1.03	1.17	2.20
16.20	0.19	0.41	5.00	1.03	1.16	2.19
16.25	0.19	0.41	5.00	1.03	1.16	2.19
16.30	0.19	0.41	5.00	1.03	1.15	2.18

16.35	0.19	0.41	5.00	1.03	1.15	2.18
16.40	0.19	0.41	5.00	1.03	1.14	2.17
16.45	0.19	0.41	5.00	1.03	1.14	2.17
16.50	0.19	0.41	5.00	1.03	1.13	2.16
16.55	0.19	0.41	5.00	1.03	1.13	2.16
16.60	0.19	0.41	5.00	1.03	1.12	2.15
16.65	0.19	0.41	5.00	1.03	1.12	2.15
16.70	0.19	0.41	5.00	1.03	1.11	2.14
16.75	0.19	0.41	5.00	1.03	1.11	2.14
16.80	0.19	0.41	5.00	1.03	1.10	2.13
16.85	0.19	0.41	5.00	1.03	1.10	2.13
16.90	0.19	0.41	5.00	1.03	1.09	2.12
16.95	0.19	0.41	5.00	1.03	1.08	2.12
17.00	0.19	0.41	5.00	1.03	1.08	2.11
17.05	0.19	0.41	5.00	1.03	1.07	2.10
17.10	0.19	0.41	5.00	1.03	1.07	2.10
17.15	0.19	0.41	5.00	1.03	1.06	2.09
17.20	0.19	0.41	5.00	1.03	1.06	2.09
17.25	0.19	0.41	5.00	1.03	1.05	2.08
17.30	0.19	0.41	5.00	1.03	1.05	2.08
17.35	0.19	0.41	5.00	1.03	1.04	2.07
17.40	0.19	0.41	5.00	1.03	1.03	2.06
17.45	0.19	0.41	5.00	1.03	1.03	2.06
17.50	0.19	0.41	5.00	1.03	1.02	2.05
17.55	0.19	0.41	5.00	1.03	1.02	2.05
17.60	0.19	0.41	5.00	1.03	1.01	2.04
17.65	0.19	0.41	5.00	1.03	1.00	2.03
17.70	0.19	0.41	5.00	1.03	1.00	2.03
17.75	0.19	0.41	5.00	1.03	0.99	2.02
17.80	0.19	0.40	5.00	1.03	0.98	2.02
17.85	0.19	0.40	5.00	1.03	0.98	2.01
17.90	0.19	0.40	5.00	1.03	0.97	2.00
17.95	0.19	0.40	5.00	1.03	0.97	2.00
18.00	0.19	0.40	5.00	1.03	0.96	1.99
18.05	0.19	0.40	5.00	1.03	0.95	1.98
18.10	0.19	0.40	5.00	1.03	0.95	1.98
18.15	0.19	0.40	5.00	1.03	0.94	1.97
18.20	0.19	0.40	5.00	1.03	0.93	1.96
18.25	0.19	0.40	5.00	1.03	0.92	1.96
18.30	0.19	0.40	5.00	1.03	0.92	1.95
18.35	0.19	0.40	5.00	1.03	0.91	1.94
18.40	0.19	0.40	5.00	1.03	0.90	1.93
18.45	0.18	0.40	5.00	1.03	0.90	1.93
18.50	0.18	0.40	5.00	1.03	0.89	1.92
18.55	0.18	0.40	5.00	1.03	0.88	1.91
18.60	0.18	0.40	5.00	1.03	0.87	1.91
18.65	0.18	0.40	5.00	1.03	0.87	1.90
18.70	0.18	0.40	5.00	1.03	0.86	1.89
18.75	0.18	0.40	5.00	1.03	0.85	1.88
18.80	0.18	0.40	5.00	1.03	0.85	1.88
18.85	0.18	0.40	5.00	1.03	0.84	1.87
18.90	0.18	0.40	5.00	1.03	0.83	1.86
18.95	0.18	0.40	5.00	1.03	0.82	1.85
19.00	0.18	0.40	5.00	1.03	0.81	1.84
19.05	0.18	0.40	5.00	1.03	0.81	1.84
19.10	0.18	0.40	5.00	1.03	0.80	1.83
19.15	0.18	0.40	5.00	1.03	0.79	1.82
19.20	0.18	0.40	5.00	1.03	0.78	1.81
19.25	0.18	0.40	5.00	1.03	0.77	1.80

19.30	0.18	0.40	5.00	1.03	0.77	1.80
19.35	0.18	0.40	5.00	1.03	0.76	1.79
19.40	0.18	0.40	5.00	1.03	0.75	1.78
19.45	0.18	0.40	5.00	1.03	0.74	1.77
19.50	0.18	0.40	5.00	1.03	0.73	1.76
19.55	0.18	0.40	5.00	1.03	0.72	1.75
19.60	0.18	0.40	5.00	1.03	0.72	1.75
19.65	0.18	0.40	5.00	1.03	0.72	1.75
19.70	0.18	0.40	5.00	1.03	0.72	1.75
19.75	0.18	0.40	5.00	1.03	0.71	1.74
19.80	0.18	0.40	5.00	1.03	0.71	1.74
19.85	0.18	0.40	5.00	1.03	0.71	1.74
19.90	0.18	0.40	5.00	1.03	0.71	1.74
19.95	0.18	0.40	5.00	1.03	0.70	1.73
20.00	0.18	0.40	5.00	1.03	0.70	1.73
20.05	0.18	0.40	5.00	1.03	0.70	1.73
20.10	0.18	0.40	5.00	1.03	0.70	1.73
20.15	0.18	0.40	5.00	1.03	0.69	1.72
20.20	0.18	0.40	5.00	1.03	0.69	1.72
20.25	0.18	0.40	5.00	1.03	0.69	1.72
20.30	0.19	0.40	5.00	1.03	0.69	1.72
20.35	0.19	0.40	5.00	1.03	0.68	1.71
20.40	0.19	0.40	5.00	1.03	0.68	1.71
20.45	0.19	0.40	5.00	1.03	0.68	1.71
20.50	0.19	0.40	5.00	1.03	0.68	1.71
20.55	0.19	0.40	5.00	1.03	0.67	1.70
20.60	0.19	0.40	5.00	1.03	0.67	1.70
20.65	0.19	0.40	5.00	1.03	0.67	1.70
20.70	0.19	0.40	5.00	1.03	0.67	1.70
20.75	0.20	0.40	5.00	1.03	0.66	1.70
20.80	0.20	0.40	5.00	1.03	0.66	1.69
20.85	0.20	0.40	5.00	1.03	0.66	1.69
20.90	0.20	0.40	5.00	1.03	0.66	1.69
20.95	0.20	0.40	5.00	1.03	0.66	1.69
21.00	0.20	0.40	5.00	1.03	0.65	1.68
21.05	0.21	0.40	5.00	1.03	0.65	1.68
21.10	0.21	0.40	5.00	1.03	0.65	1.68
21.15	0.21	0.40	5.00	1.03	0.65	1.68
21.20	0.21	0.40	5.00	1.03	0.65	1.68
21.25	0.21	0.40	5.00	1.03	0.64	1.67
21.30	0.21	0.40	5.00	1.03	0.64	1.67
21.35	0.22	0.40	5.00	1.03	0.64	1.67
21.40	0.22	0.40	5.00	1.03	0.64	1.67
21.45	0.22	0.40	5.00	1.03	0.64	1.67
21.50	0.22	0.40	5.00	1.03	0.63	1.66
21.55	0.22	0.40	5.00	1.03	0.63	1.66
21.60	0.23	0.40	5.00	1.03	0.63	1.66
21.65	0.23	0.40	5.00	1.03	0.63	1.66
21.70	0.23	0.40	5.00	1.03	0.63	1.66
21.75	0.23	0.40	5.00	1.03	0.63	1.66
21.80	0.23	0.40	5.00	1.03	0.62	1.65
21.85	0.23	0.40	5.00	1.03	0.62	1.65
21.90	0.24	0.40	5.00	1.03	0.62	1.65
21.95	0.24	0.40	5.00	1.03	0.62	1.65
22.00	0.24	0.40	5.00	1.03	0.62	1.65
22.05	0.24	0.40	5.00	1.03	0.62	1.65
22.10	0.24	0.40	5.00	1.03	0.61	1.64
22.15	0.25	0.40	5.00	1.03	0.61	1.64
22.20	0.25	0.40	5.00	1.03	0.61	1.64

22.25	0.25	0.40	5.00	1.03	0.61	1.64
22.30	0.25	0.40	5.00	1.03	0.61	1.64
22.35	0.25	0.40	5.00	1.03	0.61	1.64
22.40	0.25	0.40	5.00	1.03	0.60	1.64
22.45	0.26	0.40	5.00	1.03	0.60	1.63
22.50	0.26	0.40	5.00	1.03	0.60	1.63
22.55	0.26	0.40	5.00	1.03	0.60	1.63
22.60	0.26	0.40	5.00	1.03	0.60	1.63
22.65	0.26	0.40	5.00	1.03	0.60	1.63
22.70	0.26	0.40	5.00	1.03	0.60	1.63
22.75	0.27	0.40	5.00	1.03	0.59	1.62
22.80	0.27	0.40	5.00	1.03	0.59	1.62
22.85	0.27	0.40	5.00	1.03	0.59	1.62
22.90	0.27	0.40	5.00	1.03	0.59	1.62
22.95	0.27	0.40	5.00	1.03	0.59	1.62
23.00	0.27	0.40	5.00	1.03	0.59	1.62
23.05	0.28	0.40	5.00	1.03	0.59	1.62
23.10	0.28	0.40	5.00	1.03	0.58	1.62
23.15	0.28	0.40	5.00	1.03	0.58	1.61
23.20	0.28	0.40	5.00	1.03	0.58	1.61
23.25	0.28	0.40	5.00	1.03	0.58	1.61
23.30	0.29	0.40	5.00	1.03	0.58	1.61
23.35	0.29	0.40	5.00	1.03	0.58	1.61
23.40	0.29	0.40	5.00	1.03	0.58	1.61
23.45	0.29	0.40	5.00	1.03	0.58	1.61
23.50	0.29	0.40	5.00	1.03	0.57	1.60
23.55	0.29	0.40	5.00	1.03	0.57	1.60
23.60	0.30	0.40	5.00	1.03	0.57	1.60
23.65	0.30	0.40	5.00	1.03	0.57	1.60
23.70	0.30	0.40	5.00	1.03	0.57	1.60
23.75	0.30	0.40	5.00	1.03	0.57	1.60
23.80	0.30	0.40	5.00	1.03	0.57	1.60
23.85	0.31	0.40	5.00	1.03	0.57	1.60
23.90	0.31	0.40	5.00	1.03	0.56	1.59
23.95	0.31	0.40	5.00	1.03	0.56	1.59
24.00	0.31	0.40	5.00	1.03	0.56	1.59
24.05	0.32	0.40	5.00	1.03	0.56	1.59
24.10	0.32	0.40	5.00	1.03	0.56	1.59
24.15	0.32	0.40	5.00	1.03	0.56	1.59
24.20	0.32	0.40	5.00	1.03	0.56	1.59
24.25	0.33	0.40	5.00	1.03	0.56	1.59
24.30	0.33	0.40	5.00	1.03	0.55	1.59
24.35	0.33	0.40	5.00	1.03	0.55	1.58
24.40	0.33	0.40	5.00	1.03	0.55	1.58
24.45	0.34	0.40	5.00	1.03	0.55	1.58
24.50	0.34	0.40	5.00	1.03	0.55	1.58
24.55	0.34	0.40	5.00	1.03	0.55	1.58
24.60	0.35	0.40	5.00	1.03	0.55	1.58
24.65	0.35	0.40	5.00	1.03	0.55	1.58
24.70	0.36	0.40	5.00	1.03	0.55	1.58
24.75	0.36	0.40	5.00	1.03	0.54	1.57
24.80	0.36	0.40	5.00	1.03	0.54	1.57
24.85	0.36	0.40	5.00	1.03	0.54	1.57
24.90	0.36	0.40	5.00	1.03	0.54	1.57
24.95	0.36	0.40	5.00	1.03	0.54	1.57
25.00	0.36	0.40	5.00	1.03	0.54	1.57
25.05	0.36	0.40	5.00	1.03	0.54	1.57
25.10	0.36	0.40	5.00	1.03	0.54	1.57
25.15	0.35	0.40	5.00	1.03	0.54	1.57

25.20	0.35	0.40	5.00	1.03	0.53	1.56
25.25	0.35	0.40	5.00	1.03	0.53	1.56
25.30	0.34	0.40	5.00	1.03	0.53	1.56
25.35	0.34	0.40	5.00	1.03	0.53	1.56
25.40	0.33	0.40	5.00	1.03	0.53	1.56
25.45	0.33	0.40	5.00	1.03	0.53	1.56
25.50	0.33	0.40	5.00	1.03	0.53	1.56
25.55	0.32	0.40	5.00	1.03	0.53	1.56
25.60	0.32	0.40	5.00	1.03	0.52	1.56
25.65	0.31	0.40	5.00	1.03	0.52	1.55
25.70	0.31	0.40	5.00	1.03	0.52	1.55
25.75	0.31	0.40	5.00	1.03	0.52	1.55
25.80	0.31	0.40	5.00	1.03	0.52	1.55
25.85	0.30	0.40	5.00	1.03	0.52	1.55
25.90	0.30	0.40	5.00	1.03	0.52	1.55
25.95	0.30	0.40	5.00	1.03	0.52	1.55
26.00	0.29	0.40	5.00	1.03	0.51	1.54
26.05	0.29	0.40	5.00	1.03	0.51	1.54
26.10	0.29	0.40	5.00	1.03	0.51	1.54
26.15	0.29	0.40	5.00	1.03	0.51	1.54
26.20	0.29	0.40	5.00	1.03	0.51	1.54
26.25	0.28	0.40	5.00	1.03	0.51	1.54
26.30	0.28	0.40	5.00	1.03	0.50	1.54
26.35	0.28	0.40	5.00	1.03	0.50	1.53
26.40	0.28	0.40	5.00	1.03	0.50	1.53
26.45	0.27	0.40	5.00	1.03	0.50	1.53
26.50	0.27	0.40	5.00	1.03	0.50	1.53
26.55	0.27	0.40	5.00	1.03	0.50	1.53
26.60	0.27	0.40	5.00	1.03	0.50	1.53
26.65	0.26	0.40	5.00	1.03	0.49	1.52
26.70	0.26	0.40	5.00	1.03	0.49	1.52
26.75	0.26	0.40	5.00	1.03	0.49	1.52
26.80	0.26	0.40	5.00	1.03	0.49	1.52
26.85	0.26	0.40	5.00	1.03	0.49	1.52
26.90	0.25	0.40	5.00	1.03	0.48	1.51
26.95	0.25	0.40	5.00	1.03	0.48	1.51
27.00	0.25	0.40	5.00	1.03	0.48	1.51
27.05	0.25	0.40	5.00	1.03	0.48	1.51
27.10	0.25	0.40	5.00	1.03	0.48	1.51
27.15	0.24	0.40	5.00	1.03	0.47	1.50
27.20	0.24	0.40	5.00	1.03	0.47	1.50
27.25	0.24	0.40	5.00	1.03	0.47	1.50
27.30	0.24	0.40	5.00	1.03	0.47	1.50
27.35	0.24	0.40	5.00	1.03	0.47	1.50
27.40	0.23	0.40	5.00	1.03	0.46	1.49
27.45	0.23	0.40	5.00	1.03	0.46	1.49
27.50	0.23	0.40	5.00	1.03	0.46	1.49
27.55	0.23	0.40	5.00	1.03	0.46	1.49
27.60	0.23	0.40	5.00	1.03	0.45	1.48
27.65	0.22	0.40	5.00	1.03	0.45	1.48
27.70	0.22	0.40	5.00	1.03	0.45	1.48
27.75	0.22	0.40	5.00	1.03	0.45	1.48
27.80	0.22	0.40	5.00	1.03	0.44	1.47
27.85	0.22	0.40	5.00	1.03	0.44	1.47
27.90	0.23	0.40	5.00	1.03	0.44	1.47
27.95	0.22	0.39	5.00	1.03	0.44	1.47
28.00	0.22	0.39	5.00	1.03	0.43	1.46
28.05	0.22	0.39	5.00	1.03	0.43	1.46
28.10	0.22	0.39	5.00	1.03	0.43	1.46

28.15	0.22	0.39	5.00	1.03	0.43	1.46
28.20	0.21	0.39	5.00	1.03	0.42	1.45
28.25	0.21	0.39	5.00	1.03	0.42	1.45
28.30	0.21	0.39	5.00	1.03	0.42	1.45
28.35	0.21	0.39	5.00	1.03	0.41	1.44
28.40	0.21	0.39	5.00	1.03	0.41	1.44
28.45	0.20	0.39	5.00	1.03	0.41	1.44
28.50	0.20	0.39	5.00	1.03	0.40	1.44
28.55	0.20	0.39	5.00	1.03	0.40	1.43
28.60	0.20	0.39	5.00	1.03	0.40	1.43
28.65	0.20	0.39	5.00	1.03	0.39	1.43
28.70	0.19	0.39	5.00	1.03	0.39	1.42
28.75	0.19	0.39	5.00	1.03	0.39	1.42
28.80	0.19	0.39	5.00	1.03	0.38	1.41
28.85	0.19	0.39	5.00	1.03	0.38	1.41
28.90	0.18	0.39	5.00	1.03	0.38	1.41
28.95	0.18	0.39	5.00	1.03	0.37	1.40
29.00	0.18	0.39	5.00	1.03	0.37	1.40
29.05	0.18	0.39	5.00	1.03	0.36	1.39
29.10	0.18	0.39	5.00	1.03	0.36	1.39
29.15	0.18	0.39	5.00	1.03	0.35	1.38
29.20	0.17	0.39	5.00	1.03	0.35	1.38
29.25	0.17	0.39	5.00	1.03	0.34	1.37
29.30	0.17	0.39	5.00	1.03	0.34	1.37
29.35	0.17	0.39	5.00	1.03	0.33	1.36
29.40	0.17	0.39	5.00	1.03	0.33	1.36
29.45	0.16	0.39	5.00	1.03	0.32	1.35
29.50	0.16	0.39	5.00	1.03	0.32	1.35
29.55	0.16	0.39	5.00	1.03	0.31	1.34
29.60	0.16	0.39	5.00	1.03	0.30	1.33
29.65	0.16	0.39	5.00	1.03	0.30	1.33
29.70	0.16	0.39	5.00	1.03	0.29	1.32
29.75	0.16	0.39	5.00	1.03	0.29	1.32
29.80	0.16	0.39	5.00	1.03	0.28	1.31
29.85	0.16	0.39	5.00	1.03	0.27	1.30
29.90	0.16	0.39	5.00	1.03	0.27	1.30
29.95	0.15	0.39	5.00	1.03	0.26	1.29
30.00	0.15	0.39	5.00	1.03	0.25	1.28
30.05	0.16	0.39	5.00	1.03	0.24	1.27
30.10	0.16	0.39	5.00	1.03	0.24	1.27
30.15	0.16	0.39	5.00	1.03	0.23	1.26
30.20	0.16	0.39	5.00	1.03	0.22	1.25
30.25	0.16	0.39	5.00	1.03	0.22	1.25
30.30	0.16	0.39	5.00	1.03	0.21	1.24
30.35	0.16	0.39	5.00	1.03	0.20	1.23
30.40	0.17	0.39	5.00	1.03	0.20	1.23
30.45	0.17	0.39	5.00	1.03	0.19	1.22
30.50	0.17	0.39	5.00	1.03	0.19	1.22
30.55	0.18	0.39	5.00	1.03	0.18	1.21
30.60	0.18	0.39	5.00	1.03	0.18	1.21
30.65	0.18	0.39	5.00	1.03	0.17	1.20
30.70	0.19	0.39	5.00	1.03	0.17	1.20
30.75	0.19	0.39	5.00	1.03	0.16	1.19
30.80	0.19	0.39	5.00	1.03	0.16	1.19
30.85	0.20	0.39	5.00	1.03	0.16	1.19
30.90	0.20	0.39	5.00	1.03	0.15	1.18
30.95	0.20	0.39	5.00	1.03	0.15	1.18
31.00	0.20	0.39	5.00	1.03	0.14	1.17
31.05	0.21	0.39	5.00	1.03	0.14	1.17

31.10	0.21	0.39	5.00	1.03	0.14	1.17
31.15	0.21	0.39	5.00	1.03	0.13	1.16
31.20	0.22	0.39	5.00	1.03	0.13	1.16
31.25	0.22	0.39	5.00	1.03	0.13	1.16
31.30	0.22	0.39	5.00	1.03	0.13	1.16
31.35	0.23	0.39	5.00	1.03	0.12	1.15
31.40	0.23	0.39	5.00	1.03	0.12	1.15
31.45	0.23	0.39	5.00	1.03	0.12	1.15
31.50	0.23	0.39	5.00	1.03	0.11	1.14
31.55	0.24	0.39	5.00	1.03	0.11	1.14
31.60	0.24	0.39	5.00	1.03	0.11	1.14
31.65	0.24	0.39	5.00	1.03	0.11	1.14
31.70	0.25	0.39	5.00	1.03	0.10	1.13
31.75	0.25	0.39	5.00	1.03	0.10	1.13
31.80	0.25	0.39	5.00	1.03	0.10	1.13
31.85	0.25	0.39	5.00	1.03	0.10	1.13
31.90	0.26	0.39	5.00	1.03	0.10	1.13
31.95	0.26	0.39	5.00	1.03	0.09	1.12
32.00	0.26	0.39	5.00	1.03	0.09	1.12
32.05	0.27	0.39	5.00	1.03	0.09	1.12
32.10	0.27	0.39	5.00	1.03	0.09	1.12
32.15	0.27	0.39	5.00	1.03	0.08	1.12
32.20	0.28	0.39	5.00	1.03	0.08	1.11
32.25	0.28	0.39	5.00	1.03	0.08	1.11
32.30	0.29	0.38	5.00	1.03	0.08	1.11
32.35	0.29	0.38	5.00	1.03	0.08	1.11
32.40	0.29	0.38	5.00	1.03	0.08	1.11
32.45	0.30	0.38	5.00	1.03	0.07	1.10
32.50	0.30	0.38	5.00	1.03	0.07	1.10
32.55	0.31	0.38	5.00	1.03	0.07	1.10
32.60	0.31	0.38	5.00	1.03	0.07	1.10
32.65	0.32	0.38	5.00	1.03	0.07	1.10
32.70	0.32	0.38	5.00	1.03	0.07	1.10
32.75	0.33	0.38	5.00	1.03	0.06	1.09
32.80	0.33	0.38	5.00	1.03	0.06	1.09
32.85	0.33	0.38	5.00	1.03	0.06	1.09
32.90	0.33	0.38	5.00	1.03	0.06	1.09
32.95	0.34	0.38	5.00	1.03	0.06	1.09
33.00	0.34	0.38	5.00	1.03	0.06	1.09
33.05	0.34	0.38	5.00	1.03	0.05	1.08
33.10	0.35	0.38	5.00	1.03	0.05	1.08
33.15	0.35	0.38	5.00	1.03	0.05	1.08
33.20	0.35	0.38	5.00	1.03	0.05	1.08
33.25	0.36	0.38	5.00	1.03	0.05	1.08
33.30	0.36	0.38	5.00	1.03	0.05	1.08
33.35	0.37	0.38	5.00	1.03	0.05	1.08
33.40	0.37	0.38	5.00	1.03	0.04	1.07
33.45	0.38	0.38	5.00	1.03	0.04	1.07
33.50	0.39	0.38	5.00	1.03	0.04	1.07
33.55	0.40	0.38	5.00	1.03	0.04	1.07
33.60	0.42	0.38	5.00	1.03	0.04	1.07
33.65	0.45	0.38	5.00	1.03	0.04	1.07
33.70	0.45	0.38	5.00	1.03	0.03	1.07
33.75	0.45	0.38	5.00	1.03	0.03	1.06
33.80	0.45	0.38	5.00	1.03	0.03	1.06
33.85	0.45	0.38	5.00	1.03	0.03	1.06
33.90	0.45	0.38	5.00	1.03	0.03	1.06
33.95	0.45	0.38	5.00	1.03	0.03	1.06
34.00	0.45	0.38	5.00	1.03	0.03	1.06

34.05	0.45	0.38	5.00	1.03	0.03	1.06
34.10	0.45	0.38	5.00	1.03	0.02	1.05
34.15	0.45	0.38	5.00	1.03	0.02	1.05
34.20	0.45	0.38	5.00	1.03	0.02	1.05
34.25	0.45	0.38	5.00	1.03	0.02	1.05
34.30	0.45	0.38	5.00	1.03	0.02	1.05
34.35	0.45	0.38	5.00	1.03	0.02	1.05
34.40	0.45	0.38	5.00	1.03	0.02	1.05
34.45	0.45	0.38	5.00	1.03	0.01	1.05
34.50	0.45	0.38	5.00	1.03	0.01	1.04
34.55	0.45	0.38	5.00	1.03	0.01	1.04
34.60	0.45	0.38	5.00	1.03	0.01	1.04
34.65	0.45	0.38	5.00	1.03	0.01	1.04
34.70	0.45	0.38	5.00	1.03	0.01	1.04
34.75	0.45	0.38	5.00	1.03	0.01	1.04
34.80	0.45	0.38	5.00	1.03	0.01	1.04
34.85	0.45	0.38	5.00	1.03	0.00	1.04
34.90	0.45	0.38	5.00	1.03	0.00	1.03
34.95	0.45	0.38	5.00	1.03	0.00	1.03
35.00	0.45	0.38	5.00	1.03	0.00	1.03
35.05	0.45	0.38	1.19	1.03	0.00	1.03
35.10	0.45	0.38	1.19	1.03	0.00	1.03
35.15	0.45	0.38	1.19	1.03	0.00	1.03
35.20	0.45	0.38	1.19	1.03	0.00	1.03
35.25	0.45	0.38	1.18	1.03	0.00	1.03
35.30	0.45	0.38	1.18	1.03	0.00	1.03
35.35	0.45	0.38	1.18	1.02	0.00	1.02
35.40	0.44	0.38	1.18	1.02	0.00	1.02
35.45	0.44	0.38	1.18	1.02	0.00	1.02
35.50	0.44	0.38	1.18	1.02	0.00	1.02
35.55	0.44	0.38	1.18	1.02	0.00	1.02
35.60	0.44	0.38	1.18	1.02	0.00	1.02
35.65	0.44	0.38	1.18	1.02	0.00	1.02
35.70	0.44	0.38	1.18	1.02	0.00	1.02
35.75	0.44	0.38	1.18	1.02	0.00	1.02
35.80	0.44	0.38	1.18	1.02	0.00	1.02
35.85	0.44	0.38	1.18	1.02	0.00	1.02
35.90	0.44	0.38	1.18	1.02	0.00	1.02
35.95	0.44	0.38	1.18	1.02	0.00	1.02
36.00	0.44	0.38	1.18	1.01	0.00	1.01
36.05	0.44	0.38	1.17	1.01	0.00	1.01
36.10	0.44	0.38	1.17	1.01	0.00	1.01
36.15	0.44	0.38	1.17	1.01	0.00	1.01
36.20	0.44	0.38	1.17	1.01	0.00	1.01
36.25	0.44	0.38	1.17	1.01	0.00	1.01
36.30	0.44	0.38	1.17	1.01	0.00	1.01
36.35	0.44	0.38	1.17	1.01	0.00	1.01
36.40	0.44	0.38	1.17	1.01	0.00	1.01
36.45	0.44	0.38	1.17	1.01	0.00	1.01
36.50	0.44	0.38	1.17	1.01	0.00	1.01
36.55	0.44	0.38	1.17	1.01	0.00	1.01
36.60	0.44	0.38	1.17	1.01	0.00	1.01
36.65	0.44	0.38	1.17	1.01	0.00	1.01
36.70	0.44	0.38	1.17	1.01	0.00	1.01
36.75	0.44	0.38	1.17	1.01	0.00	1.01
36.80	0.44	0.38	1.17	1.01	0.00	1.01
36.85	0.44	0.38	1.17	1.01	0.00	1.01
36.90	0.44	0.38	1.17	1.01	0.00	1.01
36.95	0.44	0.38	1.16	1.01	0.00	1.01

37.00	0.44	0.38	1.16	1.01	0.00	1.01
37.05	0.44	0.38	1.16	1.01	0.00	1.01
37.10	0.44	0.38	1.16	1.01	0.00	1.01
37.15	0.44	0.38	1.16	1.01	0.00	1.01
37.20	0.44	0.38	1.16	1.01	0.00	1.01
37.25	0.44	0.38	1.16	1.01	0.00	1.01
37.30	0.44	0.38	1.16	1.01	0.00	1.01
37.35	0.44	0.38	1.16	1.01	0.00	1.01
37.40	0.44	0.38	1.16	1.01	0.00	1.01
37.45	0.44	0.38	1.16	1.01	0.00	1.01
37.50	0.44	0.38	1.16	1.01	0.00	1.01
37.55	0.44	0.38	1.16	1.01	0.00	1.01
37.60	0.44	0.38	1.16	1.01	0.00	1.01
37.65	0.44	0.38	1.16	1.01	0.00	1.01
37.70	0.44	0.38	1.16	1.01	0.00	1.01
37.75	0.44	0.38	1.16	1.01	0.00	1.01
37.80	0.44	0.38	1.16	1.01	0.00	1.01
37.85	0.44	0.38	1.16	1.01	0.00	1.01
37.90	0.44	0.38	1.15	1.01	0.00	1.01
37.95	0.44	0.38	1.15	1.01	0.00	1.01
38.00	0.44	0.38	1.15	1.01	0.00	1.01
38.05	0.44	0.38	1.15	1.01	0.00	1.01
38.10	0.44	0.38	1.15	1.01	0.00	1.01
38.15	0.44	0.38	1.15	1.01	0.00	1.01
38.20	0.44	0.38	1.15	1.01	0.00	1.01
38.25	0.44	0.38	1.15	1.01	0.00	1.01
38.30	0.44	0.38	1.15	1.01	0.00	1.01
38.35	0.44	0.38	1.15	1.01	0.00	1.01
38.40	0.44	0.38	1.15	1.01	0.00	1.01
38.45	0.44	0.38	1.15	1.01	0.00	1.01
38.50	0.44	0.38	1.15	1.01	0.00	1.01
38.55	0.44	0.38	1.15	1.01	0.00	1.01
38.60	0.44	0.38	1.15	1.01	0.00	1.01
38.65	0.44	0.38	1.15	1.01	0.00	1.01
38.70	0.44	0.38	1.15	1.01	0.00	1.01
38.75	0.44	0.38	1.15	1.01	0.00	1.01
38.80	0.44	0.38	1.15	1.01	0.00	1.01
38.85	0.44	0.38	1.15	1.01	0.00	1.01
38.90	0.44	0.38	1.14	1.01	0.00	1.01
38.95	0.44	0.38	1.14	1.01	0.00	1.01
39.00	0.44	0.38	1.14	1.01	0.00	1.01
39.05	0.44	0.38	1.14	1.01	0.00	1.01
39.10	0.44	0.38	1.14	1.01	0.00	1.01
39.15	0.44	0.38	1.14	1.01	0.00	1.01
39.20	0.44	0.38	1.14	1.01	0.00	1.01
39.25	0.44	0.38	1.14	1.01	0.00	1.01
39.30	0.44	0.38	1.14	1.01	0.00	1.01
39.35	0.44	0.38	1.14	1.01	0.00	1.01
39.40	0.44	0.38	1.14	1.01	0.00	1.01
39.45	0.43	0.38	1.14	1.01	0.00	1.01
39.50	0.43	0.38	1.14	1.01	0.00	1.01
39.55	0.43	0.38	1.14	1.01	0.00	1.01
39.60	0.43	0.38	1.14	1.01	0.00	1.01
39.65	0.43	0.38	1.14	1.01	0.00	1.01
39.70	0.43	0.38	1.14	1.00	0.00	1.00
39.75	0.43	0.38	1.14	1.00	0.00	1.00
39.80	0.43	0.38	1.14	1.00	0.00	1.00
39.85	0.43	0.38	1.14	1.00	0.00	1.00
39.90	0.43	0.38	1.14	1.00	0.00	1.00

39.95	0.43	0.38	1.14	1.00	0.00	1.00
40.00	0.43	0.38	1.13	1.00	0.00	1.00
40.05	0.43	0.38	1.13	1.00	0.00	1.00
40.10	0.43	0.38	1.13	1.00	0.00	1.00
40.15	0.43	0.38	1.13	0.99	0.00	0.99
40.20	0.43	0.38	1.13	0.99	0.00	0.99
40.25	0.43	0.38	1.13	0.99	0.00	0.99
40.30	0.43	0.38	1.13	0.99	0.00	0.99
40.35	0.43	0.38	1.13	0.99	0.00	0.99
40.40	0.43	0.38	1.13	0.99	0.00	0.99
40.45	0.43	0.38	1.13	0.99	0.00	0.99
40.50	0.43	0.38	1.13	0.98	0.00	0.98
40.55	0.43	0.38	1.13	0.98	0.00	0.98
40.60	0.43	0.38	1.13	0.98	0.00	0.98
40.65	0.43	0.38	1.13	0.98	0.00	0.98
40.70	0.43	0.38	1.13	0.98	0.00	0.98
40.75	0.43	0.38	1.13	0.98	0.00	0.98
40.80	0.43	0.38	1.13	0.97	0.00	0.97
40.85	0.43	0.38	1.13	0.97	0.00	0.97
40.90	0.43	0.38	1.13	0.97	0.00	0.97
40.95	0.43	0.38	1.13	0.97	0.00	0.97
41.00	0.43	0.38	1.13	0.97	0.00	0.97
41.05	0.43	0.38	1.13	0.96	0.00	0.96
41.10	0.43	0.38	1.13	0.96	0.00	0.96
41.15	0.43	0.38	1.13	0.96	0.00	0.96
41.20	0.43	0.38	1.13	0.96	0.00	0.96
41.25	0.43	0.38	1.12	0.96	0.00	0.96
41.30	0.43	0.38	1.12	0.95	0.00	0.95
41.35	0.43	0.38	1.12	0.95	0.00	0.95
41.40	0.43	0.38	1.12	0.95	0.00	0.95
41.45	0.43	0.38	1.12	0.95	0.00	0.95
41.50	0.43	0.38	1.12	0.94	0.00	0.94
41.55	0.43	0.38	1.12	0.94	0.00	0.94
41.60	0.43	0.38	1.12	0.94	0.00	0.94
41.65	0.43	0.38	1.12	0.94	0.00	0.94
41.70	0.43	0.38	1.12	0.93	0.00	0.93
41.75	0.43	0.38	1.12	0.93	0.00	0.93
41.80	0.43	0.38	1.12	0.93	0.00	0.93
41.85	0.43	0.38	1.12	0.92	0.00	0.92
41.90	0.43	0.38	1.12	0.92	0.00	0.92
41.95	0.43	0.38	1.12	0.92	0.00	0.92
42.00	0.43	0.38	1.12	0.91	0.00	0.91
42.05	0.43	0.38	1.12	0.91	0.00	0.91
42.10	0.43	0.38	1.12	0.91	0.00	0.91
42.15	0.43	0.38	1.12	0.91	0.00	0.91
42.20	0.43	0.38	1.12	0.90	0.00	0.90
42.25	0.43	0.38	1.12	0.90	0.00	0.90
42.30	0.43	0.38	1.12	0.90	0.00	0.90
42.35	0.43	0.38	1.12	0.89	0.00	0.89
42.40	0.43	0.38	1.12	0.89	0.00	0.89
42.45	0.43	0.38	1.12	0.89	0.00	0.89
42.50	0.43	0.38	1.12	0.88	0.00	0.88
42.55	0.43	0.38	1.12	0.88	0.00	0.88
42.60	0.43	0.38	1.11	0.88	0.00	0.88
42.65	0.43	0.38	1.11	0.87	0.00	0.87
42.70	0.43	0.38	1.11	0.87	0.00	0.87
42.75	0.43	0.38	1.11	0.87	0.00	0.87
42.80	0.43	0.38	1.11	0.86	0.00	0.86
42.85	0.43	0.38	1.11	0.86	0.00	0.86

42.90	0.43	0.38	1.11	0.86	0.00	0.86
42.95	0.43	0.38	1.11	0.85	0.00	0.85
43.00	0.42	0.38	1.11	0.85	0.00	0.85
43.05	0.41	0.38	1.08	0.84	0.00	0.84
43.10	0.41	0.38	1.06	0.84	0.00	0.84
43.15	0.40	0.38	1.04	0.84	0.00	0.84
43.20	0.39	0.38	1.03	0.83	0.00	0.83
43.25	0.39	0.38	1.01	0.83	0.00	0.83
43.30	0.38	0.38	1.00*	0.83	0.00	0.83
43.35	0.38	0.38	0.99*	0.82	0.00	0.82
43.40	0.37	0.38	0.98*	0.82	0.00	0.82
43.45	0.37	0.38	0.97*	0.82	0.00	0.82
43.50	0.37	0.38	0.96*	0.81	0.00	0.81
43.55	0.36	0.38	0.95*	0.81	0.00	0.81
43.60	0.36	0.38	0.94*	0.80	0.00	0.80
43.65	0.36	0.38	0.94*	0.80	0.00	0.80
43.70	0.36	0.38	0.93*	0.80	0.00	0.80
43.75	0.35	0.38	0.92*	0.79	0.00	0.79
43.80	0.35	0.38	0.92*	0.79	0.00	0.79
43.85	0.35	0.38	0.91*	0.78	0.00	0.78
43.90	0.35	0.38	0.91*	0.78	0.00	0.78
43.95	0.35	0.38	0.90*	0.78	0.00	0.78
44.00	0.34	0.38	0.90*	0.77	0.00	0.77
44.05	0.34	0.38	0.89*	0.77	0.00	0.77
44.10	0.34	0.38	0.89*	0.76	0.00	0.76
44.15	0.34	0.38	0.88*	0.76	0.00	0.76
44.20	0.34	0.38	0.88*	0.76	0.00	0.76
44.25	0.34	0.38	0.88*	0.75	0.00	0.75
44.30	0.33	0.38	0.87*	0.75	0.00	0.75
44.35	0.33	0.38	0.87*	0.74	0.00	0.74
44.40	0.33	0.38	0.86*	0.74	0.00	0.74
44.45	0.33	0.38	0.86*	0.74	0.00	0.74
44.50	0.33	0.38	0.86*	0.73	0.00	0.73
44.55	0.33	0.38	0.85*	0.73	0.00	0.73
44.60	0.33	0.38	0.85*	0.72	0.00	0.72
44.65	0.33	0.38	0.85*	0.72	0.00	0.72
44.70	0.32	0.38	0.85*	0.71	0.00	0.71
44.75	0.32	0.38	0.84*	0.71	0.00	0.71
44.80	0.32	0.38	0.84*	0.71	0.00	0.71
44.85	0.32	0.38	0.84*	0.70	0.00	0.70
44.90	0.32	0.38	0.83*	0.70	0.00	0.70
44.95	0.32	0.38	0.83*	0.69	0.00	0.69
45.00	0.32	0.38	0.83*	0.69	0.00	0.69
45.05	0.32	0.38	0.83*	0.68	0.00	0.68
45.10	0.32	0.38	0.83*	0.68	0.00	0.68
45.15	0.32	0.38	0.82*	0.67	0.00	0.67
45.20	0.32	0.38	0.82*	0.67	0.00	0.67
45.25	0.31	0.38	0.82*	0.66	0.00	0.66
45.30	0.31	0.38	0.82*	0.66	0.00	0.66
45.35	0.31	0.38	0.82*	0.66	0.00	0.66
45.40	0.31	0.38	0.82*	0.65	0.00	0.65
45.45	0.31	0.38	0.81*	0.65	0.00	0.65
45.50	0.31	0.38	0.81*	0.64	0.00	0.64
45.55	0.31	0.38	0.81*	0.64	0.00	0.64
45.60	0.31	0.38	0.81*	0.63	0.00	0.63
45.65	0.31	0.38	0.81*	0.63	0.00	0.63
45.70	0.31	0.38	0.81*	0.62	0.00	0.62
45.75	0.31	0.38	0.81*	0.62	0.00	0.62
45.80	0.31	0.38	0.80*	0.61	0.00	0.61

45.85	0.31	0.38	0.80*	0.61	0.00	0.61
45.90	0.31	0.38	0.80*	0.60	0.00	0.60
45.95	0.31	0.38	0.80*	0.60	0.00	0.60
46.00	0.31	0.38	0.80*	0.59	0.00	0.59
46.05	0.31	0.38	0.80*	0.59	0.00	0.59
46.10	0.31	0.38	0.80*	0.59	0.00	0.59
46.15	0.30	0.38	0.80*	0.58	0.00	0.58
46.20	0.30	0.38	0.79*	0.58	0.00	0.58
46.25	0.30	0.38	0.79*	0.57	0.00	0.57
46.30	0.30	0.38	0.79*	0.57	0.00	0.57
46.35	0.30	0.38	0.79*	0.56	0.00	0.56
46.40	0.30	0.38	0.79*	0.56	0.00	0.56
46.45	0.30	0.38	0.79*	0.55	0.00	0.55
46.50	0.30	0.38	0.79*	0.55	0.00	0.55
46.55	0.30	0.38	0.79*	0.54	0.00	0.54
46.60	0.30	0.38	0.78*	0.54	0.00	0.54
46.65	0.30	0.38	0.78*	0.53	0.00	0.53
46.70	0.30	0.38	0.78*	0.53	0.00	0.53
46.75	0.30	0.38	0.78*	0.52	0.00	0.52
46.80	0.30	0.38	0.78*	0.52	0.00	0.52
46.85	0.30	0.38	0.78*	0.51	0.00	0.51
46.90	0.30	0.38	0.78*	0.51	0.00	0.51
46.95	0.30	0.38	0.78*	0.50	0.00	0.50
47.00	0.30	0.38	0.78*	0.50	0.00	0.50
47.05	0.30	0.38	0.77*	0.49	0.00	0.49
47.10	0.30	0.38	0.77*	0.49	0.00	0.49
47.15	0.30	0.38	0.77*	0.48	0.00	0.48
47.20	0.30	0.38	0.77*	0.48	0.00	0.48
47.25	0.29	0.38	0.77*	0.47	0.00	0.47
47.30	0.29	0.38	0.77*	0.47	0.00	0.47
47.35	0.29	0.38	0.77*	0.46	0.00	0.46
47.40	0.29	0.38	0.77*	0.46	0.00	0.46
47.45	0.29	0.38	0.77*	0.45	0.00	0.45
47.50	0.29	0.38	0.77*	0.45	0.00	0.45
47.55	0.29	0.38	0.76*	0.44	0.00	0.44
47.60	0.29	0.38	0.76*	0.44	0.00	0.44
47.65	0.29	0.38	0.76*	0.43	0.00	0.43
47.70	0.29	0.38	0.76*	0.43	0.00	0.43
47.75	0.29	0.38	0.76*	0.42	0.00	0.42
47.80	0.29	0.38	0.76*	0.42	0.00	0.42
47.85	0.29	0.38	0.76*	0.41	0.00	0.41
47.90	0.29	0.38	0.76*	0.40	0.00	0.40
47.95	0.29	0.38	0.76*	0.40	0.00	0.40
48.00	0.29	0.38	0.76*	0.39	0.00	0.39
48.05	0.29	0.38	0.75*	0.39	0.00	0.39
48.10	0.29	0.38	0.75*	0.38	0.00	0.38
48.15	0.29	0.38	0.75*	0.38	0.00	0.38
48.20	0.29	0.38	0.75*	0.37	0.00	0.37
48.25	0.29	0.38	0.75*	0.37	0.00	0.37
48.30	0.29	0.38	0.75*	0.36	0.00	0.36
48.35	0.29	0.38	0.75*	0.36	0.00	0.36
48.40	0.29	0.38	0.75*	0.35	0.00	0.35
48.45	0.29	0.38	0.75*	0.35	0.00	0.35
48.50	0.28	0.38	0.75*	0.34	0.00	0.34
48.55	0.28	0.38	0.74*	0.34	0.00	0.34
48.60	0.28	0.38	0.74*	0.33	0.00	0.33
48.65	0.28	0.38	0.74*	0.33	0.00	0.33
48.70	0.28	0.38	0.74*	0.32	0.00	0.32
48.75	0.28	0.38	0.74*	0.31	0.00	0.31

48.80	0.28	0.38	0.74*	0.31	0.00	0.31
48.85	0.28	0.38	0.74*	0.30	0.00	0.30
48.90	0.28	0.38	0.74*	0.30	0.00	0.30
48.95	0.28	0.38	0.74*	0.29	0.00	0.29
49.00	0.28	0.38	0.74*	0.29	0.00	0.29
49.05	0.28	0.38	0.74*	0.28	0.00	0.28
49.10	0.28	0.38	0.74*	0.28	0.00	0.28
49.15	0.28	0.38	0.73*	0.27	0.00	0.27
49.20	0.28	0.38	0.73*	0.27	0.00	0.27
49.25	0.28	0.38	0.73*	0.26	0.00	0.26
49.30	0.28	0.38	0.73*	0.25	0.00	0.25
49.35	0.28	0.38	0.73*	0.25	0.00	0.25
49.40	0.28	0.38	0.73*	0.24	0.00	0.24
49.45	0.28	0.38	0.73*	0.24	0.00	0.24
49.50	0.28	0.38	0.73*	0.23	0.00	0.23
49.55	0.28	0.38	0.73*	0.23	0.00	0.23
49.60	0.28	0.38	0.73*	0.22	0.00	0.22
49.65	0.28	0.38	0.73*	0.22	0.00	0.22
49.70	0.28	0.38	0.73*	0.21	0.00	0.21
49.75	0.28	0.38	0.72*	0.20	0.00	0.20
49.80	0.28	0.38	0.72*	0.20	0.00	0.20
49.85	0.28	0.38	0.72*	0.19	0.00	0.19
49.90	0.27	0.38	0.72*	0.19	0.00	0.19
49.95	0.27	0.38	0.72*	0.18	0.00	0.18
50.00	0.27	0.38	0.72*	0.18	0.00	0.18
50.05	0.27	0.38	0.72*	0.17	0.00	0.17
50.10	0.27	0.38	0.72*	0.16	0.00	0.16
50.15	0.27	0.38	0.72*	0.16	0.00	0.16
50.20	0.27	0.38	0.72*	0.15	0.00	0.15
50.25	0.27	0.38	0.72*	0.15	0.00	0.15
50.30	0.27	0.38	0.72*	0.14	0.00	0.14
50.35	0.27	0.38	0.72*	0.14	0.00	0.14
50.40	0.27	0.38	0.71*	0.13	0.00	0.13
50.45	0.27	0.38	0.71*	0.12	0.00	0.12
50.50	0.27	0.38	0.71*	0.12	0.00	0.12
50.55	0.27	0.38	0.71*	0.11	0.00	0.11
50.60	0.27	0.38	0.71*	0.11	0.00	0.11
50.65	0.27	0.38	0.71*	0.10	0.00	0.10
50.70	0.27	0.38	0.71*	0.09	0.00	0.09
50.75	0.27	0.38	0.71*	0.09	0.00	0.09
50.80	0.27	0.38	0.71*	0.08	0.00	0.08
50.85	0.27	0.38	0.71*	0.08	0.00	0.08
50.90	0.27	0.38	0.71*	0.07	0.00	0.07
50.95	0.27	0.38	0.71*	0.07	0.00	0.07
51.00	0.27	0.38	0.71*	0.06	0.00	0.06
51.05	0.27	0.38	0.71*	0.05	0.00	0.05
51.10	0.27	0.38	0.70*	0.05	0.00	0.05
51.15	0.27	0.38	0.70*	0.04	0.00	0.04
51.20	0.27	0.38	0.70*	0.04	0.00	0.04
51.25	0.27	0.38	0.70*	0.03	0.00	0.03
51.30	0.27	0.38	0.70*	0.02	0.00	0.02
51.35	0.27	0.38	0.70*	0.02	0.00	0.02
51.40	0.27	0.38	0.70*	0.01	0.00	0.01
51.45	0.27	0.38	0.70*	0.01	0.00	0.01
51.50	0.26	0.38	0.70*	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Welcome to LiquefyPro!

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

USGS Design Maps Detailed Report

ASCE 7-10 Standard (33.9149°N, 117.4283°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 1.500 g

From Figure 22-2 [2] S_1 = 0.600 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 1.500 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.600 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 1.500 = 1.500$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.600 = 0.900$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

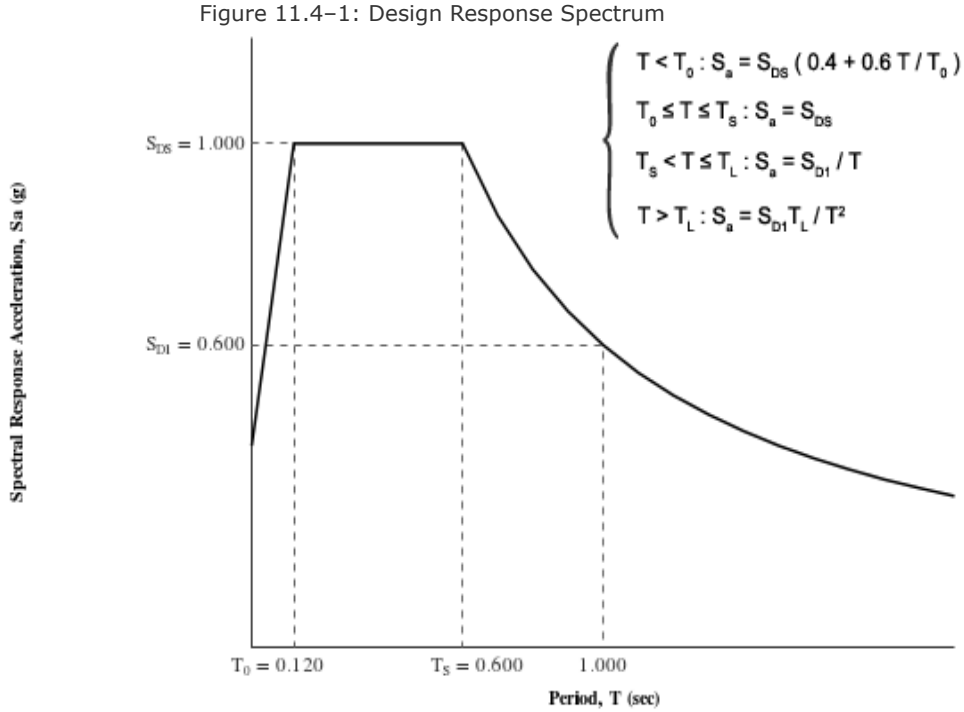
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.500 = 1.000$ g

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.900 = 0.600$ g

Section 11.4.5 — Design Response Spectrum

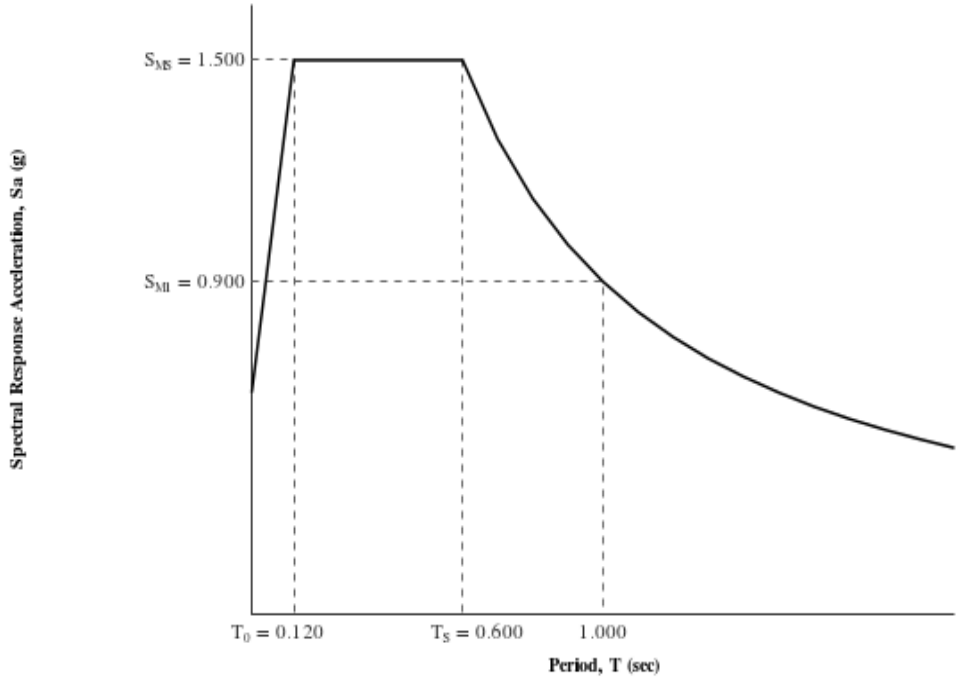
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.500

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.500 = 0.5$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.500 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 1.100

From Figure 22-18 [6] C_{R1} = 1.072

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.000 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.600 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2008 (v3.3.

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

33.9149

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

-117.4283

Site Class

259 m/s (Site class D)

Hazard Curve

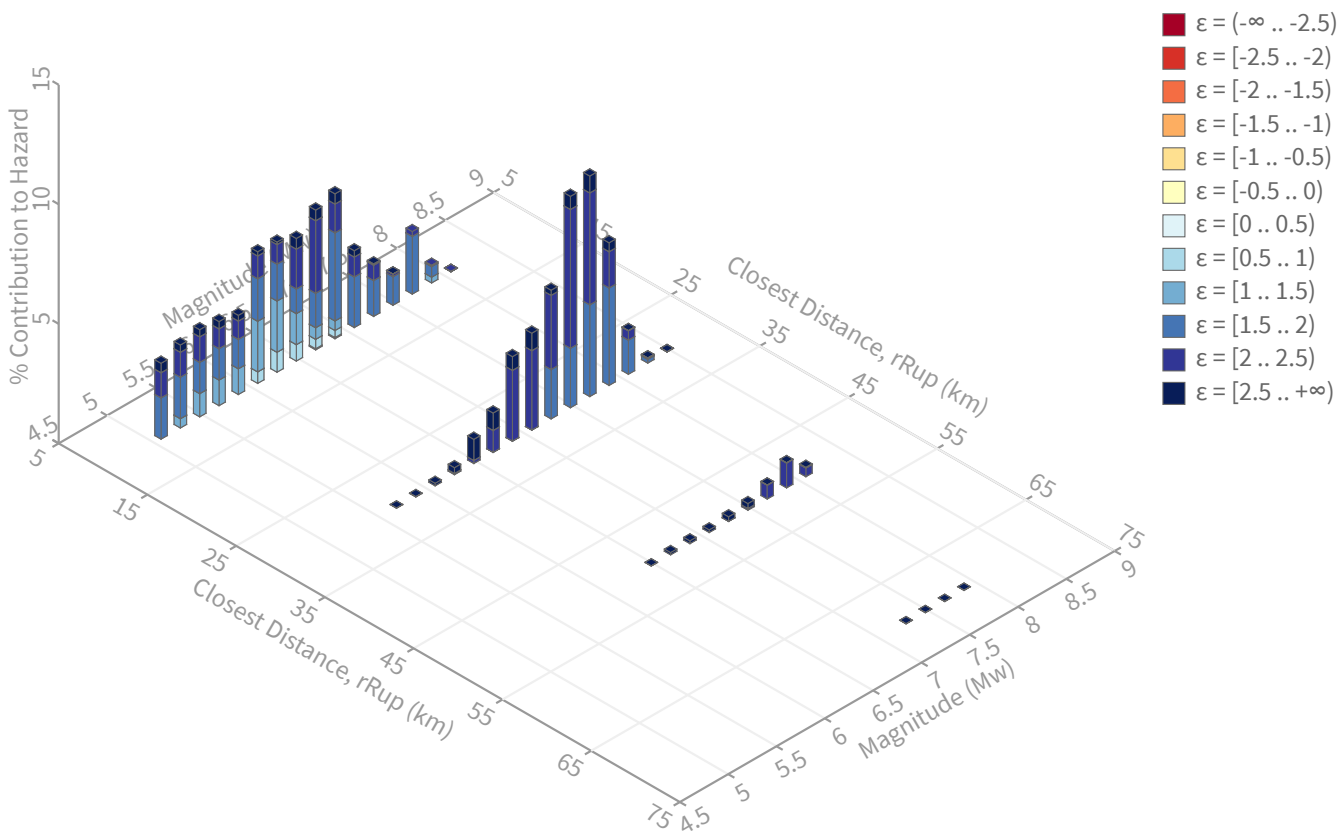
Please select “Edition”, “Location” & “Site Class” above to compute a hazard curve.

Compute Hazard Curve

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.67490205 g

Recovered targets

Return period: 3368.8407 yrs
Exceedance rate: 0.00029683802 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.05 %

Mean (for all sources)

r: 18.56 km
m: 6.86
ε_0: 1.96 σ

Mode (largest r-m bin)

r: 25.25 km
m: 7.7
ε_0: 2.01 σ
Contribution: 9.22 %

Mode (largest ε_0 bin)

r: 29.15 km
m: 7.5
ε_0: 2.17 σ
Contribution: 5.81 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
aFault_aPriori_D2.1	Fault							31.86
Elsinore : GI		15.84	6.81	2.14	117.548°W	33.813°N	224.29	4.37
San Jacinto : SBV+SJV+A+C		20.77	7.77	1.87	117.237°W	34.017°N	57.18	3.47
San Jacinto : A+C		29.66	7.50	2.18	117.108°W	33.891°N	95.12	2.83
Elsinore : GI+T		15.85	7.26	1.94	117.548°W	33.813°N	224.29	2.75
San Jacinto : SBV		20.77	7.00	2.18	117.237°W	34.017°N	57.18	2.42
San Jacinto : SJV		20.98	6.98	2.19	117.237°W	34.017°N	57.18	2.36
San Jacinto : SBV+SJV		20.77	7.33	2.07	117.237°W	34.017°N	57.18	2.33
Elsinore : W		17.31	6.96	2.02	117.590°W	33.829°N	237.40	1.62
Elsinore : GI+T+J+CM		15.80	7.73	1.68	117.548°W	33.813°N	224.29	1.45
S. San Andreas : PK+CH+CC+BB+NM+SM		46.00	7.90	2.32	117.549°W	34.316°N	346.05	1.01
aFault_MoBal	Fault							22.86
Elsinore : GI		15.84	6.78	2.16	117.548°W	33.813°N	224.29	2.58
Elsinore : W		17.31	6.94	2.02	117.590°W	33.829°N	237.40	2.36
San Jacinto : SBV+SJV+A+C		20.77	7.77	1.87	117.237°W	34.017°N	57.18	1.37
San Jacinto : SBV+SJV+A		20.77	7.64	1.94	117.237°W	34.017°N	57.18	1.14
San Jacinto : SJV+A+C		20.98	7.65	1.94	117.237°W	34.017°N	57.18	1.13
San Jacinto : A+C		29.66	7.50	2.18	117.108°W	33.891°N	95.12	1.05
CAmap.21.ch.in (opt)	Grid							11.68
PointSourceFinite: -117.428, 33.946		6.19	5.76	1.43	117.428°W	33.946°N	0.00	4.67
PointSourceFinite: -117.428, 33.973		7.85	5.86	1.62	117.428°W	33.973°N	0.00	2.27
PointSourceFinite: -117.428, 34.018		10.99	6.08	1.90	117.428°W	34.018°N	0.00	1.48
PointSourceFinite: -117.428, 34.000		9.70	5.99	1.79	117.428°W	34.000°N	0.00	1.27
CAmap.24.ch.in (opt)	Grid							11.67
PointSourceFinite: -117.428, 33.946		6.19	5.76	1.43	117.428°W	33.946°N	0.00	4.67
PointSourceFinite: -117.428, 33.973		7.85	5.86	1.62	117.428°W	33.973°N	0.00	2.27
PointSourceFinite: -117.428, 34.018		10.99	6.08	1.90	117.428°W	34.018°N	0.00	1.48
PointSourceFinite: -117.428, 34.000		9.70	5.99	1.79	117.428°W	34.000°N	0.00	1.27
CAmap.24.gr.in (opt)	Grid							5.66
PointSourceFinite: -117.428, 33.946		6.19	5.76	1.43	117.428°W	33.946°N	0.00	2.34
PointSourceFinite: -117.428, 33.973		7.85	5.86	1.62	117.428°W	33.973°N	0.00	1.14
CAmap.21.gr.in (opt)	Grid							5.66
PointSourceFinite: -117.428, 33.946		6.19	5.76	1.43	117.428°W	33.946°N	0.00	2.33
PointSourceFinite: -117.428, 33.973		7.85	5.86	1.62	117.428°W	33.973°N	0.00	1.13
aFault_unseg	Fault							5.36
San Jacinto (SB to C)		21.68	7.39	2.06	117.237°W	34.017°N	57.18	2.29
S. San Andreas		32.54	7.80	2.13	117.274°W	34.173°N	26.27	1.62
Elsinore		16.51	7.46	1.81	117.548°W	33.813°N	224.29	1.45
bFault.ch	Fault							3.13
bFault.gr	Fault							1.39

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APPENDIX D

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

APPENDIX D

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

D-1.00 GENERAL DESCRIPTION

D-1.01 Introduction

These specifications present our general recommendations for earthwork and grading as shown on the approved grading plans for the subject project. These specifications shall cover all clearing and grubbing, removal of existing structures, preparation of land to be filled, filling of the land, spreading, compaction and control of the fill, and all subsidiary work necessary to complete the grading of the filled areas to conform with the lines, grades and slopes as shown on the approved plans.

The recommendations contained in the geotechnical report of which these general specifications are a part of shall supersede the provisions contained hereinafter in case of conflict.

D-1.02 Laboratory Standard and Field Test Methods

The laboratory standard used to establish the maximum density and optimum moisture shall be ASTM D1557.

The insitu density of earth materials (field compaction tests) shall be determined by the sand cone method (ASTM D1556), direct transmission nuclear method (ASTM D2922) or other test methods as considered appropriate by the geotechnical consultant.

Relative compaction is defined, for purposes of these specifications, as the ratio of the in-place density to the maximum density as determined in the previously mentioned laboratory standard.

D-2.00 CLEARING

D-2.01 Surface Clearing

All structures marked for removal, timber, logs, trees, brush and other rubbish shall be removed and disposed of off the site. Any trees to be removed shall be pulled in such a manner so as to remove as much of the root system as possible.

D-2.02 Subsurface Removals

A thorough search should be made for possible underground storage tanks and/or septic tanks and cesspools. If found, tanks should be removed and cesspools pumped dry.

Any concrete irrigation lines shall be crushed in place and all metal underground lines shall be removed from the site.

D-2.03 Backfill of Cavities

All cavities created or exposed during clearing and grubbing operations or by previous use of the site shall be cleared

of deleterious material and backfilled with native soils or other materials approved by the soil engineer. Said backfill shall be compacted to a minimum of 90% relative compaction.

D-3.00 Original Ground Preparation

D-3.01 Stripping of Vegetation

After the site has been properly cleared, all vegetation and topsoil containing the root systems of former vegetation shall be stripped from areas to be graded. Materials removed in this stripping process may be used as fill in areas designated by the soil engineer, provided the vegetation is mixed with a sufficient amount of soil to assure that no appreciable settlement or other detriment will occur due to decaying of the organic matter. Soil materials containing more than 3% organics shall not be used as structural fill.

D-3.02 Removals of Non-Engineered Fills

Any non-engineered fills encountered during grading shall be completely removed and the underlying ground shall be prepared in accordance to the recommendations for original ground preparation contained in this section. After cleansing of any organic matter the fill material may be used for engineered fill.

D-3.03 Overexcavation of Fill Areas

The existing ground in all areas determined to be satisfactory for the support of fills shall be scarified to a minimum depth of 6 inches. Scarification shall continue until the soils are broken down and free from lumps or clods and until the scarified zone is uniform. The moisture content of the scarified zone shall be adjusted to within 2% of optimum moisture. The scarified zone shall then be uniformly compacted to 90% relative compaction.

Where fill material is to be placed on ground with slopes steeper than 5:1 (H:V) the sloping ground shall be benched. The lowermost bench shall be a minimum of 15 feet wide, shall be a minimum of 2 feet deep, and shall expose firm material as determined by the geotechnical consultant. Other benches shall be excavated to firm material as determined by the geotechnical consultant and shall have a minimum width of 4 feet.

Existing ground that is determined to be unsatisfactory for the support of fills shall be overexcavated in accordance to the recommendations contained in the geotechnical report of which these general specifications are a part.

D-4.00 Fill Materials

D-4.01 General

Materials for the fill shall be free from vegetable matter and other deleterious substances, shall not contain rocks or lumps of a greater dimension than is recommended by the geotechnical consultant, and shall be approved by the geotechnical consultant. Soils of poor gradation, expansion, or strength properties shall be placed in areas designated by the geotechnical consultant or shall be mixed with other soils providing satisfactory fill material.

D-4.02 Oversize Material

Oversize material, rock or other irreducible material with a maximum dimension greater than 12 inches, shall not be placed in fills, unless the location, materials, and disposal methods are specifically approved by the geotechnical consultant. Oversize material shall be placed in such a manner that nesting of oversize material does not occur and

in such a manner that the oversize material is completely surrounded by fill material compacted to a minimum of 90% relative compaction. Oversize material shall not be placed within 10 feet of finished grade without the approval of the geotechnical consultant.

D-4.03 Import

Material imported to the site shall conform to the requirements of Section 4.01 of these specifications. Potential import material shall be approved by the geotechnical consultant prior to importation to the subject site.

D-5.00 Placing and Spreading of Fill

D-5.01 Fill Lifts

The selected fill material shall be placed in nearly horizontal layers which when compacted will not exceed approximately 6 inches in thickness. Thicker lifts may be placed if testing indicates the compaction procedures are such that the required compaction is being achieved and the geotechnical consultant approves their use.
Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to insure uniformity of material in each layer.

D-5.02 Fill Moisture

When the moisture content of the fill material is below that recommended by the soils engineer, water shall then be added until he moisture content is as specified to assure thorough bonding during the compacting process.

When the moisture content of the fill material is above that recommended by the soils engineer, the fill material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.

D-5.03 Fill Compaction

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted to not less than 90% relative compaction. Compaction shall be by sheepsfoot rollers, multiple-wheel pneumatic tired rollers, or other types approved by the soil engineer.

Rolling shall be accomplished while the fill material is at the specified moisture content. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to insure that the desired density has been obtained.

D-5.04 Fill Slopes

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compacting of the slopes may be done progressively in increments of 3 to 4 feet in fill height. At the completion of grading, the slope face shall be compacted to a minimum of 90% relative compaction. This may require track rolling or rolling with a grid roller attached to a tractor mounted side-boom.

Slopes may be over filled and cut back in such a manner that the exposed slope faces are compacted to a minimum of 90% relative compaction.

The fill operation shall be continued in six inch (6") compacted layers, or as specified above, until the fill has been brought to the finished slopes and grades as shown on the accepted plans.

D-5.05 Compaction Testing

Field density tests shall be made by the geotechnical consultant of the compaction of each layer of fill. Density tests shall be made at locations selected by the geotechnical consultant.

Frequency of field density tests shall be not less than one test for each 2.0 feet of fill height and at least every one thousand cubic yards of fill. Where fill slopes exceed four feet in height their finished faces shall be tested at a frequency of one test for each 1000 square feet of slope face.

Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density reading shall be taken in the compacted material below the disturbed surface. When these readings indicate that the density of any layer of fill or portion thereof is below the required density, the particular layer or portion shall be reworked until the required density has been obtained.

D-6.00 SUBDRAINS

D-6.01 Subdrain Material

Subdrains shall be constructed of a minimum 4-inch diameter pipe encased in a suitable filter material. The subdrain pipe shall be Schedule 40 Acrylonitrile Butadiene Styrene (ABS) or Schedule 40 Polyvinyl Chloride Plastic (PVC) pipe or approved equivalent. Subdrain pipe shall be installed with perforations down. Filter material shall consist of 3/4" to 1 1/2" clean gravel wrapped in an envelope of filter fabric consisting of Mirafi 140N or approved equivalent.

D-6.02 Subdrain Installation

Subdrain systems, if required, shall be installed in approved ground to conform the approximate alignment and details shown on the plans or herein. The subdrain locations shall not be changed or modified without the approval of the geotechnical consultant. The geotechnical consultant may recommend and direct changes in the subdrain line, grade or material upon approval by the design civil engineer and the appropriate governmental agencies.

D-7.00 EXCAVATIONS

D-7.01 General

Excavations and cut slopes shall be examined by the geotechnical consultant. If determined necessary by the geotechnical consultant, further excavation or overexcavation and refilling of overexcavated areas shall be performed, and/or remedial grading of cut slopes shall be performed.

D-7.02 Fill-Over-Cut Slopes

Where fill-over-cut slopes are to be graded the cut portion of the slope shall be made and approved by the geotechnical consultant prior to placement of materials for construction of the fill portion of the slope.

D-8.00 Trench Backfill

D-8.01 General

Trench backfill within street right of ways shall be compacted to 90% relative compaction as determined by the ASTM D1557 test method. Backfill may be jetted as a means of initial compaction; however, mechanical compaction will be required to obtain the required percentage of relative compaction. If trenches are jetted, there must be a suitable delay for drainage of excess water before mechanical compaction is applied.

D-9.00 Seasonal Limits

D-9.01 General

No fill material shall be placed, spread or rolled while it is frozen or thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the soils engineer indicate that the moisture content and density of the fill are as previously specified.

D-10.00 Supervision

D-10.01 Prior to Grading

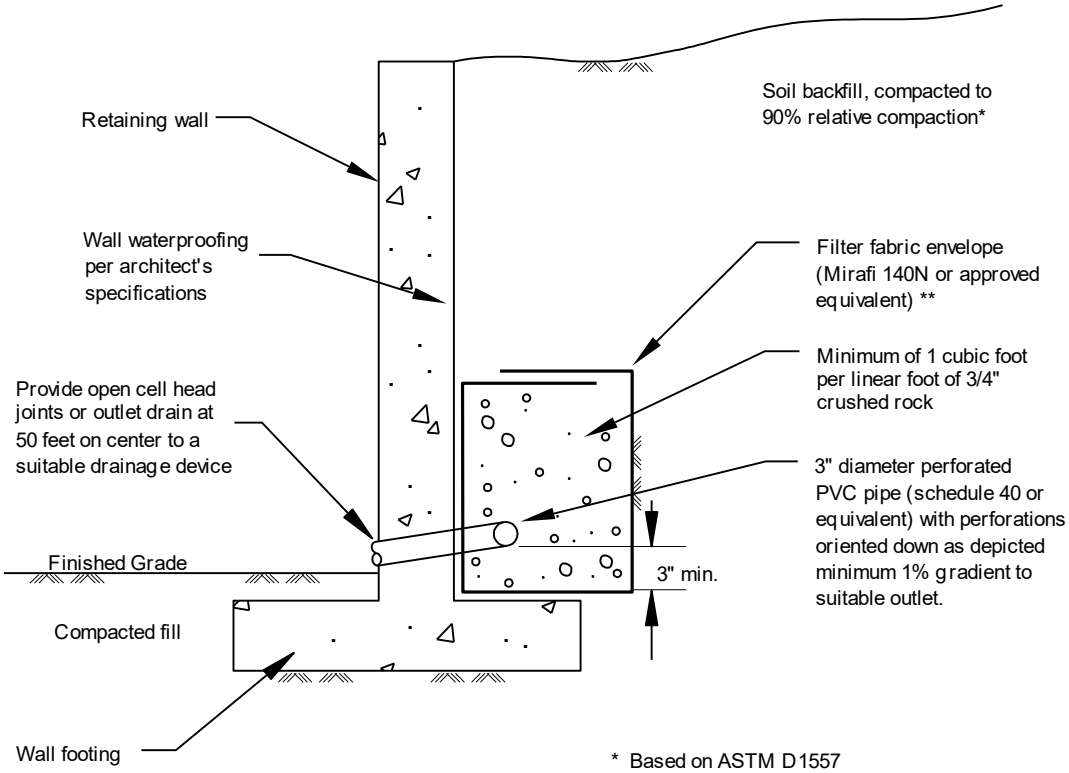
The site shall be observed by the geotechnical consultant upon completion of clearing and grubbing, prior to the preparation of any original ground for preparation of fill.

The supervisor of the grading contractor and the field representative of the geotechnical consultant shall have a meeting and discuss the geotechnical aspects of the earthwork prior to commencement of grading.

D-10.02 During Grading

Site preparation of all areas to receive fill shall be tested and approved by the geotechnical consultant prior to the placement of any fill.

The geotechnical consultant or his representative shall observe the fill and compaction operations so that he can provide an opinion regarding the conformance of the work to the recommendations contained in this report.



* Based on ASTM D1557

** If class 2 permeable material (See gradation to left) is used in place of 3/4" - 1 1/2" gravel. Filter fabric may be deleted. Class 2 permeable material compacted to 90% relative compaction. *

SPECIFICATIONS FOR CLASS 2 PERMEABLE MATERIAL (CAL TRANS SPECIFICATIONS)

Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	40-100
No.4	25-40
No.8	18-33
No.30	5-15
No.50	0-7
No.200	0-3

RETAINING WALL DRAINAGE DETAIL

APPENDIX E

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APPENDIX E

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Appendix H-2 Geotechnical Investigation (2010)

Appendices

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GEOTECHNICAL INVESTIGATION, PROPOSED FOOTBALL STADIUM AND ATHLETIC FACILITIES, ARLINGTON HIGH SCHOOL, 2951 JACKSON STREET, CITY OF RIVERSIDE, CALIFORNIA

Prepared for:

RIVERSIDE UNIFIED SCHOOL DISTRICT
3070 Washington Street
Riverside, California 92504

Project No. 602877-001

June 17, 2010

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

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A LEIGHTON GROUP COMPANY

June 17, 2010

Project No. 602877-001

To: Riverside Unified School District
Facilities Planning and Development
3070 Washington Street
Riverside, California 92504

Attention: Ms. Janet Dixon

Subject: Geotechnical Investigation, Proposed Football Stadium and Athletic Facilities, Arlington High School, 2951 Jackson Street, City of Riverside, California

Leighton Consulting, Inc. (Leighton) is pleased to present this report of geotechnical investigation for the proposed football stadium and other athletic fields and facilities at Arlington High School, located at 2951 Jackson Street in the City of Riverside, California. The purpose of this study has been to evaluate geology/geotechnical conditions of the site with respect to the planned improvements, including geologic hazards, to explore subsurface conditions, and provide geotechnical recommendations for design and construction.

Based upon our geotechnical investigation, the proposed improvements are feasible from a geotechnical viewpoint, provided our recommendations are incorporated into the design and construction of the project. The proposed bleachers and buildings can be founded on conventional spread footings bearing solely on a zone of newly excavated and recompacted fill soils, derived from site soils. The most significant geotechnical issues at the site are seismic hazards. These and other geotechnical issues are discussed in this report.

10532 Acacia Street, Suite B-6 ■ Rancho Cucamonga, CA 91730
(909) 484-2205 ■ Fax (909) 484-2170 ■ www.leightongroup.com

We appreciate the opportunity to work with you on this project. If you have any questions, or if we can be of further service, please call us at your convenience at (909) 484-2205.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Jason D. Hertzberg, GE 2711
Associate Engineer

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Principal Geologist

MDH/PB/JDH/rsh

Distribution: (2) Addressee
(3) HMC Architects
Attention: Mr. Marco Eacrett

Leighton

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1.0 INTRODUCTION

1.1 Site Location and Description

The proposed improvements are to be located within the existing Arlington High School campus located at 2951 Jackson Street in the City of Riverside, California (see Figures 1 and 2). The campus is bounded by Jackson Street to the southwest, Lincoln Avenue to the southeast, Irving Street to the northeast, and Metrolink/BNSF railroad tracks to the northwest. Residential developments surround the campus beyond these limits.

The campus and its surroundings are relatively flat, with drainage in the vicinity generally toward the northwest. Existing ground surface elevations across the campus range from approximately 850 feet above mean sea level in the northeastern corner, to approximately 870 feet in the southern corner.

The campus generally consists of permanent classroom buildings and parking lots in the southern and eastern portions, with the northern and western portions of the campus containing playfields, including the existing football stadium in the far northwestern portion. Existing athletic fields and a former agricultural area occupy the area of the proposed improvements in the northern and western portions of the campus.

A review of historical aerial photographs shows that the site was used for agricultural purposes in 1973 prior to construction of the school campus.

1.2 Proposed Improvements

Based on the March 25, 2010 conceptual site plan prepared by HMC Architects, we understand that Riverside Unified School District is planning to construct new 750-seat bleachers (approximately 6,400 square feet) and a realigned stadium on the northwest side of the Arlington High School campus at the approximate location of the existing football stadium. Four new baseball fields are proposed within the western portion of the campus, one of which will also serve as a soccer field. Concession buildings and team rooms (approximately 2,000 square feet each) are planned for construction near the proposed southern baseball fields and at the western entrance to the athletic fields area. Other proposed and possible flatwork improvements include an expansion of the existing southeastern parking area, tennis and basketball courts in the eastern portion of the athletic fields area, batting cages, maintenance storage areas, a detention basin, and various utility, landscaping, and hardscaping improvements throughout the northern portion of the campus. The proposed improvements are shown on Figure 2. Although a

future gymnasium is indicated on the site plan, plans for this are preliminary. This report does not address the future gymnasium building.

Grading plans were not available to us at the time of this study. However, due to the relatively flat topography onsite, we anticipate that minor cuts and fills (on the order of 3 feet or less) will be required to attain desired grades. This is a public school project under the jurisdiction of the Division of the State Architect (DSA), to be designed and constructed in accordance with the 2007 California Building Code (CBC).

1.3 Purpose and Scope of Work

The purpose of our study has been to evaluate the geologic/geotechnical conditions of the site with respect to the planned improvements and provide preliminary recommendations for design and construction. Our geotechnical investigation was tailored to develop a generalized representation of the subsurface soil conditions with respect to the proposed improvements. Our work included the following tasks:

- Geologic Hazards Review - We reviewed pertinent, readily available geologic and geotechnical literature covering the site. Our review included regional geologic maps and reports available from our library and analysis of in-house historical aerial photographs covering the site. Documents reviewed are listed in Appendix A, References.

- Utility Clearance - We coordinated with District representatives and Underground Service Alert (USA) to have existing underground utilities located and marked prior to our subsurface investigation. We retained a private utility locator to provide further clearance of utilities prior to our subsurface investigation.

- Field Exploration - Our field exploration included drilling, logging, and sampling eight hollow-stem auger borings (LB-1 through LB-8) at representative locations within or immediately adjacent to the footprints of the proposed buildings and in areas of other improvements. However, in some areas, we were not able to drill within the actual proposed footprint, because of existing improvements. As a minimum, one boring was drilled per every 5,000 square feet of proposed building footprint. The borings were advanced to depths ranging from 21½ feet to 51½ feet below the existing ground surface. Each boring was logged by a member of our technical staff. Relatively undisturbed soil samples were obtained at selected intervals within the borings using a California Ring Sampler. Standard Penetration Tests (SPT) were conducted at selected depths within the borings and samples were

obtained. Representative bulk soil samples were also collected at shallow depths. Logs of the geotechnical borings are presented in Appendix B. Approximate boring locations are shown on the accompanying *Geotechnical Map*, Figure 2.

- Laboratory Tests - Laboratory tests were conducted on selected relatively undisturbed and bulk soil samples obtained during our field investigation. The laboratory testing program was designed to evaluate engineering characteristics of the onsite soil. Laboratory tests conducted during this investigation include:

  - In situ moisture content and dry density
  - Atterberg limits
  - Sieve analysis for grain-size distribution
  - Consolidation settlement characteristics
  - Collapse potential
  - Maximum dry density and optimum moisture content
  - Expansion index
  - Water-soluble sulfate concentration in the soil for cement type recommendations
  - Resistivity, chloride content and pH to evaluate corrosion potential

  Results of the in situ dry density and moisture content tests are shown on the boring logs (Appendix B). Results of the remaining laboratory tests are provided in Appendix C.

- Engineering Analysis - Data obtained from our background review and field exploration was evaluated and analyzed to provide geotechnical conclusions and preliminary recommendations presented in the following sections.

- Report Preparation - Results of our geologic hazards review and geotechnical investigation have been summarized in this report, presenting our findings, conclusions and preliminary recommendations.

1.4 Previous Geotechnical Investigation

An investigation was previously performed by Leighton and Associates, Inc. (2002) for the science lab building in the southern portion of the campus. The findings and conclusions of that study were considered during this current investigation. Approximate locations of boring drilled during that previous study are shown on Figure 2, the boring logs are included at the end of Appendix B, and the laboratory test results are included at the end of Appendix C of this report.

2.0 FINDINGS

2.1 Regional Geologic Setting

The site is located in the northern part of the Peninsular Ranges Geomorphic Province of southern California near the margin of the Santa Ana River Valley. The mountains of El Sobrante de San Jacinto and the Perris structural block are south of the site. Cretaceous igneous rocks of the southern California batholith underlie the Peninsular Ranges at depth in this area. Northwest-trending, right-lateral, strike-slip faults dominate the structure of the Peninsular Ranges. The site is located within the Perris structural block, which is bounded on the north by the Cucamonga Fault, on the east by the San Jacinto Fault, and on the west by the Chino and Elsinore Faults. The active San Jacinto Fault Zone is present approximately 11.5 miles (18 kilometers) northeast of the site, and the Elsinore Fault is present approximately 9.5 miles (15 km) to the southwest. Both of these faults have experienced significant activity in the recent geologic past. The San Andreas Fault, the most active and extensive fault in California, is located approximately 19.5 miles (31 km) northeast of the site. The site rests on generally flat terrain underlain by old alluvial fan soils deposited primarily by the Santa Ana River, which is located approximately 3 miles north of the site (Morton and Miller, 2006). Bedrock is not present onsite; it is expected to be present at a depth of about 200 feet below the ground surface. The regional geology is shown on Figure 3.

2.2 Subsurface Soil Conditions

Based upon our review of pertinent geotechnical literature and our subsurface exploration, the site is underlain by late Pleistocene-age alluvial fan deposits (denoted as Qof on our boring logs). This soil generally consists of unconsolidated sandy alluvial fan deposits (Morton and Miller, 2006).

Alluvial soils encountered within our exploratory borings drilled onsite generally consisted of medium dense to dense sand and silty sand interbedded with medium stiff to stiff silt layers. Soils within the upper 5 feet below the ground surface were generally loose to medium dense and medium dense to dense below. Most material encountered possessed a significant degree of fines content, though layers of well-graded and poorly graded sands were encountered within each of our borings. These soils were visually described as slightly dry to moist to the maximum depths explored. Sampled moisture contents of the upper 15 feet of the subsurface soil ranged from 2 to 13 percent by weight. No artificial fill was recognized during our field exploration, though fill is expected to be present locally due to past site uses.

2.2.1 Compressible and Collapsible Soil

Soil compressibility refers to a soil's potential for settlement when subjected to increased loads, as from a fill surcharge or a structure. Based on our investigation, the upper 5 to 10 feet of alluvial soil is considered slightly to moderately compressible, becoming less compressible with depth. Partial removal and recompaction of this material will be necessary to reduce the potential for adverse total and differential settlement of the proposed improvements.

Collapse potential refers to the potential settlement of a soil under existing stresses upon being wetted. Three representative samples of the subsurface soil were tested for collapse potential. Test results indicate that the near-surface soil onsite has a negligible collapse potential.

2.2.2 Expansive Soil

Expansive soils contain significant amounts of clay particles that swell considerably when wetted and shrink when dried. Foundations constructed on these soils are subjected to large uplifting forces caused by the swelling. Without proper measures taken, heaving and cracking of both building foundations and slabs-on-grade could result.

Laboratory testing of a near-surface sample of the onsite soil yielded an expansion index of 2. Based on this test result, our review of pertinent geotechnical literature in the vicinity of the site, and our geotechnical experience in the area, the alluvial soils onsite are expected to have a very low expansion potential.

2.2.3 Sulfate Content

Water-soluble sulfates in soil can react adversely with concrete. However, concrete in contact with soil containing sulfate concentrations of less than 0.01 percent by weight is considered to have negligible sulfate exposure based on the American Concrete Institute (ACI) provisions, adopted by the 2007 CBC (CBC, 2007, Chapter 19A, and ACI, 2005, Chapter 4).

A near-surface soil sample was tested for soluble sulfate content. The result of this test indicated a sulfate content of 0.01 percent by weight or less, indicating negligible sulfate exposure. As such, the soils exposed at pad grade are not expected to pose a significant potential for sulfate reaction with concrete.

2.2.4 Resistivity, Chloride and pH

Soil corrosivity to ferrous metals can be estimated by the soil's electrical resistivity, chloride content and pH. In general, soil having a minimum resistivity of 2,000 ohm-cm or less is considered corrosive. Soil with a chloride content of 500 parts-per-million (ppm) or more is considered corrosive to ferrous metals.

As a screening for potentially corrosive soil, a representative soil sample was tested during this investigation to determine its minimum resistivity, chloride content, and pH. These tests indicated a minimum resistivity of 2,000 ohm-cm, a chloride content of 52 ppm, and pH of 6.5. Based on these test results, the onsite soil is considered corrosive to ferrous metals.

2.3 Groundwater

Groundwater was not encountered in any of our borings to a maximum depth of 51½ feet below the existing ground surface. Based on our review of regional maps and groundwater data from the Western Municipal Water District (spring 2008 data), groundwater levels in 1996 were on the order of 43 feet below the existing ground surface at a site located roughly 3,000 feet southeast of the school. Our review of historical groundwater maps published by CDWR (1970) indicates that the depth to groundwater in 1933 and 1960 was estimated to be approximately 95 feet below the ground surface. The Riverside County Geologic Hazard Map (2004) indicates that the historically shallowest groundwater levels in the vicinity of the site were roughly 60 feet deep. In addition, based on our review of numerous, unpublished CDWR records of water wells in the area, it appears that the historically highest groundwater levels at the site were on the order of 50 feet below the ground surface.

2.4 Faulting and Seismicity

In general, the primary seismic hazards for sites in the region could include strong ground shaking and fault rupture. The potential for fault rupture and seismic shaking are discussed below.

2.4.1 Surface Faulting

Our review of available in-house literature indicates that there are no known active faults that have been mapped across the site, the site is not located near a pressure ridge, and the site is not located within a current State of California

designated Earthquake Fault Zone (CGS, 2000). Based on our understanding of the current geologic framework, the potential for future surface rupture of active faults onsite is considered very low.

2.4.2 Seismicity

The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along several major active or potentially active faults in southern California. Design of the proposed improvements in accordance with current California Building Code (CBC) requirements is intended to reduce the impact of seismic shaking on the proposed improvements.

The known regional active faults that could produce the most significant ground shaking at the site include the San Jacinto-San Bernardino, San Jacinto-San Jacinto Valley, Chino-Central Avenue, Elsinore-Glen Ivy, Whittier, Cucamonga, and San Andreas faults. The closest active fault to the site is the Chino-Central Avenue (Elsinore) fault, at an approximate distance of 15 kilometers. Forty-two faults found within a 100-km radius search from the project site are listed in Appendix D. General locations of regional faults with respect to the site are shown on the *Regional Fault Map* (Figure 5).

The *Regional Seismicity Map* (Figure 6) shows the recent regional seismicity with respect to the site. An evaluation of historical seismicity related to the site was performed to show the significant past earthquakes from the mid 1800's to 2010 with magnitudes 5 or greater. These were estimated using the EQSERACH computer program (Blake, 2010). Based on this analysis, the largest ground acceleration at the site from historical earthquakes is estimated to have been 0.43g from a 7.0 Magnitude earthquake 11 km away in 1858. This historical seismicity search was performed for a 100-km radius from the project site and is listed in Appendix D.

PHGA and hazard deaggregation were performed using the United States Geological Survey's 2008 Interactive Deaggregations utility. The results of this analysis indicate that the predominant modal earthquake has a PHGA of 0.69g with magnitude of approximately 7.6 (M_W) at a distance on the order of 24 kilometers for the Maximum Considered Earthquake (2% probability of exceedance in 50 years).

2.5 Secondary Seismic Hazards

In general, secondary seismic hazards for sites in the region could include soil liquefaction, earthquake-induced settlement, lateral displacement, landsliding, seiches, and tsunamis. The potential for secondary seismic hazards at the site is discussed below.

2.5.1 Liquefaction Potential

Liquefaction is the loss of soil strength or stiffness due to a buildup of excess pore-water pressure during strong ground shaking. Liquefaction is associated primarily with loose (low density), granular, saturated soil. Effects of severe liquefaction can include sand boils, excessive settlement, bearing capacity failures, and lateral spreading.

The site is mapped in an area designated as having a low liquefaction potential in the Riverside County Land Information System (Riverside County, 2010). Groundwater was not encountered during any of our borings conducted to a maximum depth of 51½ feet. Furthermore, the historically shallowest groundwater level is estimated to be 50 feet or deeper (see Section 2.3, Groundwater). Based on this, the potential for liquefaction and liquefaction-related damage is considered very low at the site.

2.5.2 Seismically Induced Settlement

Seismically induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). During a strong seismic event, seismically induced settlement can occur within loose to moderately dense sandy soil due to reduction in volume during and shortly after an earthquake event. Settlement caused by ground shaking is often nonuniformly distributed, which can result in differential settlement.

We have performed analyses to estimate the seismically induced settlement using the methods first introduced by Tokimatsu and Seed (1987), using the LiquefyPro computer program by CivilTech Software. The results of our analyses indicate the onsite soils are expected to undergo less than 1 inch of seismic settlement. Differential settlement due to seismic loading is assumed to be less than ½ inch over a horizontal distance of 40 feet. A summary of seismic settlement analysis is included in Appendix D.

2.5.3 Seismically Induced Landslides

Significant slopes are not located on or near the site. Therefore, the site is not considered susceptible to landslides or seismically induced landslides.

2.5.4 Earthquake Induced Flooding

Earthquake-induced flooding can result from the failure of dams or other water-retaining structures resulting from earthquakes. The site is not located within inundation zones for local retained bodies of water, including Lake Mathews Dam, Seven Oaks Dam or Lake Perris Dam. Therefore, the potential for earthquake-induced flooding at this site is considered to be low (see Figure 7).

2.5.5 Seiches and Tsunamis

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are waves generated in large bodies of water by fault displacement or major ground movement. Based on the inland location of the site and its distance from lakes or ponds, seiches and tsunamis are not a hazard to this site.

2.6 Flood Hazard

Arlington High School is not located within either a “100-year” or “500-year” flood zone based on information obtained from the Riverside County Land Information System.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on this investigation, construction of the proposed football stadium and other athletic field and facility improvements appears feasible from a geotechnical standpoint. No severe geologic or soils related issues were identified that would preclude development of the site for the proposed school improvements. The proposed bleachers, team rooms, concession stands and associated improvements can be founded on shallow conventional spread footings bearing on a zone of newly excavated and recompacted fill soils, derived from site soils. The most significant geotechnical issues at the site are those related to the potential for strong seismic shaking, differential settlement, and the presence of surficial compressible soils. Appropriate planning and design of the project can limit the impact of these constraints. Remedial recommendations for these and other geotechnical issues are provided in the following sections.

3.1 Earthwork and Grading

All grading should be performed in accordance with the *General Earthwork and Grading Specifications* presented in Appendix E, unless specifically revised or amended below or by future recommendations based on final plans.

3.1.1 Site Preparation

Prior to construction, the areas of the proposed improvements should be cleared of vegetation (turf), asphalt pavement, and debris, which should be disposed of offsite. Any underground obstructions onsite should be removed. Resulting cavities should be properly backfilled and compacted. In addition, any uncontrolled fill, if encountered, should be removed and replaced as compacted fill. Efforts should be made to locate any existing utility lines. Those lines should be removed or rerouted if they interfere with the proposed construction, and the resulting cavities should be properly backfilled and compacted.

3.1.2 Overexcavation and Recompaction

To reduce the potential for adverse differential settlement of the proposed structures, the underlying subgrade soil should be prepared in such a manner that a uniform response to the applied loads is achieved. For the planned buildings and bleachers, we recommend that the native alluvial soil be overexcavated to a minimum depth of approximately 6 feet below existing grade or 4 feet below the proposed footings, whichever is deeper. The overexcavation and recompaction should extend a minimum horizontal distance from perimeter edges of the proposed

footings equal to the depth of the overexcavation or 5 feet, whichever is greater. Local conditions may require that deeper overexcavation be performed; such areas should be evaluated by Leighton during grading.

Areas planned for asphalt or concrete pavement, flatwork, the track and field surfaces, site walls, and areas to receive fill should be overexcavated to a minimum depth of 18 inches below existing grade or 18 inches below proposed subgrade, whichever is deeper.

After completion of the overexcavation, and prior to fill placement, the exposed surfaces should be scarified to a minimum depth of 6 inches, moisture conditioned to or slightly above optimum moisture content, and recompacted to a minimum 90 percent relative compaction, relative to the ASTM D 1557 laboratory maximum density.

3.1.3 Fill Placement and Compaction

Onsite soil free of debris and oversized material (greater than 8 inches in largest dimension) is suitable for use as compacted structural fill. Any soil to be placed as fill, whether onsite or imported material, should be reviewed and possibly tested by Leighton.

All fill soil should be placed in thin, loose lifts, moisture conditioned, as necessary, to near optimum moisture content, and compacted to a minimum 90 percent relative compaction as determined by ASTM Test Method D1557. Aggregate base for pavement should be compacted to a minimum of 95 percent relative compaction.

3.1.4 Import Fill Soil

Any import soil to be placed as fill at the site should be geotechnically accepted by Leighton. Preferably at least 3 working days prior to proposed import to the site, the contractor should provide Leighton pertinent information of the proposed import soil, such as location of the soil, whether stockpiled or native in place, and pertinent geotechnical reports if available. We recommend that a Leighton representative visit the proposed import site to observe the soil conditions and obtain representative soil samples. Potential issues may include soil that is more expansive than onsite soil, soil that is too wet, soil that is too rocky or too dissimilar to onsite soils, oversize material, organics, debris, etc.

The owner should require proper documentation that soils imported to the project site are suitable for use at the school site from an environmental standpoint. The import soils should be evaluated and/or tested, as appropriate, for environmental suitability based on the *Information Advisory - Clean Imported Fill* (Department of Toxic Substances Control, October 2001 or more current edition). The documentation indicating the soils are suitable for use should be provided to the project construction manager prior to intended import to the site. Leighton can provide these services to the District, but the contractor must give Leighton adequate time to properly evaluate the material prior to import--a minimum of 3 working days (laboratory rush charges would apply), but preferably 5 working days or more. The contractor should provide Leighton pertinent information, such as the amount and location of the soil, whether stockpiled or native in place, soil owner contact information, and pertinent environmental reports, if available.

3.1.5 Shrinkage and Subsidence

The change in volume of excavated and recompacted soil varies according to soil type and location. This volume change is represented as a percentage increase (bulking) or decrease (shrinkage) in volume of fill after removal and recompaction. Subsidence occurs as in-place soil (e.g., natural ground) is moisture-conditioned and densified to receive fill, such as in processing an overexcavation bottom. Subsidence is in addition to shrinkage from recompaction of fill soil. Subsidence, in this sense, does not refer to potential settlement due to placement of additional loads, such as from foundations or from significantly raising grades with new fill.

Field and laboratory data used in our calculations included laboratory-measured maximum dry densities for soil types encountered at the subject site, the measured in-place densities of soils encountered and our experience. We preliminarily estimate the following earth volume changes will occur during grading, and these are rough estimates:

Shrinkage	Approximately 10-15 percent
Subsidence (overexcavation bottom processing)	Approximately 0.10 foot

These shrinkage values are general guide values. Actual values may vary, due to variations in the dry density of the existing soils, the level of fill compaction, and other factors that influence the amount of volume change. Therefore, as with any

grading project, some earthwork volume adjustments should be anticipated during grading.

3.2 Seismic Design Parameters

Seismic parameters presented in this report should be considered during project design. In order to reduce the effects of ground shaking produced by regional seismic events, seismic design should be performed in accordance with the 2007 edition of the California Building Code (CBC). The following data should be considered for the seismic analysis of the subject site:

Table 1. 2007 CBC Seismic Design Parameters

Categorization/Coefficient	Design Value
Site Longitude (decimal degrees)	33.916N
Site Latitude (decimal degrees)	-117.428W
Site Class Definition (Table 1613.5.2)	D
Mapped Spectral Response Acceleration at 0.2s Period, S_s (Figure 1613.5(3))	1.50
Mapped Spectral Response Acceleration at 1s Period, S_1 (Figure 1613.5(4))	0.60
Short Period Site Coefficient at 0.2s Period, F_a (Table 1613.5.3(1))	1.0
Long Period Site Coefficient at1s Period, F_v (Table 1613.5.3(2))	1.5
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS} (Eq. 16-37)	1.50
Adjusted Spectral Response Acceleration at 1s Period, S_{M1} (Eq. 16-38)	0.90
Design Spectral Response Acceleration at 0.2s Period, S_{DS} (Eq. 16-39)	1.00
Design Spectral Response Acceleration at 1s Period, S_{D1} (Eq. 16-40)	0.60

3.3 Foundation Recommendations

Conventional shallow foundations may be used to support the loads of one- to three-story structures. Overexcavation and recompaction of the footing subgrade soil should be performed as recommended in Section 3.1. The following recommendations are based on our current understanding of the onsite soil conditions and soils with a very low expansion potential.

3.3.1 Minimum Embedment and Width

Based on this investigation, footings for proposed one- to two-story structures should have a minimum embedment of 18 inches for exterior footings and 12 inches for interior footings, with a minimum width of 24 and 15 inches for isolated and continuous footings, respectively. The structural engineer should determine the

minimum footing depth and width for structures greater than two stories, but in no case should these be smaller than the above recommended minimum dimensions for two-story structures.

3.3.2 Allowable Bearing Pressure

An allowable bearing pressure of 2,000 pounds-per-square-foot (psf) may be used, based on the minimum embedment depth and width above. This allowable bearing value may be increased by 300 psf per foot increase in depth or width to a maximum allowable bearing pressure of 4,000 psf. These allowable bearing pressures are for total dead load and sustained live loads. As a minimum, footings should have one No. 4 rebar top and bottom. Footing reinforcement should be designed by the structural engineer.

For the case of short term loading (seismic and wind loading), an increase of 1/3 would apply. The ultimate bearing pressure is assumed to be roughly three times the allowable bearing pressure. However, this ultimate pressure only considers structural failure/collapse (life safety) and not structural damage or significant cosmetic damage. Excessive settlement may occur before the ultimate bearing pressure is obtained.

3.3.3 Lateral Load Resistance

Soil resistance available to withstand lateral loads on a shallow foundation is a function of the frictional resistance along the base of the footing and the passive resistance that may develop as the face of the structure tends to move into the soil. The frictional resistance between the base of the foundation and the subgrade soil may be computed using a coefficient of friction of 0.35; this value may be increased by one third when considering loads of short duration, such as those imposed by wind and seismic forces. The passive resistance may be computed using an allowable (factor of safety of 1.5 applied) equivalent fluid pressure of 260 pounds per cubic foot (pcf), assuming there is constant contact between the footing and undisturbed soil.

3.3.4 Settlement Estimates

The recommended allowable bearing pressure is generally based on a total allowable, post construction settlement of 1 inch. Differential settlement due to static loading is estimated at ½ inch over a horizontal distance of 30 feet. Since

settlement is a function of footing sustained load, size and contact bearing pressure, differential settlement can be expected between adjacent columns or walls where a large differential loading condition exists.

Potential seismically induced differential settlement is estimated to be on the order of ¾ inch over a horizontal distance of 40 feet.

3.3.5 Foundation Recommendations for Light Standards

We assume that the proposed light standards will be supported on augered, cast-in-place piles (drilled shafts). Lateral bearing resistance for the proposed light standard pile foundations may be based on a passive earth pressure (an equivalent fluid pressure) of 300 pcf (with a maximum value of 4,500 psf), ignoring the upper 1 foot of soil in non-paved areas. This lateral bearing value assumes that the pole will not be adversely affected by a 0.5-inch deflection at the ground surface.

We recommend an allowable axial resistance in compression for these foundations consisting of 300 psf for allowable skin friction, ignoring the upper 5 feet and bottom one diameter, and an allowable end bearing of 3,000 psf (assuming a cleaned-out bottom). These recommendations assume that the footings will be embedded firmly against native soil.

The proper construction of caissons is critical to ensure satisfactory foundation support. Care in drilling and placement of steel and concrete will be essential to the quality of the caissons. If a flight auger is used for drilling, it may be necessary to drill the bottom 3 feet with a bucket auger to achieve adequate cleanout of loose or disturbed soils. Alternative methods for cleaning the bottom of the caisson boring may be considered. Prior to steel and concrete placement, caisson borings should be observed and accepted by the geotechnical consultant.

It is possible that caving or sloughing may occur during caisson construction within very granular soil layers.

Concrete placement by pumping and trimie tube starting from the bottom of the caisson borings is recommended. Concrete placement should be continuous. Prior to steel and concrete placement, caisson borings should be accepted by Leighton.

3.4 Recommendations for Slabs-On-Grade

Concrete slabs-on-grade should be designed by the structural engineer in accordance with the current CBC for a soil with a very low expansion potential. Testing to confirm the expansion potential of the near surface soil should be conducted during site grading.

Where conventional light floor loading conditions exist, the following minimum recommendations should be used. More stringent requirements may be required by local agencies, the structural engineer, the architect, or the CBC. Slabs-on-grade should have the following minimum recommended components:

Subgrade Over Optimum: The subgrade soil should be moisture conditioned to at least 2 percent above optimum moisture content to a minimum depth of 12 inches prior to placing the moisture retarder, steel or concrete.

Moisture Retarder: A moisture retarder consisting of 10-mil (minimum) Visqueen (or approved equivalent) should be placed below slabs where moisture-sensitive floor coverings or equipment is planned. The moisture retarder should be underlain by a minimum of 2 inches of sand. The structural engineer should specify pertinent concrete design parameters, such as whether or not a sand blotter layer should be placed over the vapor retarder. Gravel or other protruding objects that could puncture the moisture retarder should be removed from the subgrade prior to placing the retarder.

Concrete Thickness: Slabs-on-grade should be at least 4 inches thick. Reinforcing steel should be designed by the structural engineer, but as a minimum should be No. 3 rebar placed at 18 inches on center, each direction, mid-depth in the slab.

Minor cracking of the concrete as it cures, due to drying and shrinkage is normal and should be expected. However, cracking is often aggravated by a high water/cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. Low slump concrete can reduce the potential for shrinkage cracking. Additionally, our experience indicates that reinforcement in slabs and foundations can generally reduce the potential for concrete cracking. The structural engineer should consider these components in slab design and specifications.

Moisture retarders can reduce, but not eliminate moisture vapor rise from the underlying soils up through the slab. Floor covering manufacturers should be consulted for specific recommendations. Leighton does not practice in the field of moisture vapor transmission evaluation, since this is not specifically a geotechnical issue. Therefore, we recommend that a qualified person, such as the flooring subcontractor and/or structural engineer, be consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. That person should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structures as deemed appropriate.

3.5 Retaining Walls

We recommend that retaining walls, if planned for this project, be backfilled with very low expansive soil, and constructed with a backdrain in accordance with the recommendations provided on Figure 8, *Retaining Wall Backfill and Subdrain Detail*. Using expansive soil as retaining wall backfill will result in higher lateral earth pressures exerted on the wall. Based on these recommendations, the following parameters may be used for the design of conventional retaining walls with a level backfill:

Table 2. Retaining Walls with Level Backfill

Conditions	Equivalent Fluid Pressure (pounds-per-cubic-foot)
Active (cantilever)	37
At-Rest (braced)	56
Passive	260 (allowable) (Maximum of 3,500 psf)

Cantilever walls that are designed to yield at least 0.001H, where H is equal to the wall height, may be designed using the active condition. Rigid walls and walls braced at the top should be designed using the at-rest condition. Passive pressure is used to compute soil resistance to lateral structural movement. In addition, for sliding resistance, a frictional resistance coefficient of 0.35 may be used at the concrete and soil interface. The lateral passive resistance should be taken into account only if it is ensured that soil providing passive resistance, embedded against the foundation elements, will remain intact with time. The above lateral earth pressure values do not contain an appreciable factor of safety expect for the passive pressure, which already includes a factor of safety of 1.5. The structural engineer should apply the applicable factors of safety and/or load factors during design.

In addition to the above lateral forces due to retained earth, surcharge due to improvements, such as an adjacent structure or traffic loading, should be considered in the design of the retaining wall. Loads applied within a 1:1 projection from the surcharging structure on the stem of the wall should be considered in the design. A third of uniform vertical surcharge-loads should be applied as a horizontal pressure on cantilever (active) retaining walls, while half of uniform vertical surcharge loads should be applied as a horizontal pressure on braced (at-rest) retaining walls. To account for automobile parking surcharge, we suggest that a uniform horizontal pressure of 100 psf (for restrained walls) or 70 psf (for cantilever walls) be added for design, where autos are parked within a horizontal distance behind the retaining wall less than the height of the retaining wall stem. For sliding and overturning analyses, soil unit weight of 120 pcf may be assumed for calculating the actual weight of soil over wall footings.

Where applicable, an equivalent fluid weight of 15 pcf of incremental seismic earth pressures may be used in addition to static earth pressures presented in the table above, such as for walls over 12 feet tall. For these incremental seismic earth pressure calculations, the Mononabe-Okabe relationship was used. It should be noted that this recommended seismic earth pressure should be applied as an inverted triangle in vertical section, with the largest earth pressure occurring at the top of the retaining wall. The resultant seismic earth pressure force is applied at approximately 0.6H from the bottom of the wall, where H is the wall height.

Retaining wall footings should have a minimum width of 24 inches and a minimum embedment of 12 inches below the lowest adjacent grade. An allowable bearing pressure of 2,000 psf may be used for retaining wall footing design, based on the minimum footing width and depth. This bearing value may be increased by 300 psf per foot increase in width or depth to a maximum allowable bearing pressure of 4,000 psf.

3.6 Sulfate Attack and Ferrous Corrosion Protection

Concrete structures in contact with the onsite soil are expected to have negligible exposure to water-soluble sulfates in the soil. Therefore, common Type II Portland cement may be used for concrete construction onsite. Concrete should be designed in accordance with Table 4.3.1 of the American Concrete Institute ACI 318-05 provisions (ACI, 2005). Verification testing should be conducted during grading.

The onsite soils are considered corrosive to ferrous metals. Corrosion protection for ferrous metal utilities will be required. A corrosion engineer should be consulted if

specific recommendations are required. Corrosion information presented in this report should be provided to your underground utility contractors.

3.7 Pavement Design

Based on the design procedures outlined in the current Caltrans Highway Design Manual and an assumed R-value of 50 for the near-surface silty sand encountered, flexible pavement sections may consist of the following for the Traffic Indices (TI) indicated.

Table 3. Asphalt Pavement Sections

Traffic Index	Asphalt Concrete (AC) Thickness (inches)	Class 2 Aggregate Base (AB) Thickness (inch)
Playground AC (without vehicle traffic)	3	n/a
5 or less (auto access and parking)	3	4
7 (truck access or bus lane)	4	4

If the pavement is to be constructed prior to construction of the structures, we recommend that the full depth of the pavement section be placed in order to support heavy construction traffic.

In areas where rigid concrete pavement is planned for construction, we recommend 7.5 inches of Portland Cement Concrete (PCC) over 4 inches of aggregate base placed on prepared subgrade soil (see Section 3.1). Because the concrete will crack, the PCC pavement sections should be provided with crack-control joints spaced no more than 12 feet on center each way, to control where cracks develop. If sawcuts are used, they should have a minimum depth of ¼ of the slab thickness and made within 24 hours of concrete placement. We recommend that sections be as nearly square as possible. Use of reinforcing, such as No. 3 rebar 24 inches on center, will also help reduce severity of cracking.

PCC sidewalks should be at least 4 inches thick over prepared subgrade soil, with construction joints no more than 8 feet on center each way, with sections as nearly square as possible. Use of reinforcing, such as welded-wire mesh, will help reduce severity of cracking.

All pavement and concrete hardscape construction should be performed in accordance with the Standard Specifications for Public Works Construction. Field inspection and periodic testing, as needed during placement of the base course materials, should be

undertaken to evaluate whether the requirements of the standard specifications are fulfilled. Prior to placement of aggregate base, the subgrade soil should be processed to a minimum depth of 6 inches, moisture-conditioned, as necessary, and recompacted to a minimum of 90 percent relative compaction as determined by ASTM Test Method D1557 (95 percent for full depth asphalt, such as for playground areas). Aggregate base should be moisture conditioned, as necessary, and compacted to a minimum of 95 percent relative compaction.

3.8 Temporary Excavations

All temporary excavations, including utility trenches, retaining wall excavations and other excavations should be performed in accordance with project plans, specifications and all OSHA requirements, and the current edition of the California Construction Safety Orders (2003 or more current).

No surcharge loads should be permitted within a horizontal distance equal to the height of cut or 5 feet, whichever is greater from the top of the slope, unless the cut is shored appropriately. Excavations that extend below an imaginary plane inclined at 45 degrees below the edge of any adjacent existing site foundation should be properly shored to maintain support of the adjacent structures.

Cantilever shoring should be designed based on an active fluid pressure of 37 pcf. If excavations are braced at the top and at specific design intervals, the active pressure may then be approximated by a rectangular soil pressure distribution with the pressure per foot of width equal to 22H, where H is equal to the depth of the excavation being shored.

During construction, the soil conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor should be responsible for providing the "competent person" required by Cal-OSHA standards to evaluate soil conditions. Close coordination between the competent person and the geotechnical engineer should be maintained to facilitate construction while providing safe excavations.

3.9 Trench Backfill

Utility-type trenches onsite can be backfilled with onsite material, provided it is free of debris, significant organic material and oversized material. Prior to backfilling the trench, pipes should be bedded and shaded in a granular material that has a sand equivalent of 30 or greater. We recommend that open-graded crushed rock or similar material not be used as bedding material, unless special provisions are implemented to

limit the migration of surrounding soil into the open-graded material. The bedding material should extend 12 inches above the top of the pipe. The bedding/shading sand should be densified in-place by mechanical means, or in areas where the trench walls and bottom have a minimum sand equivalent of 15, the bedding sand may be jetted. Bedding sand should be placed in accordance with the Standard Specifications for Public Works Construction (Greenbook), current edition. The native soil fill should be placed in loose layers, moisture conditioned, as necessary, and mechanically compacted using a minimum standard of 90 percent relative compaction based on ASTM D1557. The thickness of layers should be based on the compaction equipment used in accordance with the current Standard Specifications for Public Works Construction (Greenbook).

3.10 Surface Drainage

Positive surface drainage should be provided to direct surface water away from structures and towards suitable collective drainage facilities. Surface drainage should be provided to prevent ponding of water adjacent to structures. In general, the area around the buildings should slope away from the buildings. Care should be taken to avoid heavy irrigation, and under-irrigation should also be avoided.

3.11 Additional Geotechnical Services

The geotechnical recommendations presented in this report are based on subsurface conditions as interpreted from limited subsurface explorations and limited laboratory testing. Our geotechnical recommendations provided in this report are based on information available at the time the report was prepared and may change as plans are developed. Leighton should review the site and grading plans when available and comment further on the geotechnical aspects of the project. Our conclusions and recommendations should be reviewed and verified by Leighton during construction and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- During overexcavation of compressible soil.
- During compaction of all fill materials.
- After excavation of all footings and prior to placement of concrete.
- During utility trench bedding, backfilling and compaction.
- During pavement subgrade and base preparation.
- When any unusual conditions are encountered.

3.12 Limitations

This report was based in part on data obtained from a limited number of observations, site visits, soil excavations, samples, and tests. Such information is, by necessity, incomplete. The nature of many sites is such that differing soil or geologic conditions can be present within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. Therefore, our findings, conclusions, and recommendations presented in this report are based on the assumption that Leighton Consulting, Inc. will provide geotechnical observation and testing during construction.

IMPORTANT: All public school geotechnical reports in California are to be reviewed by the California Geological Survey (CGS) with oversight by the California Division of the State Architect (DSA). CGS and DSA requirements change and evolve with time. Geologic data in this report is not valid for a public school project until it is reviewed and approved by CGS. Anyone using this report before CGS approval does so at their own risk, and we assume they will indemnify, defend and hold harmless Leighton Consulting, Inc. from and against any and all alleged or real damage claims, including consequential damages, arising from premature use of this report before CGS approval with DSA concurrence.

Environmental services were not included as part of this study. This report was prepared for the sole use of Riverside Unified School District for application to the design of the proposed Arlington High School athletic fields and facilities project in accordance with generally accepted geotechnical engineering practices at this time in California.

3.13 ASFE Important Information about this Geotechnical Engineering Report

See ASFE insert on the following page.

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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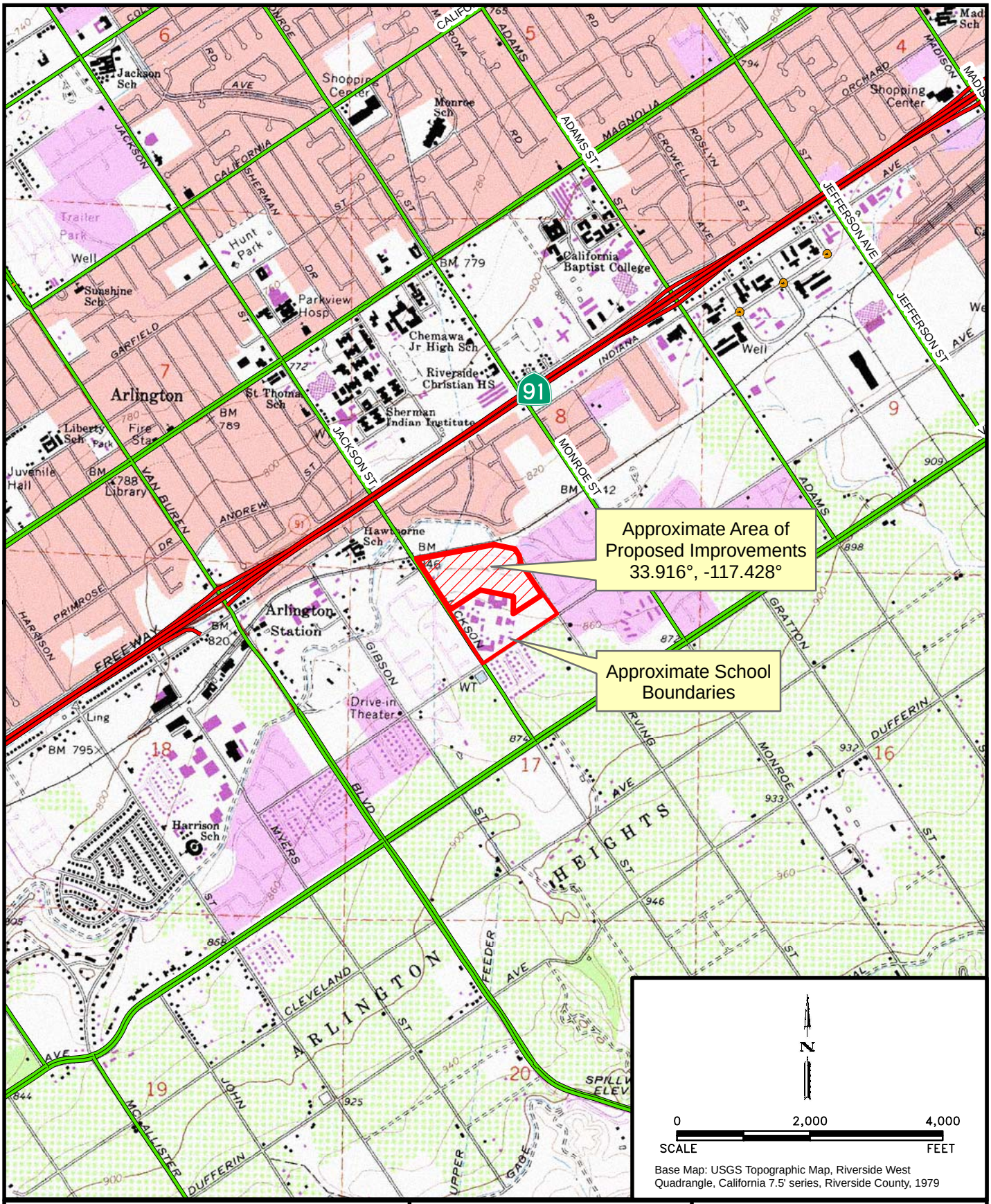
IIGER06075.0MRP



Base Map: USGS Topographic Map, Riverside West Quadrangle, California 7.5' series, Riverside County, 1979

RUSD Arlington High School
2951 Jackson Street
Riverside, California

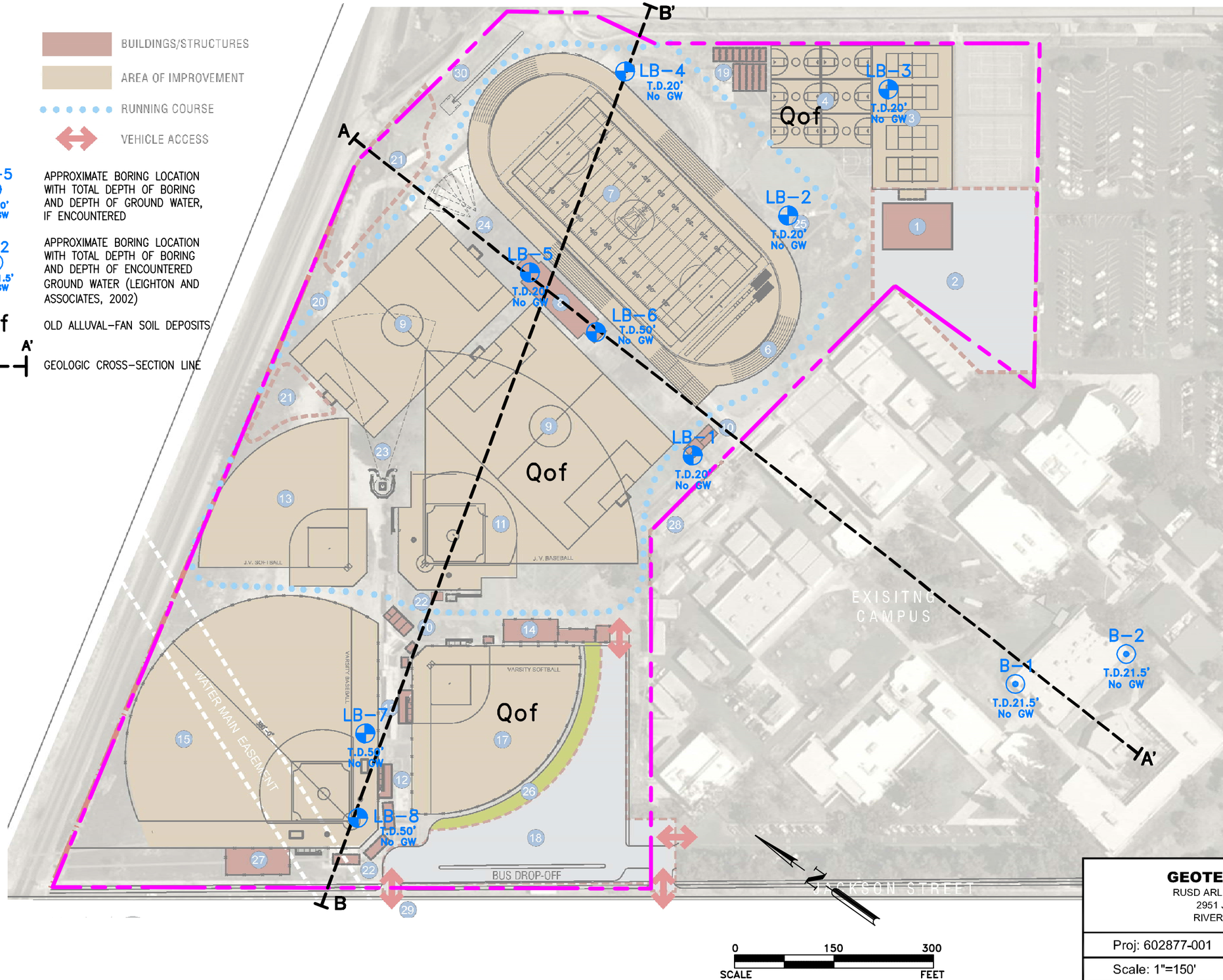
SITE LOCATION MAP

Project No.
602877-001

Date
June 2010

Figure 1

\\geomatics\data2\Drafting\602437\008\GIS\of_2010-04-21\Figure1-SiteLocationMap.mxd



LEGEND

1. POSSIBLE LOCATION FOR FUTURE GYM
2. POSSIBLE PARKING EXPANSION AND GATE WAY TO FIELD AREA FROM EXISTING SCHOOL PARKING
3. PROPOSED LOCATION FOR 4 NEW TENNIS COURTS, ONE WITH SPECTATOR BLEACHERS
4. 6 BASKETBALL COURTS WITH OVERLAPPED VOLLEYBALL
5. NOT USED
6. 8 LANE SYNTHETIC TRACK
7. SYNTHETIC TURF FOOTBALL FIELD WITH PRACTICE GRADE LIGHTING
8. 750 SEAT BLEACHERS
9. 260' X 300' PRACTICE SOCCER FIELD
10. CONCESSION BUILDING WITH REST ROOMS
11. JUNIOR VARSITY BASEBALL FIELD
12. TEAM ROOM
13. JUNIOR VARSITY SOFTBALL FIELD
14. RELOCATED BATTING CAGES AND FIELD MAINTENANCE EQUIPMENT
15. VARSITY BASEBALL FIELD
16. EXISTING TEAM ROOM TO BE RENOVATED
17. VARSITY SOFTBALL FIELD
18. PARKING EXPANSION AND ENTRY GATEWAY TO FIELDS FROM JACKSON STREET WITH BUS DROP-OFF
19. CONSOLIDATE STORAGE CONTAINERS PROVIDE CONCRETE PAD
20. RUNNING COURSE AROUND FIELDS (+/- .6 MILES)
21. DETENTION BASIN
22. PROVIDE PAD FOR BLEACHERS
23. DISCUS THROW
24. SHOT PUT
25. PRACTICE MUSCO LIGHTS, TYP. OF (2)
26. LANDSCAPE BUFFER ZONE
27. VARSITY BASE BALL BATTING CAGE
28. SCREEN FOR POOL EQUIPMENT
29. NEW DRIVEWAY ENTRANCE
30. POLE VAULT

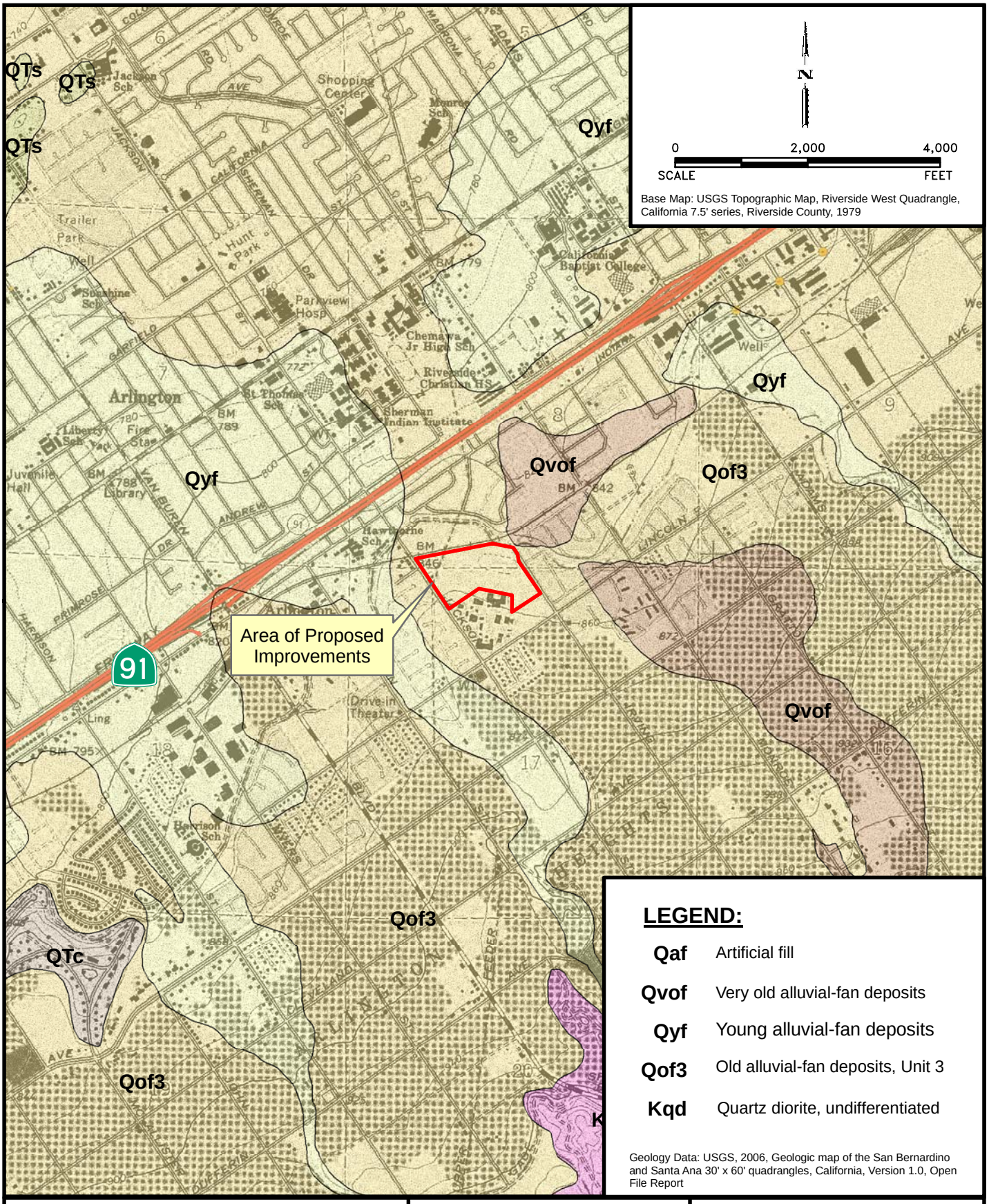
GEOTECHNICAL MAP
RUSD ARLINGTON HIGH SCHOOL
2951 JACKSON STREET
RIVERSIDE, CALIFORNIA

FIGURE 2

Proj: 602877-001	Eng/Geol: JDH/PB
Scale: 1"=150'	Date: 06/2010

Drafted By: MAM | Checked By:

Leighton



RUSD Arlington High School
2951 Jackson Street
Riverside, California

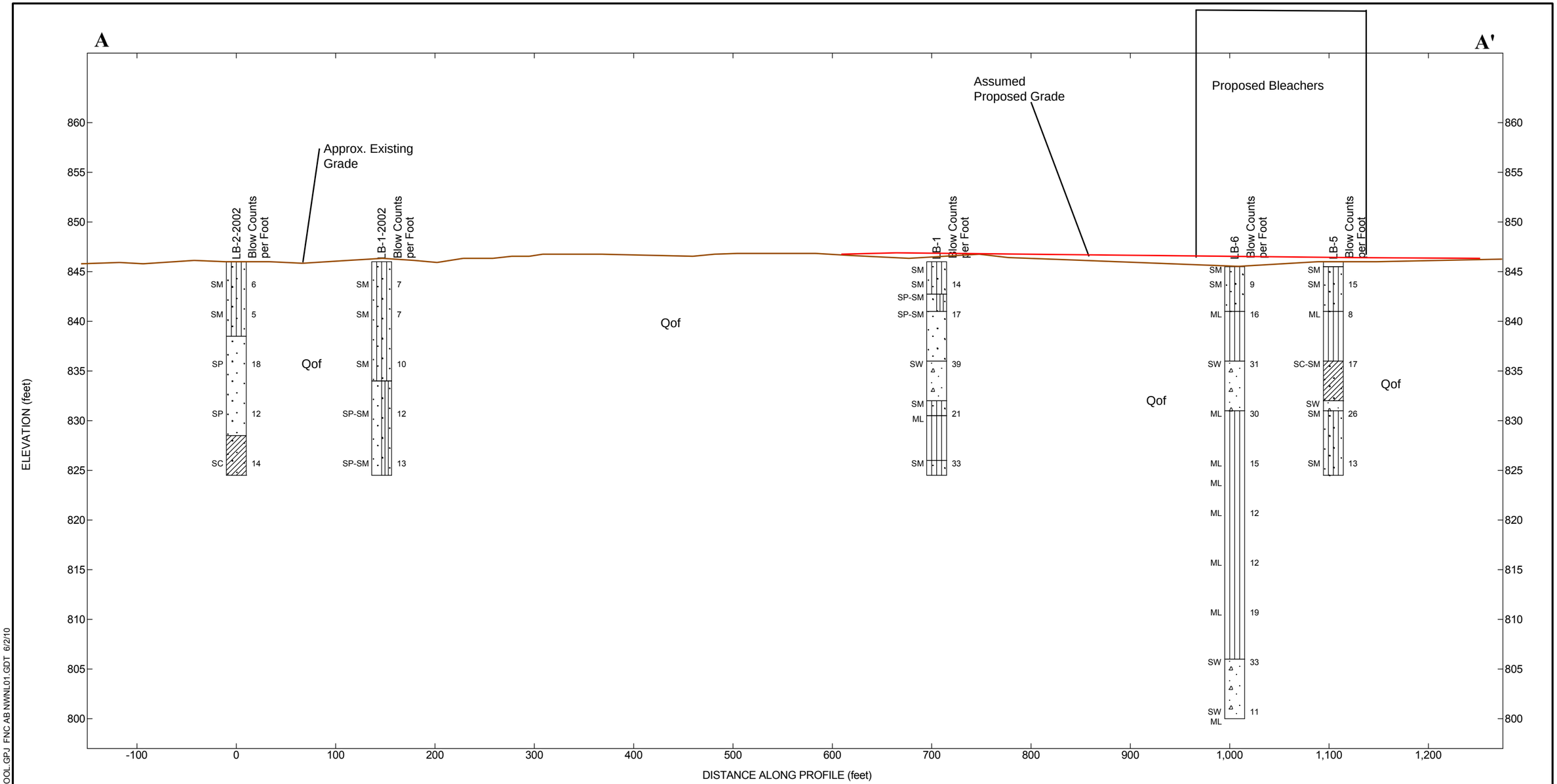
REGIONAL GEOLOGIC MAP

Project No.
602877-001

Date
June 2010

Figure 3

\\geomatics\data2\Drafting\602437\008\GIS\of_2010-04-21\Figure3-RegionalGeologyMap.mxd



Lithology Graphics

- USCS Silty Sand
- USCS Poorly-graded Sand with Silt
- USCS Poorly-graded Sand
- USCS Well-graded Sand
- USCS Silt
- USCS Clayey Sand

0 100
Horizontal Scale (feet)

Vertical Exaggeration: 10x

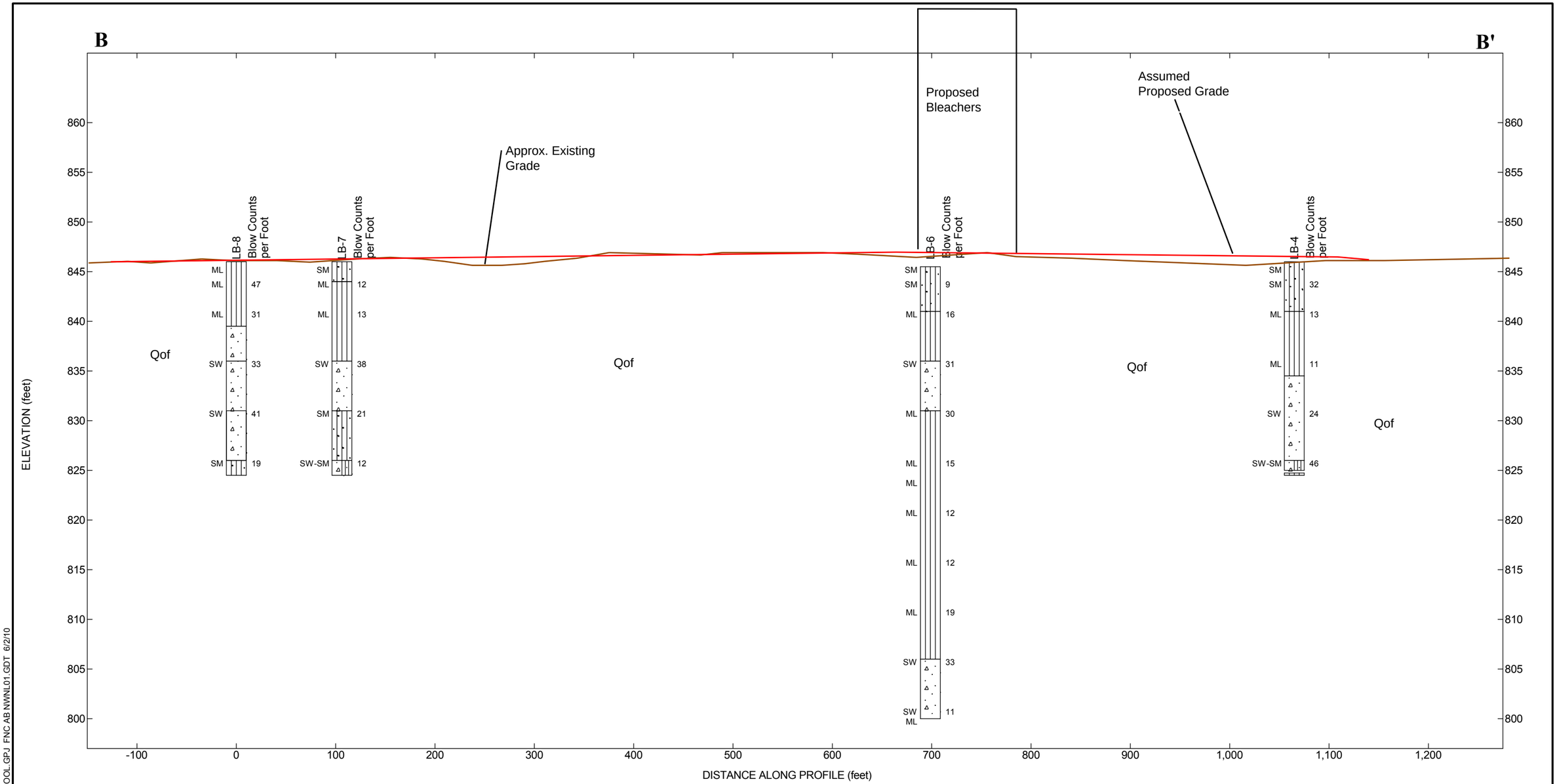
Leighton

Geotechnical Cross Section A-A'

RUSD Arlington High School
2951 Jackson Street, Riverside, CA

JOB NUMBER	FIGURE NUMBER
602877-001	Figure 4A

DSA CROSS-SECTION RUSD ARLINGTON HIGH SCHOOL.GPJ FNC AB NWNL01.GDT 6/2/10



Lithology Graphics

USCS Silty Sand

USCS Silt

USCS Well-graded Sand

USCS Well-graded Sand with Silt

0 100

Horizontal Scale (feet)

Vertical Exaggeration: 10x

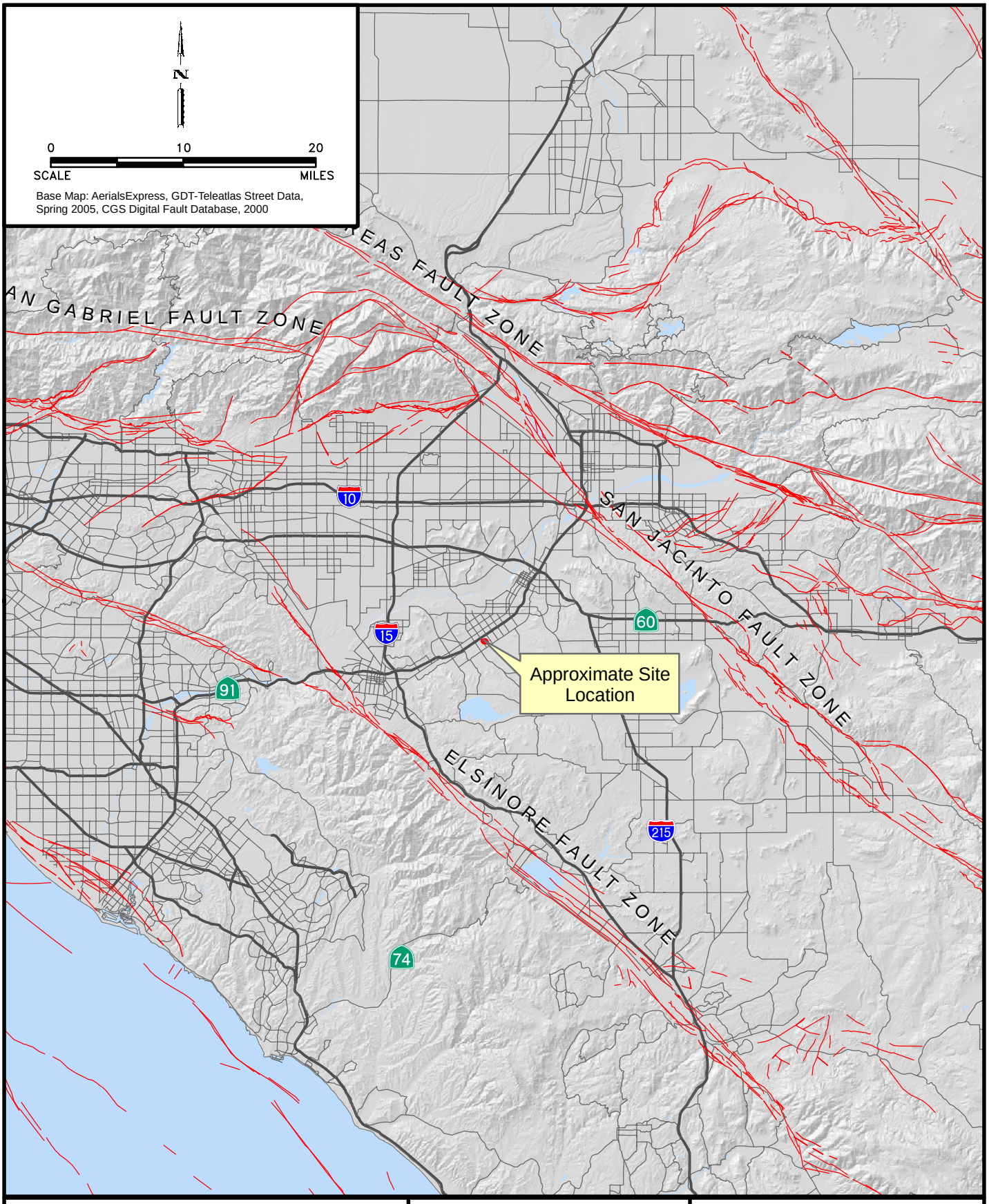
Leighton

Geotechnical Cross Section B-B'

RUSD Arlington High School
2951 Jackson Street, Riverside, CA

JOB NUMBER	FIGURE NUMBER
602877-001	Figure 4B

DSA CROSS-SECTION RUSD ARLINGTON HIGH SCHOOL.GPJ FNC AB NWNL01.GDT 6/2/10



RUSD Arlington High School
2951 Jackson Street
Riverside, California

REGIONAL FAULT MAP

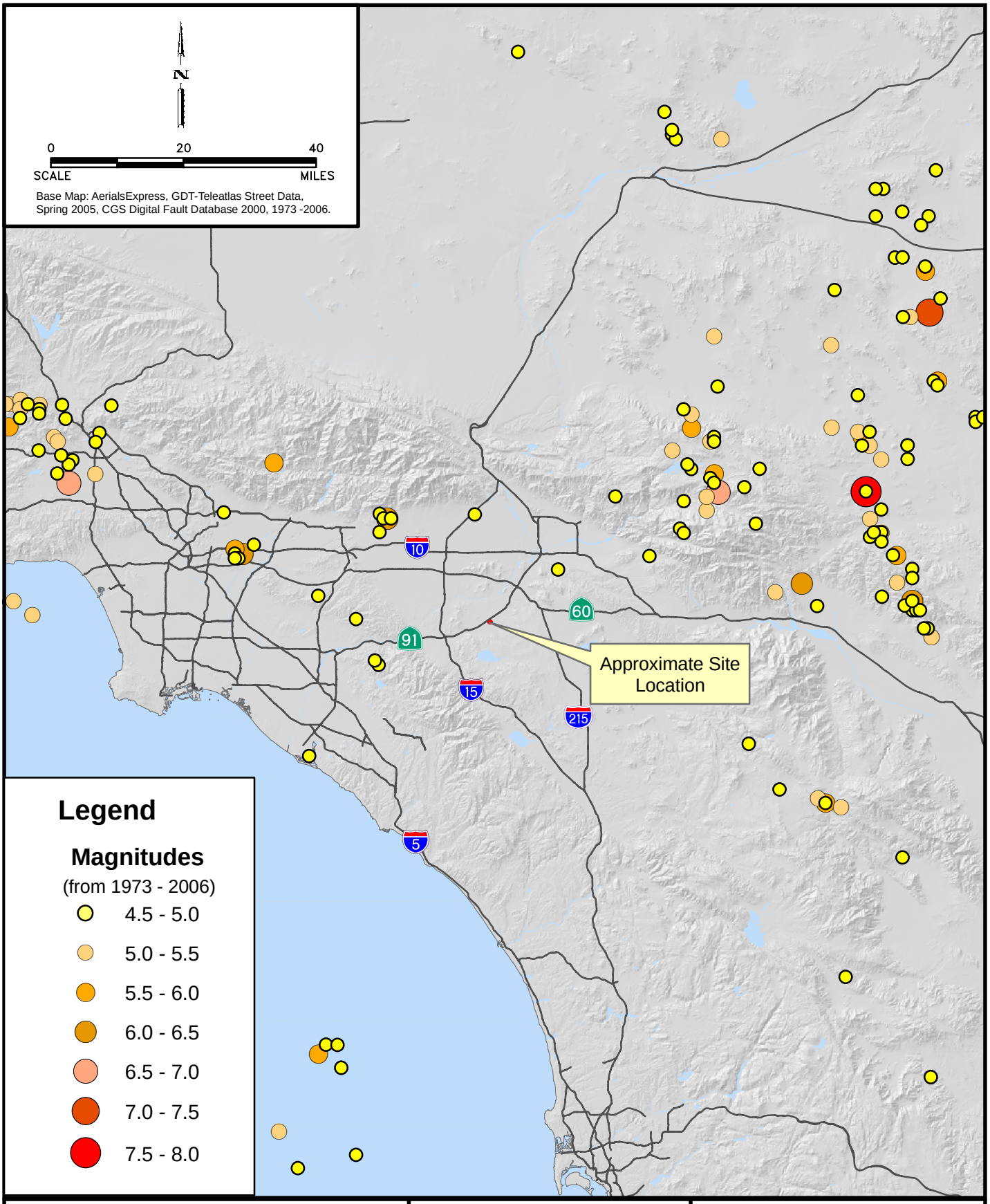
Project No.
602877-001

Engr./Geol.
JDH/PB

Date
June 2010

Figure 5

\\geomatics\data2\Drafting\602437\001\GIS\of_08-12-23\Figure5-RegionalFaultMap.mxd



RUSD Arlington High School
2951 Jackson Street
Riverside, California

REGIONAL SEISMICITY MAP

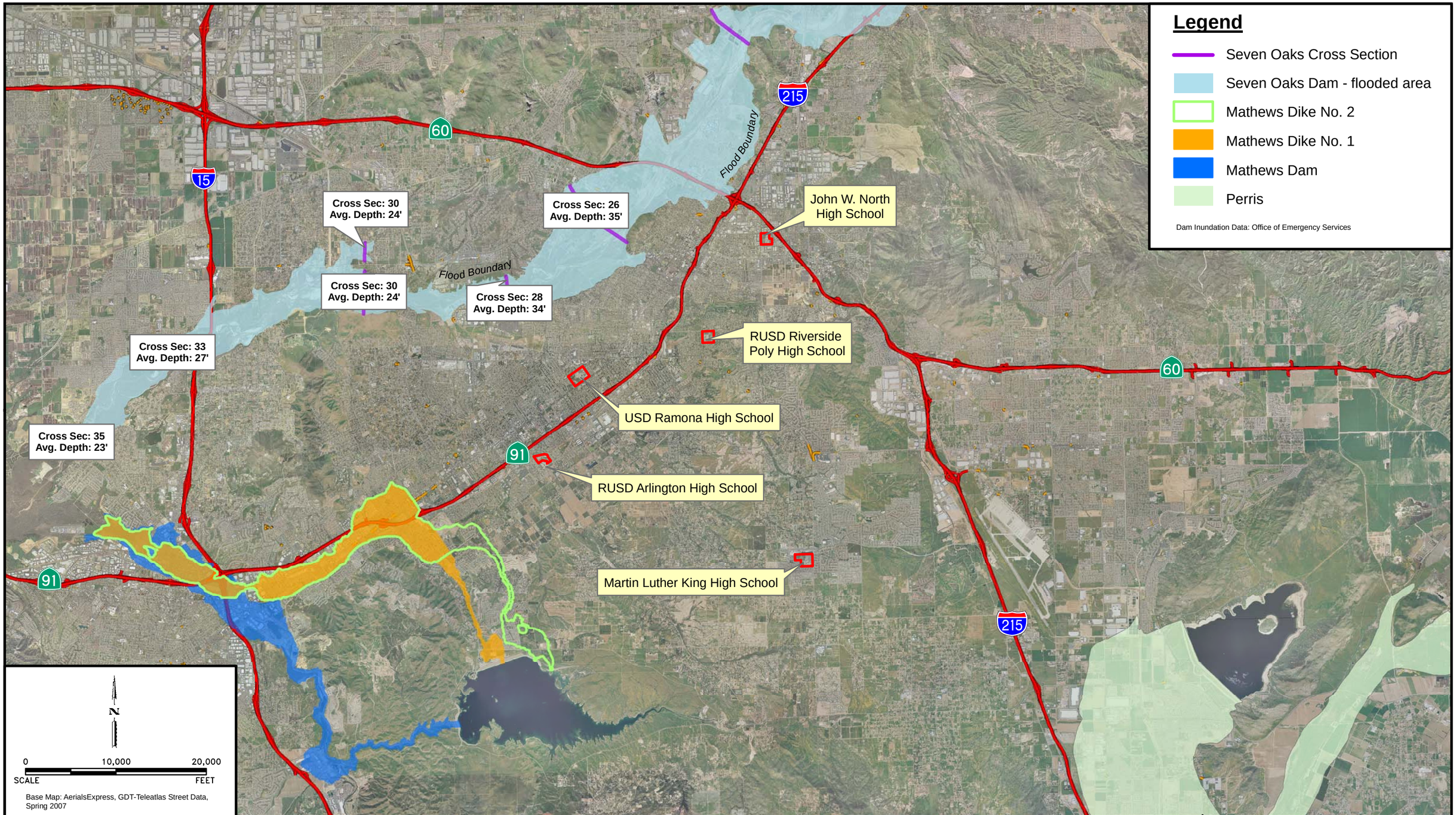
Project No.
602877-001

Engr./Geol.
JDH/PB

Date
June 2010

Figure 6

\\geomatics\data2\Drafting\602437\008\GIS\of_2010-04-21\Figure6-RegionalSeismicityMap.mxd



Riverside Unified School District
Various Schools
Riverside, California

REGIONAL DAM INUNDATION HAZARDS

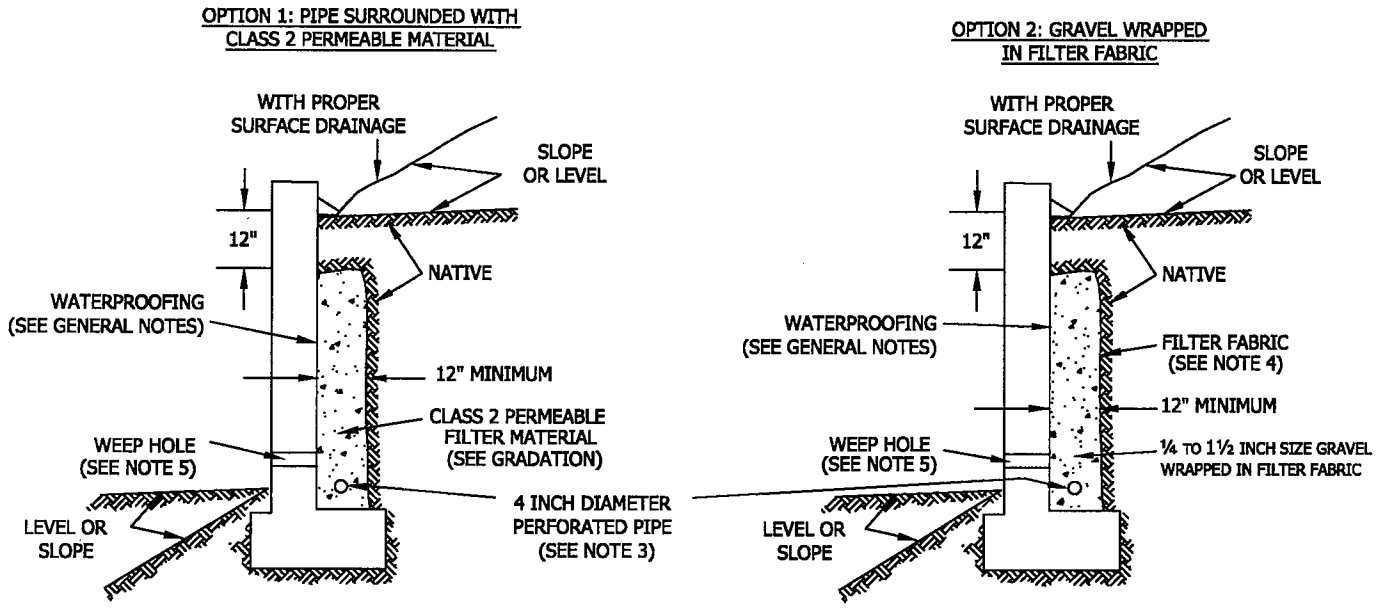
Project No.

Date
June 2010

Figure 7

\\GIS\Administration\ArcGISTemplates\NEW_GDT_SiteLocationMap.mxd

SUBDRAIN OPTIONS AND BACKFILL WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50



Class 2 Filter Permeable Material Gradation
Per Caltrans Specifications

Sieve Size	Percent Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

GENERAL NOTES:

* Waterproofing should be provided where moisture nuisance problem through the wall is undesirable.
* Water proofing of the walls is not under purview of the geotechnical engineer
* All drains should have a gradient of 1 percent minimum
*Outlet portion of the subdrain should have a 4-inch diameter solid pipe discharged into a suitable disposal area designed by the project engineer. The subdrain pipe should be accessible for maintenance (rodding)
*Other subdrain backfill options are subject to the review by the geotechnical engineer and modification of design parameters.

Notes:
1) Sand should have a sand equivalent of 30 or greater and may be densified by water jetting.
2) 1 Cu. ft. per ft. of 1/4- to 1 1/2-inch size gravel wrapped in filter fabric
3) Pipe type should be ASTM D1527 Acrylonitrile Butadiene Styrene (ABS) SDR35 or ASTM D1785 Polyvinyl Chloride plastic (PVC), Schedule 40, Armco A2000 PVC, or approved equivalent. Pipe should be installed with perforations down. Perforations should be 3/8 inch in diameter placed at the ends of a 120-degree arc in two rows at 3-inch on center (staggered)
4) Filter fabric should be Mirafi 140NC or approved equivalent.
5) Weephole should be 3-inch minimum diameter and provided at 10-foot maximum intervals. If exposure is permitted, weepholes should be located 12 inches above finished grade. If exposure is not permitted such as for a wall adjacent to a sidewalk/curb, a pipe under the sidewalk to be discharged through the curb face or equivalent should be provided. For a basement-type wall, a proper subdrain outlet system should be provided.
6) Retaining wall plans should be reviewed and approved by the geotechnical engineer.
7) Walls over six feet in height are subject to a special review by the geotechnical engineer and modifications to the above requirements.

RETAINING WALL BACKFILL AND SUBDRAIN DETAIL FOR WALLS 6 FEET OR LESS IN HEIGHT

WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50

Leighton

Figure 8

APPENDIX A

REFERENCES

APPENDIX A

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Aerial Photographs Reviewed:

Date	Flight	Photo Frames	Scale	Agency
9/21/1965	R92165	26	1:36,000	RCFC
5/24/1974	RCFC74	154, 225	1:24,000	RCFC

APPENDIX B

GEOTECHNICAL BORING LOGS

FIELD EXPLORATION

Our field investigation consisted of a surface reconnaissance and a subsurface exploration program. Logs of these subsurface explorations are included as part of this appendix. Approximate soil boring locations are shown on Figure 2, *Geotechnical Map*.

Encountered soils were logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D 2488). Relatively undisturbed soil samples were obtained at selected intervals within these borings using both a California ring-lined and Standard Penetration Test (SPT) split-spoon sampler. Standard Penetration Test (SPT) resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch outside diameter split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration (ASTM D 1586). In addition, 2.4-inch inside diameter brass ring samples were obtained using a Modified California sampler driven into the soil with the 140-pound hammer. Borings were backfilled with soil cuttings obtained during the exploration, and where asphalt pavement was penetrated, patched at the surface with cold asphalt patch. Representative earth-material samples obtained from these subsurface explorations were transported to our geotechnical laboratory for evaluation and appropriate testing.

The attached subsurface exploration logs and related information depict subsurface conditions only at the locations indicated and at the particular date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

GEOTECHNICAL BORING LOG LB-1

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
	0								Surface covered with grass	
845				B-1				SM	SILTY SAND, loose, dark brown, moist, fine to medium grained sand, trace fine gravel	
									Qof - Old Alluvial Fan Deposits	
				R-1	4 6 8	126	6	SM	SILTY SAND, fine grained sand, trace rootlets	
								SP-SM	Poorly graded SAND with SILT, medium dense, light brown, moist, fine grained sand, some gravel (alluvium)	
	5			R-2	5 7 10	113	3	SP-SM	Poorly graded SAND with SILT, medium dense, light brown, moist, fine and coarse grained sand, some silt, 1% gravel, 93% sand, 6% fines	
840										
	10			R-3	8 16 23	110	4	SW	Well-graded SAND, dense, light olive brown, dry to moist, fine to coarse grained sand, trace silt	
835										
								SM	SILTY SAND, dense, light brownish gray, moist, fine grained sand	
	15			R-4	6 9 12	119	9			
830								ML	SANDY SILT, stiff, dark brown, moist, fine grained sand, trace coarse sand	
	20			R-5	11 14 19	125	6	SM	SILTY SAND, dense, dark brown, moist, fine grained sand, trace gravel, to sandy silt	
825										
									Drilled to 20' Sampled to 21.5' Groundwater not encountered Backfilled with soil cuttings (4/7/2010 @ 08:04)	
	25									
820										
	30									

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-2

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
	0								Surface covered with grass	
845								SM	SILTY SAND, very loose, brown, moist, fine grained sand **Qof - Old Alluvial Fan Deposits**	
				R-2	2 3 3	122	9	SM	SILTY SAND, loose, dark brown, trace coarse sand with fine gravel, to sandy silt, 41% fines	
	5			R-2	5 8 10	106	5	SP-SM	Poorly graded SAND with SILT, medium dense, brown, moist, fine to medium grained sand, trace subangular gravel	
840										
	10			R-3	8 9 11	112	4	SP	Poorly graded SAND, medium dense, dark grayish brown, moist, fine grained sand, trace gravel and silt	
835										
	15			R-4	8 10 17	124	9	SM	SILTY SAND, dense, dark olive brown, moist, fine grained sand	
830										
	20			R-5	10 13 22			ML	SILT with SAND, stiff, dark reddish brown, moist, fine grained sand, trace clay	
825									Poorly graded SAND with SILT, dense, dark brown, moist, fine to medium grained sand Drilled to 20' Sampled to 21.5' Groundwater not encountered Backfilled with soil cuttings (4/7/2010 @ 08:45)	
	25									
820										
	30									

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-3

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0	N S							*The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
845								SM	3 inches asphalt over 3 inches base SILTY SAND, medium dense, brown, moist, fine grained sand, trace gravel	
				R-2 B-1	4 4 7	121	6	SM	**Qof - Old Alluvial Fan Deposits** SILTY SAND, loose, dark brown, fine and coarse grained sand, trace gravel, more silt	
840	5			R-2	6 5 6	114	3	SP-SM	Poorly graded SAND with SILT, loose, brown, moist, fine to medium grained sand, trace coarse sand	
835	10			R-3	9 16 20	115	3	SW	Well-graded SAND, dense, light brownish gray, dry to moist, fine to coarse grained sand	
830	15			R-4	9 14 17	120	8	ML	SANDY SILT, stiff, brown, moist, very fine grained sand, trace clay	
825	20			R-5	10 12 17			ML	SANDY SILT, stiff, trace coarse sand	
820	25								Drilled to 20' Sampled to 21.5' Groundwater not encountered Backfilled with soil cuttings and asphalt patch on top (4/7/2010 @ 09:27)	
	30									

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-4

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0							SM	SILTY SAND, medium dense, brown, moist, fine to medium grained sand	
845									**Qof - Old Alluvial Fan Deposits**	
				R-1	13 15 17	122	5	SM	SILTY SAND, dense, dark brown, fine grained sand, more silt	
	5			R-5	8 6 7	109	9	ML	SANDY SILT, medium stiff, dark brown, moist, fine grained sand	
840										
	10			R-3	5 5 6	120	7	ML	SANDY SILT, medium stiff, brown, fine to medium grained sand, more sand toward the bottom of sample	
835										
	15			R-4	8 12 12	116	3	SW	Well-graded SAND, medium dense, light brownish gray, dry to moist, fine to coarse grained sand with fine gravel	
830										
	20			R-5	13 22 24			SW-SM	Well-graded SAND with SILT, dense, dark brown, moist, fine to coarse grained sand, trace gravel	
825									SANDY SILT, very stiff, brown, moist, very fine grained sand	
									Drilled to 20' Sampled to 21.5' Groundwater not encountered Backfilled with soil cuttings (4/7/2010 @ 10:22)	
	25									
820										
	30									

The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-5

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
	0								surface covered with grass	
845								SM	SILTY SAND, medium dense, dark brown, moist, fine grained sand, trace coarse sand	
				R-1	7 8	117	12	SM	**Qof - Old Alluvial Fan Deposits** SILTY SAND, more moist with more silt, some rootlets	
				B-1	7					MD
	5			R-2	2 3 5	120	8	ML	SANDY SILT, medium stiff, brown to reddish brown, moist, fine grained sand	CN
840										
	10			R-3	6 7 10	115	7	SC-SM	SILTY, CLAYEY SAND, medium dense, brown, moist to wet, fine to medium grained sand	
835										
								SW	Well-graded SAND, medium dense, light gray, moist, fine to coarse grained sand with fine gravel	
	15			R-4	7 9 17	1077	13	SM	SILTY SAND, dense, brown, moist to wet, fine to medium grained sand	
830										
	20			S-5	5 6 7			SM	SILTY SAND, same as above, more moist	
825										
									Drilled to 20' Sampled to 21.5' Groundwater not encountered Backfilled with soil cuttings (4/7/2010 @ 10:59)	
	25									
820										
	30									

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-6

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0							SM	SILTY SAND, medium dense, dark brown, moist, fine grained sand	
845									**Qof - Old Alluvial Fan Deposits**	
				R-1	4 5 4	121	10	SM	SILTY SAND, loose, dark brown, fine to medium grained sand, more silt	
	5			R-2	5 7 9	117	10	ML	SANDY SILT, stiff, brown, moist, fine to medium grained sand, more sand toward the bottom of sample	
840										
	10			R-3	6 11 20	114	11	SW	Well-graded SAND, medium dense, light brownish gray, moist, fine to coarse grained sand, some silt	
835										
	15			R-4	11 14 16	125	8	ML	SANDY SILT, stiff, brown to reddish brown, moist, fine to medium grained sand, 30% fines	
830										
	20			S-5	5 7 8			ML	SANDY SILT, stiff, light reddish brown, little to no sand, trace clay	
825								ML	SANDY SILT, becomes hard to drill	
	25			S-6	4 6 6			ML	SANDY SILT, same as above	
820										
	30									

The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-6

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	30			S-7	3 5 7			ML	SANDY SILT, stiff, brown to reddish brown, moist, fine to medium grained sand, 30% fines SANDY SILT, same as above, trace clay, more moist, 72% fines	
815										
	35			S-8	5 9 10			ML	SANDY SILT, very stiff, light brown, moist, very fine to fine grained sand	
810										
	40			S-9	9 15 18			SW	Well-graded SAND, dense, light brown, moist, fine to medium grained sand, trace coarse sand, some silt, 9% fines	
805										
	45			S-10	10 7 4			SW ML	Well-graded SAND, same as above SILT with SAND, stiff, reddish brown, moist, trace clay	
800										
	50			S-11	13 14 17			ML	SILT with SAND, hard, reddish brown, trace coarse sand, some oxidation	
795										
									Drilled to 50' Sampled to 51.5' Groundwater not encountered Backfilled with soil cuttings (4/7/2010 @ 12:38)	
	55									
790										
	60									

The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-7

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
845	0			B-1				SM	SILTY SAND, loose, brown, dry to moist, fine to medium grained sand, EI = 2	EI
									Qof - Old Alluvial Fan Deposits	
				R-1	5 6 6	110	4	ML	SANDY SILT, medium stiff, brown, dry to moist, very fine to fine grained sand	
840	5			R-2	5 6 7	126	6	ML	SANDY SILT, stiff, moist, fine grained sand, becomes silty fine to medium sand toward the bottom	
835	10			R-3	6 19 19	119	2	SW	Well-graded SAND, dense, light brown, moist, fine to coarse grained sand with fine gravel	
830	15			R-4	6 8 13	113	8	SM	SILTY SAND, medium dense, grayish brown, moist, fine to medium grained sand	
825	20			S-5	5 6 6			SW-SM	Well-graded SAND with SILT, medium dense, grayish brown, moist, fine to medium grained sand	
820	25								Drilled to 20' Sampled to 21.5' Groundwater not encountered Backfilled with soil cuttings (4/7/2010 @ 14:11)	
	30									

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

GEOTECHNICAL BORING LOG LB-8

Project No.	602877-001	**Date Drilled**	4-7-10
Project	RUSD Arlington High School	**Logged By**	BSS
Drilling Co.	2R Drilling, Inc.	**Hole Diameter**	8"
Drilling Method	H - 140lb - Auto Hammer - 30" Drop	**Ground Elevation**	846'
Location	See Geotechnical Map, Figure 2	**Sampled By**	BSS

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
									The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
845	0							ML	SANDY SILT, medium stiff, olive brown, dry to moist, fine grained sand	
									Qof - Old Alluvial Fan Deposits	
				R-1	18 21 26	122	3	SM	SILTY SAND, hard, light brown, dry to moist, nonplastic, some white carbonate, 42% fines	AL
840	5			R-2	18 14 17	118	6	ML	SANDY SILT, same as above with some coarse sand	SA
835	10			R-3	10 15 18	119	4	SW	Well-graded SAND, medium dense, light brownish gray, moist, fine to coarse grained sand, becomes sandy silt toward the bottom	
830	15			R-4	15 20 21	117	2	SW	Well-graded SAND, dense, light brown, fine to coarse grained sand with fine gravel	
825	20			S-5	7 8 11			SM	SILTY SAND, dense, dark brown, moist, fine to medium grained sand	
									Drilled to 20' Sampled to 21.5' Groundwater not encountered Backfilled with soil cuttings (4/7/2010 @ 14:48)	
820	25									
	30									

SAMPLE TYPES:

S	SPLIT SPOON	G	GRAB SAMPLE
R	RING SAMPLE	C	CORE SAMPLE
B	BULK SAMPLE		
T	TUBE SAMPLE		

TYPE OF TESTS:

DS	DIRECT SHEAR	SA	SIEVE ANALYSIS	-200	% FINES PASSING
MD	MAXIMUM DENSITY	SE	SAND EQUIVALENT	AL	ATTERBERG LIMITS
CN	CONSOLIDATION	EI	EXPANSION INDEX	CO	COLLAPSE
CR	CORROSION	RV	R VALUE	PP	POCKET PENETROMETER
UC	UNCONFINED COMPRESSIVE STRENGTH				

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

Exploration Logs from Leighton and Associates, Inc., 2002

GEOTECHNICAL BORING LOG B-1

Date 10-2002 | Sheet 1 of 1
Project RUSD Arlington High School | Project No. 020813-001
Drilling Co. 2R Drilling, Inc. | Type of Rig Hollw-stem auger
Hole Diameter 8 in. | Drive Weight 140 lb (automatic) | Drop 30 in.
Elevation Top of Hole (ft) | Location See Boring Location Map

Logged By PP
Sampled By PP

Elevation (Feet)	Depth (Feet)	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION
	0			Bag 1					
				R-1	7	111.1	5.8	SM	2' : Silty SAND, reddish brown, moist, loose, fine to coarse sand, few rootlets, friable, slightly porous
	5			R-2	7	114.7	5.6	SM	5' : Silty SAND, reddish brown, moist, loose, fine to coarse sand, few rootlets, friable, slightly porous
	10			R-3	10	106.1	2.1	SM	10' : Silty SAND with some gravel, orangish brown, moist, loose, fine to coarse sand, fine gravel
	15			S-1	12			SP/SM	15' : SAND to Silty SAND, orangish brown, moist, medium dense, fine to coarse sand
	20			S-2	13			SP/SM	20' : SAND to Silty SAND, traces of clay, orangish brown, moist, medium dense, fine to coarse sand
	25								Total Depth = 21.5 feet No Groundwater was encountered. Backfilled with native soil.
	30								

SAMPLE TYPES: Bag=Bulk, R=2.5-in. Ring (Ca Mod), S=SPT, T=Shelby Tube

Leighton and Associates

GEOTECHNICAL BORING LOG B-2

Date 10-2002 | Sheet 1 of 1

Project RUSD Arlington High School | Project No. 020813-001

Drilling Co. 2R Drilling, Inc. | Type of Rig Hollw-stem auger

Hole Diameter 8 in. | Drive Weight 140 lb (automatic) | Drop 30 in.

Elevation Top of Hole (ft) | Location See Boring Location Map

Logged By PP

Sampled By PP

Elevation (Feet)	Depth (Feet)	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION
	0			Bag 1					
				R-1	6	107.6	9.6	SM	2' : Silty SAND, dark brown, moist, loose, fine to medium sand, few rootlets, friable
	5			R-2	5	11.9	7.6	SM	5' : Silty SAND, dark brown, moist, loose, fine to coarse sand, few rootlets, friable
	10			R-3	18	118.6	4.0	SP	10' : SAND with some clay, orangish brown, moist, medium dense, fine to coarse sand, few gravel
	15			S-1	12			SP	15' : SAND with some clay, orangish brown, moist, medium dense, fine to coarse sand, few gravel
	20			S-2	14			SC	20' : Clayey SAND, dark brown, moist, medium dense, fine to coarse sand, friable
	25								Total Depth = 21.5 feet No Groundwater was encountered. Backfilled with native soil.
	30								

SAMPLE TYPES: Bag=Bulk, R=2.5-in. Ring (Ca Mod), S=SPT, T=Shelby Tube

Leighton and Associates

APPENDIX C

LABORATORY TEST RESULTS

Leighton

ATTERBERG LIMITS

ASTM D 4318

Project Name:	Arlington High School	Tested By:	V. Juliano	Date:	04/30/10
Project No. :	602877-001	Input By:	J. Ward	Date:	05/03/10
Boring No.:	LB-8	Checked By:	J. Ward		
Sample No.:	R-1	Depth (ft.)	2.0		
Soil Identification:	Brown silty sand (SM)				

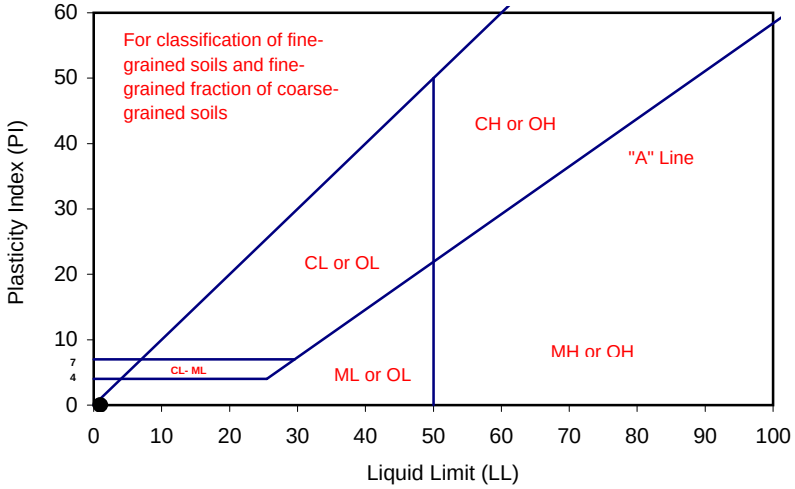
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			7			
Wet Wt. of Soil + Cont. (g)	**Cannot be rolled:**		24.83	**Cannot get more than 7 blows:**		
Dry Wt. of Soil + Cont. (g)	**NonPlastic**		22.78	**NonPlastic**		
Wt. of Container (g)			13.57			
Moisture Content (%) [Wn]			22.26			

Liquid Limit	**NP**
Plastic Limit	**NP**
Plasticity Index	**NP**
Classification	**NP**

PI at "A" - Line = 0.73(LL-20) =

One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.12}$



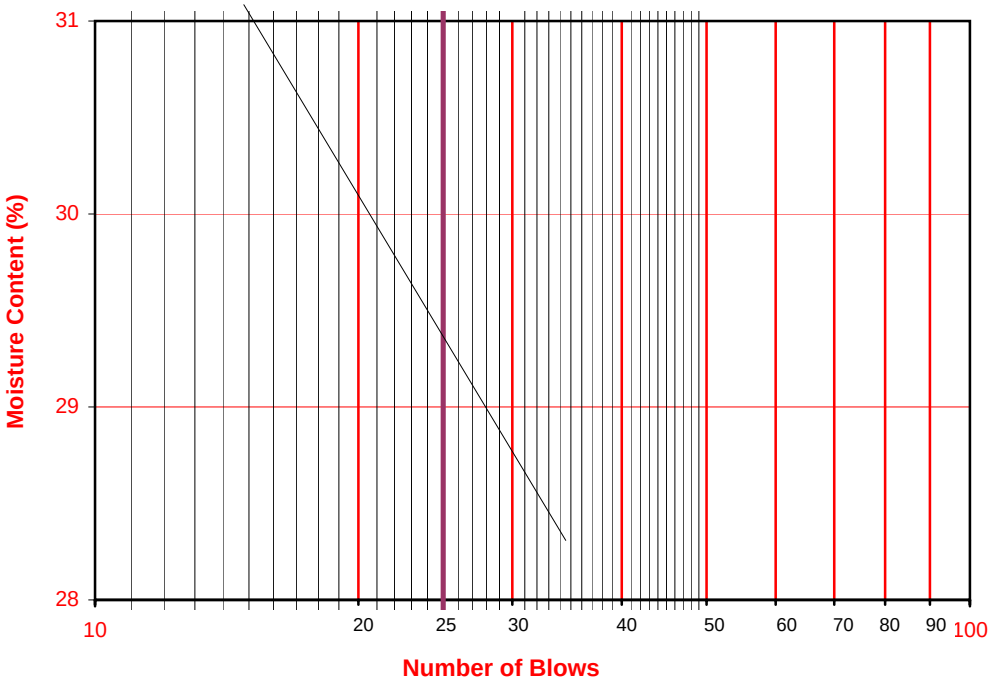
PROCEDURES USED

[ ] Wet Preparation
Multipoint - Wet

[X] Dry Preparation
Multipoint - Dry

[X] Procedure A
Multipoint Test

[ ] Procedure B
One-point Test



Leighton

PARTICLE-SIZE ANALYSIS of SOILS
ASTM D 6913

Project Name:	Arlington High School	Tested By:	S. Felter	Date:	04/27/10
Project No.:	602877-001	Checked By:	J. Ward	Date:	05/03/10
Exploration No.:	LB-1	Depth (feet):	5.0		
Sample No.:	R-2				
Soil Identification:	Grayish brown poorly-graded sand with silt (SP-SM)				

		Moisture Content of Total Air - Dry Soil	
Container No.:	CT	Wt. of Air-Dry Soil + Cont. (g)	0.00
Wt. of Air-Dried Soil + Cont.(g)	789.60	Wt. of Dry Soil + Cont. (g)	0.00
Wt. of Container (g)	244.70	Wt. of Container No._____ (g)	1.00
Dry Wt. of Soil (g)	544.90	Moisture Content (%)	0.00

After Wet Sieve	Container No.	CT
	Wt. of Dry Soil + Container (g)	759.10
	Wt. of Container (g)	244.70
	Dry Wt. of Soil Retained on # 200 Sieve (g)	514.40

U. S. Sieve Size (in.)	U. S. Sieve Size (mm.)	Cumulative Weight Dry Soil Retained (g)	Percent Passing (%)
6"	152.400		
3"	75.000		
1 1/2	37.500		
3/4"	19.000		
3/8"	9.500	0.00	100.0
#4	4.750	6.60	98.8
#8	2.360	68.20	87.5
#16	1.180	163.80	69.9
#30	0.600	273.40	49.8
#50	0.300	402.10	26.2
#100	0.150	484.40	11.1
#200	0.075	512.30	6.0
PAN			

GRAVEL: **1 %**

SAND: **93 %**

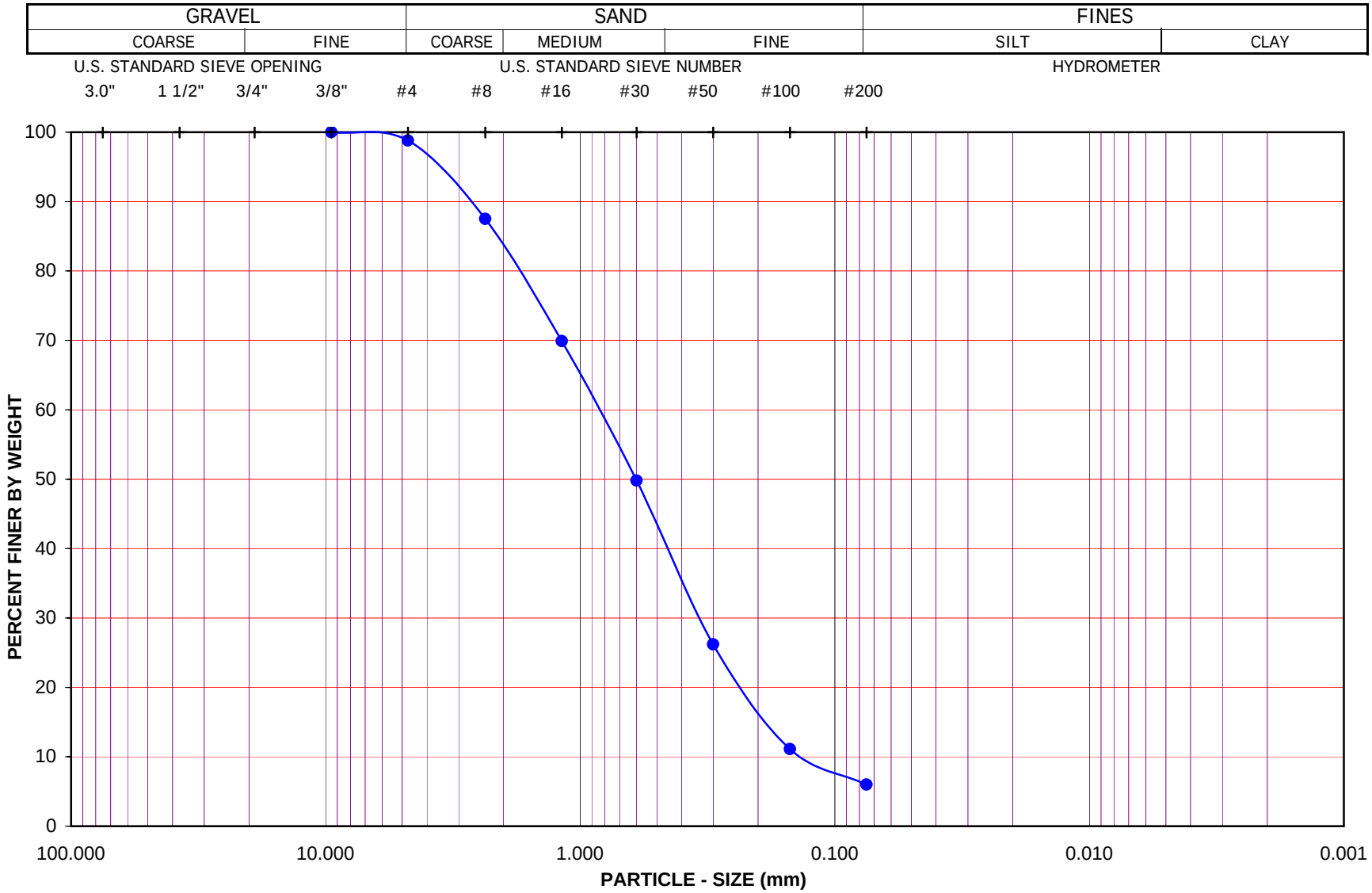
FINES: **6 %**

GROUP SYMBOL: **SP-SM**

Cu = D60/D10 = 6.00

Cc = $(D30)^2/(D60*D10)$ = 0.93

Remarks:



Project Name: Arlington High School

Project No.: 602877-001

Exploration No.: LB-1

Sample No.: R-2

Depth (feet): 5.0

Soil Type : SP-SM

Soil Identification: Grayish brown poorly-graded sand with silt (SP-SM)

GR:SA:FI : (%) 1 : 93 : 6

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

May-10

SA LB-1, R-2 @ 5

Boring No.	LB-2	LB-6	LB-6	LB-6	LB-8			
Sample No.	R-1	R-4	S-7	S-9	R-1			
Depth (ft.)	2.0	15.0	30.0	40.0	2.0			
Sample Type	Drive	Drive	SPT	SPT	Drive			
Soil Identification	Brown silty sand (SM)	Brown silty sand (SM)	Light olive brown lean clay with sand (CL)s	Light olive brown well-graded sand with silt (SW-SM)	Brown silty sand (SM)			
Moisture Correction								
Wet Weight of Soil + Container (g)	0.00	0.00	0.00	0.00	0.00			
Dry Weight of Soil + Container (g)	0.00	0.00	0.00	0.00	0.00			
Weight of Container (g)	1.00	1.00	1.00	1.00	1.00			
Moisture Content (%)	0.00	0.00	0.00	0.00	0.00			
Sample Dry Weight Determination								
Weight of Sample + Container (g)	718.10	858.00	368.58	581.95	520.60			
Weight of Container (g)	137.90	235.10	77.06	77.02	148.20			
Weight of Dry Sample (g)	580.20	622.90	291.52	504.93	372.40			
Container No.:								
After Wash								
Method (A or B)	B	B	B	B	B			
Dry Weight of Sample + Cont. (g)	482.00	670.10	157.75	537.87	363.10			
Weight of Container (g)	137.90	235.10	77.06	77.02	148.20			
Dry Weight of Sample (g)	344.10	435.00	80.69	460.85	214.90			
% Passing No. 200 Sieve	**40.7**	**30.2**	**72.3**	**8.7**	**42.3**			
% Retained No. 200 Sieve	59.3	69.8	27.7	91.3	57.7			

Leighton

PERCENT PASSING
No. 200 SIEVE
ASTM D 1140

Project Name: Arlington High School
Project No.: 602877-001
Client Name: LCI / Rancho Cucamonga
Tested By: Felter / Berdy Date: 04/28/10

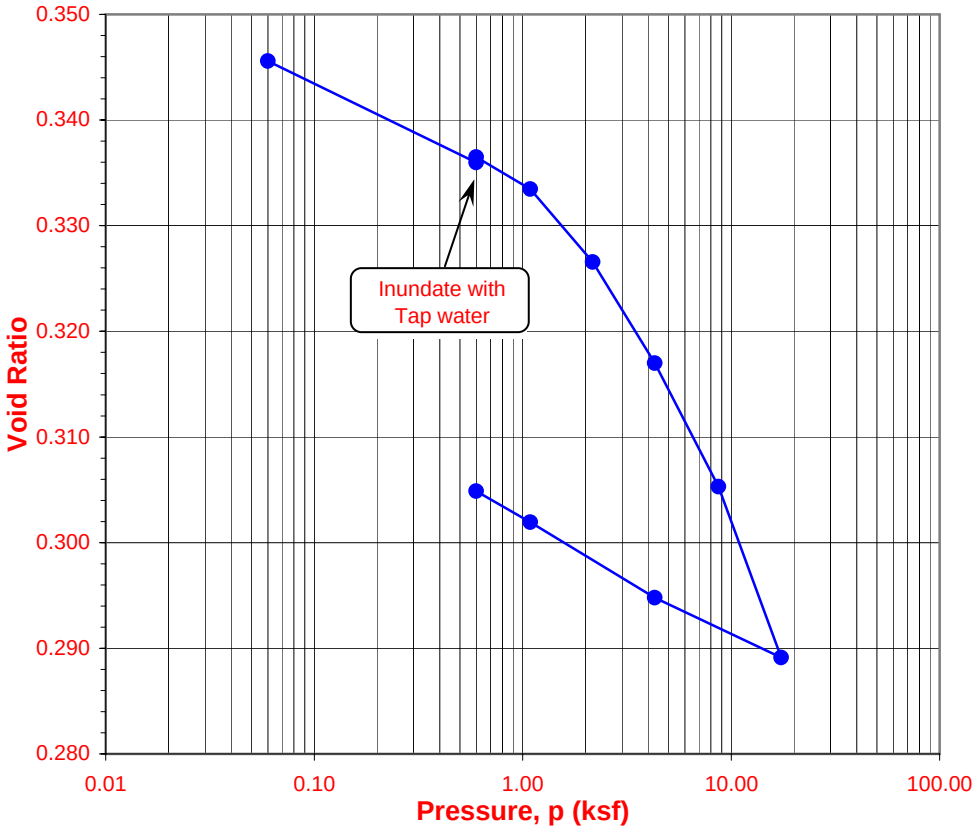
Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

(ASTM D 2435)

Project Name:	Arlington High School	Tested By:	F. Tabibkhoei	Date:	04/22/10
Project No.:	602877-001	Checked By:	J. Ward	Date:	05/04/10
Boring No.:	LB-5	Depth (ft.):	5.0		
Sample No.:	R-2	Sample Type:	Drive		
Soil Identification:	Brown silt with sand (ML)s				

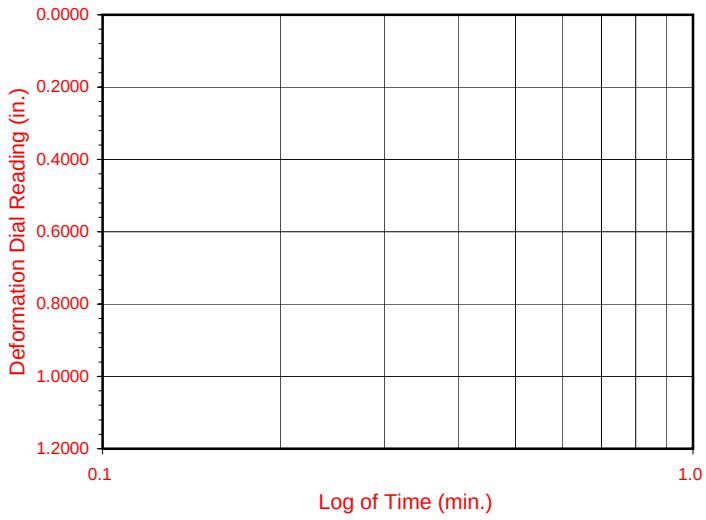
Sample Diameter (in.):	2.416
Sample Thickness (in.):	1.000
Weight of Sample + ring (g):	207.56
Weight of Ring (g):	44.68
Height after consol. (in.):	0.9696
Before Test	
Wt. of Wet Sample+Cont. (g):	222.14
Wt. of Dry Sample+Cont. (g):	208.49
Weight of Container (g):	39.18
Initial Moisture Content (%)	8.1
Initial Dry Density (pcf)	125.3
Initial Saturation (%):	63
Initial Vertical Reading (in.)	0.1017
After Test	
Wt. of Wet Sample+Cont. (g):	249.34
Wt. of Dry Sample+Cont. (g):	230.78
Weight of Container (g):	39.04
Final Moisture Content (%)	12.62
Final Dry Density (pcf):	126.0
Final Saturation (%):	101
Final Vertical Reading (in.)	0.1321
Specific Gravity (assumed):	2.70
Water Density (pcf):	62.43

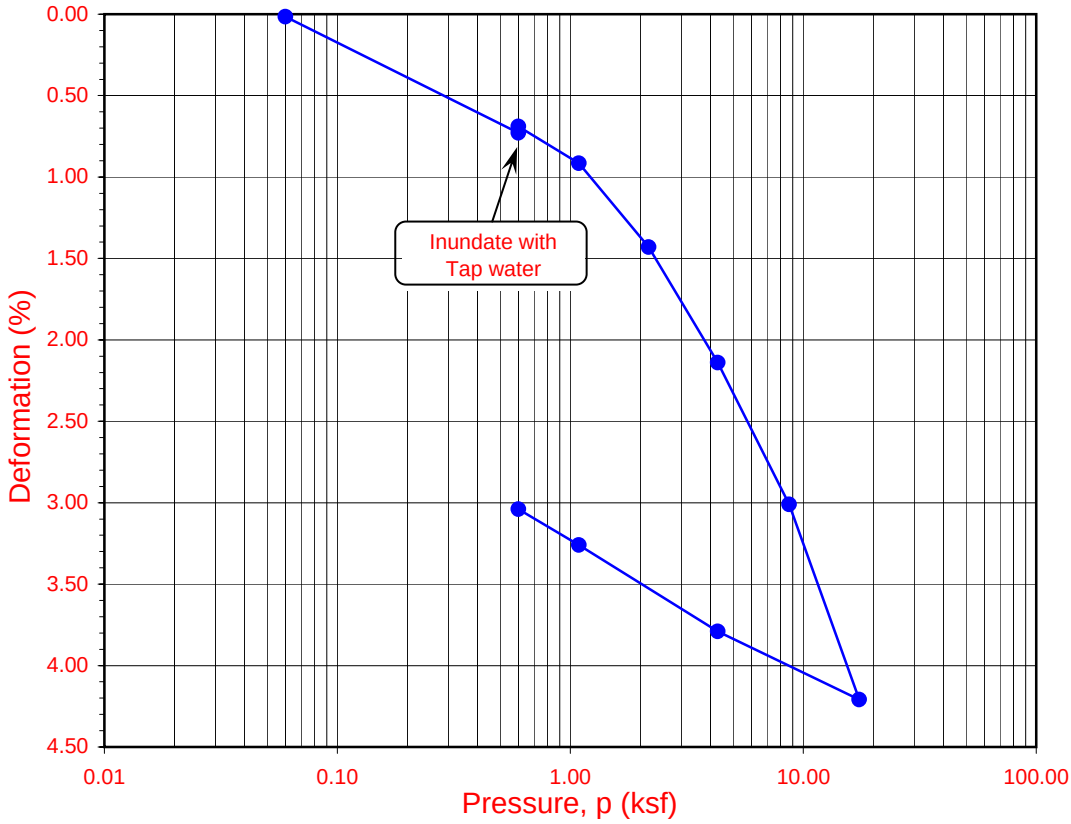


Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.06	0.1019	0.9999	0.00	0.01	0.346	0.01
0.60	0.1090	0.9927	0.00	0.73	0.336	0.73
0.60	0.1086	0.9931	0.00	0.69	0.337	0.69
1.09	0.1109	0.9909	0.00	0.91	0.333	0.91
2.17	0.1160	0.9857	0.00	1.43	0.327	1.43
4.30	0.1231	0.9786	0.00	2.14	0.317	2.14
8.70	0.1318	0.9699	0.00	3.01	0.305	3.01
17.40	0.1438	0.9579	0.00	4.21	0.289	4.21
4.30	0.1396	0.9621	0.00	3.79	0.295	3.79
1.09	0.1343	0.9674	0.00	3.26	0.302	3.26
0.60	0.1321	0.9696	0.00	3.04	0.305	3.04

No Time Readings				
Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

No Time Readings





Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
LB-5	**R-2**	**5**	**8.1**	**12.6**	**125.3**	**126.0**	**0.346**	**0.305**	**63**	**101**

Soil Identification: Brown silt with sand (ML)s

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
(ASTM D 2435)

Project No.: 602877-001

Arlington High School

05-10

One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

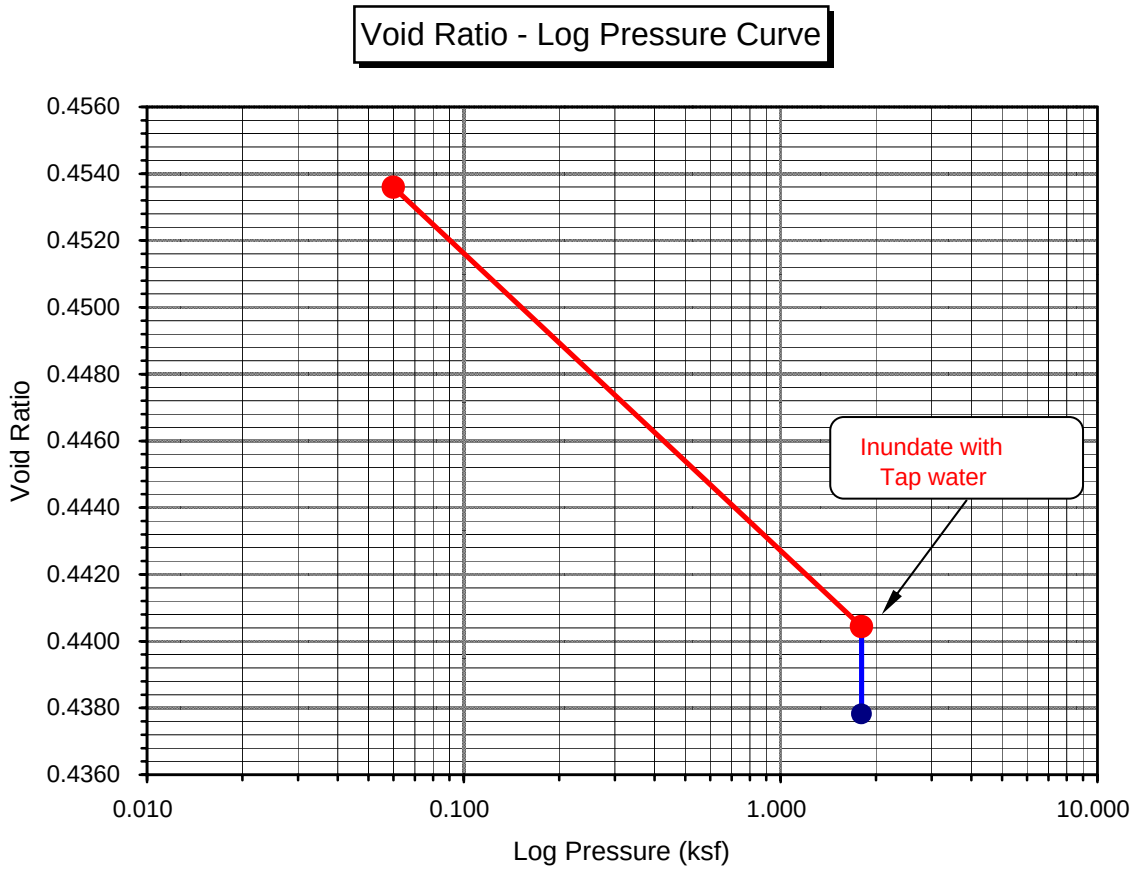
Project Name:	Arlington High School	Tested By:	G. Bathala	Date:	05/03/10
Project No.:	602877-001	Checked By:	J. Ward	Date:	05/07/10
Boring No.:	LB-1	Sample Type:	Drive		
Sample No.:	R-4	Depth (ft.)	15.0		
Sample Description:	Brown sandy silty clay s(CL-ML)				

Initial Dry Density (pcf):	116.0
Initial Moisture (%):	9.16
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1336
Diameter(in):	2.416

Final Dry Density (pcf):	117.2
Final Moisture (%) :	13.3
Initial Void ratio:	0.4534
Specific Gravity(assumed):	2.70
Initial Saturation (%)	54.5

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.060	0.1335	1.0002	0.00	0.02	0.4536	0.02
1.800	0.1425	0.9911	0.00	-0.89	0.4404	-0.89
H2O	0.1443	0.9893	0.00	-1.07	0.4378	-1.07

Percent Swell (+) / Settlement (-) After Inundation = -0.18



One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

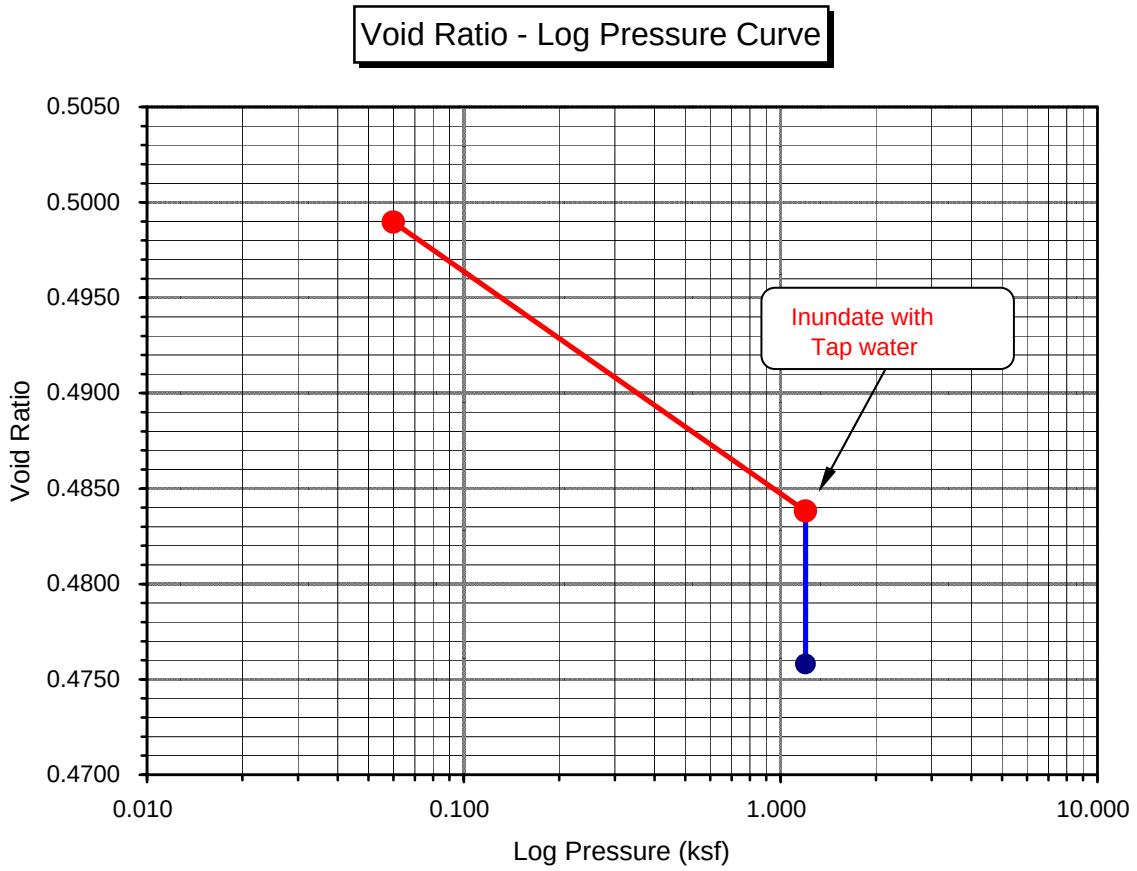
Project Name:	Arlington High School	Tested By:	G. Bathala	Date:	05/03/10
Project No.:	602877-001	Checked By:	J. Ward	Date:	05/07/10
Boring No.:	LB-5	Sample Type:	Drive		
Sample No.:	R-3	Depth (ft.)	10.0		
Sample Description:	Brown silty, clayey sand (SC-SM)				

Initial Dry Density (pcf):	112.4
Initial Moisture (%):	7.17
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1488
Diameter(in):	2.416

Final Dry Density (pcf):	114.2
Final Moisture (%) :	13.2
Initial Void ratio:	0.4994
Specific Gravity(assumed):	2.70
Initial Saturation (%)	38.8

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.060	0.1491	0.9997	0.00	-0.03	0.4990	-0.03
1.200	0.1592	0.9896	0.00	-1.04	0.4838	-1.04
H2O	0.1646	0.9843	0.00	-1.58	0.4758	-1.58

Percent Swell (+) / Settlement (-) After Inundation = -0.54



One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

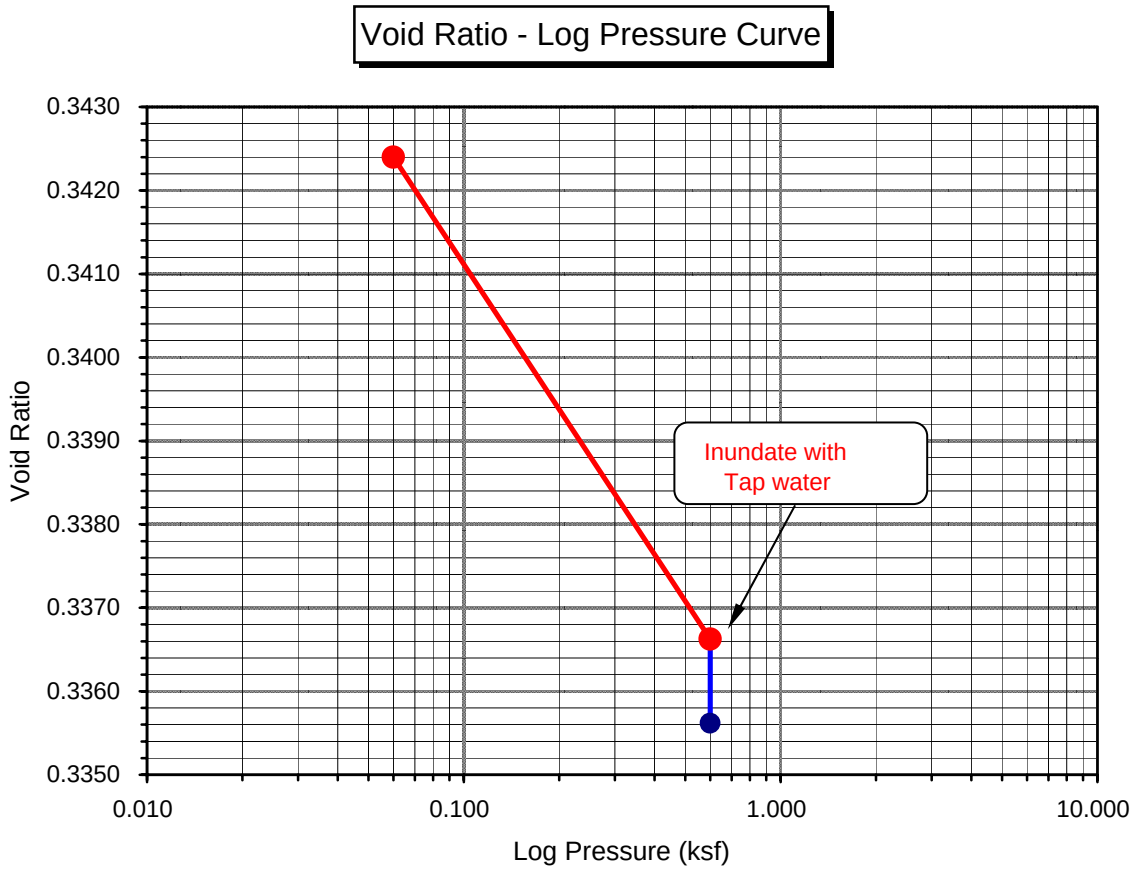
Project Name:	Arlington High School	Tested By:	G. Bathala	Date:	05/03/10
Project No.:	602877-001	Checked By:	J. Ward	Date:	05/07/10
Boring No.:	LB-7	Sample Type:	Drive		
Sample No.:	R-2	Depth (ft.)	5.0		
Sample Description:	Brown silty, clayey sand (SC-SM)				

Initial Dry Density (pcf):	125.5
Initial Moisture (%):	5.57
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1283
Diameter(in):	2.416

Final Dry Density (pcf):	126.2
Final Moisture (%) :	11.1
Initial Void ratio:	0.3427
Specific Gravity(assumed):	2.70
Initial Saturation (%)	43.9

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.060	0.1285	0.9998	0.00	-0.02	0.3424	-0.02
0.600	0.1328	0.9955	0.00	-0.45	0.3366	-0.45
H2O	0.1336	0.9948	0.00	-0.52	0.3356	-0.52

Percent Swell (+) / Settlement (-) After Inundation = -0.08



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MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Arlington High School	Tested By :	G. Berdy	Date:	04/26/10
Project No.:	602877-001	Input By :	J. Ward	Date:	05/04/10
Boring No.:	LB-5	Depth (ft.)	3.0		
Sample No. :	B-1				
Soil Identification:	Yellowish brown silty sand (SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03330 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3781.0	3879.0	3932.0	3852.0		
Weight of Mold (g)	1810.0	1810.0	1810.0	1810.0		
Net Weight of Soil (g)	1971.0	2069.0	2122.0	2042.0		
Wet Weight of Soil + Cont. (g)	514.70	516.70	508.90	506.40		
Dry Weight of Soil + Cont. (g)	493.30	485.44	469.18	456.30		
Weight of Container (g)	50.80	51.40	54.30	54.30		
Moisture Content (%)	4.84	7.20	9.57	12.46		
Wet Density (pcf)	130.5	137.0	140.5	135.2		
Dry Density (pcf)	124.5	127.8	128.2	120.2		

Maximum Dry Density (pcf) 128.5 **Optimum Moisture Content (%)** 8.5

PROCEDURE USED

[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

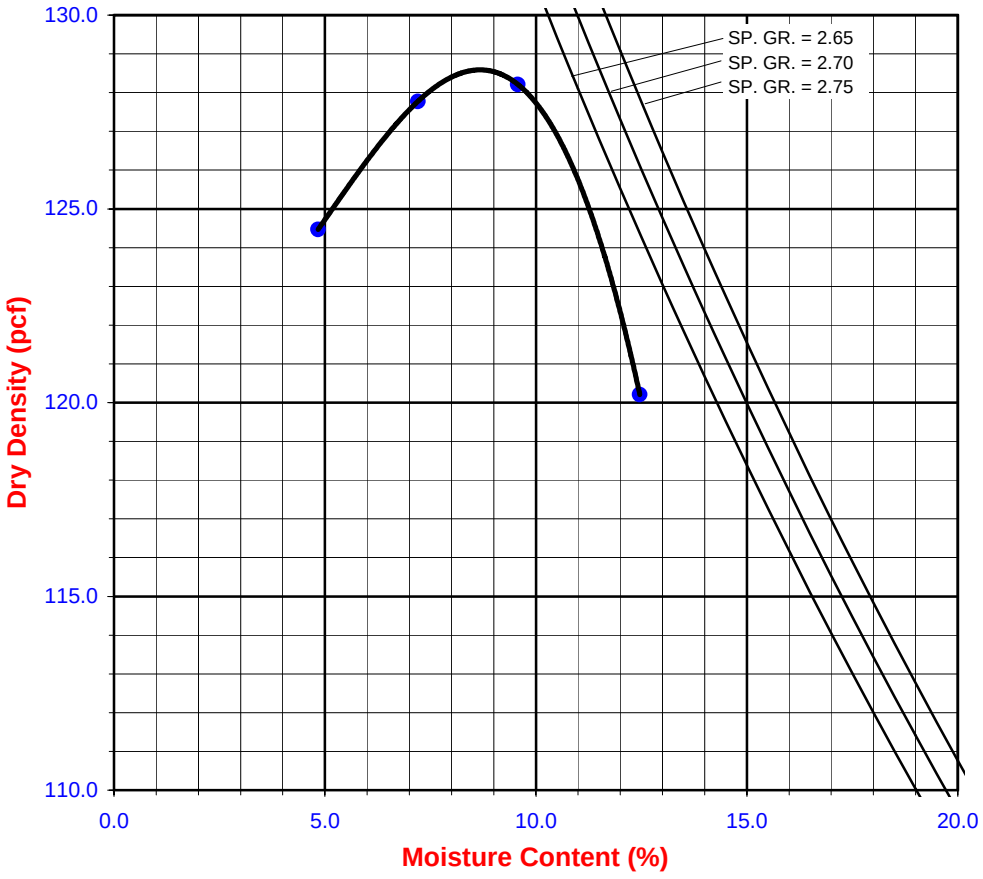
[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI



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EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	Arlington High School	Tested By:	G. Berdy	Date:	04/26/10
Project No. :	602877-001	Checked By:	J. Ward	Date:	05/04/10
Boring No.:	LB-7	Depth (ft.)	0.5		
Sample No. :	B-1				
Soil Identification:	Brown silty sand (SM)				

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN		Before Test	After Test
Specimen Diameter	(in.)	4.01	4.01
Specimen Height	(in.)	1.0000	1.0014
Wt. Comp. Soil + Mold	(g)	615.50	455.50
Wt. of Mold	(g)	181.30	0.00
Specific Gravity (Assumed)		2.70	2.70
Container No.		O	O
Wet Wt. of Soil + Cont.	(g)	872.60	636.80
Dry Wt. of Soil + Cont.	(g)	817.30	587.90
Wt. of Container	(g)	0.00	181.30
Moisture Content	(%)	6.77	12.03
Wet Density	(pcf)	131.0	137.2
Dry Density	(pcf)	122.7	122.5
Void Ratio		0.374	0.376
Total Porosity		0.272	0.273
Pore Volume	(cc)	56.4	56.7
Degree of Saturation (%) [S_{meas}]		**48.8**	86.3

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
04/26/10	15:12	1.0	0	0.1761
04/26/10	15:22	1.0	10	0.1760
Add Distilled Water to the Specimen				
04/26/10	15:32	1.0	10	0.1770
04/27/10	8:00	1.0	998	0.1775
04/27/10	9:55	1.0	1113	0.1775

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**2**

Leighton

TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS

Project Name: Arlington High School | Tested By : V. Juliano | Date: 04/21/10

Project No. : 602877-001 | Data Input By: J. Ward | Date: 05/04/10

Boring No.	LB-7			
Sample No.	B-1			
Sample Depth (ft)	0.5			
Soil Identification:	Brown (SM)			
Wet Weight of Soil + Container (g)	182.80			
Dry Weight of Soil + Container (g)	178.00			
Weight of Container (g)	56.00			
Moisture Content (%)	3.93			
Weight of Soaked Soil (g)	100.70			

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	8			
Crucible No.	15			
Furnace Temperature (°C)	830			
Time In / Time Out	7:40 / 8:25			
Duration of Combustion (min)	45			
Wt. of Crucible + Residue (g)	20.3182			
Wt. of Crucible (g)	20.3167			
Wt. of Residue (g) (A)	0.0015			
PPM of Sulfate (A) x 41150	61.73			
PPM of Sulfate, Dry Weight Basis	**64**			

CHLORIDE CONTENT, DOT California Test 422

ml of Chloride Soln. For Titration (B)	30			
ml of AgNO3 Soln. Used in Titration (C)	0.7			
PPM of Chloride (C -0.2) * 100 * 30 / B	50			
PPM of Chloride, Dry Wt. Basis	**52**			

pH TEST, DOT California Test 532/643

pH Value	**6.52**			
Temperature °C	19.0			

Leighton

SOIL RESISTIVITY TEST

DOT CA TEST 532 / 643

Project Name: Arlington High School

Project No. : 602877-001

Boring No.: LB-7

Sample No. : B-1

Soil Identification:* Brown (SM)

Tested By : V. Juliano Date: 04/26/10

Data Input By: J. Ward Date: 05/04/10

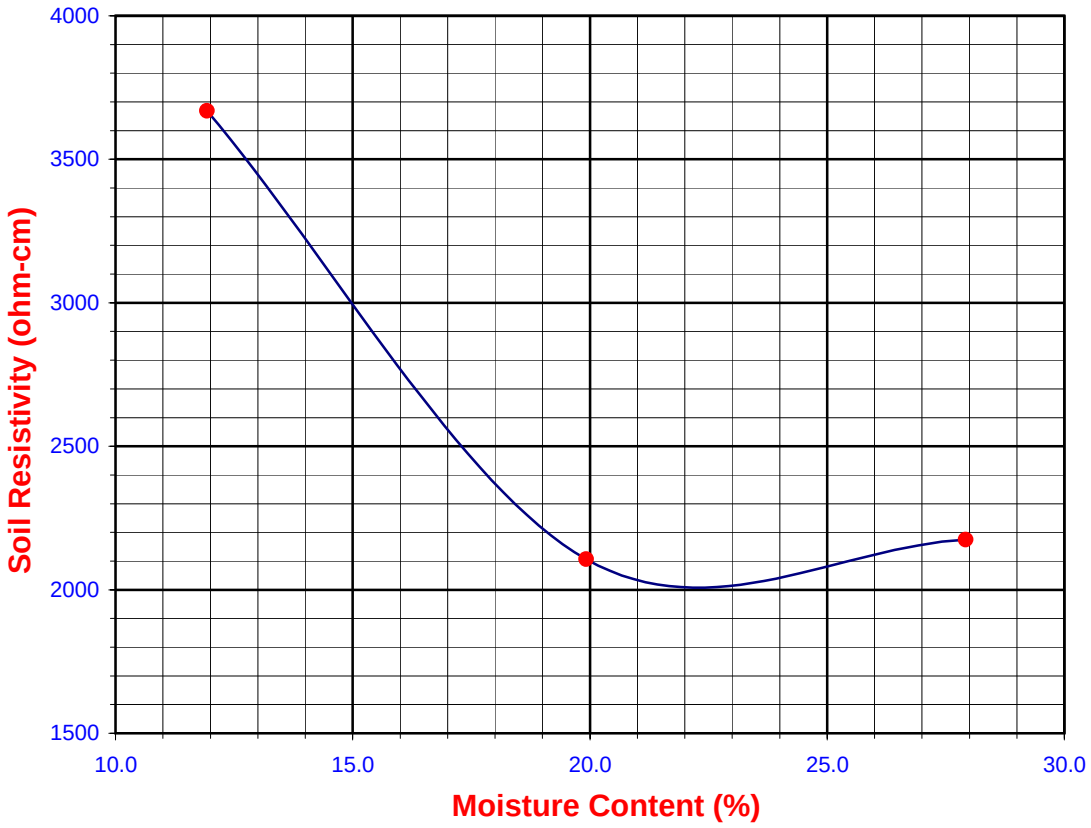
Depth (ft.) : 0.5

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	100	11.93	540	3669
2	200	19.92	310	2106
3	300	27.92	320	2174
4				
5				

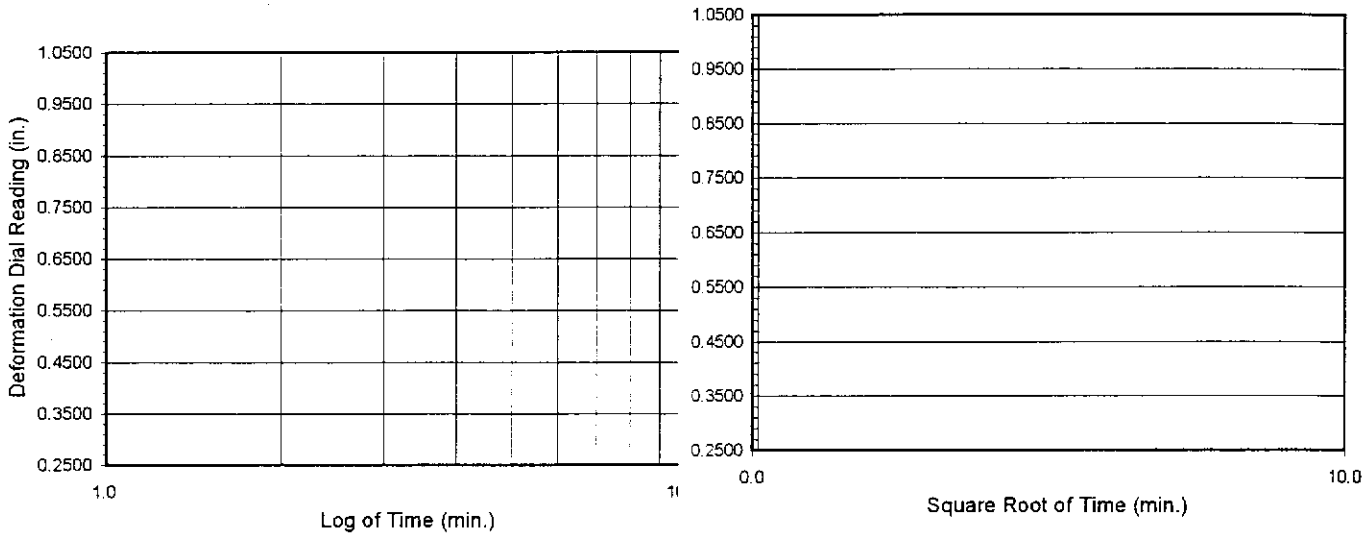
Moisture Content (%) (MCi)	3.93
Wet Wt. of Soil + Cont. (g)	182.80
Dry Wt. of Soil + Cont. (g)	178.00
Wt. of Container (g)	56.00
Container No.	
Initial Soil Wt. (g) (Wt)	1300.00
Box Constant	6.795
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

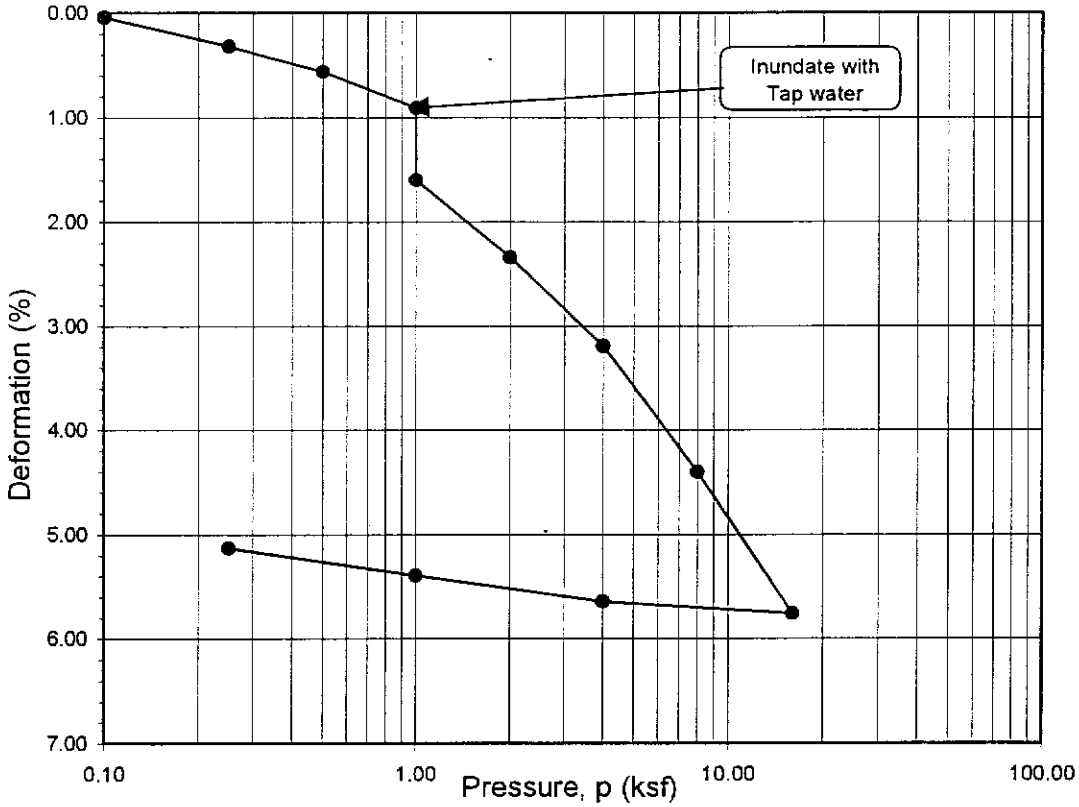
Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 532 / 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 532 / 643	
2000	**22.3**	**64**	**52**	**6.52**	**19.0**



Laboratory Test Results from Leighton and Associates, Inc., 2002

NoTime Readings





Boring No.	Sample No.:	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-1	**R-3**	**10**	**2.1**	**17.3**	**106.1**	**109.3**	**0.589**	**0.508**	**10**	**86**

Sample Description:

Olive Brown Silty Sand (SM)

Project No.: 020813-001

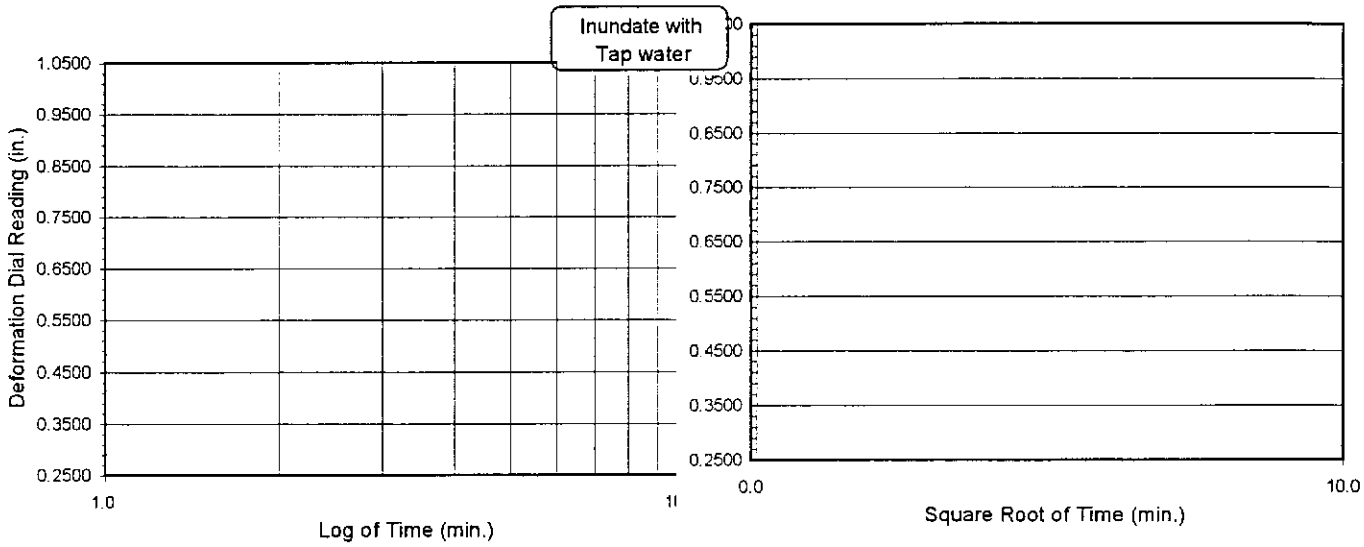
RUSD / Arligton

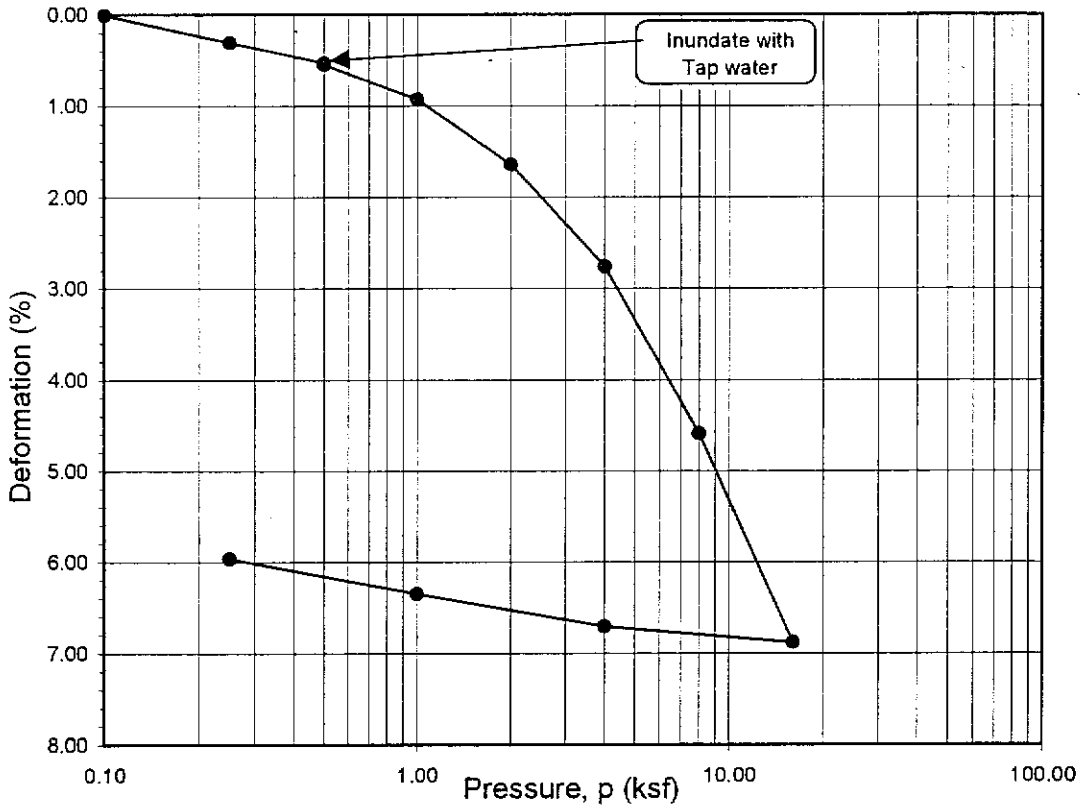
ONE - DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
(ASTM D 2435)

Leighton and Associates, Inc.

11-02

NoTime Readings





Boring No.	Sample No.:	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-2	**R-2**	**5**	**7.6**	**15.5**	**111.9**	**118.4**	**0.506**	**0.416**	**41**	**99**

Sample Description:

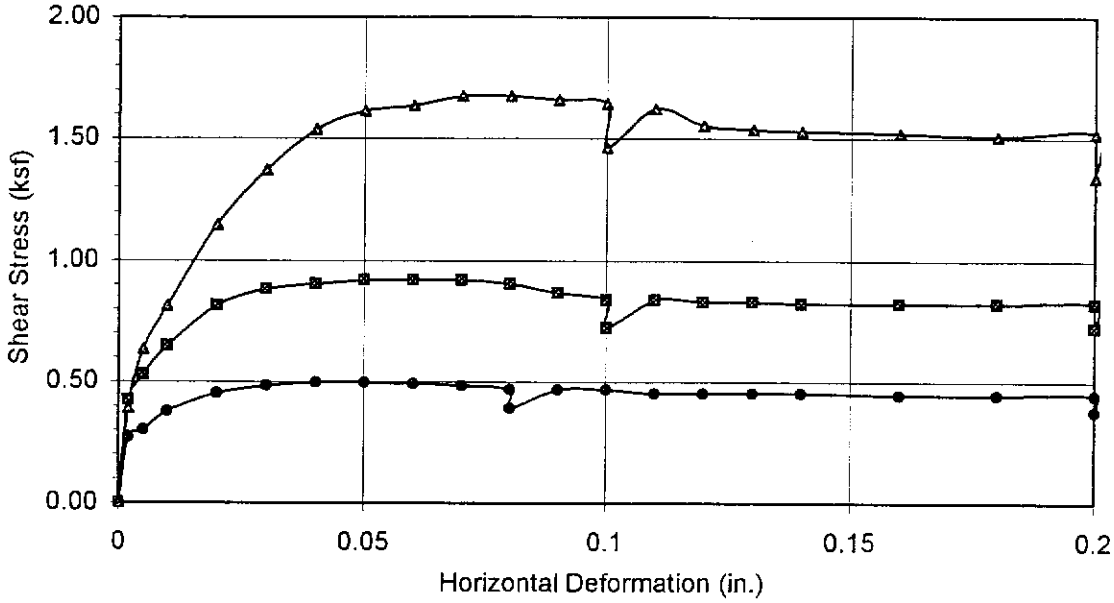
Project No.: 020813-001

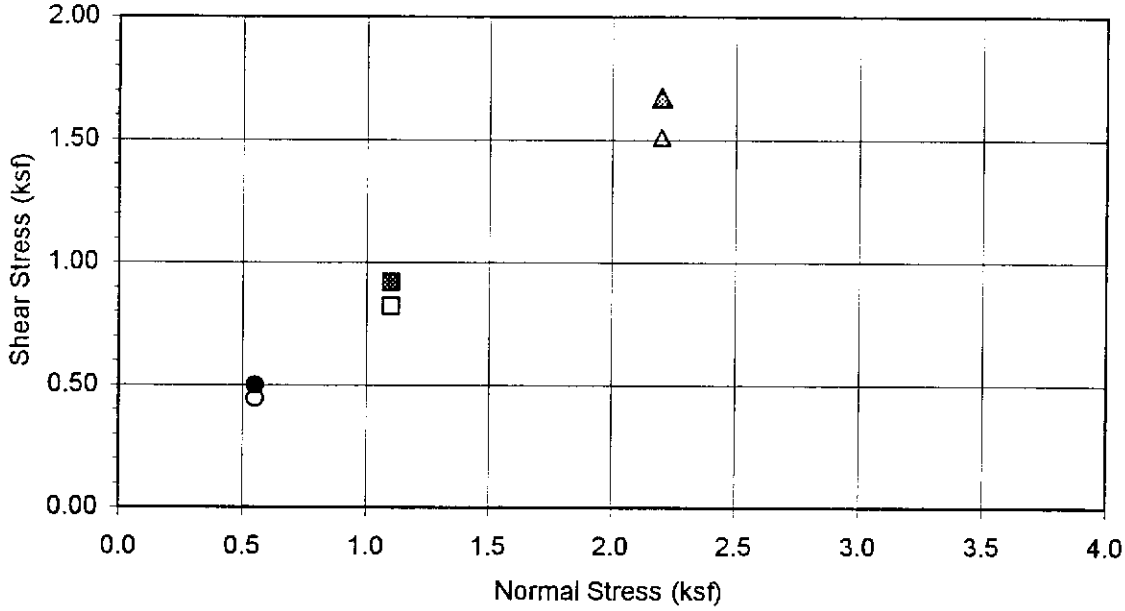
RUSD / Arligton

ONE - DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
(ASTM D 2435)

11-02

Leighton and Associates, Inc.





Normal Stress (kip/ft²)	0.550	1.100	2.200
Peak Shear Stress (kip/ft²)	● 0.498	▩ 0.920	◬ 1.674
Shear Stress @ End of Test (ksf)	○ 0.445	□ 0.822	△ 1.508
Deformation Rate (in./min.)	0.050	0.050	0.050
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.416	2.416	2.416
Initial Moisture Content (%)	7.50	7.50	7.50
Dry Density (pcf)	116.3	116.2	116.7
Saturation (%)	45.1	44.9	45.6
Soil Height Before Shearing (in.)	N/A	N/A	N/A
Final Moisture Content (%)	16.6	16.1	15.8

DIRECT SHEAR TEST RESULTS

Consolidated Undrained

Leighton and Associates, Inc.

Boring No.: B-2
Sample No.: Bag-1
Depth (ft) 1
Soil Description: Brown SiltySandy (SM)

Project No.: 020813-001

RUSD / Arlington

11-02

DS ELE B-2,Bag-1@0-5

Leighton and Associates, Inc.

COMPACTION TEST

ASTM D 1557

Project Name: RUSD/Arlington
Project No.: 020813-001
Boring No.: B-2
Sample No. : Bag-1
Visual Sample Description:

Tested By : MTR
Calculated By :
Depth (ft.) 0-5

Preparation Method: Moist / X Dry

X Mechanical Ram / Manual Ram

Mold Volume (ft³) 0.03322

Ram Weight 10 LBS Drop 18 inches

-5 -2.5 0 2.5

TEST NO.	1	2	3	4	5	6
Wt. Comp. Soil + Mold (gm.)	3642.0	3756.0	3801.0	3780.0		
Wt. of Mold (gm.)	1707.0	1707.0	1707.0	1707.0		
Net Wt. of Soil (gm.)	1935.0	2049.0	2094.0	2073.0		
Wet Wt. of Soil + Cont. (gm.)	380.00	388.50	407.50	398.60		
Dry Wt. of Soil + Cont. (gm.)	366.80	368.20	379.50	363.00		
Wt. of Container (gm.)	52.10	54.80	51.40	50.70		
Moisture Content (%)	4.19	6.48	8.53	11.40		
Wet Density (pcf)	128.4	136.0	139.0	137.6		
Dry Density (pcf)	123.2	127.7	128.0	123.5		

Maximum Dry Density (pcf) 129.5 **Optimum Moisture Content (%)** 7.5

PROCEDURE USED

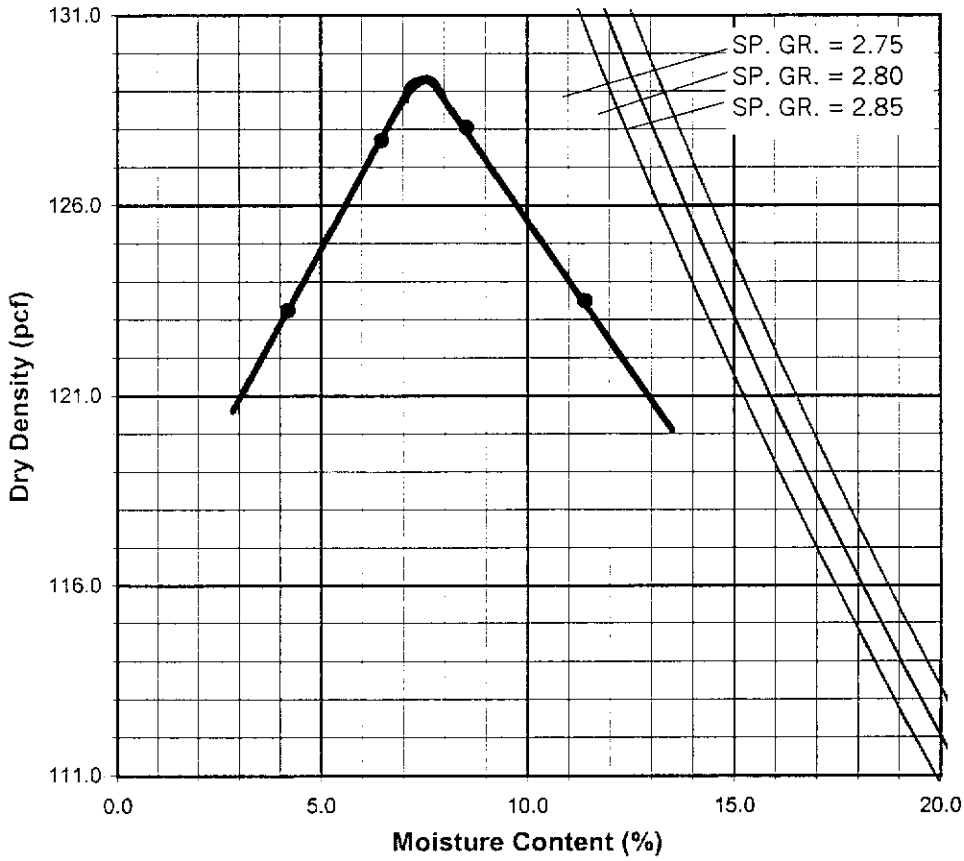
[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if + #4 > 20% and + 3/8 " < 20%

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + ¾ in <30%

Particle-Size Distribution:
GR:SA:FI

Atterberg Limits:
LL,PL,PI



MX B.B-2 Sam.Bag-1

Leighton and Associates, Inc.

EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	RUSD / Arligton	Tested By:	ACS
Project No. :	020813-001	Checked By:	FT
Boring No.:	B-2	Depth (ft.)	0-5
Sample No. :	Bag-1		

Visual Sample Description:

Dry Wt. of Soil + Cont. (gm.)	1000.00
Wt. of Container No. (gm.)	0.00
Dry Wt. of Soil (gm.)	1000.00
Weight Soil Retained on #4 Sieve	0.00
Percent Passing # 4	100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0012
Wt. Comp. Soil + Mold (gm.)	628.30	455.60
Wt. of Mold (gm.)	192.30	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	O	O
Wet Wt. of Soil + Cont. (gm.)	841.60	647.90
Dry Wt. of Soil + Cont. (gm.)	779.30	596.00
Wt. of Container (gm.)	0.00	192.30
Moisture Content (%)	7.99	12.86
Wet Density (pcf)	131.5	137.3
Dry Density (pcf)	121.8	121.6
Void Ratio	0.384	0.386
Total Porosity	0.278	0.279
Pore Volume (cc)	57.5	57.7
Degree of Saturation (%) [S_{meas}]	**56.2**	89.9

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h.

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
10/15/02	14:50	1.0	0	0.5928
10/15/02	15:00	1.0	10	0.5923
Add Distilled Water to the Specimen				
10/16/02	8:00	1.0	1020	0.5940
10/16/02	10:00	1.0	1140	0.5940

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	1.7
Expansion Index ($EI)_{50}$ = EI_{meas} - (50 -S_{meas})x((65+EI_{meas}) / (220-S_{meas}))	4

Leighton and Associates, Inc.

SOIL RESISTIVITY TEST

DOT CA TEST 532 / 643

Project Name: RUSD / Arlington

Project No. : 020813-001

Boring No.: B-2

Sample No. : Bag-1

Visual Soil Identification:

Tested By : VJ

Data Input By: FT

Checked By: FT

Depth (ft.) : 0-5

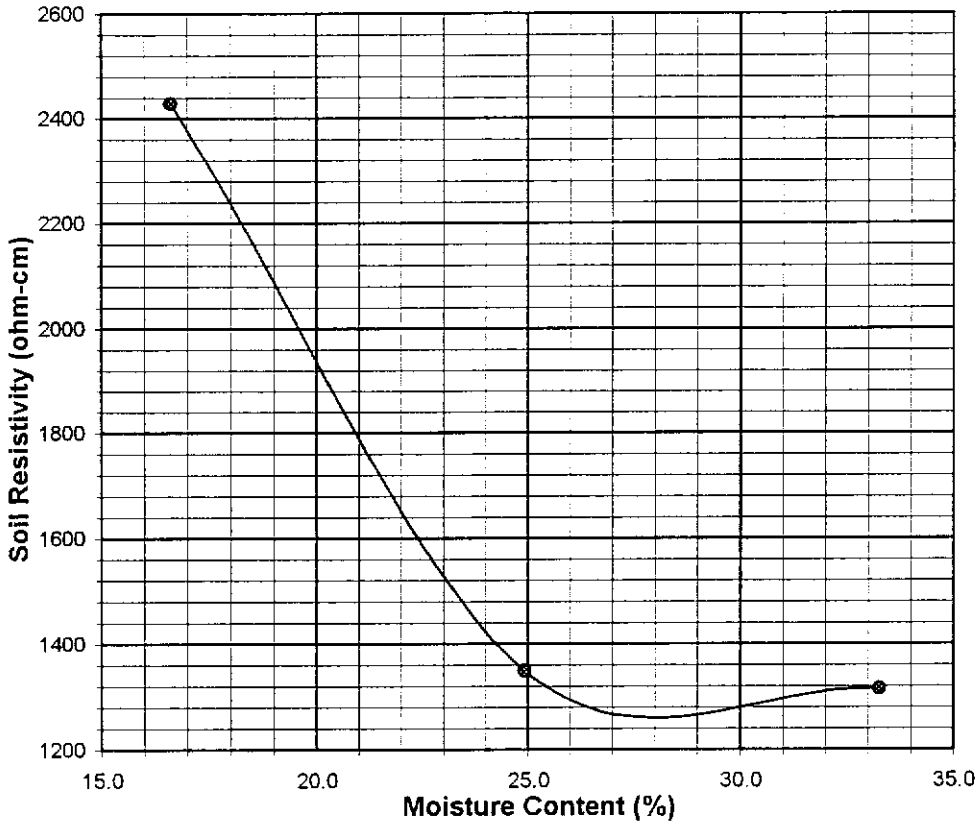
Initial Moisture Content (%)

Wet Wt. of Soil + Cont. (gm	179.40
Dry Wt. of Soil + Cont. (gm.	169.15
Wt. of Container (gm	45.20
Moisture Content (%) (MC	8.27

Initial Soil Weight (gm)(Wt	1300.00
Box Constant:	6.7460

MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100

Remolded Specimen	Moisture Adjustments				
Water Added (ml) (Wa)	100	200	300		
Adj. Moisture Content (MC)	16.60	24.93	33.25		
Resistance Rdg. (ohm)	360	200	195		
Soil Resistivity (ohm-cm)	2429	1349	1315		



Minimum Resistivity	Moisture Content	Sulfate Content	Chloride Content	Soil pH
DOT CA Test 532 / 643		DOT CA Test 417 Part	DOT CA Test	DOT CA Test 532/643
1273	**28.3**	**67**	**87**	**7.9 @ 21.0 °C**

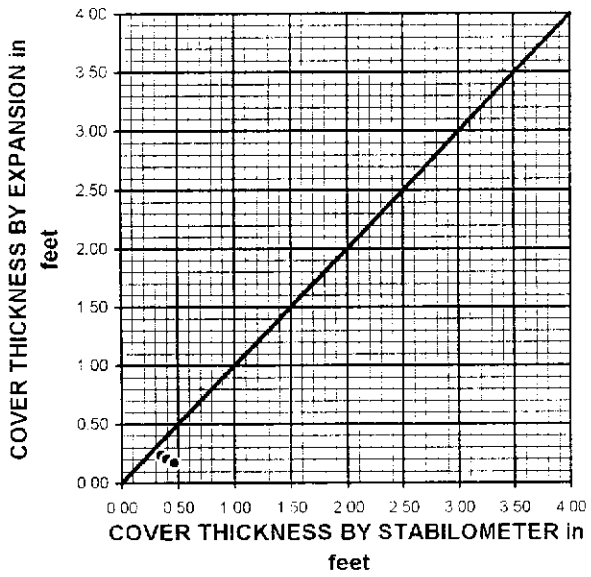
Leighton and Associates, Inc	R-VALUE TEST RESULTS

PROJECT NAME:	RUSD/Arlington	PROJECT NUMBER	020813-001
SAMPLE NUMBER:	Bag-1	SAMPLE LOCATION	B-1
SAMPLE DESCRIPTION:	.	TECHNICIAN	ACS

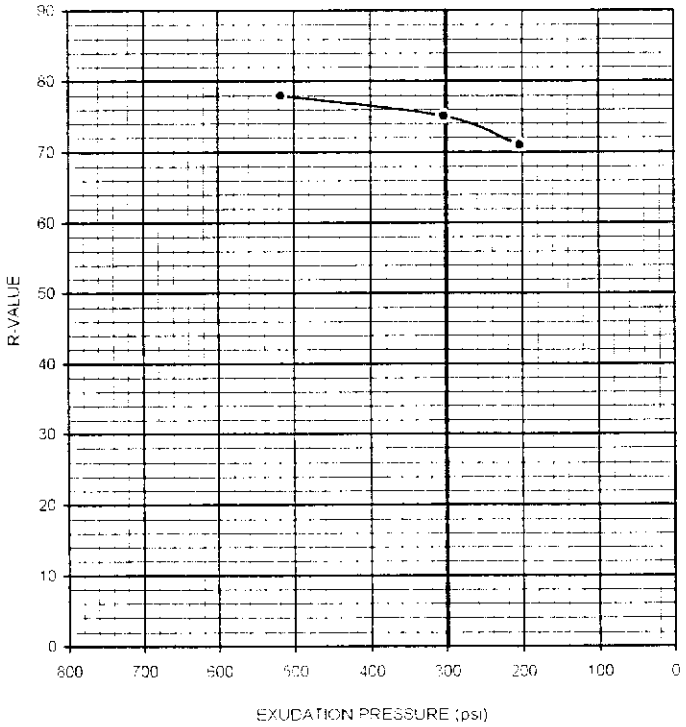
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	10.2	10.6	11.1
HEIGHT OF SAMPLE, Inches	2.50	2.54	2.53
DRY DENSITY, pcf	123.5	120.7	120.5
COMPACTOR AIR PRESSURE, psf	375	350	300
EXUDATION PRESSURE, psf	517	302	204
EXPANSION, Inches x 10exp-4	7	6	5
STABILITY Ph 2,000 lbs (160 psi)	22	25	29
TURNS DISPLACEMENT	4.48	4.59	4.64
R-VALUE UNCORRECTED	78	75	71
R-VALUE CORRECTED	78	75	71

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	0.35	0.40	0.46
EXPANSION PRESSURE THICKNESS, ft.	0.23	0.20	0.17

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION:	81
R-VALUE BY EXUDATION:	75
EQUILIBRIUM R-VALUE:	75

APPENDIX D

SUMMARY OF FAULTING, HISTORICAL SEISMICITY, AND SECONDARY SEISMIC HAZARD ANALYSIS

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                         *************************
                         *                       *
                         *    E Q S E A R C H    *
                         *                       *
                         *     Version 3.00      *
                         *                       *
                         *************************

                               ESTIMATION OF
                          PEAK ACCELERATION FROM
                       CALIFORNIA EARTHQUAKE CATALOGS


JOB NUMBER: 602877-001
                                                        DATE: 05-11-2010

JOB NAME: Arlington HS

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

MAGNITUDE RANGE:
   MINIMUM MAGNITUDE:  5.00
   MAXIMUM MAGNITUDE:  9.00

SITE COORDINATES:
   SITE LATITUDE:  33.9157
   SITE LONGITUDE:  117.4290

SEARCH DATES:
           START DATE:   1800
           END DATE:   2010

SEARCH RADIUS:
           62.0 mi
           99.8 km

ATTENUATION RELATION:  14) Campbell & Bozorgnia (1997 Rev.) - Alluvium
   UNCERTAINTY (M=Median, S=Sigma): M       Number of Sigmas:  0.0
   ASSUMED SOURCE TYPE:  DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
   SCOND:   0  Depth Source:  A
   Basement Depth:  5.00 km     Campbell SSR:  0     Campbell SHR:  0
   COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km):  3.0


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                         EARTHQUAKE SEARCH RESULTS
                         -------------------------
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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	34.0000	117.5000	12/16/1858	10 0 0.0	0.0	7.00	0.425	X	7.1(11.4)
DMG	34.0000	117.2500	07/23/1923	73026.0	0.0	6.25	0.181	VIII	11.8(19.0)
MGI	33.8000	117.6000	04/22/1918	2115 0.0	0.0	5.00	0.061	VI	12.6(20.3)
DMG	33.9000	117.2000	12/19/1880	0 0 0.0	0.0	6.00	0.132	VIII	13.2(21.2)
MGI	34.1000	117.3000	07/15/1905	2041 0.0	0.0	5.30	0.065	VI	14.7(23.7)
DMG	33.7000	117.4000	05/13/1910	620 0.0	0.0	5.00	0.049	VI	15.0(24.1)
DMG	33.7000	117.4000	05/15/1910	1547 0.0	0.0	6.00	0.112	VII	15.0(24.1)
DMG	33.7000	117.4000	04/11/1910	757 0.0	0.0	5.00	0.049	VI	15.0(24.1)
DMG	33.6990	117.5110	05/31/1938	83455.4	10.0	5.50	0.070	VI	15.7(25.2)
GSG	33.9530	117.7610	07/29/2008	184215.7	14.0	5.30	0.046	VI	19.2(30.9)
DMG	34.2000	117.4000	07/22/1899	046 0.0	0.0	5.50	0.052	VI	19.7(31.7)
GSP	34.1400	117.7000	02/28/1990	234336.6	5.0	5.20	0.035	V	21.9(35.3)
DMG	34.2700	117.5400	09/12/1970	143053.0	8.0	5.40	0.034	V	25.3(40.7)
DMG	33.8000	117.0000	12/25/1899	1225 0.0	0.0	6.40	0.073	VII	25.9(41.6)
DMG	34.3000	117.5000	07/22/1899	2032 0.0	0.0	6.50	0.075	VII	26.8(43.2)
DMG	33.7500	117.0000	06/06/1918	2232 0.0	0.0	5.00	0.022	IV	27.1(43.7)
DMG	33.7500	117.0000	04/21/1918	223225.0	0.0	6.80	0.092	VII	27.1(43.7)
DMG	34.2000	117.1000	09/20/1907	154 0.0	0.0	6.00	0.050	VI	27.2(43.8)
DMG	34.3000	117.6000	07/30/1894	512 0.0	0.0	6.00	0.047	VI	28.3(45.5)
DMG	33.7100	116.9250	09/23/1963	144152.6	16.5	5.00	0.017	IV	32.2(51.8)
MGI	34.0000	118.0000	12/25/1903	1745 0.0	0.0	5.00	0.017	IV	33.2(53.4)
DMG	33.9500	116.8500	09/28/1946	719 9.0	0.0	5.00	0.017	IV	33.2(53.5)
DMG	34.2000	117.9000	08/28/1889	215 0.0	0.0	5.50	0.025	V	33.3(53.6)
DMG	34.3700	117.6500	12/08/1812	15 0 0.0	0.0	7.00	0.080	VII	33.8(54.4)
DMG	34.1800	116.9200	01/16/1930	02433.9	0.0	5.20	0.019	IV	34.4(55.3)
DMG	34.1800	116.9200	01/16/1930	034 3.6	0.0	5.10	0.017	IV	34.4(55.3)
DMG	34.2670	116.9670	08/29/1943	34513.0	0.0	5.50	0.023	IV	35.9(57.7)
GSP	34.1630	116.8550	06/28/1992	144321.0	6.0	5.30	0.018	IV	37.0(59.6)
DMG	33.6170	117.9670	03/11/1933	154 7.8	0.0	6.30	0.041	V	37.1(59.8)
GSP	34.1950	116.8620	08/17/1992	204152.1	11.0	5.30	0.018	IV	37.7(60.7)
GSP	34.2900	116.9460	02/10/2001	210505.8	9.0	5.10	0.015	IV	37.8(60.9)
DMG	34.1000	116.8000	10/24/1935	1448 7.6	0.0	5.10	0.015	IV	38.2(61.4)
PAS	34.0610	118.0790	10/01/1987	144220.0	9.5	5.90	0.028	V	38.5(62.0)
DMG	33.6830	118.0500	03/11/1933	658 3.0	0.0	5.50	0.020	IV	39.1(62.9)
DMG	33.7500	118.0830	03/11/1933	230 0.0	0.0	5.10	0.014	IV	39.2(63.1)
DMG	33.7500	118.0830	03/13/1933	131828.0	0.0	5.30	0.017	IV	39.2(63.1)
DMG	33.7500	118.0830	03/11/1933	910 0.0	0.0	5.10	0.014	IV	39.2(63.1)
DMG	33.7500	118.0830	03/11/1933	323 0.0	0.0	5.00	0.013	III	39.2(63.1)
DMG	33.7500	118.0830	03/11/1933	2 9 0.0	0.0	5.00	0.013	III	39.2(63.1)
DMG	33.7000	118.0670	03/11/1933	85457.0	0.0	5.10	0.014	IV	39.5(63.6)
DMG	33.7000	118.0670	03/11/1933	51022.0	0.0	5.10	0.014	IV	39.5(63.6)
DMG	33.6170	118.0170	03/14/1933	19 150.0	0.0	5.10	0.014	IV	39.5(63.6)
DMG	33.5750	117.9830	03/11/1933	518 4.0	0.0	5.20	0.015	IV	39.6(63.7)
GSN	34.2030	116.8270	06/28/1992	150530.7	5.0	6.70	0.051	VI	39.7(63.9)
PAS	34.0730	118.0980	10/04/1987	105938.2	8.2	5.30	0.017	IV	39.8(64.1)
MGI	34.1000	118.1000	07/11/1855	415 0.0	0.0	6.30	0.036	V	40.5(65.1)
GSP	34.2390	116.8370	07/09/1992	014357.6	0.0	5.30	0.016	IV	40.5(65.3)
GSP	34.2620	118.0020	06/28/1991	144354.5	11.0	5.40	0.017	IV	40.6(65.3)
DMG	33.9760	116.7210	06/12/1944	104534.7	10.0	5.10	0.014	III	40.8(65.6)
DMG	33.7830	118.1330	10/02/1933	91017.6	0.0	5.40	0.017	IV	41.4(66.6)
DMG	33.9940	116.7120	06/12/1944	111636.0	10.0	5.30	0.016	IV	41.4(66.6)
GSP	34.3400	116.9000	11/27/1992	160057.5	1.0	5.30	0.015	IV	42.1(67.7)
GSG	34.3100	116.8480	02/22/2003	121910.6	1.0	5.20	0.014	III	42.9(69.1)

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.1000	116.7000	02/07/1889	520 0.0	0.0	5.30	0.014	IV	43.6(70.2)
GSP	34.3690	116.8970	12/04/1992	020857.5	3.0	5.30	0.014	IV	43.6(70.2)
T-A	34.0000	118.2500	09/23/1827	0 0 0.0	0.0	5.00	0.010	III	47.4(76.2)
T-A	34.0000	118.2500	03/26/1860	0 0 0.0	0.0	5.00	0.010	III	47.4(76.2)
T-A	34.0000	118.2500	01/10/1856	0 0 0.0	0.0	5.00	0.010	III	47.4(76.2)
PAS	33.9980	116.6060	07/08/1986	92044.5	11.7	5.60	0.016	IV	47.5(76.4)
DMG	33.7830	118.2500	11/14/1941	84136.3	0.0	5.40	0.014	III	48.0(77.2)
DMG	33.8500	118.2670	03/11/1933	1425 0.0	0.0	5.00	0.010	III	48.2(77.6)
MGI	34.0800	118.2600	07/16/1920	18 8 0.0	0.0	5.00	0.010	III	48.9(78.7)
MGI	34.0000	118.3000	09/03/1905	540 0.0	0.0	5.30	0.012	III	50.2(80.8)
DMG	34.0170	116.5000	07/24/1947	221046.0	0.0	5.50	0.013	III	53.7(86.3)
DMG	34.0170	116.5000	07/25/1947	04631.0	0.0	5.00	0.008	III	53.7(86.3)
DMG	34.0170	116.5000	07/25/1947	61949.0	0.0	5.20	0.010	III	53.7(86.3)
DMG	34.0170	116.5000	07/26/1947	24941.0	0.0	5.10	0.009	III	53.7(86.3)
GSP	33.5290	116.5720	06/12/2005	154146.5	14.0	5.20	0.009	III	56.0(90.1)
GSP	34.1390	116.4310	06/28/1992	123640.6	10.0	5.10	0.008	III	59.1(95.2)
GSP	34.3410	116.5290	06/28/1992	124053.5	6.0	5.20	0.009	III	59.2(95.3)
GSP	33.5080	116.5140	10/31/2001	075616.6	15.0	5.10	0.008	II	59.6(95.9)
PAS	33.5010	116.5130	02/25/1980	104738.5	13.6	5.50	0.011	III	59.9(96.4)
DMG	33.9330	116.3830	12/04/1948	234317.0	0.0	6.50	0.024	V	59.9(96.5)
GSN	34.2010	116.4360	06/28/1992	115734.1	1.0	7.60	0.057	VI	60.1(96.7)
GSP	34.1080	116.4040	06/29/1992	141338.8	9.0	5.40	0.010	III	60.1(96.8)
DMG	34.5190	118.1980	08/23/1952	10 9 7.1	13.1	5.00	0.007	II	60.5(97.4)
DMG	33.5000	116.5000	09/30/1916	211 0.0	0.0	5.00	0.007	II	60.6(97.5)
MGI	34.0000	118.5000	11/19/1918	2018 0.0	0.0	5.00	0.007	II	61.6(99.1)
DMG	34.0000	118.5000	08/04/1927	1224 0.0	0.0	5.00	0.007	II	61.6(99.1)
GSP	34.0640	116.3610	09/15/1992	084711.3	9.0	5.20	0.008	III	62.0(99.8)

****

-END OF SEARCH- 80 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2010

LENGTH OF SEARCH TIME: 211 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 7.1 MILES (11.4 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.6

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.425 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 1.306
b-value= 0.395
beta-value= 0.910

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	80	0.38095
4.5	80	0.38095
5.0	80	0.38095
5.5	24	0.11429
6.0	15	0.07143
6.5	7	0.03333
7.0	3	0.01429
7.5	1	0.00476

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*                    *
*    E Q F A U L T   *
*                    *
*    Version 3.00    *
*                    *
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DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 602877-001

DATE: 05-11-2010

JOB NAME: Arlington High School

CALCULATION NAME: Fault Analysis

FAULT-DATA-FILE NAME: CDMGFLTE.DAT

SITE COORDINATES:
SITE LATITUDE: 33.9157
SITE LONGITUDE: 117.4290

SEARCH RADIUS: 62 mi

ATTENUATION RELATION: 14) Campbell & Bozorgnia (1997 Rev.) - Alluvium
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
DISTANCE MEASURE: cdist
SCOND: 0
Basement Depth: 5.00 km Campbell SSR: 0 Campbell SHR: 0
COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CDMGFLTE.DAT

MINIMUM DEPTH VALUE (km): 3.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
CHINO-CENTRAL AVE. (Elsinore)	11.1(17.8)	6.7	0.261	IX
ELSINORE-GLEN IVY	11.2(18.1)	6.8	0.233	IX
SAN JACINTO-SAN BERNARDINO	12.4(20.0)	6.7	0.198	VIII
WHITTIER	12.8(20.6)	6.8	0.206	VIII
SAN JACINTO-SAN JACINTO VALLEY	13.2(21.2)	6.9	0.214	VIII
ELSINORE-TEMECULA	19.5(31.4)	6.8	0.131	VIII
CUCAMONGA	20.3(32.7)	7.0	0.156	VIII
SAN JOSE	20.9(33.6)	6.5	0.105	VII
SAN ANDREAS - Southern	21.1(33.9)	7.4	0.189	VIII
SAN ANDREAS - San Bernardino	21.1(33.9)	7.3	0.176	VIII
SIERRA MADRE	23.6(38.0)	7.0	0.129	VIII
ELYSIAN PARK THRUST	25.2(40.5)	6.7	0.095	VII
CLEGHORN	25.7(41.4)	6.5	0.073	VII
NORTH FRONTAL FAULT ZONE (West)	27.5(44.2)	7.0	0.106	VII
SAN ANDREAS - Mojave	28.0(45.0)	7.1	0.109	VII
SAN ANDREAS - 1857 Rupture	28.0(45.0)	7.8	0.188	VIII
SAN JACINTO-ANZA	31.8(51.2)	7.2	0.101	VII
COMPTON THRUST	32.9(52.9)	6.8	0.071	VI
CLAMSHELL-SAWPIT	34.6(55.7)	6.5	0.053	VI
NEWPORT-INGLEWOOD (Offshore)	35.2(56.7)	6.9	0.069	VI
NEWPORT-INGLEWOOD (L.A.Basin)	35.6(57.3)	6.9	0.068	VI
RAYMOND	37.8(60.8)	6.5	0.047	VI
PINTO MOUNTAIN	41.7(67.1)	7.0	0.061	VI
NORTH FRONTAL FAULT ZONE (East)	42.1(67.7)	6.7	0.047	VI
VERDUGO	43.5(70.0)	6.7	0.045	VI
ELSINORE-JULIAN	44.2(71.2)	7.1	0.062	VI
HELENDALE - S. LOCKHARDT	44.9(72.3)	7.1	0.060	VI
PALOS VERDES	47.2(75.9)	7.1	0.057	VI
HOLLYWOOD	48.3(77.8)	6.4	0.030	V
CORONADO BANK	53.1(85.5)	7.4	0.063	VI
ROSE CANYON	54.3(87.4)	6.9	0.040	V
LENWOOD-LOCKHART-OLD WOMAN SPRGS	54.7(88.0)	7.3	0.056	VI
SAN ANDREAS - Coachella	55.1(88.6)	7.1	0.047	VI
SAN GABRIEL	56.2(90.4)	7.0	0.042	VI
SIERRA MADRE (San Fernando)	56.5(90.9)	6.7	0.031	V
SANTA MONICA	57.7(92.8)	6.6	0.028	V
BURNT MTN.	59.7(96.1)	6.4	0.022	IV
JOHNSON VALLEY (Northern)	60.0(96.5)	6.7	0.029	V
LANDERS	60.5(97.4)	7.3	0.049	VI
EUREKA PEAK	61.1(98.3)	6.4	0.022	IV

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                          ----------------------------
                          DETERMINISTIC SITE PARAMETERS
                          ----------------------------

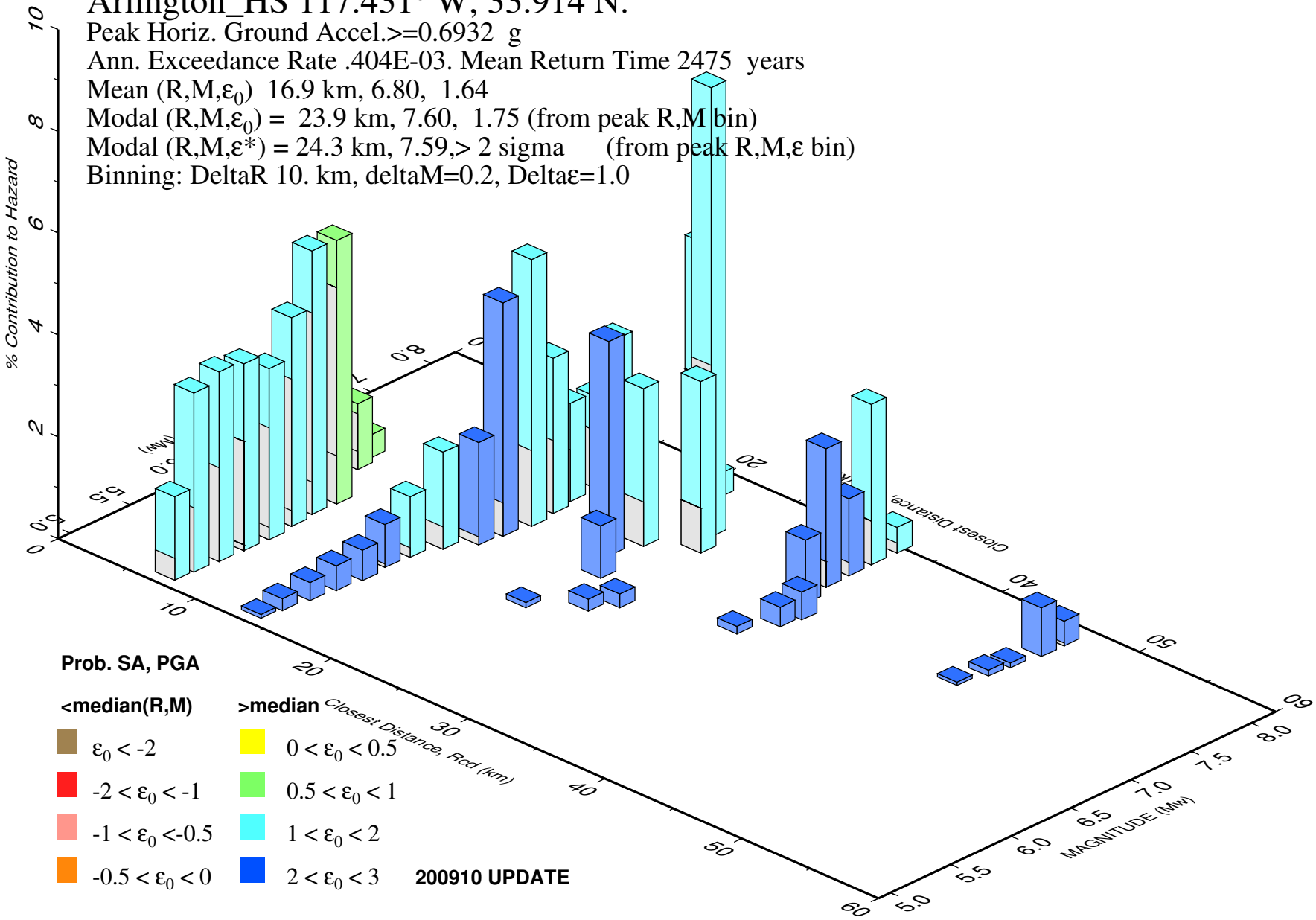
Page  2
-------------------------------------------------------------------------------
                                 |              |ESTIMATED MAX. EARTHQUAKE EVENT
                                 | APPROXIMATE  |-------------------------------
          ABBREVIATED            |   DISTANCE   | MAXIMUM  |   PEAK   |EST. SITE
          FAULT  NAME            |   mi   (km)  |EARTHQUAKE|   SITE   |INTENSITY
                                 |              | MAG.(Mw) | ACCEL. g |MOD.MERC.
================================|==============|==========|==========|=========
NORTHRIDGE (E. Oak Ridge)        |  61.5(  99.0)|   6.9    |   0.032  |    V
SAN JACINTO-COYOTE CREEK         |  61.6(  99.2)|   6.8    |   0.031  |    V
*******************************************************************************
-END OF SEARCH-   42 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE CHINO-CENTRAL AVE. (Elsinore)    FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 11.1 MILES (17.8 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.2606 g
```

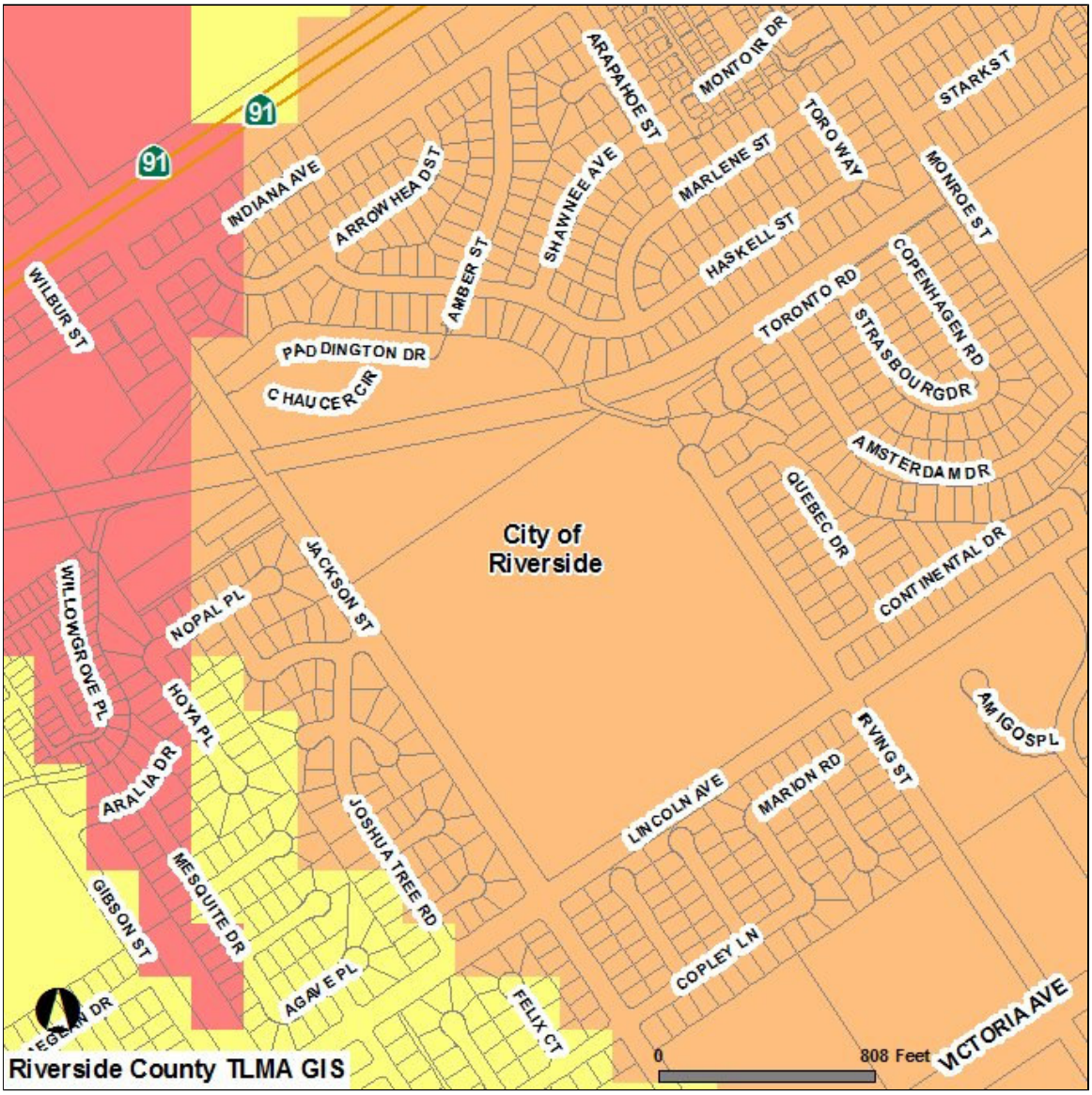
PSH Deaggregation on NEHRP CD soil
Arlington_HS 117.431° W, 33.914 N.

Peak Horiz. Ground Accel.>=0.6932 g
Ann. Exceedance Rate .404E-03. Mean Return Time 2475 years
Mean (R,M,ε_0) 16.9 km, 6.80, 1.64
Modal (R,M,ε_0) = 23.9 km, 7.60, 1.75 (from peak R,M bin)
Modal (R,M,ε*) = 24.3 km, 7.59,> 2 sigma (from peak R,M,ε bin)
Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0



GMT 2010 May 11 19:43:10 **Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on soil with average vs= 360. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted**

Arlington HS



LIQUEFACTION

INTERSTATES | HIGHWAYS | CITY | PARCELS

High | Low | Moderate

IMPORTANT
Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

REPORT PRINTED ON...Tue Apr 27 09:44:43 2010

Graphical Locater
Home Page
USA map
XY- data
TRS- data

Montana State University
Environmental Statistics Group

USF&WS

USDOE

The selected location is:

Latitude/Longitude 33.9157°N, 117.4290°W (33°, 54', 56.4" N; 117°, 25', 44.5" W)
The legal description is: California, San Bernardino Meridian T3S,R5W,sec17
UTM zone 11 (X,Y) 460342 , 3752889

The elevation is 257 m (843 ft)
The gradient is: 2.5 percent
The aspect direction is: 125.8 degrees or SE
The local roughness is: 1.7 or average
The location as decimal degrees (X,Y;Z) = -117.4290, 33.9157; 257 m

The state and county are California: Riverside County 6065
The HUC is Santa Ana 18070203; Place point in HUC
The Omernik ecoregion is Southern and Central California Plains and Hills (more typical) 6
The 1:100,000 map (if available); Switch to TerraServer
Zoom on that location with radius = 2 km; 5 km ; 10 km ; 20 km ; 30 km ; custom.

Nearby named places (in order by distance)

1. Hawthorne School; California: Riverside Co. -117.4356, 33.9169 at a distance of 622 m
2. Sherman Indian Institute; California: Riverside Co. -117.4342, 33.9225 at a distance of 896 m
3. Riverside Christian High School; California: Riverside Co. -117.4287, 33.9244 at a distance of 970 m
4. Arlington Station; California: Riverside Co. -117.4412, 33.9142, (820 ft) at a distance of 1136 m
5. Chemawa Junior High School; California: Riverside Co. -117.4331, 33.9267 at a distance of 1281 m
6. Saint Thomas School; California: Riverside Co. -117.4395, 33.9239, (772 ft) at a distance of 1331 m
7. Parkview Hospital; California: Riverside Co. -117.4387, 33.9267, (765 ft) at a distance of 1516 m
8. California Baptist College; California: Riverside Co. -117.4256, 33.9300 at a distance of 1622 m
9. Arlington; California: Riverside Co. -117.4465, 33.9203, (788 ft) at a distance of 1695 m
10. Hunt Park; California: Riverside Co. -117.4401, 33.9297 at a distance of 1863 m

The 7.5 minute series topographic maps for that area

Guasti	Fontana	San Bernardino South
Corona North	**Riverside West**	Riverside East
Corona South	Lake Mathews	Steele Peak

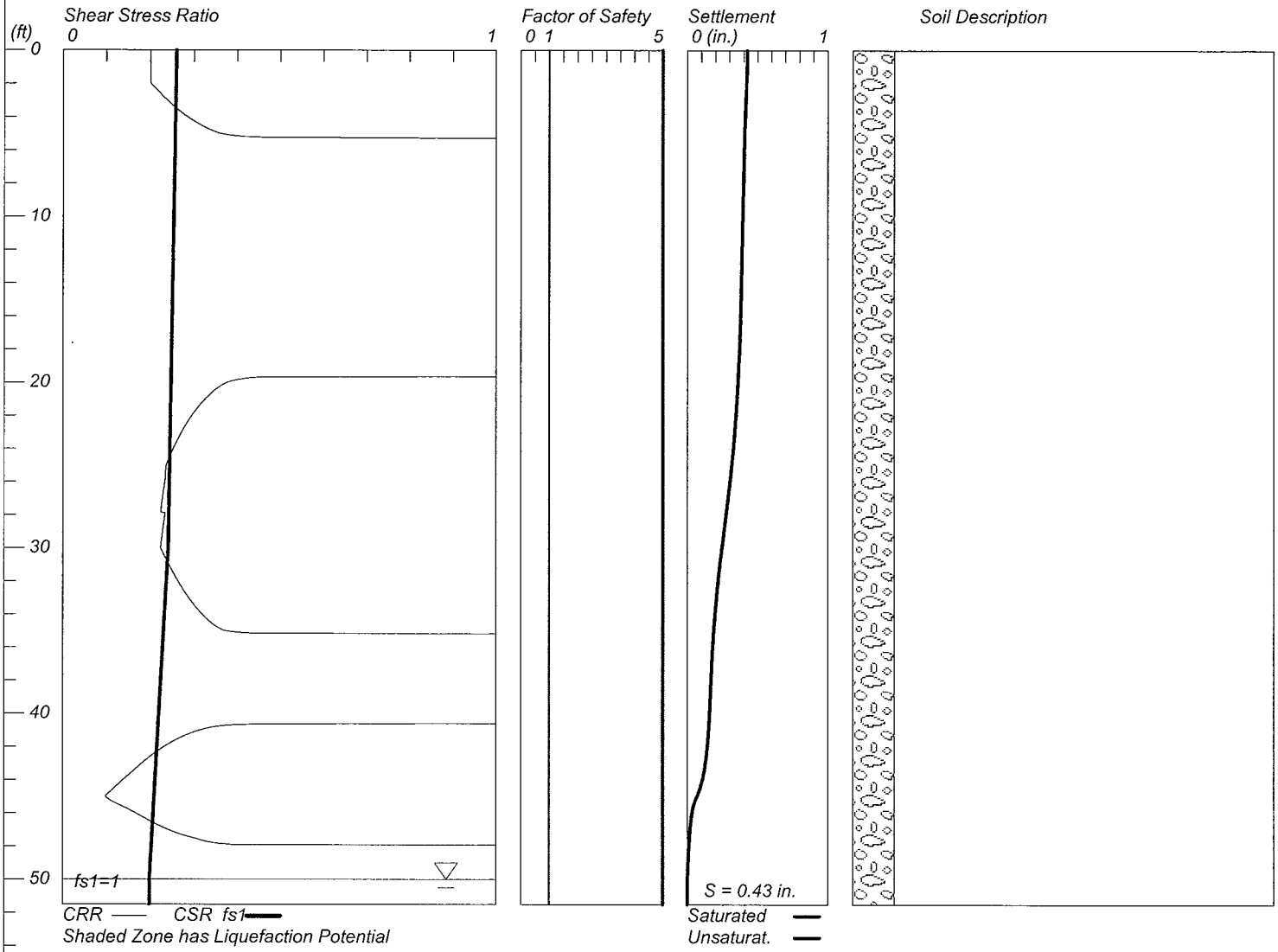
This was request number 3423703
dlg@rapid.msu.montana.edu

LIQUEFACTION ANALYSIS

RUSD Arlington HS

Hole No.=LB-6 Water Depth=50 ft Surface Elev.=846

Magnitude=7.6
Acceleration=0.4g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY
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Font: Courier New, Regular, Size 8 is recommended for this report.

Title: RUSD Arlington HS
Subtitle: 602877-001

Surface Elev.=846
Hole No.=LB-6
Depth of Hole= 51.50 ft
Water Table during Earthquake= 50.00 ft
Water Table during In-Situ Testing= 50.00 ft
Max. Acceleration= 0.4 g
Earthquake Magnitude= 7.60

Input Data:
Surface Elev.=846
Hole No.=LB-6
Depth of Hole=51.50 ft
Water Table during Earthquake= 50.00 ft
Water Table during In-Situ Testing= 50.00 ft
Max. Acceleration=0.4 g
Earthquake Magnitude=7.60

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.3
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1
Plot one CSR curve (fs1=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	6.00	120.00	35.00
2.00	6.00	120.00	35.00
5.00	10.00	120.00	65.00
10.00	20.00	120.00	5.00
15.00	20.00	120.00	65.00
20.00	15.00	120.00	65.00
25.00	12.00	120.00	65.00
30.00	12.00	120.00	65.00
35.00	19.00	120.00	65.00
40.00	33.00	120.00	5.00
45.00	11.00	120.00	5.00
50.00	31.00	120.00	65.00

Output Results:
Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.43 in.
Total Settlement of Saturated and Unsaturated Sands=0.43 in.
Differential Settlement=0.213 to 0.281 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.20	0.26	5.00	0.00	0.43	0.43
0.05	0.20	0.26	5.00	0.00	0.43	0.43
0.10	0.20	0.26	5.00	0.00	0.43	0.43
0.15	0.20	0.26	5.00	0.00	0.43	0.43
0.20	0.20	0.26	5.00	0.00	0.43	0.43
0.25	0.20	0.26	5.00	0.00	0.43	0.43
0.30	0.20	0.26	5.00	0.00	0.43	0.43
0.35	0.20	0.26	5.00	0.00	0.43	0.43
0.40	0.20	0.26	5.00	0.00	0.43	0.43
0.45	0.20	0.26	5.00	0.00	0.43	0.43
0.50	0.20	0.26	5.00	0.00	0.43	0.43
0.55	0.20	0.26	5.00	0.00	0.43	0.43
0.60	0.20	0.26	5.00	0.00	0.43	0.43
0.65	0.20	0.26	5.00	0.00	0.43	0.43
0.70	0.20	0.26	5.00	0.00	0.42	0.42
0.75	0.20	0.26	5.00	0.00	0.42	0.42
0.80	0.20	0.26	5.00	0.00	0.42	0.42
0.85	0.20	0.26	5.00	0.00	0.42	0.42
0.90	0.20	0.26	5.00	0.00	0.42	0.42
0.95	0.20	0.26	5.00	0.00	0.42	0.42
1.00	0.20	0.26	5.00	0.00	0.42	0.42
1.05	0.20	0.26	5.00	0.00	0.42	0.42
1.10	0.20	0.26	5.00	0.00	0.42	0.42
1.15	0.20	0.26	5.00	0.00	0.42	0.42
1.20	0.20	0.26	5.00	0.00	0.42	0.42
1.25	0.20	0.26	5.00	0.00	0.42	0.42
1.30	0.20	0.26	5.00	0.00	0.42	0.42
1.35	0.20	0.26	5.00	0.00	0.42	0.42
1.40	0.20	0.26	5.00	0.00	0.42	0.42
1.45	0.20	0.26	5.00	0.00	0.42	0.42
1.50	0.20	0.26	5.00	0.00	0.42	0.42
1.55	0.20	0.26	5.00	0.00	0.42	0.42
1.60	0.20	0.26	5.00	0.00	0.42	0.42
1.65	0.20	0.26	5.00	0.00	0.42	0.42
1.70	0.20	0.26	5.00	0.00	0.42	0.42
1.75	0.20	0.26	5.00	0.00	0.42	0.42
1.80	0.20	0.26	5.00	0.00	0.42	0.42
1.85	0.20	0.26	5.00	0.00	0.42	0.42
1.90	0.20	0.26	5.00	0.00	0.42	0.42
1.95	0.20	0.26	5.00	0.00	0.42	0.42
2.00	0.20	0.26	5.00	0.00	0.42	0.42
2.05	0.20	0.26	5.00	0.00	0.42	0.42
2.10	0.21	0.26	5.00	0.00	0.42	0.42
2.15	0.21	0.26	5.00	0.00	0.42	0.42
2.20	0.21	0.26	5.00	0.00	0.42	0.42
2.25	0.21	0.26	5.00	0.00	0.42	0.42
2.30	0.21	0.26	5.00	0.00	0.42	0.42
2.35	0.21	0.26	5.00	0.00	0.42	0.42
2.40	0.22	0.26	5.00	0.00	0.42	0.42
2.45	0.22	0.26	5.00	0.00	0.42	0.42
2.50	0.22	0.26	5.00	0.00	0.42	0.42
2.55	0.22	0.26	5.00	0.00	0.42	0.42
2.60	0.22	0.26	5.00	0.00	0.42	0.42
2.65	0.22	0.26	5.00	0.00	0.42	0.42
2.70	0.23	0.26	5.00	0.00	0.42	0.42
2.75	0.23	0.26	5.00	0.00	0.42	0.42
2.80	0.23	0.26	5.00	0.00	0.42	0.42

2.85	0.23	0.26	5.00	0.00	0.42	0.42
2.90	0.23	0.26	5.00	0.00	0.42	0.42
2.95	0.24	0.26	5.00	0.00	0.42	0.42
3.00	0.24	0.26	5.00	0.00	0.42	0.42
3.05	0.24	0.26	5.00	0.00	0.42	0.42
3.10	0.24	0.26	5.00	0.00	0.42	0.42
3.15	0.24	0.26	5.00	0.00	0.41	0.41
3.20	0.25	0.26	5.00	0.00	0.41	0.41
3.25	0.25	0.26	5.00	0.00	0.41	0.41
3.30	0.25	0.26	5.00	0.00	0.41	0.41
3.35	0.25	0.26	5.00	0.00	0.41	0.41
3.40	0.26	0.26	5.00	0.00	0.41	0.41
3.45	0.26	0.26	5.00	0.00	0.41	0.41
3.50	0.26	0.26	5.00	0.00	0.41	0.41
3.55	0.26	0.26	5.00	0.00	0.41	0.41
3.60	0.26	0.26	5.00	0.00	0.41	0.41
3.65	0.27	0.26	5.00	0.00	0.41	0.41
3.70	0.27	0.26	5.00	0.00	0.41	0.41
3.75	0.27	0.26	5.00	0.00	0.41	0.41
3.80	0.27	0.26	5.00	0.00	0.41	0.41
3.85	0.28	0.26	5.00	0.00	0.41	0.41
3.90	0.28	0.26	5.00	0.00	0.41	0.41
3.95	0.28	0.26	5.00	0.00	0.41	0.41
4.00	0.28	0.26	5.00	0.00	0.41	0.41
4.05	0.29	0.26	5.00	0.00	0.41	0.41
4.10	0.29	0.26	5.00	0.00	0.41	0.41
4.15	0.29	0.26	5.00	0.00	0.41	0.41
4.20	0.30	0.26	5.00	0.00	0.41	0.41
4.25	0.30	0.26	5.00	0.00	0.41	0.41
4.30	0.30	0.26	5.00	0.00	0.41	0.41
4.35	0.30	0.26	5.00	0.00	0.41	0.41
4.40	0.31	0.26	5.00	0.00	0.41	0.41
4.45	0.31	0.26	5.00	0.00	0.41	0.41
4.50	0.31	0.26	5.00	0.00	0.41	0.41
4.55	0.32	0.26	5.00	0.00	0.41	0.41
4.60	0.32	0.26	5.00	0.00	0.41	0.41
4.65	0.33	0.26	5.00	0.00	0.41	0.41
4.70	0.33	0.26	5.00	0.00	0.41	0.41
4.75	0.33	0.26	5.00	0.00	0.41	0.41
4.80	0.34	0.26	5.00	0.00	0.41	0.41
4.85	0.34	0.26	5.00	0.00	0.41	0.41
4.90	0.35	0.26	5.00	0.00	0.41	0.41
4.95	0.35	0.26	5.00	0.00	0.41	0.41
5.00	0.36	0.26	5.00	0.00	0.41	0.41
5.05	0.37	0.26	5.00	0.00	0.41	0.41
5.10	0.38	0.26	5.00	0.00	0.41	0.41
5.15	0.39	0.26	5.00	0.00	0.41	0.41
5.20	0.41	0.26	5.00	0.00	0.41	0.41
5.25	0.46	0.26	5.00	0.00	0.41	0.41
5.30	1.93	0.26	5.00	0.00	0.41	0.41
5.35	1.93	0.26	5.00	0.00	0.41	0.41
5.40	1.93	0.26	5.00	0.00	0.41	0.41
5.45	1.93	0.26	5.00	0.00	0.41	0.41
5.50	1.93	0.26	5.00	0.00	0.41	0.41
5.55	1.93	0.26	5.00	0.00	0.41	0.41
5.60	1.93	0.26	5.00	0.00	0.41	0.41
5.65	1.93	0.26	5.00	0.00	0.41	0.41
5.70	1.93	0.26	5.00	0.00	0.41	0.41
5.75	1.93	0.26	5.00	0.00	0.41	0.41
5.80	1.93	0.26	5.00	0.00	0.41	0.41
5.85	1.93	0.26	5.00	0.00	0.40	0.40
5.90	1.93	0.26	5.00	0.00	0.40	0.40
5.95	1.93	0.26	5.00	0.00	0.40	0.40
6.00	1.93	0.26	5.00	0.00	0.40	0.40
6.05	1.93	0.26	5.00	0.00	0.40	0.40
6.10	1.93	0.26	5.00	0.00	0.40	0.40
6.15	1.93	0.26	5.00	0.00	0.40	0.40
6.20	1.93	0.26	5.00	0.00	0.40	0.40
6.25	1.93	0.26	5.00	0.00	0.40	0.40
6.30	1.93	0.26	5.00	0.00	0.40	0.40
6.35	1.93	0.26	5.00	0.00	0.40	0.40
6.40	1.93	0.26	5.00	0.00	0.40	0.40
6.45	1.93	0.26	5.00	0.00	0.40	0.40
6.50	1.93	0.26	5.00	0.00	0.40	0.40
6.55	1.93	0.26	5.00	0.00	0.40	0.40
6.60	1.93	0.26	5.00	0.00	0.40	0.40
6.65	1.93	0.26	5.00	0.00	0.40	0.40
6.70	1.93	0.26	5.00	0.00	0.40	0.40
6.75	1.93	0.26	5.00	0.00	0.40	0.40
6.80	1.93	0.26	5.00	0.00	0.40	0.40
6.85	1.93	0.26	5.00	0.00	0.40	0.40
6.90	1.93	0.26	5.00	0.00	0.40	0.40
6.95	1.93	0.26	5.00	0.00	0.40	0.40
7.00	1.93	0.26	5.00	0.00	0.40	0.40
7.05	1.93	0.26	5.00	0.00	0.40	0.40
7.10	1.93	0.26	5.00	0.00	0.40	0.40
7.15	1.93	0.26	5.00	0.00	0.40	0.40
7.20	1.93	0.26	5.00	0.00	0.40	0.40
7.25	1.93	0.26	5.00	0.00	0.40	0.40
7.30	1.93	0.26	5.00	0.00	0.40	0.40
7.35	1.93	0.26	5.00	0.00	0.40	0.40
7.40	1.93	0.26	5.00	0.00	0.40	0.40
7.45	1.93	0.26	5.00	0.00	0.40	0.40
7.50	1.93	0.26	5.00	0.00	0.40	0.40
7.55	1.93	0.26	5.00	0.00	0.40	0.40
7.60	1.93	0.26	5.00	0.00	0.40	0.40
7.65	1.93	0.26	5.00	0.00	0.40	0.40
7.70	1.93	0.26	5.00	0.00	0.40	0.40
7.75	1.93	0.26	5.00	0.00	0.40	0.40
7.80	1.93	0.26	5.00	0.00	0.40	0.40
7.85	1.93	0.26	5.00	0.00	0.40	0.40
7.90	1.93	0.26	5.00	0.00	0.40	0.40
7.95	1.93	0.26	5.00	0.00	0.40	0.40
8.00	1.93	0.26	5.00	0.00	0.40	0.40
8.05	1.93	0.26	5.00	0.00	0.40	0.40
8.10	1.93	0.26	5.00	0.00	0.40	0.40
8.15	1.93	0.26	5.00	0.00	0.40	0.40
8.20	1.93	0.26	5.00	0.00	0.40	0.40
8.25	1.93	0.25	5.00	0.00	0.40	0.40
8.30	1.93	0.25	5.00	0.00	0.40	0.40
8.35	1.93	0.25	5.00	0.00	0.40	0.40
8.40	1.93	0.25	5.00	0.00	0.40	0.40
8.45	1.93	0.25	5.00	0.00	0.40	0.40
8.50	1.93	0.25	5.00	0.00	0.40	0.40
8.55	1.93	0.25	5.00	0.00	0.40	0.40
8.60	1.93	0.25	5.00	0.00	0.40	0.40
8.65	1.93	0.25	5.00	0.00	0.40	0.40
8.70	1.93	0.25	5.00	0.00	0.40	0.40
8.75	1.93	0.25	5.00	0.00	0.40	0.40
8.80	1.93	0.25	5.00	0.00	0.40	0.40
8.85	1.93	0.25	5.00	0.00	0.40	0.40
8.90	1.93	0.25	5.00	0.00	0.40	0.40
8.95	1.93	0.25	5.00	0.00	0.40	0.40
9.00	1.93	0.25	5.00	0.00	0.40	0.40
9.05	1.93	0.25	5.00	0.00	0.40	0.40
9.10	1.93	0.25	5.00	0.00	0.40	0.40
9.15	1.93	0.25	5.00	0.00	0.40	0.40
9.20	1.93	0.25	5.00	0.00	0.40	0.40

9.25	1.93	0.25	5.00	0.00	0.40	0.40
9.30	1.93	0.25	5.00	0.00	0.40	0.40
9.35	1.93	0.25	5.00	0.00	0.40	0.40
9.40	1.93	0.25	5.00	0.00	0.40	0.40
9.45	1.93	0.25	5.00	0.00	0.40	0.40
9.50	1.93	0.25	5.00	0.00	0.40	0.40
9.55	1.93	0.25	5.00	0.00	0.40	0.40
9.60	1.93	0.25	5.00	0.00	0.40	0.40
9.65	1.93	0.25	5.00	0.00	0.39	0.39
9.70	1.93	0.25	5.00	0.00	0.39	0.39
9.75	1.93	0.25	5.00	0.00	0.39	0.39
9.80	1.93	0.25	5.00	0.00	0.39	0.39
9.85	1.93	0.25	5.00	0.00	0.39	0.39
9.90	1.93	0.25	5.00	0.00	0.39	0.39
9.95	1.93	0.25	5.00	0.00	0.39	0.39
10.00	1.93	0.25	5.00	0.00	0.39	0.39
10.05	1.93	0.25	5.00	0.00	0.39	0.39
10.10	1.93	0.25	5.00	0.00	0.39	0.39
10.15	1.93	0.25	5.00	0.00	0.39	0.39
10.20	1.93	0.25	5.00	0.00	0.39	0.39
10.25	1.93	0.25	5.00	0.00	0.39	0.39
10.30	1.93	0.25	5.00	0.00	0.39	0.39
10.35	1.93	0.25	5.00	0.00	0.39	0.39
10.40	1.93	0.25	5.00	0.00	0.39	0.39
10.45	1.93	0.25	5.00	0.00	0.39	0.39
10.50	1.93	0.25	5.00	0.00	0.39	0.39
10.55	1.93	0.25	5.00	0.00	0.39	0.39
10.60	1.93	0.25	5.00	0.00	0.39	0.39
10.65	1.93	0.25	5.00	0.00	0.39	0.39
10.70	1.93	0.25	5.00	0.00	0.39	0.39
10.75	1.93	0.25	5.00	0.00	0.39	0.39
10.80	1.93	0.25	5.00	0.00	0.39	0.39
10.85	1.93	0.25	5.00	0.00	0.39	0.39
10.90	1.93	0.25	5.00	0.00	0.39	0.39
10.95	1.93	0.25	5.00	0.00	0.39	0.39
11.00	1.93	0.25	5.00	0.00	0.39	0.39
11.05	1.93	0.25	5.00	0.00	0.39	0.39
11.10	1.93	0.25	5.00	0.00	0.39	0.39
11.15	1.93	0.25	5.00	0.00	0.39	0.39
11.20	1.93	0.25	5.00	0.00	0.39	0.39
11.25	1.93	0.25	5.00	0.00	0.39	0.39
11.30	1.93	0.25	5.00	0.00	0.39	0.39
11.35	1.93	0.25	5.00	0.00	0.39	0.39
11.40	1.93	0.25	5.00	0.00	0.39	0.39
11.45	1.93	0.25	5.00	0.00	0.39	0.39
11.50	1.93	0.25	5.00	0.00	0.39	0.39
11.55	1.93	0.25	5.00	0.00	0.39	0.39
11.60	1.93	0.25	5.00	0.00	0.39	0.39
11.65	1.93	0.25	5.00	0.00	0.39	0.39
11.70	1.93	0.25	5.00	0.00	0.39	0.39
11.75	1.93	0.25	5.00	0.00	0.39	0.39
11.80	1.93	0.25	5.00	0.00	0.39	0.39
11.85	1.93	0.25	5.00	0.00	0.39	0.39
11.90	1.93	0.25	5.00	0.00	0.39	0.39
11.95	1.93	0.25	5.00	0.00	0.39	0.39
12.00	1.93	0.25	5.00	0.00	0.39	0.39
12.05	1.93	0.25	5.00	0.00	0.39	0.39
12.10	1.93	0.25	5.00	0.00	0.39	0.39
12.15	1.93	0.25	5.00	0.00	0.39	0.39
12.20	1.93	0.25	5.00	0.00	0.39	0.39
12.25	1.93	0.25	5.00	0.00	0.39	0.39
12.30	1.93	0.25	5.00	0.00	0.39	0.39
12.35	1.93	0.25	5.00	0.00	0.39	0.39
12.40	1.93	0.25	5.00	0.00	0.39	0.39
12.45	1.93	0.25	5.00	0.00	0.39	0.39
12.50	1.93	0.25	5.00	0.00	0.39	0.39
12.55	1.93	0.25	5.00	0.00	0.39	0.39
12.60	1.93	0.25	5.00	0.00	0.39	0.39
12.65	1.93	0.25	5.00	0.00	0.39	0.39
12.70	1.93	0.25	5.00	0.00	0.39	0.39
12.75	1.93	0.25	5.00	0.00	0.39	0.39
12.80	1.93	0.25	5.00	0.00	0.39	0.39
12.85	1.93	0.25	5.00	0.00	0.39	0.39
12.90	1.93	0.25	5.00	0.00	0.39	0.39
12.95	1.93	0.25	5.00	0.00	0.39	0.39
13.00	1.93	0.25	5.00	0.00	0.39	0.39
13.05	1.93	0.25	5.00	0.00	0.39	0.39
13.10	1.93	0.25	5.00	0.00	0.39	0.39
13.15	1.93	0.25	5.00	0.00	0.39	0.39
13.20	1.93	0.25	5.00	0.00	0.39	0.39
13.25	1.93	0.25	5.00	0.00	0.39	0.39
13.30	1.93	0.25	5.00	0.00	0.39	0.39
13.35	1.93	0.25	5.00	0.00	0.39	0.39
13.40	1.93	0.25	5.00	0.00	0.39	0.39
13.45	1.93	0.25	5.00	0.00	0.39	0.39
13.50	1.93	0.25	5.00	0.00	0.39	0.39
13.55	1.93	0.25	5.00	0.00	0.39	0.39
13.60	1.93	0.25	5.00	0.00	0.39	0.39
13.65	1.93	0.25	5.00	0.00	0.39	0.39
13.70	1.93	0.25	5.00	0.00	0.38	0.38
13.75	1.93	0.25	5.00	0.00	0.38	0.38
13.80	1.93	0.25	5.00	0.00	0.38	0.38
13.85	1.93	0.25	5.00	0.00	0.38	0.38
13.90	1.93	0.25	5.00	0.00	0.38	0.38
13.95	1.93	0.25	5.00	0.00	0.38	0.38
14.00	1.93	0.25	5.00	0.00	0.38	0.38
14.05	1.93	0.25	5.00	0.00	0.38	0.38
14.10	1.93	0.25	5.00	0.00	0.38	0.38
14.15	1.93	0.25	5.00	0.00	0.38	0.38
14.20	1.93	0.25	5.00	0.00	0.38	0.38
14.25	1.93	0.25	5.00	0.00	0.38	0.38
14.30	1.93	0.25	5.00	0.00	0.38	0.38
14.35	1.93	0.25	5.00	0.00	0.38	0.38
14.40	1.93	0.25	5.00	0.00	0.38	0.38
14.45	1.93	0.25	5.00	0.00	0.38	0.38
14.50	1.93	0.25	5.00	0.00	0.38	0.38
14.55	1.93	0.25	5.00	0.00	0.38	0.38
14.60	1.93	0.25	5.00	0.00	0.38	0.38
14.65	1.93	0.25	5.00	0.00	0.38	0.38
14.70	1.93	0.25	5.00	0.00	0.38	0.38
14.75	1.93	0.25	5.00	0.00	0.38	0.38
14.80	1.93	0.25	5.00	0.00	0.38	0.38
14.85	1.93	0.25	5.00	0.00	0.38	0.38
14.90	1.93	0.25	5.00	0.00	0.38	0.38
14.95	1.93	0.25	5.00	0.00	0.38	0.38
15.00	1.93	0.25	5.00	0.00	0.38	0.38
15.05	1.93	0.25	5.00	0.00	0.38	0.38
15.10	1.93	0.25	5.00	0.00	0.38	0.38
15.15	1.93	0.25	5.00	0.00	0.38	0.38
15.20	1.93	0.25	5.00	0.00	0.38	0.38
15.25	1.93	0.25	5.00	0.00	0.38	0.38
15.30	1.93	0.25	5.00	0.00	0.38	0.38
15.35	1.93	0.25	5.00	0.00	0.38	0.38
15.40	1.93	0.25	5.00	0.00	0.38	0.38
15.45	1.93	0.25	5.00	0.00	0.38	0.38
15.50	1.93	0.25	5.00	0.00	0.38	0.38
15.55	1.93	0.25	5.00	0.00	0.38	0.38
15.60	1.93	0.25	5.00	0.00	0.38	0.38

15.65	1.93	0.25	5.00	0.00	0.38	0.38
15.70	1.93	0.25	5.00	0.00	0.38	0.38
15.75	1.93	0.25	5.00	0.00	0.38	0.38
15.80	1.93	0.25	5.00	0.00	0.38	0.38
15.85	1.93	0.25	5.00	0.00	0.38	0.38
15.90	1.93	0.25	5.00	0.00	0.38	0.38
15.95	1.93	0.25	5.00	0.00	0.38	0.38
16.00	1.93	0.25	5.00	0.00	0.38	0.38
16.05	1.93	0.25	5.00	0.00	0.38	0.38
16.10	1.93	0.25	5.00	0.00	0.38	0.38
16.15	1.93	0.25	5.00	0.00	0.38	0.38
16.20	1.93	0.25	5.00	0.00	0.38	0.38
16.25	1.93	0.25	5.00	0.00	0.38	0.38
16.30	1.93	0.25	5.00	0.00	0.38	0.38
16.35	1.93	0.25	5.00	0.00	0.38	0.38
16.40	1.93	0.25	5.00	0.00	0.38	0.38
16.45	1.93	0.25	5.00	0.00	0.38	0.38
16.50	1.93	0.25	5.00	0.00	0.38	0.38
16.55	1.93	0.25	5.00	0.00	0.38	0.38
16.60	1.93	0.25	5.00	0.00	0.38	0.38
16.65	1.93	0.25	5.00	0.00	0.38	0.38
16.70	1.93	0.25	5.00	0.00	0.38	0.38
16.75	1.93	0.25	5.00	0.00	0.38	0.38
16.80	1.93	0.25	5.00	0.00	0.38	0.38
16.85	1.93	0.25	5.00	0.00	0.38	0.38
16.90	1.93	0.25	5.00	0.00	0.38	0.38
16.95	1.93	0.25	5.00	0.00	0.38	0.38
17.00	1.93	0.25	5.00	0.00	0.38	0.38
17.05	1.93	0.25	5.00	0.00	0.38	0.38
17.10	1.93	0.25	5.00	0.00	0.38	0.38
17.15	1.93	0.25	5.00	0.00	0.38	0.38
17.20	1.93	0.25	5.00	0.00	0.38	0.38
17.25	1.93	0.25	5.00	0.00	0.37	0.37
17.30	1.93	0.25	5.00	0.00	0.37	0.37
17.35	1.93	0.25	5.00	0.00	0.37	0.37
17.40	1.93	0.25	5.00	0.00	0.37	0.37
17.45	1.93	0.25	5.00	0.00	0.37	0.37
17.50	1.93	0.25	5.00	0.00	0.37	0.37
17.55	1.93	0.25	5.00	0.00	0.37	0.37
17.60	1.93	0.25	5.00	0.00	0.37	0.37
17.65	1.93	0.25	5.00	0.00	0.37	0.37
17.70	1.93	0.25	5.00	0.00	0.37	0.37
17.75	1.93	0.25	5.00	0.00	0.37	0.37
17.80	1.93	0.25	5.00	0.00	0.37	0.37
17.85	1.93	0.25	5.00	0.00	0.37	0.37
17.90	1.93	0.25	5.00	0.00	0.37	0.37
17.95	1.93	0.25	5.00	0.00	0.37	0.37
18.00	1.93	0.25	5.00	0.00	0.37	0.37
18.05	1.93	0.25	5.00	0.00	0.37	0.37
18.10	1.93	0.25	5.00	0.00	0.37	0.37
18.15	1.93	0.25	5.00	0.00	0.37	0.37
18.20	1.93	0.25	5.00	0.00	0.37	0.37
18.25	1.93	0.25	5.00	0.00	0.37	0.37
18.30	1.93	0.25	5.00	0.00	0.37	0.37
18.35	1.93	0.25	5.00	0.00	0.37	0.37
18.40	1.93	0.25	5.00	0.00	0.37	0.37
18.45	1.93	0.25	5.00	0.00	0.37	0.37
18.50	1.93	0.25	5.00	0.00	0.37	0.37
18.55	1.93	0.25	5.00	0.00	0.37	0.37
18.60	1.93	0.25	5.00	0.00	0.37	0.37
18.65	1.93	0.25	5.00	0.00	0.37	0.37
18.70	1.93	0.25	5.00	0.00	0.37	0.37
18.75	1.93	0.25	5.00	0.00	0.37	0.37
18.80	1.93	0.25	5.00	0.00	0.37	0.37
18.85	1.93	0.25	5.00	0.00	0.37	0.37
18.90	1.93	0.25	5.00	0.00	0.37	0.37
18.95	1.93	0.25	5.00	0.00	0.37	0.37
19.00	1.93	0.25	5.00	0.00	0.37	0.37
19.05	1.93	0.25	5.00	0.00	0.37	0.37
19.10	1.93	0.25	5.00	0.00	0.37	0.37
19.15	1.93	0.25	5.00	0.00	0.37	0.37
19.20	1.93	0.25	5.00	0.00	0.37	0.37
19.25	1.93	0.25	5.00	0.00	0.36	0.36
19.30	1.93	0.25	5.00	0.00	0.36	0.36
19.35	1.93	0.25	5.00	0.00	0.36	0.36
19.40	1.93	0.25	5.00	0.00	0.36	0.36
19.45	1.93	0.25	5.00	0.00	0.36	0.36
19.50	1.93	0.25	5.00	0.00	0.36	0.36
19.55	1.93	0.25	5.00	0.00	0.36	0.36
19.60	1.93	0.25	5.00	0.00	0.36	0.36
19.65	1.93	0.25	5.00	0.00	0.36	0.36
19.70	0.45	0.25	5.00	0.00	0.36	0.36
19.75	0.43	0.25	5.00	0.00	0.36	0.36
19.80	0.41	0.25	5.00	0.00	0.36	0.36
19.85	0.40	0.25	5.00	0.00	0.36	0.36
19.90	0.39	0.25	5.00	0.00	0.36	0.36
19.95	0.38	0.25	5.00	0.00	0.36	0.36
20.00	0.38	0.25	5.00	0.00	0.36	0.36
20.05	0.37	0.25	5.00	0.00	0.36	0.36
20.10	0.37	0.25	5.00	0.00	0.36	0.36
20.15	0.37	0.25	5.00	0.00	0.36	0.36
20.20	0.36	0.25	5.00	0.00	0.36	0.36
20.25	0.36	0.25	5.00	0.00	0.36	0.36
20.30	0.36	0.25	5.00	0.00	0.36	0.36
20.35	0.36	0.25	5.00	0.00	0.36	0.36
20.40	0.35	0.25	5.00	0.00	0.36	0.36
20.45	0.35	0.25	5.00	0.00	0.36	0.36
20.50	0.35	0.25	5.00	0.00	0.36	0.36
20.55	0.35	0.25	5.00	0.00	0.36	0.36
20.60	0.34	0.25	5.00	0.00	0.36	0.36
20.65	0.34	0.25	5.00	0.00	0.36	0.36
20.70	0.34	0.25	5.00	0.00	0.36	0.36
20.75	0.34	0.25	5.00	0.00	0.36	0.36
20.80	0.33	0.25	5.00	0.00	0.36	0.36
20.85	0.33	0.25	5.00	0.00	0.36	0.36
20.90	0.33	0.25	5.00	0.00	0.35	0.35
20.95	0.33	0.25	5.00	0.00	0.35	0.35
21.00	0.33	0.25	5.00	0.00	0.35	0.35
21.05	0.33	0.25	5.00	0.00	0.35	0.35
21.10	0.32	0.25	5.00	0.00	0.35	0.35
21.15	0.32	0.25	5.00	0.00	0.35	0.35
21.20	0.32	0.25	5.00	0.00	0.35	0.35
21.25	0.32	0.25	5.00	0.00	0.35	0.35
21.30	0.32	0.25	5.00	0.00	0.35	0.35
21.35	0.31	0.25	5.00	0.00	0.35	0.35
21.40	0.31	0.25	5.00	0.00	0.35	0.35
21.45	0.31	0.25	5.00	0.00	0.35	0.35
21.50	0.31	0.25	5.00	0.00	0.35	0.35
21.55	0.31	0.25	5.00	0.00	0.35	0.35
21.60	0.31	0.25	5.00	0.00	0.35	0.35
21.65	0.31	0.25	5.00	0.00	0.35	0.35
21.70	0.30	0.25	5.00	0.00	0.35	0.35
21.75	0.30	0.25	5.00	0.00	0.35	0.35
21.80	0.30	0.25	5.00	0.00	0.35	0.35
21.85	0.30	0.25	5.00	0.00	0.35	0.35
21.90	0.30	0.25	5.00	0.00	0.35	0.35
21.95	0.30	0.25	5.00	0.00	0.35	0.35
22.00	0.30	0.25	5.00	0.00	0.35	0.35

22.05	0.29	0.25	5.00	0.00	0.35	0.35
22.10	0.29	0.25	5.00	0.00	0.35	0.35
22.15	0.29	0.25	5.00	0.00	0.35	0.35
22.20	0.29	0.25	5.00	0.00	0.34	0.34
22.25	0.29	0.25	5.00	0.00	0.34	0.34
22.30	0.29	0.25	5.00	0.00	0.34	0.34
22.35	0.29	0.25	5.00	0.00	0.34	0.34
22.40	0.29	0.25	5.00	0.00	0.34	0.34
22.45	0.29	0.25	5.00	0.00	0.34	0.34
22.50	0.28	0.25	5.00	0.00	0.34	0.34
22.55	0.28	0.25	5.00	0.00	0.34	0.34
22.60	0.28	0.25	5.00	0.00	0.34	0.34
22.65	0.28	0.25	5.00	0.00	0.34	0.34
22.70	0.28	0.25	5.00	0.00	0.34	0.34
22.75	0.28	0.25	5.00	0.00	0.34	0.34
22.80	0.28	0.25	5.00	0.00	0.34	0.34
22.85	0.28	0.25	5.00	0.00	0.34	0.34
22.90	0.27	0.25	5.00	0.00	0.34	0.34
22.95	0.27	0.25	5.00	0.00	0.34	0.34
23.00	0.27	0.25	5.00	0.00	0.34	0.34
23.05	0.27	0.25	5.00	0.00	0.34	0.34
23.10	0.27	0.25	5.00	0.00	0.34	0.34
23.15	0.27	0.25	5.00	0.00	0.34	0.34
23.20	0.27	0.25	5.00	0.00	0.34	0.34
23.25	0.27	0.25	5.00	0.00	0.34	0.34
23.30	0.27	0.25	5.00	0.00	0.34	0.34
23.35	0.27	0.25	5.00	0.00	0.33	0.33
23.40	0.26	0.25	5.00	0.00	0.33	0.33
23.45	0.26	0.25	5.00	0.00	0.33	0.33
23.50	0.26	0.25	5.00	0.00	0.33	0.33
23.55	0.26	0.25	5.00	0.00	0.33	0.33
23.60	0.26	0.25	5.00	0.00	0.33	0.33
23.65	0.26	0.25	5.00	0.00	0.33	0.33
23.70	0.26	0.25	5.00	0.00	0.33	0.33
23.75	0.26	0.25	5.00	0.00	0.33	0.33
23.80	0.26	0.25	5.00	0.00	0.33	0.33
23.85	0.26	0.25	5.00	0.00	0.33	0.33
23.90	0.26	0.25	5.00	0.00	0.33	0.33
23.95	0.25	0.25	5.00	0.00	0.33	0.33
24.00	0.25	0.25	5.00	0.00	0.33	0.33
24.05	0.25	0.25	5.00	0.00	0.33	0.33
24.10	0.25	0.25	5.00	0.00	0.33	0.33
24.15	0.25	0.25	5.00	0.00	0.33	0.33
24.20	0.25	0.25	5.00	0.00	0.33	0.33
24.25	0.25	0.25	5.00	0.00	0.33	0.33
24.30	0.25	0.25	5.00	0.00	0.32	0.32
24.35	0.25	0.25	5.00	0.00	0.32	0.32
24.40	0.25	0.25	5.00	0.00	0.32	0.32
24.45	0.25	0.25	5.00	0.00	0.32	0.32
24.50	0.25	0.25	5.00	0.00	0.32	0.32
24.55	0.24	0.25	5.00	0.00	0.32	0.32
24.60	0.24	0.25	5.00	0.00	0.32	0.32
24.65	0.24	0.25	5.00	0.00	0.32	0.32
24.70	0.24	0.25	5.00	0.00	0.32	0.32
24.75	0.24	0.24	5.00	0.00	0.32	0.32
24.80	0.24	0.24	5.00	0.00	0.32	0.32
24.85	0.24	0.24	5.00	0.00	0.32	0.32
24.90	0.24	0.24	5.00	0.00	0.32	0.32
24.95	0.24	0.24	5.00	0.00	0.32	0.32
25.00	0.24	0.24	5.00	0.00	0.32	0.32
25.05	0.24	0.24	5.00	0.00	0.32	0.32
25.10	0.24	0.24	5.00	0.00	0.32	0.32
25.15	0.24	0.24	5.00	0.00	0.31	0.31
25.20	0.24	0.24	5.00	0.00	0.31	0.31
25.25	0.24	0.24	5.00	0.00	0.31	0.31
25.30	0.24	0.24	5.00	0.00	0.31	0.31
25.35	0.24	0.24	5.00	0.00	0.31	0.31
25.40	0.24	0.24	5.00	0.00	0.31	0.31
25.45	0.24	0.24	5.00	0.00	0.31	0.31
25.50	0.24	0.24	5.00	0.00	0.31	0.31
25.55	0.23	0.24	5.00	0.00	0.31	0.31
25.60	0.23	0.24	5.00	0.00	0.31	0.31
25.65	0.24	0.24	5.00	0.00	0.31	0.31
25.70	0.24	0.24	5.00	0.00	0.31	0.31
25.75	0.24	0.24	5.00	0.00	0.31	0.31
25.80	0.24	0.24	5.00	0.00	0.31	0.31
25.85	0.23	0.24	5.00	0.00	0.31	0.31
25.90	0.23	0.24	5.00	0.00	0.31	0.31
25.95	0.23	0.24	5.00	0.00	0.30	0.30
26.00	0.23	0.24	5.00	0.00	0.30	0.30
26.05	0.23	0.24	5.00	0.00	0.30	0.30
26.10	0.23	0.24	5.00	0.00	0.30	0.30
26.15	0.23	0.24	5.00	0.00	0.30	0.30
26.20	0.23	0.24	5.00	0.00	0.30	0.30
26.25	0.23	0.24	5.00	0.00	0.30	0.30
26.30	0.23	0.24	5.00	0.00	0.30	0.30
26.35	0.23	0.24	5.00	0.00	0.30	0.30
26.40	0.23	0.24	5.00	0.00	0.30	0.30
26.45	0.23	0.24	5.00	0.00	0.30	0.30
26.50	0.23	0.24	5.00	0.00	0.30	0.30
26.55	0.23	0.24	5.00	0.00	0.30	0.30
26.60	0.23	0.24	5.00	0.00	0.30	0.30
26.65	0.23	0.24	5.00	0.00	0.30	0.30
26.70	0.23	0.24	5.00	0.00	0.29	0.29
26.75	0.23	0.24	5.00	0.00	0.29	0.29
26.80	0.23	0.24	5.00	0.00	0.29	0.29
26.85	0.23	0.24	5.00	0.00	0.29	0.29
26.90	0.23	0.24	5.00	0.00	0.29	0.29
26.95	0.23	0.24	5.00	0.00	0.29	0.29
27.00	0.23	0.24	5.00	0.00	0.29	0.29
27.05	0.23	0.24	5.00	0.00	0.29	0.29
27.10	0.23	0.24	5.00	0.00	0.29	0.29
27.15	0.23	0.24	5.00	0.00	0.29	0.29
27.20	0.23	0.24	5.00	0.00	0.29	0.29
27.25	0.23	0.24	5.00	0.00	0.29	0.29
27.30	0.23	0.24	5.00	0.00	0.29	0.29
27.35	0.23	0.24	5.00	0.00	0.29	0.29
27.40	0.23	0.24	5.00	0.00	0.28	0.28
27.45	0.23	0.24	5.00	0.00	0.28	0.28
27.50	0.23	0.24	5.00	0.00	0.28	0.28
27.55	0.23	0.24	5.00	0.00	0.28	0.28
27.60	0.23	0.24	5.00	0.00	0.28	0.28
27.65	0.23	0.24	5.00	0.00	0.28	0.28
27.70	0.23	0.24	5.00	0.00	0.28	0.28
27.75	0.22	0.24	5.00	0.00	0.28	0.28
27.80	0.22	0.24	5.00	0.00	0.28	0.28
27.85	0.22	0.24	5.00	0.00	0.28	0.28
27.90	0.23	0.24	5.00	0.00	0.28	0.28
27.95	0.23	0.24	5.00	0.00	0.28	0.28
28.00	0.23	0.24	5.00	0.00	0.28	0.28
28.05	0.23	0.24	5.00	0.00	0.28	0.28
28.10	0.23	0.24	5.00	0.00	0.27	0.27
28.15	0.23	0.24	5.00	0.00	0.27	0.27
28.20	0.23	0.24	5.00	0.00	0.27	0.27
28.25	0.23	0.24	5.00	0.00	0.27	0.27
28.30	0.23	0.24	5.00	0.00	0.27	0.27
28.35	0.23	0.24	5.00	0.00	0.27	0.27
28.40	0.23	0.24	5.00	0.00	0.27	0.27

28.45	0.23	0.24	5.00	0.00	0.27	0.27
28.50	0.23	0.24	5.00	0.00	0.27	0.27
28.55	0.23	0.24	5.00	0.00	0.27	0.27
28.60	0.23	0.24	5.00	0.00	0.27	0.27
28.65	0.23	0.24	5.00	0.00	0.27	0.27
28.70	0.23	0.24	5.00	0.00	0.27	0.27
28.75	0.23	0.24	5.00	0.00	0.27	0.27
28.80	0.23	0.24	5.00	0.00	0.26	0.26
28.85	0.23	0.24	5.00	0.00	0.26	0.26
28.90	0.23	0.24	5.00	0.00	0.26	0.26
28.95	0.23	0.24	5.00	0.00	0.26	0.26
29.00	0.23	0.24	5.00	0.00	0.26	0.26
29.05	0.23	0.24	5.00	0.00	0.26	0.26
29.10	0.23	0.24	5.00	0.00	0.26	0.26
29.15	0.23	0.24	5.00	0.00	0.26	0.26
29.20	0.23	0.24	5.00	0.00	0.26	0.26
29.25	0.23	0.24	5.00	0.00	0.26	0.26
29.30	0.23	0.24	5.00	0.00	0.26	0.26
29.35	0.23	0.24	5.00	0.00	0.26	0.26
29.40	0.23	0.24	5.00	0.00	0.26	0.26
29.45	0.23	0.24	5.00	0.00	0.26	0.26
29.50	0.23	0.24	5.00	0.00	0.25	0.25
29.55	0.23	0.24	5.00	0.00	0.25	0.25
29.60	0.23	0.24	5.00	0.00	0.25	0.25
29.65	0.23	0.24	5.00	0.00	0.25	0.25
29.70	0.23	0.24	5.00	0.00	0.25	0.25
29.75	0.23	0.24	5.00	0.00	0.25	0.25
29.80	0.23	0.24	5.00	0.00	0.25	0.25
29.85	0.22	0.24	5.00	0.00	0.25	0.25
29.90	0.22	0.24	5.00	0.00	0.25	0.25
29.95	0.22	0.24	5.00	0.00	0.25	0.25
30.00	0.22	0.24	5.00	0.00	0.25	0.25
30.05	0.23	0.24	5.00	0.00	0.25	0.25
30.10	0.23	0.24	5.00	0.00	0.25	0.25
30.15	0.23	0.24	5.00	0.00	0.24	0.24
30.20	0.23	0.24	5.00	0.00	0.24	0.24
30.25	0.23	0.24	5.00	0.00	0.24	0.24
30.30	0.23	0.24	5.00	0.00	0.24	0.24
30.35	0.23	0.24	5.00	0.00	0.24	0.24
30.40	0.23	0.24	5.00	0.00	0.24	0.24
30.45	0.23	0.24	5.00	0.00	0.24	0.24
30.50	0.23	0.24	5.00	0.00	0.24	0.24
30.55	0.23	0.24	5.00	0.00	0.24	0.24
30.60	0.24	0.24	5.00	0.00	0.24	0.24
30.65	0.24	0.24	5.00	0.00	0.24	0.24
30.70	0.24	0.24	5.00	0.00	0.24	0.24
30.75	0.24	0.24	5.00	0.00	0.24	0.24
30.80	0.24	0.24	5.00	0.00	0.23	0.23
30.85	0.24	0.24	5.00	0.00	0.23	0.23
30.90	0.24	0.24	5.00	0.00	0.23	0.23
30.95	0.24	0.24	5.00	0.00	0.23	0.23
31.00	0.24	0.24	5.00	0.00	0.23	0.23
31.05	0.24	0.24	5.00	0.00	0.23	0.23
31.10	0.25	0.24	5.00	0.00	0.23	0.23
31.15	0.25	0.24	5.00	0.00	0.23	0.23
31.20	0.25	0.24	5.00	0.00	0.23	0.23
31.25	0.25	0.24	5.00	0.00	0.23	0.23
31.30	0.25	0.24	5.00	0.00	0.23	0.23
31.35	0.25	0.24	5.00	0.00	0.23	0.23
31.40	0.25	0.24	5.00	0.00	0.23	0.23
31.45	0.25	0.24	5.00	0.00	0.23	0.23
31.50	0.25	0.24	5.00	0.00	0.23	0.23
31.55	0.25	0.24	5.00	0.00	0.22	0.22
31.60	0.26	0.24	5.00	0.00	0.22	0.22
31.65	0.26	0.24	5.00	0.00	0.22	0.22
31.70	0.26	0.24	5.00	0.00	0.22	0.22
31.75	0.26	0.24	5.00	0.00	0.22	0.22
31.80	0.26	0.24	5.00	0.00	0.22	0.22
31.85	0.26	0.24	5.00	0.00	0.22	0.22
31.90	0.26	0.24	5.00	0.00	0.22	0.22
31.95	0.26	0.24	5.00	0.00	0.22	0.22
32.00	0.26	0.24	5.00	0.00	0.22	0.22
32.05	0.27	0.24	5.00	0.00	0.22	0.22
32.10	0.27	0.24	5.00	0.00	0.22	0.22
32.15	0.27	0.24	5.00	0.00	0.22	0.22
32.20	0.27	0.24	5.00	0.00	0.22	0.22
32.25	0.27	0.24	5.00	0.00	0.22	0.22
32.30	0.27	0.24	5.00	0.00	0.22	0.22
32.35	0.27	0.24	5.00	0.00	0.22	0.22
32.40	0.27	0.24	5.00	0.00	0.21	0.21
32.45	0.27	0.24	5.00	0.00	0.21	0.21
32.50	0.28	0.24	5.00	0.00	0.21	0.21
32.55	0.28	0.24	5.00	0.00	0.21	0.21
32.60	0.28	0.24	5.00	0.00	0.21	0.21
32.65	0.28	0.24	5.00	0.00	0.21	0.21
32.70	0.28	0.24	5.00	0.00	0.21	0.21
32.75	0.28	0.24	5.00	0.00	0.21	0.21
32.80	0.28	0.24	5.00	0.00	0.21	0.21
32.85	0.28	0.24	5.00	0.00	0.21	0.21
32.90	0.29	0.24	5.00	0.00	0.21	0.21
32.95	0.29	0.24	5.00	0.00	0.21	0.21
33.00	0.29	0.24	5.00	0.00	0.21	0.21
33.05	0.29	0.24	5.00	0.00	0.21	0.21
33.10	0.29	0.24	5.00	0.00	0.21	0.21
33.15	0.29	0.24	5.00	0.00	0.21	0.21
33.20	0.29	0.23	5.00	0.00	0.21	0.21
33.25	0.30	0.23	5.00	0.00	0.21	0.21
33.30	0.30	0.23	5.00	0.00	0.20	0.20
33.35	0.30	0.23	5.00	0.00	0.20	0.20
33.40	0.30	0.23	5.00	0.00	0.20	0.20
33.45	0.30	0.23	5.00	0.00	0.20	0.20
33.50	0.30	0.23	5.00	0.00	0.20	0.20
33.55	0.30	0.23	5.00	0.00	0.20	0.20
33.60	0.31	0.23	5.00	0.00	0.20	0.20
33.65	0.31	0.23	5.00	0.00	0.20	0.20
33.70	0.31	0.23	5.00	0.00	0.20	0.20
33.75	0.31	0.23	5.00	0.00	0.20	0.20
33.80	0.31	0.23	5.00	0.00	0.20	0.20
33.85	0.31	0.23	5.00	0.00	0.20	0.20
33.90	0.32	0.23	5.00	0.00	0.20	0.20
33.95	0.32	0.23	5.00	0.00	0.20	0.20
34.00	0.32	0.23	5.00	0.00	0.20	0.20
34.05	0.32	0.23	5.00	0.00	0.20	0.20
34.10	0.32	0.23	5.00	0.00	0.20	0.20
34.15	0.32	0.23	5.00	0.00	0.20	0.20
34.20	0.33	0.23	5.00	0.00	0.20	0.20
34.25	0.33	0.23	5.00	0.00	0.20	0.20
34.30	0.33	0.23	5.00	0.00	0.19	0.19
34.35	0.33	0.23	5.00	0.00	0.19	0.19
34.40	0.33	0.23	5.00	0.00	0.19	0.19
34.45	0.34	0.23	5.00	0.00	0.19	0.19
34.50	0.34	0.23	5.00	0.00	0.19	0.19
34.55	0.34	0.23	5.00	0.00	0.19	0.19
34.60	0.34	0.23	5.00	0.00	0.19	0.19
34.65	0.35	0.23	5.00	0.00	0.19	0.19
34.70	0.35	0.23	5.00	0.00	0.19	0.19
34.75	0.35	0.23	5.00	0.00	0.19	0.19
34.80	0.36	0.23	5.00	0.00	0.19	0.19

34.85	0.36	0.23	5.00	0.00	0.19	0.19
34.90	0.36	0.23	5.00	0.00	0.19	0.19
34.95	0.37	0.23	5.00	0.00	0.19	0.19
35.00	0.37	0.23	5.00	0.00	0.19	0.19
35.05	0.38	0.23	5.00	0.00	0.19	0.19
35.10	0.40	0.23	5.00	0.00	0.19	0.19
35.15	0.43	0.23	5.00	0.00	0.19	0.19
35.20	1.84	0.23	5.00	0.00	0.19	0.19
35.25	1.84	0.23	5.00	0.00	0.19	0.19
35.30	1.84	0.23	5.00	0.00	0.19	0.19
35.35	1.83	0.23	5.00	0.00	0.19	0.19
35.40	1.83	0.23	5.00	0.00	0.19	0.19
35.45	1.83	0.23	5.00	0.00	0.18	0.18
35.50	1.83	0.23	5.00	0.00	0.18	0.18
35.55	1.83	0.23	5.00	0.00	0.18	0.18
35.60	1.83	0.23	5.00	0.00	0.18	0.18
35.65	1.83	0.23	5.00	0.00	0.18	0.18
35.70	1.83	0.23	5.00	0.00	0.18	0.18
35.75	1.83	0.23	5.00	0.00	0.18	0.18
35.80	1.83	0.23	5.00	0.00	0.18	0.18
35.85	1.83	0.23	5.00	0.00	0.18	0.18
35.90	1.83	0.23	5.00	0.00	0.18	0.18
35.95	1.83	0.23	5.00	0.00	0.18	0.18
36.00	1.83	0.23	5.00	0.00	0.18	0.18
36.05	1.83	0.23	5.00	0.00	0.18	0.18
36.10	1.83	0.23	5.00	0.00	0.18	0.18
36.15	1.83	0.23	5.00	0.00	0.18	0.18
36.20	1.83	0.23	5.00	0.00	0.18	0.18
36.25	1.83	0.23	5.00	0.00	0.18	0.18
36.30	1.82	0.23	5.00	0.00	0.18	0.18
36.35	1.82	0.23	5.00	0.00	0.18	0.18
36.40	1.82	0.23	5.00	0.00	0.18	0.18
36.45	1.82	0.23	5.00	0.00	0.18	0.18
36.50	1.82	0.23	5.00	0.00	0.18	0.18
36.55	1.82	0.23	5.00	0.00	0.18	0.18
36.60	1.82	0.23	5.00	0.00	0.18	0.18
36.65	1.82	0.23	5.00	0.00	0.18	0.18
36.70	1.82	0.23	5.00	0.00	0.18	0.18
36.75	1.82	0.23	5.00	0.00	0.18	0.18
36.80	1.82	0.23	5.00	0.00	0.18	0.18
36.85	1.82	0.23	5.00	0.00	0.18	0.18
36.90	1.82	0.23	5.00	0.00	0.17	0.17
36.95	1.82	0.23	5.00	0.00	0.17	0.17
37.00	1.82	0.23	5.00	0.00	0.17	0.17
37.05	1.82	0.23	5.00	0.00	0.17	0.17
37.10	1.82	0.23	5.00	0.00	0.17	0.17
37.15	1.82	0.23	5.00	0.00	0.17	0.17
37.20	1.82	0.23	5.00	0.00	0.17	0.17
37.25	1.82	0.23	5.00	0.00	0.17	0.17
37.30	1.81	0.23	5.00	0.00	0.17	0.17
37.35	1.81	0.23	5.00	0.00	0.17	0.17
37.40	1.81	0.23	5.00	0.00	0.17	0.17
37.45	1.81	0.23	5.00	0.00	0.17	0.17
37.50	1.81	0.23	5.00	0.00	0.17	0.17
37.55	1.81	0.23	5.00	0.00	0.17	0.17
37.60	1.81	0.23	5.00	0.00	0.17	0.17
37.65	1.81	0.23	5.00	0.00	0.17	0.17
37.70	1.81	0.23	5.00	0.00	0.17	0.17
37.75	1.81	0.23	5.00	0.00	0.17	0.17
37.80	1.81	0.23	5.00	0.00	0.17	0.17
37.85	1.81	0.23	5.00	0.00	0.17	0.17
37.90	1.81	0.23	5.00	0.00	0.17	0.17
37.95	1.81	0.22	5.00	0.00	0.17	0.17
38.00	1.81	0.22	5.00	0.00	0.17	0.17
38.05	1.81	0.22	5.00	0.00	0.17	0.17
38.10	1.81	0.22	5.00	0.00	0.17	0.17
38.15	1.81	0.22	5.00	0.00	0.17	0.17
38.20	1.81	0.22	5.00	0.00	0.17	0.17
38.25	1.80	0.22	5.00	0.00	0.17	0.17
38.30	1.80	0.22	5.00	0.00	0.17	0.17
38.35	1.80	0.22	5.00	0.00	0.17	0.17
38.40	1.80	0.22	5.00	0.00	0.17	0.17
38.45	1.80	0.22	5.00	0.00	0.17	0.17
38.50	1.80	0.22	5.00	0.00	0.17	0.17
38.55	1.80	0.22	5.00	0.00	0.17	0.17
38.60	1.80	0.22	5.00	0.00	0.17	0.17
38.65	1.80	0.22	5.00	0.00	0.17	0.17
38.70	1.80	0.22	5.00	0.00	0.17	0.17
38.75	1.80	0.22	5.00	0.00	0.17	0.17
38.80	1.80	0.22	5.00	0.00	0.17	0.17
38.85	1.80	0.22	5.00	0.00	0.16	0.16
38.90	1.80	0.22	5.00	0.00	0.16	0.16
38.95	1.80	0.22	5.00	0.00	0.16	0.16
39.00	1.80	0.22	5.00	0.00	0.16	0.16
39.05	1.80	0.22	5.00	0.00	0.16	0.16
39.10	1.80	0.22	5.00	0.00	0.16	0.16
39.15	1.80	0.22	5.00	0.00	0.16	0.16
39.20	1.80	0.22	5.00	0.00	0.16	0.16
39.25	1.79	0.22	5.00	0.00	0.16	0.16
39.30	1.79	0.22	5.00	0.00	0.16	0.16
39.35	1.79	0.22	5.00	0.00	0.16	0.16
39.40	1.79	0.22	5.00	0.00	0.16	0.16
39.45	1.79	0.22	5.00	0.00	0.16	0.16
39.50	1.79	0.22	5.00	0.00	0.16	0.16
39.55	1.79	0.22	5.00	0.00	0.16	0.16
39.60	1.79	0.22	5.00	0.00	0.16	0.16
39.65	1.79	0.22	5.00	0.00	0.16	0.16
39.70	1.79	0.22	5.00	0.00	0.16	0.16
39.75	1.79	0.22	5.00	0.00	0.16	0.16
39.80	1.79	0.22	5.00	0.00	0.16	0.16
39.85	1.79	0.22	5.00	0.00	0.16	0.16
39.90	1.79	0.22	5.00	0.00	0.16	0.16
39.95	1.79	0.22	5.00	0.00	0.16	0.16
40.00	1.79	0.22	5.00	0.00	0.16	0.16
40.05	1.79	0.22	5.00	0.00	0.16	0.16
40.10	1.79	0.22	5.00	0.00	0.16	0.16
40.15	1.79	0.22	5.00	0.00	0.16	0.16
40.20	1.79	0.22	5.00	0.00	0.16	0.16
40.25	1.78	0.22	5.00	0.00	0.16	0.16
40.30	1.78	0.22	5.00	0.00	0.16	0.16
40.35	1.78	0.22	5.00	0.00	0.16	0.16
40.40	1.78	0.22	5.00	0.00	0.16	0.16
40.45	1.78	0.22	5.00	0.00	0.16	0.16
40.50	1.78	0.22	5.00	0.00	0.16	0.16
40.55	1.78	0.22	5.00	0.00	0.16	0.16
40.60	1.78	0.22	5.00	0.00	0.16	0.16
40.65	0.44	0.22	5.00	0.00	0.15	0.15
40.70	0.39	0.22	5.00	0.00	0.15	0.15
40.75	0.36	0.22	5.00	0.00	0.15	0.15
40.80	0.35	0.22	5.00	0.00	0.15	0.15
40.85	0.34	0.22	5.00	0.00	0.15	0.15
40.90	0.33	0.22	5.00	0.00	0.15	0.15
40.95	0.32	0.22	5.00	0.00	0.15	0.15
41.00	0.32	0.22	5.00	0.00	0.15	0.15
41.05	0.31	0.22	5.00	0.00	0.15	0.15
41.10	0.30	0.22	5.00	0.00	0.15	0.15
41.15	0.30	0.22	5.00	0.00	0.15	0.15
41.20	0.29	0.22	5.00	0.00	0.15	0.15

41.25	0.29	0.22	5.00	0.00	0.15	0.15
41.30	0.28	0.22	5.00	0.00	0.15	0.15
41.35	0.28	0.22	5.00	0.00	0.15	0.15
41.40	0.28	0.22	5.00	0.00	0.15	0.15
41.45	0.27	0.22	5.00	0.00	0.15	0.15
41.50	0.27	0.22	5.00	0.00	0.15	0.15
41.55	0.26	0.22	5.00	0.00	0.15	0.15
41.60	0.26	0.22	5.00	0.00	0.15	0.15
41.65	0.26	0.22	5.00	0.00	0.15	0.15
41.70	0.25	0.22	5.00	0.00	0.15	0.15
41.75	0.25	0.22	5.00	0.00	0.15	0.15
41.80	0.25	0.22	5.00	0.00	0.14	0.14
41.85	0.24	0.22	5.00	0.00	0.14	0.14
41.90	0.24	0.22	5.00	0.00	0.14	0.14
41.95	0.24	0.22	5.00	0.00	0.14	0.14
42.00	0.23	0.22	5.00	0.00	0.14	0.14
42.05	0.23	0.22	5.00	0.00	0.14	0.14
42.10	0.23	0.22	5.00	0.00	0.14	0.14
42.15	0.22	0.22	5.00	0.00	0.14	0.14
42.20	0.22	0.22	5.00	0.00	0.14	0.14
42.25	0.22	0.22	5.00	0.00	0.14	0.14
42.30	0.22	0.22	5.00	0.00	0.14	0.14
42.35	0.21	0.22	5.00	0.00	0.14	0.14
42.40	0.21	0.22	5.00	0.00	0.14	0.14
42.45	0.21	0.22	5.00	0.00	0.14	0.14
42.50	0.21	0.22	5.00	0.00	0.14	0.14
42.55	0.20	0.22	5.00	0.00	0.14	0.14
42.60	0.20	0.22	5.00	0.00	0.14	0.14
42.65	0.20	0.22	5.00	0.00	0.13	0.13
42.70	0.20	0.21	5.00	0.00	0.13	0.13
42.75	0.19	0.21	5.00	0.00	0.13	0.13
42.80	0.19	0.21	5.00	0.00	0.13	0.13
42.85	0.19	0.21	5.00	0.00	0.13	0.13
42.90	0.19	0.21	5.00	0.00	0.13	0.13
42.95	0.18	0.21	5.00	0.00	0.13	0.13
43.00	0.18	0.21	5.00	0.00	0.13	0.13
43.05	0.18	0.21	5.00	0.00	0.13	0.13
43.10	0.18	0.21	5.00	0.00	0.13	0.13
43.15	0.18	0.21	5.00	0.00	0.13	0.13
43.20	0.17	0.21	5.00	0.00	0.13	0.13
43.25	0.17	0.21	5.00	0.00	0.12	0.12
43.30	0.17	0.21	5.00	0.00	0.12	0.12
43.35	0.17	0.21	5.00	0.00	0.12	0.12
43.40	0.17	0.21	5.00	0.00	0.12	0.12
43.45	0.16	0.21	5.00	0.00	0.12	0.12
43.50	0.16	0.21	5.00	0.00	0.12	0.12
43.55	0.16	0.21	5.00	0.00	0.12	0.12
43.60	0.16	0.21	5.00	0.00	0.12	0.12
43.65	0.15	0.21	5.00	0.00	0.12	0.12
43.70	0.15	0.21	5.00	0.00	0.12	0.12
43.75	0.15	0.21	5.00	0.00	0.11	0.11
43.80	0.15	0.21	5.00	0.00	0.11	0.11
43.85	0.15	0.21	5.00	0.00	0.11	0.11
43.90	0.14	0.21	5.00	0.00	0.11	0.11
43.95	0.14	0.21	5.00	0.00	0.11	0.11
44.00	0.14	0.21	5.00	0.00	0.11	0.11
44.05	0.14	0.21	5.00	0.00	0.11	0.11
44.10	0.14	0.21	5.00	0.00	0.10	0.10
44.15	0.13	0.21	5.00	0.00	0.10	0.10
44.20	0.13	0.21	5.00	0.00	0.10	0.10
44.25	0.13	0.21	5.00	0.00	0.10	0.10
44.30	0.13	0.21	5.00	0.00	0.10	0.10
44.35	0.13	0.21	5.00	0.00	0.10	0.10
44.40	0.12	0.21	5.00	0.00	0.10	0.10
44.45	0.12	0.21	5.00	0.00	0.09	0.09
44.50	0.12	0.21	5.00	0.00	0.09	0.09
44.55	0.12	0.21	5.00	0.00	0.09	0.09
44.60	0.11	0.21	5.00	0.00	0.09	0.09
44.65	0.11	0.21	5.00	0.00	0.09	0.09
44.70	0.11	0.21	5.00	0.00	0.08	0.08
44.75	0.11	0.21	5.00	0.00	0.08	0.08
44.80	0.11	0.21	5.00	0.00	0.08	0.08
44.85	0.10	0.21	5.00	0.00	0.08	0.08
44.90	0.10	0.21	5.00	0.00	0.07	0.07
44.95	0.10	0.21	5.00	0.00	0.07	0.07
45.00	0.10	0.21	5.00	0.00	0.07	0.07
45.05	0.10	0.21	5.00	0.00	0.07	0.07
45.10	0.10	0.21	5.00	0.00	0.06	0.06
45.15	0.11	0.21	5.00	0.00	0.06	0.06
45.20	0.11	0.21	5.00	0.00	0.06	0.06
45.25	0.11	0.21	5.00	0.00	0.06	0.06
45.30	0.11	0.21	5.00	0.00	0.05	0.05
45.35	0.12	0.21	5.00	0.00	0.05	0.05
45.40	0.12	0.21	5.00	0.00	0.05	0.05
45.45	0.13	0.21	5.00	0.00	0.05	0.05
45.50	0.13	0.21	5.00	0.00	0.05	0.05
45.55	0.13	0.21	5.00	0.00	0.04	0.04
45.60	0.14	0.21	5.00	0.00	0.04	0.04
45.65	0.14	0.21	5.00	0.00	0.04	0.04
45.70	0.15	0.21	5.00	0.00	0.04	0.04
45.75	0.15	0.21	5.00	0.00	0.04	0.04
45.80	0.15	0.21	5.00	0.00	0.04	0.04
45.85	0.16	0.21	5.00	0.00	0.04	0.04
45.90	0.16	0.21	5.00	0.00	0.04	0.04
45.95	0.16	0.21	5.00	0.00	0.03	0.03
46.00	0.17	0.21	5.00	0.00	0.03	0.03
46.05	0.17	0.21	5.00	0.00	0.03	0.03
46.10	0.17	0.21	5.00	0.00	0.03	0.03
46.15	0.18	0.21	5.00	0.00	0.03	0.03
46.20	0.18	0.21	5.00	0.00	0.03	0.03
46.25	0.18	0.21	5.00	0.00	0.03	0.03
46.30	0.19	0.21	5.00	0.00	0.03	0.03
46.35	0.19	0.21	5.00	0.00	0.03	0.03
46.40	0.20	0.21	5.00	0.00	0.03	0.03
46.45	0.20	0.21	5.00	0.00	0.03	0.03
46.50	0.20	0.21	5.00	0.00	0.03	0.03
46.55	0.21	0.21	5.00	0.00	0.02	0.02
46.60	0.21	0.21	5.00	0.00	0.02	0.02
46.65	0.21	0.21	5.00	0.00	0.02	0.02
46.70	0.22	0.21	5.00	0.00	0.02	0.02
46.75	0.22	0.21	5.00	0.00	0.02	0.02
46.80	0.22	0.21	5.00	0.00	0.02	0.02
46.85	0.23	0.21	5.00	0.00	0.02	0.02
46.90	0.23	0.21	5.00	0.00	0.02	0.02
46.95	0.24	0.21	5.00	0.00	0.02	0.02
47.00	0.24	0.21	5.00	0.00	0.02	0.02
47.05	0.25	0.21	5.00	0.00	0.02	0.02
47.10	0.25	0.21	5.00	0.00	0.02	0.02
47.15	0.26	0.21	5.00	0.00	0.02	0.02
47.20	0.26	0.21	5.00	0.00	0.02	0.02
47.25	0.27	0.21	5.00	0.00	0.02	0.02
47.30	0.27	0.21	5.00	0.00	0.02	0.02
47.35	0.28	0.21	5.00	0.00	0.02	0.02
47.40	0.28	0.20	5.00	0.00	0.02	0.02
47.45	0.29	0.20	5.00	0.00	0.02	0.02
47.50	0.30	0.20	5.00	0.00	0.01	0.01
47.55	0.31	0.20	5.00	0.00	0.01	0.01
47.60	0.31	0.20	5.00	0.00	0.01	0.01

47.65	0.32	0.20	5.00	0.00	0.01	0.01
47.70	0.33	0.20	5.00	0.00	0.01	0.01
47.75	0.33	0.20	5.00	0.00	0.01	0.01
47.80	0.35	0.20	5.00	0.00	0.01	0.01
47.85	0.36	0.20	5.00	0.00	0.01	0.01
47.90	0.38	0.20	5.00	0.00	0.01	0.01
47.95	1.71	0.20	5.00	0.00	0.01	0.01
48.00	1.71	0.20	5.00	0.00	0.01	0.01
48.05	1.71	0.20	5.00	0.00	0.01	0.01
48.10	1.71	0.20	5.00	0.00	0.01	0.01
48.15	1.71	0.20	5.00	0.00	0.01	0.01
48.20	1.71	0.20	5.00	0.00	0.01	0.01
48.25	1.71	0.20	5.00	0.00	0.01	0.01
48.30	1.71	0.20	5.00	0.00	0.01	0.01
48.35	1.71	0.20	5.00	0.00	0.01	0.01
48.40	1.71	0.20	5.00	0.00	0.01	0.01
48.45	1.71	0.20	5.00	0.00	0.01	0.01
48.50	1.71	0.20	5.00	0.00	0.01	0.01
48.55	1.71	0.20	5.00	0.00	0.01	0.01
48.60	1.71	0.20	5.00	0.00	0.01	0.01
48.65	1.71	0.20	5.00	0.00	0.01	0.01
48.70	1.71	0.20	5.00	0.00	0.01	0.01
48.75	1.71	0.20	5.00	0.00	0.01	0.01
48.80	1.71	0.20	5.00	0.00	0.01	0.01
48.85	1.71	0.20	5.00	0.00	0.01	0.01
48.90	1.71	0.20	5.00	0.00	0.01	0.01
48.95	1.70	0.20	5.00	0.00	0.01	0.01
49.00	1.70	0.20	5.00	0.00	0.00	0.00
49.05	1.70	0.20	5.00	0.00	0.00	0.00
49.10	1.70	0.20	5.00	0.00	0.00	0.00
49.15	1.70	0.20	5.00	0.00	0.00	0.00
49.20	1.70	0.20	5.00	0.00	0.00	0.00
49.25	1.70	0.20	5.00	0.00	0.00	0.00
49.30	1.70	0.20	5.00	0.00	0.00	0.00
49.35	1.70	0.20	5.00	0.00	0.00	0.00
49.40	1.70	0.20	5.00	0.00	0.00	0.00
49.45	1.70	0.20	5.00	0.00	0.00	0.00
49.50	1.70	0.20	5.00	0.00	0.00	0.00
49.55	1.70	0.20	5.00	0.00	0.00	0.00
49.60	1.70	0.20	5.00	0.00	0.00	0.00
49.65	1.70	0.20	5.00	0.00	0.00	0.00
49.70	1.70	0.20	5.00	0.00	0.00	0.00
49.75	1.70	0.20	5.00	0.00	0.00	0.00
49.80	1.70	0.20	5.00	0.00	0.00	0.00
49.85	1.70	0.20	5.00	0.00	0.00	0.00
49.90	1.70	0.20	5.00	0.00	0.00	0.00
49.95	1.70	0.20	5.00	0.00	0.00	0.00
50.00	1.70	0.20	5.00	0.00	0.00	0.00
50.05	1.70	0.20	5.00	0.00	0.00	0.00
50.10	1.69	0.20	5.00	0.00	0.00	0.00
50.15	1.69	0.20	5.00	0.00	0.00	0.00
50.20	1.69	0.20	5.00	0.00	0.00	0.00
50.25	1.69	0.20	5.00	0.00	0.00	0.00
50.30	1.69	0.20	5.00	0.00	0.00	0.00
50.35	1.69	0.20	5.00	0.00	0.00	0.00
50.40	1.69	0.20	5.00	0.00	0.00	0.00
50.45	1.69	0.20	5.00	0.00	0.00	0.00
50.50	1.69	0.20	5.00	0.00	0.00	0.00
50.55	1.69	0.20	5.00	0.00	0.00	0.00
50.60	1.69	0.20	5.00	0.00	0.00	0.00
50.65	1.69	0.20	5.00	0.00	0.00	0.00
50.70	1.69	0.20	5.00	0.00	0.00	0.00
50.75	1.69	0.20	5.00	0.00	0.00	0.00
50.80	1.69	0.20	5.00	0.00	0.00	0.00
50.85	1.69	0.20	5.00	0.00	0.00	0.00
50.90	1.69	0.20	5.00	0.00	0.00	0.00
50.95	1.69	0.20	5.00	0.00	0.00	0.00
51.00	1.69	0.20	5.00	0.00	0.00	0.00
51.05	1.69	0.20	5.00	0.00	0.00	0.00
51.10	1.69	0.20	5.00	0.00	0.00	0.00
51.15	1.69	0.20	5.00	0.00	0.00	0.00
51.20	1.69	0.20	5.00	0.00	0.00	0.00
51.25	1.69	0.20	5.00	0.00	0.00	0.00
51.30	1.69	0.20	5.00	0.00	0.00	0.00
51.35	1.69	0.20	5.00	0.00	0.00	0.00
51.40	1.69	0.20	5.00	0.00	0.00	0.00
51.45	1.69	0.20	5.00	0.00	0.00	0.00
51.50	1.69	0.20	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

APPENDIX E

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

LEIGHTON CONSULTING, INC.

GENERAL EARTHWORK AND GRADING SPECIFICATIONS FOR ROUGH GRADING

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1.0 General

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultants shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The

Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General: Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).

4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.

4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 Safety: The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 Bedding and Backfill: All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.3 Lift Thickness: Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

7.4 Observation and Testing: The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

Appendix I Health Risk Assessment

Appendices

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May 2019 | Health Risk Assessment

ARLINGTON HIGH SCHOOL MODERNIZATION

Riverside Unified School District

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Project Number RIV-24.0

PLACEWORKS

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1. Introduction

The Riverside Unified School District (District) is evaluating modernization of the existing facilities at Arlington High School. The proposed project includes modernizing the Media Arts Academy, Administration Building, pool, and student courtyard and the addition of new facilities within the existing campus. The project site is located at 2951 Jackson Street, City of Riverside, Riverside County, California.

Regulations pertaining to the siting of new schools or modernization of existing schools in California require compliance with the California Code of Regulations (CCR) Title 5 standards. For new schools, Title 5 studies must demonstrate that facilities with the potential to emit hazardous air pollutants within a quarter-mile radius of the school site will not constitute an actual or potential public health risk to students and staff that will attend the school. This health risk assessment (HRA) included conducting the following tasks:

- Toxic air contaminant (TAC) emissions were evaluated associated with vehicles and trucks traveling on State Route (SR-91), which is approximately 1,100 feet northwest of the school site boundary.
- Emissions were evaluated from diesel locomotives traveling along the Burlington North Santa Fe (BNSF)-Metrolink railroad right-of-way.
- Facilities within a quarter-mile (1,320-foot) radius of the proposed site were surveyed that might reasonably emit hazardous or acutely hazardous air emissions.
- Air dispersion modeling, using the AERMOD computer model, was conducted to quantify maximum ground-level concentrations for receptors at the project site. Meteorological (met) data from the nearest South Coast Air Quality Management District (SCAQMD) met station with similar meteorological conditions were used to represent local weather conditions and prevailing winds.
- Cancer and non-cancer risks to students and staff attending the school site were determined, based on the results of the AERMOD modeling. The assessment considered exposure through the inhalation pathway. Cancer Potency Factors (CPFs) were used to determine carcinogenic risk and Recommended Exposure Limits (RELs) were used to determine non-carcinogenic risk.
- A health risk assessment report has been prepared that compares the calculated risks with thresholds established by the SCAQMD and Office of Environmental Health Hazard Assessment (OEHHA).

The HRA and dispersion modeling methodologies used in the preparation of this report included all relevant and appropriate procedures developed by the US Environmental Protection Agency (USEPA, 2005) and OEHHA (2015). These methodologies and assumptions were used to ensure that the assessment effectively quantified school-based impacts associated with emission sources. It should be noted that these health impacts were based on conservative (i.e., health protective) assumptions. The USEPA and OEHHA note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks (USEPA, 2005; OEHHA, 2015). Therefore, the estimated risks do not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of risk and usually overestimate exposures.

1. Introduction

For this school-based risk assessment, the following conservative assumptions were used:

- It was assumed that maximum exposed receptor (both students and staff) stood outside at the site for 9 hours per weekday (7:00 AM to 4:00 PM, Monday to Friday), 180 days per year for 4 years (9th grade to 12th grade students) or 250 days per year for 25 years (staff). In reality, students and staff are exposed to outdoor pollutant concentration levels only during breaks, lunch, and PE class and are exposed to reduced indoor pollutant concentrations for the remaining school hours. This would result in lower estimated risk values.
- The calculated risk for children from 2-16 years is multiplied by a factor of 3 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

Thus, the estimated risks in this HRA are conservative.

2. Project Description

Arlington High School is an existing school at 2951 Jackson Street, City of Riverside. The proposed project includes modernizing the Media Arts Academy, Administration Building, pool, and student courtyard and the addition of new facilities within the existing 45-acre campus. The school site is bounded by Irving Street to the east, a BNSF Railway Company right-of-way to the north, Jackson Street to the west, and Lincoln Avenue to the south. The nearest freeway travel lane for SR-91 is approximately 1,000 feet northwest of the site. Construction of the school site could be completed as early as 2021.

The project site and vicinity are depicted in Figure 1.

2. Project Description

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Figure 1 - Site Location

School Boundary

0 2,000
Scale (Feet)

Source: ESRI, 2018

2. Project Description

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3. Source Identification

The HRA evaluated the impact of potential long-term (chronic) exposure to air toxic emissions generated by vehicles traveling along SR-91 (between mile posts 14.079 and 15.627) and by diesel locomotives on the BNSF-Metrolink rail lines. Additionally, no stationary emission sources were identified within a quarter-mile radius (1,320 feet) of the school based on a surveyed using the SCAQMD Facility Information Detail (FIND) database and aerial photography of the surrounding area. A summary of the emissions sources evaluated during this assessment is provided below in Table 1. Appendix A contains a summary of all emission sources surveyed and interviewed.

Table 1 Emission Sources

Source	Address
State Route 91	Mile Posts 14.079 and 15.627
BNSF-Metrolink Rail Line	Approximately 3,800-foot long stretch within a 1,320-foot radius between Monroe Street and Gibson Street

The project site and evaluated emission sources are depicted in Figure 2.

3. Source Identification

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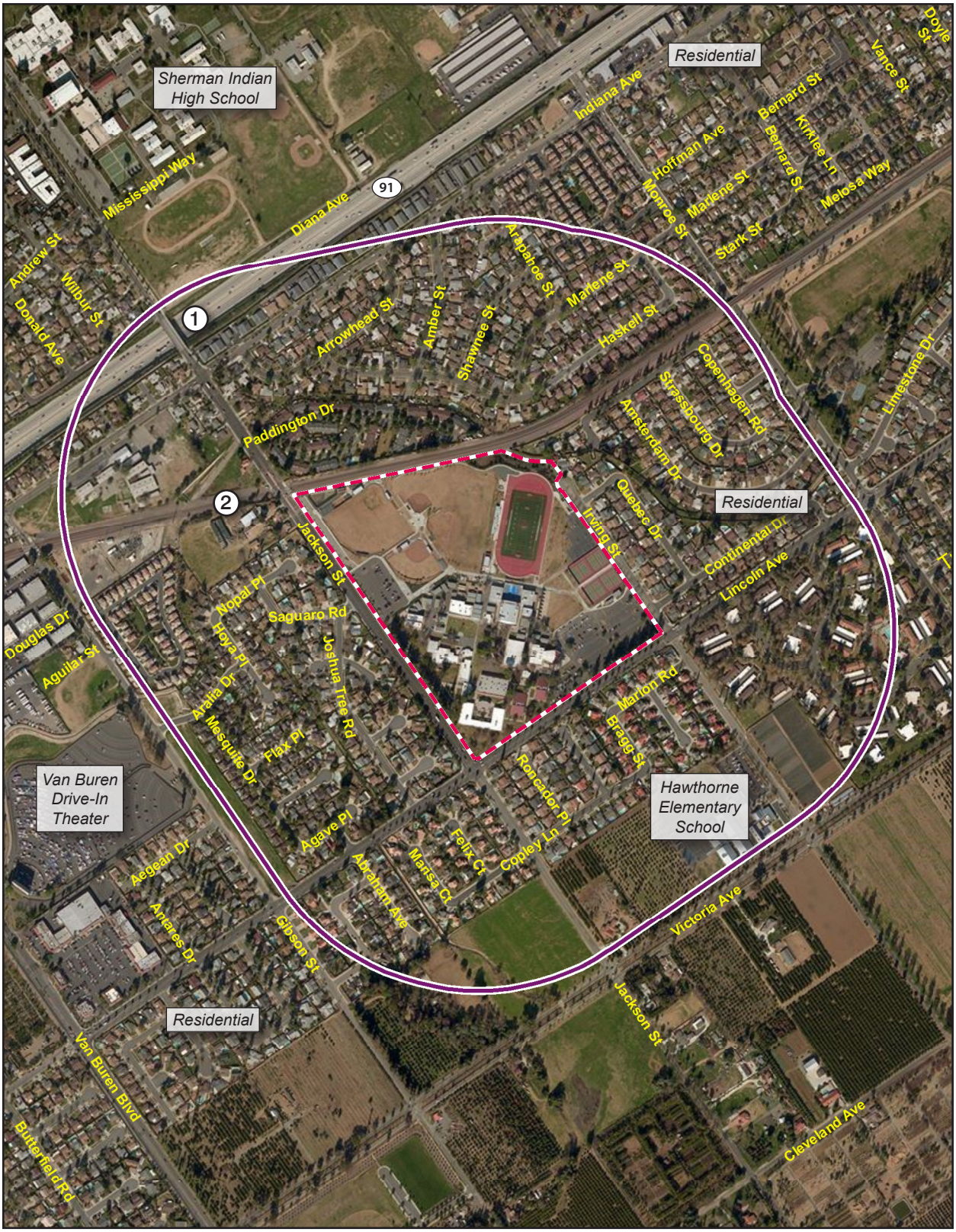
Figure 2 - Emission Sources



School Boundary

1/4-Mile Radius

1 State Route 91

2 BNSF Railroad Double Track

0 800
Scale (Feet)

Source: ESRI, 2018

3. Source Identification

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4. Emissions Inventory

4.1 ON-ROAD MOBILE SOURCES

Vehicle emissions contribute significantly to localized concentrations of air contaminants. Typically, emissions generated from these sources depend on vehicle mix, the percentage of heavy duty diesel trucks, the rate at which pollutants are generated during the course of travel, and the number of vehicles traveling along the roadway network.

The peak hourly traffic for the section of SR-91 nearest the school site was obtained from the California Department of Transportation, Traffic Branch (Caltrans). To determine variances in hourly traffic volumes, the assessment used data available through the Caltrans Performance Measurement System (Caltrans PeMS, 2019). The truck percentage for each evaluated roadway segment was used to estimate the number of diesel trucks traveling on the roadway. Table 2 lists the identified peak hourly traffic volumes and diesel truck percentage considered in the assessment.

Table 2 Vehicle Fleet Mix

Roadway	Peak Hourly Vehicle Traffic (vehicles per hour)	Truck Percentage
SR-91 (Mile Posts 14.079-15.627)	13,600	5.0

Source: Caltrans, 2017.

Additionally, for purposes of this analysis a one percent annual increase in traffic is assumed. CARB has developed the EMFAC2017 emission factor model to account for the emission standards representative of the California fleet. EMFAC2017 was used to identify pollutant emission rates for total organic gases (TOG) and diesel particulate matter (DPM) at the project build out year of 2021. The PM_{10} emission factor for diesel-fueled vehicles was used as the surrogate for DPM (CARB, 2017). The TOG speciation profile provided by the Bay Area Air Quality Management District (2012) was used to quantify the toxic air contaminants (TACs) associated with the TOG fraction.

A list of emitted compounds for the mobile-source category is presented in Table 3.

Table 3 Compounds Emitted from Mobile Sources

Source	Contaminant
SR-91 (gasoline vehicles and diesel trucks)	Diesel Particulate Matter (DPM) Total Organic Gases (TOG), toxic air contaminant species: Acetaldehyde, Acrolein, Benzene, 1,3-Butadiene, Ethyl Benzene, Formaldehyde, Hexane, Methanol, Methyl Ethyl Ketone, Naphthalene, Propylene, Styrene, Toluene, Xylenes

4.2 LOCOMOTIVES EMISSIONS

Locomotive engines generate pollutants, which can impact local air quality. Although locomotive engines produced today meet stringent USEPA emission requirements and use cleaner burning fuels, they still emit significant amounts of DPM which contributes to public health impacts.

Fleet distribution profiles for locomotives traversing the railroad easement north of the site are based upon passenger and freight train information obtained from the Federal Railroad Administration (FRA) Office of Safety Analysis and Metrolink and BNSF schedules. Approximately 27 passenger trains and 18 freight trains were reported by FRA for the Jackson Street crossing (Crossing ID 026507V, 2017). The freight locomotive emission factor used in this evaluation were obtained from the San Joaquin Valley Air Pollution Control District's locomotive emission factor methodology, based on the USEPA's Emission Factors for Locomotives Technical Report (USEPA, 2009). The freight emission factor for the locomotives was based on a representative engine model (ES44DC for BNSF) operating at a throttle notch of 6 for a speed of 45-50 mph (Starcrest, 2012), which was the average speed reported by FRA for the section of track near the site (FRA, 2014). The passenger train emission factor used in this evaluation is based on the Tier 4 emissions standard for the EMD F125 engine. By 2020, all Metrolink locomotives will replaced their existing locomotives with EMD F125 engines (Metrolink, 2018).

EPA's *Clean Air Nonroad Diesel Rule* (2004) requires that locomotive and marine diesel fuels meet the ultra-low sulfur classification of 15 parts per million by 2012. Characterizations of diesel particulate emissions from locomotive activity accounted for the use of ultra-low sulfur diesel fuel, based on the California Air Resources Board (CARB) *OFFROAD Modeling Change Technical Memo, Changes to the Locomotive Inventory* (2006).

Appendix A presents the emission rate calculations for each source considered in the assessment. Appendix B contains a graphical representation of each emitting source included in the air dispersion model.

5. Air Dispersion Modeling

To assess the impact of emitted compounds on individuals who may work and/or attend classes at the proposed school facility, air quality modeling using the AERMOD atmospheric dispersion model was performed. The model is a steady state Gaussian plume model, and is recommended by SCAQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain.

The model requires additional input parameters, including chemical emission data and local meteorology. Meteorological (met) data provided by SCAQMD for the Riverside Airport met station (2012-2016) was used to represent local weather conditions and prevailing winds. According to the data from the Riverside Airport met station, the prevailing wind direction in the area of the project site is to the east. The wind rose is provided in Appendix B.

The modeling analysis also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator (UTM) coordinates for source and receptor locations. In addition, digital elevation model (DEM) data for the area were obtained and included in AERMOD to account for complex terrain.

For all modeling runs, a unit emission rate of 1 gram per second (g/s) was used. The unit emission rates were divided between the volume sources for SR-91. Two sets of volume sources were created for SR-91. One set representing the motor vehicles traveling along SR-91 was used to characterize emissions of TOG and criteria air pollutants. For this set of sources, a release height of 0.60 meter was used (CARB, 2000). The second set of sources representing truck traffic was used to characterize emissions of DPM. For this run, a release height of 4.15 meters was used (CARB, 2000). The model's hour-of-day (HRDOW) scalar option was invoked to predict concentrations from variable hourly emissions from vehicular traffic.

The maximum AERMOD concentrations from the output files were then multiplied by the emission rates calculated in Appendix A to obtain the maximum ground-level concentrations at the maximum exposed receptor (MER). The air dispersion model output is presented in Appendix C. The calculated MER concentrations used in the HRA are provided in Appendix D. The annual average concentrations from the model run were used to determine cancer risk and chronic non-cancer risk, and the maximum one-hour concentrations were used to determine acute non-cancer risk. Additionally, CARB's Hotspots Analysis and Reporting Program (HARP2), Risk Assessment Standalone Tool was used to determine the 8-hour chronic non-cancer risk; the program determines the 8-hour non-cancer risk from the annual average concentrations (CARB, 2019).

5. Air Dispersion Modeling

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6. Risk Characterizations

6.1 CARCINOGENIC CHEMICAL RISK

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Any exposure, therefore, will have some associated risk. The SCAQMD has established a maximum incremental cancer risk of 10 in a million ($1x10^{-5}$) for CEQA projects and the OEHHA also sets a typical risk management level as 10 in a million (OEHHA, 2015).

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$), averaged over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to accommodate the unique exposures associated with the proposed school population, the following dose algorithm was used.

$$\mathrm{Dose}_{\mathrm{AIR,per\ age\ group}} = (\mathrm{C_{air}} \times \mathrm{EF} \times [\frac{\mathrm{BR}}{\mathrm{BW}}] \times \mathrm{A} \times \mathrm{CF})$$

Where:

$\mathrm{Dose_{AIR}}$	=	dose by inhalation (mg/kg-day), per age group
$\mathrm{C_{air}}$	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days /365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)
A	=	inhalation absorption factor (default = 1)
CF	=	conversion factor ($1x10^{-6}$, µg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. For this assessment, the default value of 1 was used. To represent the unique characteristics of the school population, the assessment employed the USEPA's guidance to develop viable dose estimates based on reasonable maximum exposure, defined as the "highest exposure that

is reasonably expected to occur" for a given receptor population. Lifetime risk values for the student population were adjusted to account for an exposure of 180 days per year for 4 years (9th grade to 12th grade students). In addition, the calculated risk for students is multiplied by an ASF weighting factor of 3 (for children ages 2 to 16) to account for early life sensitivity to pollutant exposures (OEHHA, 2015). To assess staff-related risk, exposures were adjusted to account for an employment period of 250 days per year for 25 years. This timeline is considered appropriate for potential workplace exposures established by OEHHA.

To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \frac{\text{ED}}{AT}$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
CPF	=	cancer potency factor, chemical-specific $(\text{mg/kg-day})^{-1}$
ASF	=	age sensitivity factor, per age group
ED	=	exposure duration (years)
AT	=	averaging time period over which exposure duration is averaged (always 70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. The cancer risk is calculated separately for the students and staff, because of age differences in sensitivity to carcinogens and age differences in intake rates. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of 1×10^6 (i.e., 1 million).

CARB's HARP2 Risk Assessment Standalone Tool was used to calculate the cancer risk values (CARB, 2019). The determined cancer risks attributed to each chemical exposure and summation of those risks are presented in Appendix D.

6.2 NON-CARCINOGENIC HAZARDS

An evaluation was conducted for the potential non-cancer effects of chronic and acute chemical exposures. Adverse health effects are evaluated by comparing the annual receptor level ground level concentration of each chemical compound with the appropriate Reference Exposure Level (REL). Available RELs promulgated by OEHHA were considered in the assessment.

The hazard index approach was used to quantify non-carcinogenic impacts. The hazard index assumes that chronic and acute sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). For each discrete chemical exposure, target organs presented in regulatory guidance were used. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. The ratios are summed for compounds affecting the same toxicological endpoint. A health hazard is presumed to exist where the total equals or exceeds one.

CARB's HARP2 Risk Assessment Standalone Tool was used to calculate the chronic, 8-hour, and acute (1-hour) health risk values (CARB, 2019), and the determined hazard indices are provided in Appendix D.

6.3 ACCIDENTAL RELEASES

Under the auspices of the California Accidental Release Prevention (CalARP) Program, a Risk Management Plan (RMP) is required to be conducted pursuant to the provisions of the federal Accidental Release Prevention program (Title 40, Code of Federal Regulations, Part 68) Article 2, Chapter 6.95 of the Health and Safety Code. The RMP is only required should a stationary source use more than a threshold quantity of a regulated hazardous substance, and includes a risk assessment of accidental releases.

A review of the available information collected during the source identification process (e.g., regulatory records review and interviews with business owner/operators) did not reveal the presence of any CalARP program facilities within 0.25 mile of the proposed site (The Right-to-Know Network, 2019).

6. Risk Characterizations

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7. Conclusions

The results of the health risk assessment are provided in Table 4. The excess cancer risk was calculated to be 6.0 per million for adult school staff and 1.7 per million for students. In comparison to the threshold level of 10 in a million, carcinogenic risks are below the significance threshold value for both school staff and students. For non-carcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for both school staff and students. Therefore, chronic non-carcinogenic hazards are below the significance threshold. Additionally, the acute 1-hour and 8-hour non-carcinogenic hazards were also below the significance thresholds.

Table 4 Health Risk Assessment Results

Source	Cancer Risk (per million)		Chronic Hazard Index	Acute (1-Hour) Hazard Index	8-Hour Hazard Index
	Staff Exposure	Student Exposure			
All Sources	6.0	1.7	0.019	0.001	<0.001
SCAQMD Threshold	10	10	1.0	1.0	1.0
Exceeds Threshold	**No**	**No**	**No**	**No**	**No**

Source: CARB HARP2 (2019).

Based on a comparison to the carcinogenic and non-carcinogenic thresholds established by OEHHA and SCAQMD, hazardous air emissions generated from the emission sources within a quarter-mile radius are not anticipated to pose an actual or potential endangerment to students and staff occupying the project site and no mitigation measures are required.

7. Conclusions

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8. References

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8. References

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Appendix A. Emission Rate Calculations

Appendix

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Vehicle Mix Worksheet

Table A: Traffic Volumes

Route	Mile Post	Traffic Data Year	Peak Hour Traffic (veh/hr)[1]	Truck Percentage (%)[1]	Annual Increase in Traffic (%)	School Buildout Year
State Route 91	14.079-15.627	2017	13,600	5.0%	1.0%	2021

Sources:

1. Caltrans, Traffic Data Branch (2018). Website: http://www.dot.ca.gov/trafficops/census/.

Table B: Highway Parameters

Link/Segment	Link length (m)	Width of roadway (m)	Source Separation (m)	Roadway Configuration	Mile Post	Speed
State Route 91	430	45.0	45.0	Below-Grade	14.079-15.627	55 mph

Table C: Segment Volumes

Link/Segment	Period Length (years)	Hourly All Vehicles	Hourly TOG Vehicles	Hourly Diesel Vehicles [4]
2021 [1]	4	14,152	**13,445**	708
2025 [1]	5	14,727	13,991	736
2030 [1]	5	15,478	14,704	774
2035 [1]	5	16,268	15,454	813
2040 [1]	5	17,097	16,243	855
2045 [1]	1	17,970	17,071	898
25-year weighted average [2]	25	15,697	**14,912**	**785**
4-year weighted average [3]	4	14,152	**13,445**	**708**

1 Increases in Peak Hourly Traffic based on annual traffic increase based on projected vehicle mile traveled (VMT) growth rate of 1% per year from 2021 to 2045 (CARB, EMFAC2017).

2 Represents the 25-year (staff) weighted average traffic volumes, accounting for annual increases in projected traffic.

3 Represents the 4-year (9th-12th grade students) weighted average traffic volumes, accounting for annual increases in projected traffic.

4 Truck percentage of 5.0%, from CalTrans (2018), used to represent the diesel vehicle traffic along roadway segment.

On-Road Mobile Sources
Emission Rate Computation

TOG and DPM Emission Rates

Emission Rate = EF x VPH x L

EF = emission factor (g/mi)		
VPH = Peak Hour Volume (vehicles per hour)		
L = Link Length (m)		430
Conversion Factors	m/mi	1609.3
	sec/hr	3600

1 **State Route 91**
Mile Post 14.079-15.627

1a Gasoline Vehicles

Long-Term Hazards	
TOG EF (g/mi) - 2021	0.0298
VPH - 25-year, gasoline fueled vehicles	14,912
TOG Emission Rate (g/s) - Staff	**3.30E-02**
TOG EF (g/mi) - 2021	0.0298
VPH - 4-year, gasoline fueled vehicles	13,445
TOG Emission Rate (g/s) - Students	**2.98E-02**
Acute Hazards	
TOG EF (g/mi) - 2021	0.0298
VPH - 1-hour, gasoline fueled vehicles	13,445
TOG Emission Rate (g/s) - 1-hour	**2.98E-02**

1b Diesel Vehicles

DPM EF (g/mi) - 2021	0.0519
VPH - 25-year, diesel fueled vehicles	785
DPM Emission Rate (g/s) - Staff	**3.02E-03**
DPM EF (g/mi) - 2021	0.0519
VPH - 4-year, diesel fueled vehicles	708
DPM Emission Rate (g/s) - Students	**2.73E-03**

Initial Sigma Computation

Vertical Sigma Calculations - At-Grade or Above Grade Roadway

Initial Horizontal Dispersion Parameter (Sigma Y)
SY = (source separation distance)/2.15

Initial Vertical Dispersion Parameter (Sigma Z)
$SZ = (1.8 + 0.11(TR)) \times (60/30)^{0.2}$
TR = W2/U

Where:
W2 = traveled way half width (m)
U = average wind speed (m/s)

1 State Route 91

Width of Traveled Way (m)	45.0
Average Wind Speed (m/s)	2.70
Source Separation Distance (m)	45.0

SY = **20.93**
SZ = **3.12**

Variable Emissions Worksheet
Caltrans PeMS Data

Caltrans PeMS VMT Aggregates - 8/1/2018 - 10/31/2018: SR-91							Normalizing Factors HROFDAY Scalars [1]		
	All Vehicles - Daily VMT			Trucks - Daily VMT					
Hour	Eastbound	Westbound	Total VMT	Eastbound	Westbound	Total VMT	Hour	Vehicles	Trucks
0	889	634	1,522	0.4	43	43	1	0.197	0.517
1	604	480	1,084	0.2	38	38	2	0.140	0.449
2	524	539	1,063	0.1	45	45	3	0.137	0.536
3	604	1,128	1,732	0.3	68	69	4	0.224	0.817
4	1,048	2,449	3,497	0.5	84	84	5	0.452	1.000
5	2,146	2,550	4,696	0.4	64	65	6	0.607	0.768
6	3,523	2,985	6,508	0.9	66	67	7	0.842	0.793
7	3,882	3,751	7,633	0.3	63	63	8	0.987	0.755
8	3,556	3,721	7,277	0.8	53	53	9	0.941	0.635
9	3,502	3,316	6,817	1.5	64	66	10	0.882	0.784
10	3,503	3,424	6,928	2.0	63	65	11	0.896	0.769
11	3,577	3,559	7,136	1.3	60	61	12	0.923	0.731
12	3,726	3,716	7,443	0.9	57	58	13	0.963	0.687
13	3,804	3,739	7,542	1.2	52	53	14	0.975	0.632
14	3,760	3,822	7,583	0.2	43	43	15	0.981	0.509
15	3,549	3,920	7,469	0.0	38	38	16	0.966	0.450
16	3,622	4,019	7,641	0.1	28	28	17	0.988	0.329
17	3,702	4,031	7,732	0.5	19	19	18	1.000	0.229
18	3,625	3,644	7,269	0.5	31	31	19	0.940	0.374
19	3,290	2,975	6,265	0.4	50	50	20	0.810	0.594
20	3,042	2,432	5,475	0.2	58	58	21	0.708	0.695
21	2,657	2,087	4,744	0.1	64	64	22	0.614	0.762
22	2,050	1,569	3,619	0.4	66	66	23	0.468	0.791
23	1,480	1,058	2,538	0.6	61	62	24	0.328	0.735
Max	3,882	4,031	7,732	2.0	84	84			

[1] School Hours: 7:00 AM - 4:00 PM (Hour 8-16)

Number of Days - PeMS Data	Truck Percentage Check	1.1%
63.0	Caltrans	5.0%

Report Description

	Report	Aggregates>Time Series
	Report link	***http://pems.dot.ca.gov/?report_form=1&dnode=VDS&content=loops&statio***
	Report generated	01/10/2019 10:35
	PeMS version	caltrans_pems-18.0.0

Report Parameters

	Parameter	Value
Eastbound	Quantity	Vehicle Miles Traveled (VMT)
	Data	73,728 Lane Points
	Data Quality	98% Observed
	Segment Type	VDS
	Segment Name	Mainline VDS 801523 - .11 E/O JACKSON
	start date	08/01/2018 00:00:00
	end date	10/31/2018 23:59:59
	Day of Week	Mo,Tu,We,Th,Fr
	Granularity	hour

Report Parameters

	Parameter	Value
Westbound	Quantity	Vehicle Miles Traveled (VMT)
	Data	73,728 Lane Points
	Data Quality	98% Observed
	Segment Type	VDS
	Segment Name	Mainline VDS 820846 - JACKSON ST.
	start date	08/01/2018 00:00:00
	end date	10/31/2018 23:59:59
	Day of Week	Mo,Tu,We,Th,Fr
	Granularity	hour

EMISSION FACTOR CALCULATIONS
EMFAC 2017

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: RIVERSIDE
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Speed (mph)		**TOTAL EMISSION RATES (g/mi)**	
55		TOG	DPM
	Gas	**0.0298**	
	DSL		**0.0519**
	NG		
	Total		

		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	DPM (g/mi)	DPM Weighted
HHDT	GAS		95	0.685	65	0.00094	0
HHDT	DSL	0.568	376152	0.0651	24478	0.052	19561
HHDT	NG		0	0	0	0	0
LDA	GAS		3070438	0.0113	34768	0.00113	3470
LDA	DSL	0.044	29268	0.0117	343	0.00663	194
LDT1	GAS		309511	0.0418	12924	0.00181	560
LDT1	DSL	0.000	96	0.2281	22	0.15383	15
LDT2	GAS		988252	0.0205	20237	0.00119	1173
LDT2	DSL	0.009	5974	0.0114	68	0.00521	31
LHDT1	GAS		93046	0.0383	3564	0.0009	84
LHDT1	DSL	0.103	68045	0.0883	6006	0.01842	1253
LHDT2	GAS		14587	0.0238	347	0.00077	11
LHDT2	DSL	0.040	26340	0.0753	1984	0.01714	452
MCY	GAS		27389	2.2262	60974	0.00147	40
MDV	GAS		788674	0.0301	23744	0.0012	950
MDV	DSL	0.027	17657	0.0087	153	0.00457	81
MH	GAS		7528	0.0709	534	0.00102	8
MH	DSL	0.004	2901	0.0654	190	0.13089	380
MHDT	GAS		14562	0.0853	1242	0.00079	12
MHDT	DSL	0.198	131514	0.1058	13913	0.09205	12106
OBUS	GAS		3770	0.0699	264	0.0006	2
OBUS	DSL	0.005	3195	0.1195	382	0.08027	256
SBUS	GAS		850	0.0295	25	0.00039	0
SBUS	DSL	0.002	1586	0.0541	86	0.03824	61
UBUS	GAS		2229	0.0062	14	0.00065	1
UBUS	DSL	0.000	1	0.0186	0	0.00931	0
UBUS	NG		1245	2.3405	2913	0.0047	6

Gas Total		5320930	158701	6312
DSL Total	1.00	662730	47624	34389
NG Total		1245	2913	6

Note: Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

2017 Caltrans Traffic Volumes

DIS	RTE	R1	CNTY	PM_PM	PM	DESCRIPTION	BACK_F	BACK_PE	BACK_A	AHEAD_PEA	AHEAD_PEAK	AHEAD_AADT
08	091		RIV	14.079		RIVERSIDE, VAN BUREN STREET	14900	220000	212000	13600	203000	195000
08	091		RIV	15.627		RIVERSIDE, ADAMS STREET	13600	203000	195000	13500	199000	192000

2016 Daily Truck Traffic

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK By Axle 2	TRUCK By Axle 3	AADT By Axle 4	TOTAL By Axle 5+	% TRUCK By Axle 2	TRUCK By Axle 3	AADT By Axle 4	By Axle 5+	EAL 2-WAY (1000)	YEAR VER/ EST
91	12	ORA	R9.187	B	JCT. RTE. 55 SOUTH	231600	15054	6.50	8746	1280	587	4441	58.10	9	4	30	2042	91E
91	12	ORA	R9.187	A	JCT. RTE. 55 SOUTH	322700	14521	4.50	7842	813	290	5576	54.00	6	2	38	2316	91E
91	12	ORA	R11.54	B	PERALTA, JCT. RTE. 90 WEST	303200	15160	5.00	7580	834	303	6443	50.00	6	2	43	2609	91E
91	12	ORA	R11.54	A	PERALTA, JCT. RTE. 90 WEST	256400	12179	4.75	5404	831	340	5604	44.37	7	3	46	2249	08E
91	08	RIV	R2.087	B	JCT. RTE. 71 NORTH	253000	15105	5.97	6323	1171	586	7025	41.86	8	4	47	2839	00E
91	08	RIV	R2.087	A	JCT. RTE. 71 NORTH	256000	16666	6.51	7143	1190	595	7738	42.86	7	4	46	3117	00E
91	08	RIV	6.343	B	CORONA, MAIN ST	247000	16080	6.51	6892	1148	574	7466	42.86	7	4	46	3007	00E
91	08	RIV	6.343	A	CORONA, MAIN ST	233000	14120	6.06	6052	1008	504	6556	42.86	7	4	46	2640	00E
91	08	RIV	9.18	B	MC KINLEY ST	219000	14804	6.76	6345	1057	529	6873	42.86	7	4	46	2768	00E
91	08	RIV	9.18	A	MC KINLEY ST	209000	16072	7.69	6888	1148	574	7462	42.86	7	4	46	3005	00E
91	08	RIV	11.991	B	RIVERSIDE, LA SIERRA AVE	197000	16706	8.48	7160	1193	596	7757	42.86	7	4	46	3124	00E
91	08	RIV	14.079	B	RIVERSIDE, VAN BUREN ST	212000	10600	5.00	7314	636	424	2226	69.00	6	4	21	1145	81E
91	08	RIV	14.079	A	RIVERSIDE, VAN BUREN ST	195000	9751	5.00	6728	585	390	2048	69.00	6	4	21	1053	81V
91	08	RIV	19.999	B	RIVERSIDE, 14TH ST	186000	9300	5.00	6417	558	372	1953	69.00	6	4	21	1004	81E
91	08	RIV	22.068	B	RIVERSIDE, JCT. RTE. 60, JCT. RTE. 215 NORTH	185000	9251	5.00	6383	555	370	1943	69.00	6	4	21	999	81E
92	04	SM	0	A	HALF MOON BAY, JCT. RTE. 1	16600	613	3.69	257	66	35	255	41.98	11	6	42	108	03V
92	04	SM	5.191	B	JCT. RTE. 35 SOUTH	25500	941	3.69	395	101	54	391	41.98	11	6	42	166	03E

Source 2
Locomotives - BNSF and Metrolink

Operation: Locomotive emissions

Link Length (feet)	3,838	ft
	1170	m
	0.73	mi

	Source 2a - BNSF	Source 2b- Metrolink	
Trains per day[1]	18	6	
Operating hours per day	9	9	
Trains per hour	2.0	0.67	
Locomotives per train[2]	3.5	1	
Train speed (mph)[3]	43	46	
Throttle notch	6	6	
Travel time (hr)[4]	0.017	0.016	
Load factor[5]	0.64	0.64	
Locomotive horsepower[6]	4,400	4,700	
Correction factor for low sulfur fuel[7]	0.87	0.72	
DPM Emission Rate per Locomotive (g/hp-hr)[8]	0.11	0.03	
Emission Rate per Locomotive (g/hr)	272	65	
Emission Rate Along Rail Line Near Project Site (g/hr)	32.2	0.68	g/hr
	8.94E-03	**1.90E-04**	g/sec

(1) Current train traffic for BNSF from FRA Crossing data for Jackson Street (Crossing 026507V; 2017) and site reconnaissance. Current train traffic for Metrolink from Metrolink 91/Perris Valley Line and Inland Empire/OC train schedules (2018). Amtrak train traffic from Southwest Chief train schedule (2018).

(2) Based on site reconnaissance on November 26, 2018 by PlaceWorks staff.

(3) Based on observed average speed of 46 mph for Metrolink trains and 43 mph for freight trains from site reconnaissance. FRA crossing data for Jackson Street shows a maximum timetable speed of 60 mph (2017).

(4) Calculated by dividing distance in miles by a speed of train.

(5) Based on a throttle notch of 6 for a speed of 45-50 mph for commuter and freight trains, *Port of LA Emissions Inventory (Starcrest, 2012).*

(6) Horsepower of ES44DC locomotives used by BNSF and EMD F125 locomotives used by Metrolink.

(7) Correction factor for freight trains in South Coast Air Basin after 2011, Changes to Locomotive Inventory (CARB, 2006).

(8) Emission rate is from San Joaquin Valley Air Pollution Control District's Trains Emission Factor worksheets for long line haul (BNSF) locomotives for analysis year 2021. Emission factors based on USEPA's Emission Factors for Locomotives Technical Report (2009). For projected traffic, Metrolink emission is rate based on Tier 4 emission standard for EMD F125 engine. By 2020, all Metrolink locomotives will replace their existing locomotives with EMD F125 engines.

Release Height[9] (m) 5.6 8AM-4PM

(9) Average release height for daytime hours (5.6 m), based upon Toxic Air Contaminant Emissions Inventory and Dispersion Modeling Report for the City of Industry Rail Yard, City of Industry, CA (Sierra Research, Inc., 2007).

Sigma Values for Railroad

Initial Horizontal Dispersion Parameter (Sigma Y)
SY = (source separation distance)/2.15

Initial Vertical Dispersion Parameter (Sigma Z)
$SZ = (1.8 + 0.11(TR)) \times (60/30)^{0.2}$
TR = W2/U

Where:
W2 = traveled way half width (m)
U = average wind speed (m/s)

Width of Traveled Way (m)	15.2
Average Wind Speed (m/s)	2.70
Source Separation Distance (m)	15.2

SY = **7.09**
SZ = **2.42**

Appendix B. Model Setup

Appendix

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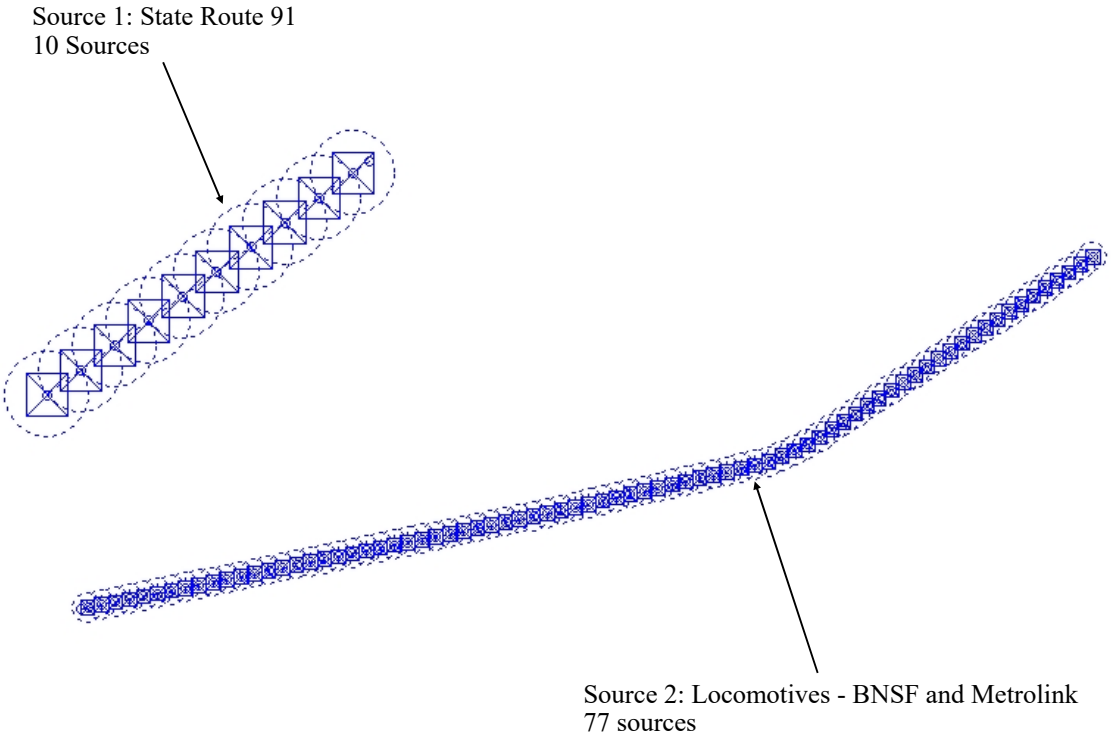
Source 1: State Route 91
Mile Post 14.079-15.627
Sources L0000151-160 (trucks)
Sources L0000161-170 (cars)

Source 2: Locomotives - BNSF and Metrolink
Sources L0000001-77



- Release height of 4.15 m and initial vertical dimension (δy) of 1.93 m is based upon California Air Resources Board's "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles" (2000). Release of 0.6 m used for gasoline-fueled vehicles.

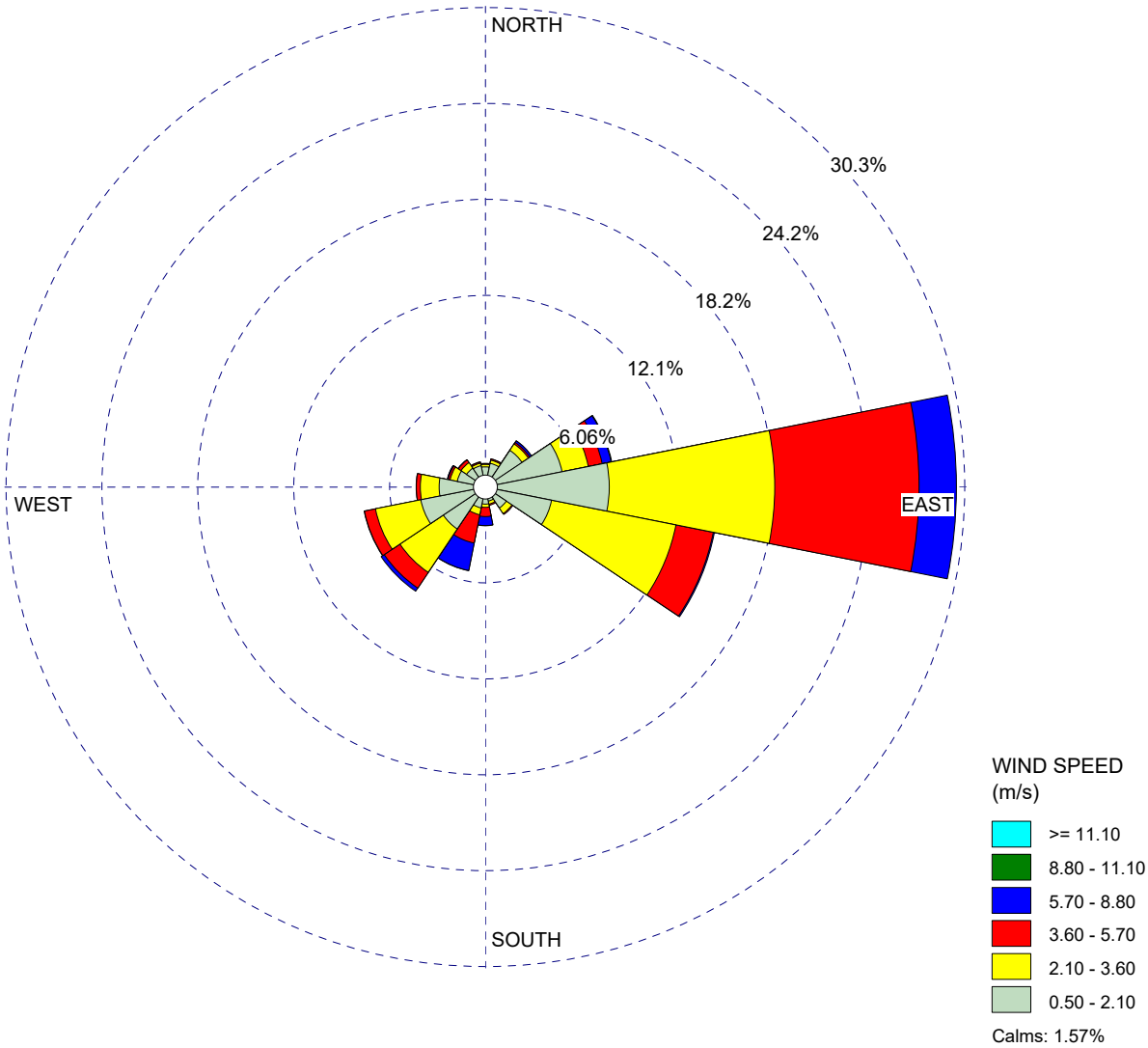
- Locomotives release height for daytime hours (5.6 m), based upon Toxic Air Contaminant Emissions Inventory and Dispersion Modeling Report for the City of Industry Rail Yard, City of Industry, CA (Sierra Research, Inc., 2007).

WIND ROSE PLOT:

Riverside Airport Meteorological Station
2012-16

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
School Hours 7:00 AM to 4:00 PM	**Start Date: 1/1/2012 - 07:00** **End Date: 12/31/2016 - 15:00**	MODELER:	
	CALM WINDS: **1.57%**	TOTAL COUNT: **16157 hrs.**	
	AVG. WIND SPEED: **2.70 m/s**	DATE: **1/8/2019**	PROJECT NO.: **RIV-24.0**

WRPLOT View - Lakes Environmental Software

Appendix C. Air Dispersion Model Output

Appendix

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Results Summary

Arlington High School HRA
Riverside, CA

Concentration - Source Group: CARS

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	35.52582	ug/m^3	460057.28	3752978.36	258.35	0.00	258.35	1/24/2012, 8
PERIOD		0.28026	ug/m^3	460207.28	3753018.36	258.48	0.00	258.48	

Concentration - Source Group: RAIL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		10.51671	ug/m^3	460147.28	3752998.36	258.53	0.00	258.53	

Concentration - Source Group: TRUCKS

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.21150	ug/m^3	460117.28	3752998.36	258.43	0.00	258.43	

Model Output
Unit Emission Rates (1 g/s)

```
*** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
*** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                    PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for    97 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:     97 Source(s);       3 Source Group(s); and    1861 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:     97 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)
```

Model Output
Unit Emission Rates (1 g/s)

```
**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  16216

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   245.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      4.0 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   Arlington High School HRA.err
**File for Summary of Results:   Arlington High School HRA.sum
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.12987E-01	459718.0	3752925.7	253.6	5.60	7.09	2.42	YES	HRDOW
L0000002	0	0.12987E-01	459733.0	3752928.8	253.9	5.60	7.09	2.42	YES	HRDOW
L0000003	0	0.12987E-01	459747.9	3752931.8	254.2	5.60	7.09	2.42	YES	HRDOW
L0000004	0	0.12987E-01	459762.8	3752934.9	254.4	5.60	7.09	2.42	YES	HRDOW
L0000005	0	0.12987E-01	459777.7	3752937.9	254.7	5.60	7.09	2.42	YES	HRDOW
L0000006	0	0.12987E-01	459792.7	3752941.0	255.0	5.60	7.09	2.42	YES	HRDOW
L0000007	0	0.12987E-01	459807.6	3752944.1	255.2	5.60	7.09	2.42	YES	HRDOW
L0000008	0	0.12987E-01	459822.5	3752947.1	255.5	5.60	7.09	2.42	YES	HRDOW
L0000009	0	0.12987E-01	459837.5	3752950.2	255.8	5.60	7.09	2.42	YES	HRDOW
L0000010	0	0.12987E-01	459852.4	3752953.2	256.0	5.60	7.09	2.42	YES	HRDOW
L0000011	0	0.12987E-01	459867.3	3752956.3	256.2	5.60	7.09	2.42	YES	HRDOW
L0000012	0	0.12987E-01	459882.3	3752959.3	256.5	5.60	7.09	2.42	YES	HRDOW
L0000013	0	0.12987E-01	459897.2	3752962.4	256.7	5.60	7.09	2.42	YES	HRDOW
L0000014	0	0.12987E-01	459912.1	3752965.4	256.7	5.60	7.09	2.42	YES	HRDOW
L0000015	0	0.12987E-01	459927.0	3752968.5	256.8	5.60	7.09	2.42	YES	HRDOW
L0000016	0	0.12987E-01	459942.0	3752971.6	257.1	5.60	7.09	2.42	YES	HRDOW
L0000017	0	0.12987E-01	459956.9	3752974.6	257.4	5.60	7.09	2.42	YES	HRDOW
L0000018	0	0.12987E-01	459971.8	3752977.7	257.5	5.60	7.09	2.42	YES	HRDOW
L0000019	0	0.12987E-01	459986.8	3752980.7	257.7	5.60	7.09	2.42	YES	HRDOW
L0000020	0	0.12987E-01	460001.7	3752983.8	257.8	5.60	7.09	2.42	YES	HRDOW
L0000021	0	0.12987E-01	460016.6	3752986.8	257.8	5.60	7.09	2.42	YES	HRDOW
L0000022	0	0.12987E-01	460031.6	3752989.9	257.9	5.60	7.09	2.42	YES	HRDOW
L0000023	0	0.12987E-01	460046.5	3752993.0	258.1	5.60	7.09	2.42	YES	HRDOW
L0000024	0	0.12987E-01	460061.4	3752996.0	258.2	5.60	7.09	2.42	YES	HRDOW
L0000025	0	0.12987E-01	460076.3	3752999.1	258.3	5.60	7.09	2.42	YES	HRDOW
L0000026	0	0.12987E-01	460091.3	3753002.1	258.3	5.60	7.09	2.42	YES	HRDOW
L0000027	0	0.12987E-01	460106.2	3753005.2	258.4	5.60	7.09	2.42	YES	HRDOW
L0000028	0	0.12987E-01	460121.1	3753008.2	258.3	5.60	7.09	2.42	YES	HRDOW
L0000029	0	0.12987E-01	460136.1	3753011.3	258.4	5.60	7.09	2.42	YES	HRDOW
L0000030	0	0.12987E-01	460151.0	3753014.3	258.4	5.60	7.09	2.42	YES	HRDOW
L0000031	0	0.12987E-01	460165.9	3753017.4	258.3	5.60	7.09	2.42	YES	HRDOW
L0000032	0	0.12987E-01	460180.9	3753020.5	258.4	5.60	7.09	2.42	YES	HRDOW
L0000033	0	0.12987E-01	460195.8	3753023.5	258.4	5.60	7.09	2.42	YES	HRDOW
L0000034	0	0.12987E-01	460210.7	3753026.6	258.4	5.60	7.09	2.42	YES	HRDOW
L0000035	0	0.12987E-01	460225.6	3753029.9	258.4	5.60	7.09	2.42	YES	HRDOW
L0000036	0	0.12987E-01	460240.4	3753033.4	258.3	5.60	7.09	2.42	YES	HRDOW
L0000037	0	0.12987E-01	460255.3	3753036.8	258.3	5.60	7.09	2.42	YES	HRDOW
L0000038	0	0.12987E-01	460270.1	3753040.3	258.2	5.60	7.09	2.42	YES	HRDOW

Model Output
Unit Emission Rates (1 g/s)

L0000039	0	0.12987E-01	460285.0	3753043.8	258.1	5.60	7.09	2.42	YES	HRDOW
L0000040	0	0.12987E-01	460299.8	3753047.2	258.0	5.60	7.09	2.42	YES	HRDOW
L0000041	0	0.12987E-01	460314.6	3753050.7	257.9	5.60	7.09	2.42	YES	HRDOW
L0000042	0	0.12987E-01	460329.5	3753054.2	257.8	5.60	7.09	2.42	YES	HRDOW
L0000043	0	0.12987E-01	460344.3	3753057.6	257.6	5.60	7.09	2.42	YES	HRDOW
L0000044	0	0.12987E-01	460359.2	3753061.1	257.5	5.60	7.09	2.42	YES	HRDOW
L0000045	0	0.12987E-01	460374.0	3753064.6	257.4	5.60	7.09	2.42	YES	HRDOW
L0000046	0	0.12987E-01	460388.8	3753068.0	257.3	5.60	7.09	2.42	YES	HRDOW
L0000047	0	0.12987E-01	460403.7	3753071.5	257.2	5.60	7.09	2.42	YES	HRDOW
L0000048	0	0.12987E-01	460418.5	3753075.0	257.1	5.60	7.09	2.42	YES	HRDOW
L0000049	0	0.12987E-01	460433.4	3753078.4	257.0	5.60	7.09	2.42	YES	HRDOW
L0000050	0	0.12987E-01	460448.2	3753081.9	257.0	5.60	7.09	2.42	YES	HRDOW
L0000051	0	0.12987E-01	460462.1	3753088.1	256.9	5.60	7.09	2.42	YES	HRDOW
L0000052	0	0.12987E-01	460476.0	3753094.3	256.9	5.60	7.09	2.42	YES	HRDOW
L0000053	0	0.12987E-01	460490.0	3753100.5	256.8	5.60	7.09	2.42	YES	HRDOW
L0000054	0	0.12987E-01	460503.0	3753108.3	256.7	5.60	7.09	2.42	YES	HRDOW
L0000055	0	0.12987E-01	460515.7	3753116.7	256.8	5.60	7.09	2.42	YES	HRDOW
L0000056	0	0.12987E-01	460528.5	3753125.1	256.8	5.60	7.09	2.42	YES	HRDOW
L0000057	0	0.12987E-01	460541.2	3753133.5	256.7	5.60	7.09	2.42	YES	HRDOW
L0000058	0	0.12987E-01	460553.9	3753141.9	256.8	5.60	7.09	2.42	YES	HRDOW
L0000059	0	0.12987E-01	460566.6	3753150.3	256.7	5.60	7.09	2.42	YES	HRDOW
L0000060	0	0.12987E-01	460579.3	3753158.7	256.7	5.60	7.09	2.42	YES	HRDOW
L0000061	0	0.12987E-01	460592.0	3753167.1	256.8	5.60	7.09	2.42	YES	HRDOW
L0000062	0	0.12987E-01	460604.7	3753175.5	256.7	5.60	7.09	2.42	YES	HRDOW
L0000063	0	0.12987E-01	460617.4	3753183.9	256.7	5.60	7.09	2.42	YES	HRDOW
L0000064	0	0.12987E-01	460630.2	3753192.3	256.7	5.60	7.09	2.42	YES	HRDOW
L0000065	0	0.12987E-01	460642.9	3753200.7	256.7	5.60	7.09	2.42	YES	HRDOW
L0000066	0	0.12987E-01	460655.6	3753209.1	256.7	5.60	7.09	2.42	YES	HRDOW
L0000067	0	0.12987E-01	460668.3	3753217.5	256.8	5.60	7.09	2.42	YES	HRDOW
L0000068	0	0.12987E-01	460681.0	3753225.9	256.7	5.60	7.09	2.42	YES	HRDOW
L0000069	0	0.12987E-01	460693.7	3753234.3	256.8	5.60	7.09	2.42	YES	HRDOW
L0000070	0	0.12987E-01	460706.4	3753242.7	256.7	5.60	7.09	2.42	YES	HRDOW
L0000071	0	0.12987E-01	460719.1	3753251.1	256.7	5.60	7.09	2.42	YES	HRDOW
L0000072	0	0.12987E-01	460731.9	3753259.6	256.8	5.60	7.09	2.42	YES	HRDOW
L0000073	0	0.12987E-01	460744.6	3753268.0	256.8	5.60	7.09	2.42	YES	HRDOW
L0000074	0	0.12987E-01	460757.3	3753276.4	256.8	5.60	7.09	2.42	YES	HRDOW
L0000075	0	0.12987E-01	460770.0	3753284.8	256.1	5.60	7.09	2.42	YES	HRDOW
L0000076	0	0.12987E-01	460782.7	3753293.2	254.4	5.60	7.09	2.42	YES	HRDOW
L0000077	0	0.12987E-01	460795.4	3753301.6	253.3	5.60	7.09	2.42	YES	HRDOW
L0000151	0	0.10000E+00	460002.5	3753391.0	246.9	4.15	20.93	3.12	YES	HRDOW
L0000152	0	0.10000E+00	459966.0	3753364.7	246.7	4.15	20.93	3.12	YES	HRDOW
L0000153	0	0.10000E+00	459929.5	3753338.3	246.5	4.15	20.93	3.12	YES	HRDOW

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000154	0	0.10000E+00	459893.1	3753311.9	246.3	4.15	20.93	3.12	YES	HRDOW
L0000155	0	0.10000E+00	459856.6	3753285.6	246.1	4.15	20.93	3.12	YES	HRDOW
L0000156	0	0.10000E+00	459820.1	3753259.2	245.9	4.15	20.93	3.12	YES	HRDOW
L0000157	0	0.10000E+00	459783.6	3753232.9	245.6	4.15	20.93	3.12	YES	HRDOW
L0000158	0	0.10000E+00	459747.2	3753206.5	245.4	4.15	20.93	3.12	YES	HRDOW
L0000159	0	0.10000E+00	459710.7	3753180.2	245.2	4.15	20.93	3.12	YES	HRDOW
L0000160	0	0.10000E+00	459674.2	3753153.8	245.0	4.15	20.93	3.12	YES	HRDOW
L0000161	0	0.10000E+00	460002.5	3753391.0	246.9	0.60	20.93	3.12	YES	HRDOW
L0000162	0	0.10000E+00	459966.0	3753364.7	246.7	0.60	20.93	3.12	YES	HRDOW
L0000163	0	0.10000E+00	459929.5	3753338.3	246.5	0.60	20.93	3.12	YES	HRDOW
L0000164	0	0.10000E+00	459893.1	3753311.9	246.3	0.60	20.93	3.12	YES	HRDOW
L0000165	0	0.10000E+00	459856.6	3753285.6	246.1	0.60	20.93	3.12	YES	HRDOW
L0000166	0	0.10000E+00	459820.1	3753259.2	245.9	0.60	20.93	3.12	YES	HRDOW
L0000167	0	0.10000E+00	459783.6	3753232.9	245.6	0.60	20.93	3.12	YES	HRDOW
L0000168	0	0.10000E+00	459747.2	3753206.5	245.4	0.60	20.93	3.12	YES	HRDOW
L0000169	0	0.10000E+00	459710.7	3753180.2	245.2	0.60	20.93	3.12	YES	HRDOW
L0000170	0	0.10000E+00	459674.2	3753153.8	245.0	0.60	20.93	3.12	YES	HRDOW

Model Output
Unit Emission Rates (1 g/s)

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs							
RAIL	L0000001 ,	L0000002 ,	L0000003 ,	L0000004 ,	L0000005 ,	L0000006 ,	L0000007 ,	L0000008 ,
	L0000009 ,	L0000010 ,	L0000011 ,	L0000012 ,	L0000013 ,	L0000014 ,	L0000015 ,	L0000016 ,
	L0000017 ,	L0000018 ,	L0000019 ,	L0000020 ,	L0000021 ,	L0000022 ,	L0000023 ,	L0000024 ,
	L0000025 ,	L0000026 ,	L0000027 ,	L0000028 ,	L0000029 ,	L0000030 ,	L0000031 ,	L0000032 ,
	L0000033 ,	L0000034 ,	L0000035 ,	L0000036 ,	L0000037 ,	L0000038 ,	L0000039 ,	L0000040 ,
	L0000041 ,	L0000042 ,	L0000043 ,	L0000044 ,	L0000045 ,	L0000046 ,	L0000047 ,	L0000048 ,
	L0000049 ,	L0000050 ,	L0000051 ,	L0000052 ,	L0000053 ,	L0000054 ,	L0000055 ,	L0000056 ,
	L0000057 ,	L0000058 ,	L0000059 ,	L0000060 ,	L0000061 ,	L0000062 ,	L0000063 ,	L0000064 ,
	L0000065 ,	L0000066 ,	L0000067 ,	L0000068 ,	L0000069 ,	L0000070 ,	L0000071 ,	L0000072 ,
	L0000073 ,	L0000074 ,	L0000075 ,	L0000076 ,	L0000077 ,			
TRUCKS	L0000151 ,	L0000152 ,	L0000153 ,	L0000154 ,	L0000155 ,	L0000156 ,	L0000157 ,	L0000158 ,
	L0000159 ,	L0000160 ,						
CARS	L0000161 ,	L0000162 ,	L0000163 ,	L0000164 ,	L0000165 ,	L0000166 ,	L0000167 ,	L0000168 ,
	L0000169 ,	L0000170 ,						

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	2189641.	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 ,
		L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 ,
		L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 ,
		L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 ,
		L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 , L0000040 ,
		L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 , L0000048 ,
		L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 , L0000056 ,
		L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 , L0000063 , L0000064 ,
		L0000065 , L0000066 , L0000067 , L0000068 , L0000069 , L0000070 , L0000071 , L0000072 ,
		L0000073 , L0000074 , L0000075 , L0000076 , L0000077 , L0000151 , L0000152 , L0000153 ,
		L0000154 , L0000155 , L0000156 , L0000157 , L0000158 , L0000159 , L0000160 , L0000161 ,
		L0000162 , L0000163 , L0000164 , L0000165 , L0000166 , L0000167 , L0000168 , L0000169 ,
		L0000170 ,

Model Output
Unit Emission Rates (1 g/s)

```
*** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
*** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                    PAGE   7
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                  * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 through L0000077     ; SOURCE TYPE = VOLUME   :
 HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                                DAY OF WEEK = WEEKDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
```

Model Output
Unit Emission Rates (1 g/s)

```
*** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
*** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                    PAGE  84
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                  * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000151 through L0000160    ; SOURCE TYPE = VOLUME   :
 HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                                DAY OF WEEK = WEEKDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .7550E+00
   9  .6350E+00   10  .7840E+00   11  .7690E+00   12  .7310E+00   13  .6870E+00   14  .6320E+00   15  .5090E+00   16  .4500E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
```

Model Output
Unit Emission Rates (1 g/s)

```
*** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
*** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                    PAGE  94
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                  * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000161 through L0000170   ; SOURCE TYPE = VOLUME   :
 HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                                DAY OF WEEK = WEEKDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .9870E+00
   9  .9410E+00   10  .8820E+00   11  .8960E+00   12  .9230E+00   13  .9630E+00   14  .9750E+00   15  .9810E+00   16  .9660E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8  .0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16  .0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460347.3,	3752528.4,	265.3,	265.3,	0.0);	(460357.3,	3752528.4,	265.3,	265.3,	0.0);
(460367.3,	3752528.4,	265.4,	265.4,	0.0);	(460337.3,	3752538.4,	265.1,	265.1,	0.0);
(460347.3,	3752538.4,	265.2,	265.2,	0.0);	(460357.3,	3752538.4,	265.2,	265.2,	0.0);
(460367.3,	3752538.4,	265.3,	265.3,	0.0);	(460377.3,	3752538.4,	265.4,	265.4,	0.0);
(460387.3,	3752538.4,	265.5,	265.5,	0.0);	(460337.3,	3752548.4,	265.1,	265.1,	0.0);
(460347.3,	3752548.4,	265.1,	265.1,	0.0);	(460357.3,	3752548.4,	265.1,	265.1,	0.0);
(460367.3,	3752548.4,	265.2,	265.2,	0.0);	(460377.3,	3752548.4,	265.3,	265.3,	0.0);
(460387.3,	3752548.4,	265.4,	265.4,	0.0);	(460397.3,	3752548.4,	265.4,	265.4,	0.0);
(460327.3,	3752558.4,	264.9,	264.9,	0.0);	(460337.3,	3752558.4,	265.0,	265.0,	0.0);
(460347.3,	3752558.4,	265.0,	265.0,	0.0);	(460357.3,	3752558.4,	265.1,	265.1,	0.0);
(460367.3,	3752558.4,	265.1,	265.1,	0.0);	(460377.3,	3752558.4,	265.2,	265.2,	0.0);
(460387.3,	3752558.4,	265.3,	265.3,	0.0);	(460397.3,	3752558.4,	265.3,	265.3,	0.0);
(460407.3,	3752558.4,	265.2,	265.2,	0.0);	(460317.3,	3752568.4,	264.8,	264.8,	0.0);
(460327.3,	3752568.4,	264.9,	264.9,	0.0);	(460337.3,	3752568.4,	264.9,	264.9,	0.0);
(460347.3,	3752568.4,	264.9,	264.9,	0.0);	(460357.3,	3752568.4,	265.0,	265.0,	0.0);
(460367.3,	3752568.4,	265.1,	265.1,	0.0);	(460377.3,	3752568.4,	265.2,	265.2,	0.0);
(460387.3,	3752568.4,	265.2,	265.2,	0.0);	(460397.3,	3752568.4,	265.1,	265.1,	0.0);
(460407.3,	3752568.4,	265.1,	265.1,	0.0);	(460417.3,	3752568.4,	265.1,	265.1,	0.0);
(460427.3,	3752568.4,	265.0,	265.0,	0.0);	(460307.3,	3752578.4,	264.8,	264.8,	0.0);
(460317.3,	3752578.4,	264.8,	264.8,	0.0);	(460327.3,	3752578.4,	264.8,	264.8,	0.0);
(460337.3,	3752578.4,	264.8,	264.8,	0.0);	(460347.3,	3752578.4,	264.9,	264.9,	0.0);
(460357.3,	3752578.4,	264.9,	264.9,	0.0);	(460367.3,	3752578.4,	265.0,	265.0,	0.0);
(460377.3,	3752578.4,	265.1,	265.1,	0.0);	(460387.3,	3752578.4,	265.1,	265.1,	0.0);
(460397.3,	3752578.4,	265.0,	265.0,	0.0);	(460407.3,	3752578.4,	265.0,	265.0,	0.0);
(460417.3,	3752578.4,	264.9,	264.9,	0.0);	(460427.3,	3752578.4,	264.9,	264.9,	0.0);
(460437.3,	3752578.4,	264.8,	264.8,	0.0);	(460447.3,	3752578.4,	264.8,	264.8,	0.0);
(460307.3,	3752588.4,	264.7,	264.7,	0.0);	(460317.3,	3752588.4,	264.7,	264.7,	0.0);
(460327.3,	3752588.4,	264.7,	264.7,	0.0);	(460337.3,	3752588.4,	264.7,	264.7,	0.0);
(460347.3,	3752588.4,	264.8,	264.8,	0.0);	(460357.3,	3752588.4,	264.9,	264.9,	0.0);
(460367.3,	3752588.4,	265.0,	265.0,	0.0);	(460377.3,	3752588.4,	265.0,	265.0,	0.0);
(460387.3,	3752588.4,	265.0,	265.0,	0.0);	(460397.3,	3752588.4,	265.0,	265.0,	0.0);
(460407.3,	3752588.4,	264.9,	264.9,	0.0);	(460417.3,	3752588.4,	264.8,	264.8,	0.0);
(460427.3,	3752588.4,	264.7,	264.7,	0.0);	(460437.3,	3752588.4,	264.7,	264.7,	0.0);
(460447.3,	3752588.4,	264.7,	264.7,	0.0);	(460457.3,	3752588.4,	264.7,	264.7,	0.0);
(460297.3,	3752598.4,	264.7,	264.7,	0.0);	(460307.3,	3752598.4,	264.7,	264.7,	0.0);
(460317.3,	3752598.4,	264.7,	264.7,	0.0);	(460327.3,	3752598.4,	264.7,	264.7,	0.0);
(460337.3,	3752598.4,	264.7,	264.7,	0.0);	(460347.3,	3752598.4,	264.7,	264.7,	0.0);
(460357.3,	3752598.4,	264.8,	264.8,	0.0);	(460367.3,	3752598.4,	264.9,	264.9,	0.0);
(460377.3,	3752598.4,	264.9,	264.9,	0.0);	(460387.3,	3752598.4,	264.9,	264.9,	0.0);
(460397.3,	3752598.4,	264.9,	264.9,	0.0);	(460407.3,	3752598.4,	264.8,	264.8,	0.0);
(460417.3,	3752598.4,	264.7,	264.7,	0.0);	(460427.3,	3752598.4,	264.6,	264.6,	0.0);
(460437.3,	3752598.4,	264.6,	264.6,	0.0);	(460447.3,	3752598.4,	264.6,	264.6,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460457.3, 3752598.4,     264.5,     264.5,       0.0);         ( 460467.3, 3752598.4,     264.5,     264.5,       0.0);
( 460287.3, 3752608.4,     264.6,     264.6,       0.0);         ( 460297.3, 3752608.4,     264.6,     264.6,       0.0);
( 460307.3, 3752608.4,     264.6,     264.6,       0.0);         ( 460317.3, 3752608.4,     264.6,     264.6,       0.0);
( 460327.3, 3752608.4,     264.6,     264.6,       0.0);         ( 460337.3, 3752608.4,     264.6,     264.6,       0.0);
( 460347.3, 3752608.4,     264.7,     264.7,       0.0);         ( 460357.3, 3752608.4,     264.8,     264.8,       0.0);
( 460367.3, 3752608.4,     264.9,     264.9,       0.0);         ( 460377.3, 3752608.4,     264.8,     264.8,       0.0);
( 460387.3, 3752608.4,     264.8,     264.8,       0.0);         ( 460397.3, 3752608.4,     264.8,     264.8,       0.0);
( 460407.3, 3752608.4,     264.8,     264.8,       0.0);         ( 460417.3, 3752608.4,     264.6,     264.6,       0.0);
( 460427.3, 3752608.4,     264.5,     264.5,       0.0);         ( 460437.3, 3752608.4,     264.5,     264.5,       0.0);
( 460447.3, 3752608.4,     264.5,     264.5,       0.0);         ( 460457.3, 3752608.4,     264.4,     264.4,       0.0);
( 460467.3, 3752608.4,     264.4,     264.4,       0.0);         ( 460477.3, 3752608.4,     264.4,     264.4,       0.0);
( 460487.3, 3752608.4,     264.6,     264.6,       0.0);         ( 460287.3, 3752618.4,     264.5,     264.5,       0.0);
( 460297.3, 3752618.4,     264.5,     264.5,       0.0);         ( 460307.3, 3752618.4,     264.5,     264.5,       0.0);
( 460317.3, 3752618.4,     264.5,     264.5,       0.0);         ( 460327.3, 3752618.4,     264.5,     264.5,       0.0);
( 460337.3, 3752618.4,     264.6,     264.6,       0.0);         ( 460347.3, 3752618.4,     264.7,     264.7,       0.0);
( 460357.3, 3752618.4,     264.8,     264.8,       0.0);         ( 460367.3, 3752618.4,     264.8,     264.8,       0.0);
( 460377.3, 3752618.4,     264.8,     264.8,       0.0);         ( 460387.3, 3752618.4,     264.7,     264.7,       0.0);
( 460397.3, 3752618.4,     264.7,     264.7,       0.0);         ( 460407.3, 3752618.4,     264.7,     264.7,       0.0);
( 460417.3, 3752618.4,     264.5,     264.5,       0.0);         ( 460427.3, 3752618.4,     264.4,     264.4,       0.0);
( 460437.3, 3752618.4,     264.4,     264.4,       0.0);         ( 460447.3, 3752618.4,     264.4,     264.4,       0.0);
( 460457.3, 3752618.4,     264.3,     264.3,       0.0);         ( 460467.3, 3752618.4,     264.3,     264.3,       0.0);
( 460477.3, 3752618.4,     264.3,     264.3,       0.0);         ( 460487.3, 3752618.4,     264.4,     264.4,       0.0);
( 460497.3, 3752618.4,     264.5,     264.5,       0.0);         ( 460277.3, 3752628.4,     264.4,     264.4,       0.0);
( 460287.3, 3752628.4,     264.4,     264.4,       0.0);         ( 460297.3, 3752628.4,     264.5,     264.5,       0.0);
( 460307.3, 3752628.4,     264.5,     264.5,       0.0);         ( 460317.3, 3752628.4,     264.5,     264.5,       0.0);
( 460327.3, 3752628.4,     264.5,     264.5,       0.0);         ( 460337.3, 3752628.4,     264.6,     264.6,       0.0);
( 460347.3, 3752628.4,     264.7,     264.7,       0.0);         ( 460357.3, 3752628.4,     264.7,     264.7,       0.0);
( 460367.3, 3752628.4,     264.7,     264.7,       0.0);         ( 460377.3, 3752628.4,     264.7,     264.7,       0.0);
( 460387.3, 3752628.4,     264.6,     264.6,       0.0);         ( 460397.3, 3752628.4,     264.6,     264.6,       0.0);
( 460407.3, 3752628.4,     264.6,     264.6,       0.0);         ( 460417.3, 3752628.4,     264.5,     264.5,       0.0);
( 460427.3, 3752628.4,     264.4,     264.4,       0.0);         ( 460437.3, 3752628.4,     264.3,     264.3,       0.0);
( 460447.3, 3752628.4,     264.3,     264.3,       0.0);         ( 460457.3, 3752628.4,     264.2,     264.2,       0.0);
( 460467.3, 3752628.4,     264.2,     264.2,       0.0);         ( 460477.3, 3752628.4,     264.2,     264.2,       0.0);
( 460487.3, 3752628.4,     264.3,     264.3,       0.0);         ( 460497.3, 3752628.4,     264.4,     264.4,       0.0);
( 460507.3, 3752628.4,     264.4,     264.4,       0.0);         ( 460517.3, 3752628.4,     264.4,     264.4,       0.0);
( 460267.3, 3752638.4,     264.3,     264.3,       0.0);         ( 460277.3, 3752638.4,     264.4,     264.4,       0.0);
( 460287.3, 3752638.4,     264.4,     264.4,       0.0);         ( 460297.3, 3752638.4,     264.4,     264.4,       0.0);
( 460307.3, 3752638.4,     264.4,     264.4,       0.0);         ( 460317.3, 3752638.4,     264.4,     264.4,       0.0);
( 460327.3, 3752638.4,     264.4,     264.4,       0.0);         ( 460337.3, 3752638.4,     264.5,     264.5,       0.0);
( 460347.3, 3752638.4,     264.6,     264.6,       0.0);         ( 460357.3, 3752638.4,     264.6,     264.6,       0.0);
( 460367.3, 3752638.4,     264.6,     264.6,       0.0);         ( 460377.3, 3752638.4,     264.5,     264.5,       0.0);
( 460387.3, 3752638.4,     264.5,     264.5,       0.0);         ( 460397.3, 3752638.4,     264.5,     264.5,       0.0);
( 460407.3, 3752638.4,     264.5,     264.5,       0.0);         ( 460417.3, 3752638.4,     264.4,     264.4,       0.0);
( 460427.3, 3752638.4,     264.3,     264.3,       0.0);         ( 460437.3, 3752638.4,     264.2,     264.2,       0.0);
( 460447.3, 3752638.4,     264.1,     264.1,       0.0);         ( 460457.3, 3752638.4,     264.1,     264.1,       0.0);
( 460467.3, 3752638.4,     264.0,     264.0,       0.0);         ( 460477.3, 3752638.4,     264.0,     264.0,       0.0);
( 460487.3, 3752638.4,     264.2,     264.2,       0.0);         ( 460497.3, 3752638.4,     264.3,     264.3,       0.0);
( 460507.3, 3752638.4,     264.2,     264.2,       0.0);         ( 460517.3, 3752638.4,     264.2,     264.2,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460527.3,	3752638.4,	264.2,	264.2,	0.0);	(460257.3,	3752648.4,	264.2,	264.2,	0.0);
(460267.3,	3752648.4,	264.3,	264.3,	0.0);	(460277.3,	3752648.4,	264.3,	264.3,	0.0);
(460287.3,	3752648.4,	264.3,	264.3,	0.0);	(460297.3,	3752648.4,	264.3,	264.3,	0.0);
(460307.3,	3752648.4,	264.3,	264.3,	0.0);	(460317.3,	3752648.4,	264.4,	264.4,	0.0);
(460327.3,	3752648.4,	264.4,	264.4,	0.0);	(460337.3,	3752648.4,	264.5,	264.5,	0.0);
(460347.3,	3752648.4,	264.5,	264.5,	0.0);	(460357.3,	3752648.4,	264.5,	264.5,	0.0);
(460367.3,	3752648.4,	264.5,	264.5,	0.0);	(460377.3,	3752648.4,	264.4,	264.4,	0.0);
(460387.3,	3752648.4,	264.4,	264.4,	0.0);	(460397.3,	3752648.4,	264.4,	264.4,	0.0);
(460407.3,	3752648.4,	264.4,	264.4,	0.0);	(460417.3,	3752648.4,	264.3,	264.3,	0.0);
(460427.3,	3752648.4,	264.2,	264.2,	0.0);	(460437.3,	3752648.4,	264.1,	264.1,	0.0);
(460447.3,	3752648.4,	264.0,	264.0,	0.0);	(460457.3,	3752648.4,	264.0,	264.0,	0.0);
(460467.3,	3752648.4,	263.9,	263.9,	0.0);	(460477.3,	3752648.4,	263.9,	263.9,	0.0);
(460487.3,	3752648.4,	264.1,	264.1,	0.0);	(460497.3,	3752648.4,	264.1,	264.1,	0.0);
(460507.3,	3752648.4,	264.1,	264.1,	0.0);	(460517.3,	3752648.4,	264.1,	264.1,	0.0);
(460527.3,	3752648.4,	264.0,	264.0,	0.0);	(460537.3,	3752648.4,	264.0,	264.0,	0.0);
(460547.3,	3752648.4,	264.0,	264.0,	0.0);	(460247.3,	3752658.4,	264.2,	264.2,	0.0);
(460257.3,	3752658.4,	264.2,	264.2,	0.0);	(460267.3,	3752658.4,	264.2,	264.2,	0.0);
(460277.3,	3752658.4,	264.2,	264.2,	0.0);	(460287.3,	3752658.4,	264.2,	264.2,	0.0);
(460297.3,	3752658.4,	264.2,	264.2,	0.0);	(460307.3,	3752658.4,	264.2,	264.2,	0.0);
(460317.3,	3752658.4,	264.3,	264.3,	0.0);	(460327.3,	3752658.4,	264.4,	264.4,	0.0);
(460337.3,	3752658.4,	264.4,	264.4,	0.0);	(460347.3,	3752658.4,	264.4,	264.4,	0.0);
(460357.3,	3752658.4,	264.4,	264.4,	0.0);	(460367.3,	3752658.4,	264.4,	264.4,	0.0);
(460377.3,	3752658.4,	264.3,	264.3,	0.0);	(460387.3,	3752658.4,	264.3,	264.3,	0.0);
(460397.3,	3752658.4,	264.3,	264.3,	0.0);	(460407.3,	3752658.4,	264.2,	264.2,	0.0);
(460417.3,	3752658.4,	264.2,	264.2,	0.0);	(460427.3,	3752658.4,	264.1,	264.1,	0.0);
(460437.3,	3752658.4,	264.0,	264.0,	0.0);	(460447.3,	3752658.4,	263.9,	263.9,	0.0);
(460457.3,	3752658.4,	263.9,	263.9,	0.0);	(460467.3,	3752658.4,	263.8,	263.8,	0.0);
(460477.3,	3752658.4,	263.8,	263.8,	0.0);	(460487.3,	3752658.4,	263.9,	263.9,	0.0);
(460497.3,	3752658.4,	264.0,	264.0,	0.0);	(460507.3,	3752658.4,	263.9,	263.9,	0.0);
(460517.3,	3752658.4,	263.9,	263.9,	0.0);	(460527.3,	3752658.4,	263.9,	263.9,	0.0);
(460537.3,	3752658.4,	263.9,	263.9,	0.0);	(460547.3,	3752658.4,	263.8,	263.8,	0.0);
(460557.3,	3752658.4,	263.8,	263.8,	0.0);	(460237.3,	3752668.4,	264.1,	264.1,	0.0);
(460247.3,	3752668.4,	264.1,	264.1,	0.0);	(460257.3,	3752668.4,	264.1,	264.1,	0.0);
(460267.3,	3752668.4,	264.1,	264.1,	0.0);	(460277.3,	3752668.4,	264.1,	264.1,	0.0);
(460287.3,	3752668.4,	264.1,	264.1,	0.0);	(460297.3,	3752668.4,	264.1,	264.1,	0.0);
(460307.3,	3752668.4,	264.1,	264.1,	0.0);	(460317.3,	3752668.4,	264.3,	264.3,	0.0);
(460327.3,	3752668.4,	264.3,	264.3,	0.0);	(460337.3,	3752668.4,	264.3,	264.3,	0.0);
(460347.3,	3752668.4,	264.3,	264.3,	0.0);	(460357.3,	3752668.4,	264.3,	264.3,	0.0);
(460367.3,	3752668.4,	264.2,	264.2,	0.0);	(460377.3,	3752668.4,	264.2,	264.2,	0.0);
(460387.3,	3752668.4,	264.2,	264.2,	0.0);	(460397.3,	3752668.4,	264.2,	264.2,	0.0);
(460407.3,	3752668.4,	264.1,	264.1,	0.0);	(460417.3,	3752668.4,	264.1,	264.1,	0.0);
(460427.3,	3752668.4,	264.0,	264.0,	0.0);	(460437.3,	3752668.4,	263.9,	263.9,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460447.3, 3752668.4,     263.8,     263.8,       0.0);
( 460467.3, 3752668.4,     263.7,     263.7,       0.0);
( 460487.3, 3752668.4,     263.8,     263.8,       0.0);
( 460507.3, 3752668.4,     263.8,     263.8,       0.0);
( 460527.3, 3752668.4,     263.7,     263.7,       0.0);
( 460547.3, 3752668.4,     263.7,     263.7,       0.0);
( 460567.3, 3752668.4,     263.6,     263.6,       0.0);
( 460247.3, 3752678.4,     264.1,     264.1,       0.0);
( 460267.3, 3752678.4,     264.0,     264.0,       0.0);
( 460287.3, 3752678.4,     264.0,     264.0,       0.0);
( 460307.3, 3752678.4,     264.1,     264.1,       0.0);
( 460327.3, 3752678.4,     264.2,     264.2,       0.0);
( 460347.3, 3752678.4,     264.2,     264.2,       0.0);
( 460367.3, 3752678.4,     264.1,     264.1,       0.0);
( 460387.3, 3752678.4,     264.1,     264.1,       0.0);
( 460407.3, 3752678.4,     264.0,     264.0,       0.0);
( 460427.3, 3752678.4,     263.9,     263.9,       0.0);
( 460447.3, 3752678.4,     263.7,     263.7,       0.0);
( 460467.3, 3752678.4,     263.6,     263.6,       0.0);
( 460487.3, 3752678.4,     263.6,     263.6,       0.0);
( 460507.3, 3752678.4,     263.6,     263.6,       0.0);
( 460527.3, 3752678.4,     263.6,     263.6,       0.0);
( 460547.3, 3752678.4,     263.5,     263.5,       0.0);
( 460567.3, 3752678.4,     263.5,     263.5,       0.0);
( 460587.3, 3752678.4,     263.4,     263.4,       0.0);
( 460237.3, 3752688.4,     263.9,     263.9,       0.0);
( 460257.3, 3752688.4,     264.0,     264.0,       0.0);
( 460277.3, 3752688.4,     263.9,     263.9,       0.0);
( 460297.3, 3752688.4,     263.9,     263.9,       0.0);
( 460317.3, 3752688.4,     264.1,     264.1,       0.0);
( 460337.3, 3752688.4,     264.1,     264.1,       0.0);
( 460357.3, 3752688.4,     264.0,     264.0,       0.0);
( 460377.3, 3752688.4,     263.9,     263.9,       0.0);
( 460397.3, 3752688.4,     263.9,     263.9,       0.0);
( 460417.3, 3752688.4,     263.8,     263.8,       0.0);
( 460437.3, 3752688.4,     263.7,     263.7,       0.0);
( 460457.3, 3752688.4,     263.6,     263.6,       0.0);
( 460477.3, 3752688.4,     263.4,     263.4,       0.0);
( 460497.3, 3752688.4,     263.5,     263.5,       0.0);
( 460517.3, 3752688.4,     263.4,     263.4,       0.0);
( 460537.3, 3752688.4,     263.4,     263.4,       0.0);
( 460557.3, 3752688.4,     263.3,     263.3,       0.0);
( 460577.3, 3752688.4,     263.3,     263.3,       0.0);
( 460597.3, 3752688.4,     263.2,     263.2,       0.0);
( 460237.3, 3752698.4,     263.9,     263.9,       0.0);
( 460257.3, 3752698.4,     263.9,     263.9,       0.0);
( 460277.3, 3752698.4,     263.9,     263.9,       0.0);
( 460297.3, 3752698.4,     263.9,     263.9,       0.0);
( 460457.3, 3752668.4,     263.8,     263.8,       0.0);
( 460477.3, 3752668.4,     263.7,     263.7,       0.0);
( 460497.3, 3752668.4,     263.8,     263.8,       0.0);
( 460517.3, 3752668.4,     263.8,     263.8,       0.0);
( 460537.3, 3752668.4,     263.7,     263.7,       0.0);
( 460557.3, 3752668.4,     263.7,     263.7,       0.0);
( 460237.3, 3752678.4,     264.0,     264.0,       0.0);
( 460257.3, 3752678.4,     264.1,     264.1,       0.0);
( 460277.3, 3752678.4,     264.0,     264.0,       0.0);
( 460297.3, 3752678.4,     264.0,     264.0,       0.0);
( 460317.3, 3752678.4,     264.2,     264.2,       0.0);
( 460337.3, 3752678.4,     264.2,     264.2,       0.0);
( 460357.3, 3752678.4,     264.1,     264.1,       0.0);
( 460377.3, 3752678.4,     264.1,     264.1,       0.0);
( 460397.3, 3752678.4,     264.0,     264.0,       0.0);
( 460417.3, 3752678.4,     263.9,     263.9,       0.0);
( 460437.3, 3752678.4,     263.8,     263.8,       0.0);
( 460457.3, 3752678.4,     263.6,     263.6,       0.0);
( 460477.3, 3752678.4,     263.6,     263.6,       0.0);
( 460497.3, 3752678.4,     263.7,     263.7,       0.0);
( 460517.3, 3752678.4,     263.6,     263.6,       0.0);
( 460537.3, 3752678.4,     263.5,     263.5,       0.0);
( 460557.3, 3752678.4,     263.5,     263.5,       0.0);
( 460577.3, 3752678.4,     263.4,     263.4,       0.0);
( 460227.3, 3752688.4,     263.9,     263.9,       0.0);
( 460247.3, 3752688.4,     264.0,     264.0,       0.0);
( 460267.3, 3752688.4,     264.0,     264.0,       0.0);
( 460287.3, 3752688.4,     263.9,     263.9,       0.0);
( 460307.3, 3752688.4,     264.1,     264.1,       0.0);
( 460327.3, 3752688.4,     264.1,     264.1,       0.0);
( 460347.3, 3752688.4,     264.1,     264.1,       0.0);
( 460367.3, 3752688.4,     264.0,     264.0,       0.0);
( 460387.3, 3752688.4,     263.9,     263.9,       0.0);
( 460407.3, 3752688.4,     263.9,     263.9,       0.0);
( 460427.3, 3752688.4,     263.8,     263.8,       0.0);
( 460447.3, 3752688.4,     263.7,     263.7,       0.0);
( 460467.3, 3752688.4,     263.4,     263.4,       0.0);
( 460487.3, 3752688.4,     263.5,     263.5,       0.0);
( 460507.3, 3752688.4,     263.5,     263.5,       0.0);
( 460527.3, 3752688.4,     263.4,     263.4,       0.0);
( 460547.3, 3752688.4,     263.4,     263.4,       0.0);
( 460567.3, 3752688.4,     263.3,     263.3,       0.0);
( 460587.3, 3752688.4,     263.3,     263.3,       0.0);
( 460227.3, 3752698.4,     263.8,     263.8,       0.0);
( 460247.3, 3752698.4,     263.9,     263.9,       0.0);
( 460267.3, 3752698.4,     263.9,     263.9,       0.0);
( 460287.3, 3752698.4,     263.9,     263.9,       0.0);
( 460307.3, 3752698.4,     264.0,     264.0,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460317.3,	3752698.4,	264.0,	264.0,	0.0);	(460327.3,	3752698.4,	264.0,	264.0,	0.0);
(460337.3,	3752698.4,	264.0,	264.0,	0.0);	(460347.3,	3752698.4,	263.9,	263.9,	0.0);
(460357.3,	3752698.4,	263.9,	263.9,	0.0);	(460367.3,	3752698.4,	263.9,	263.9,	0.0);
(460377.3,	3752698.4,	263.8,	263.8,	0.0);	(460387.3,	3752698.4,	263.8,	263.8,	0.0);
(460397.3,	3752698.4,	263.7,	263.7,	0.0);	(460407.3,	3752698.4,	263.7,	263.7,	0.0);
(460417.3,	3752698.4,	263.7,	263.7,	0.0);	(460427.3,	3752698.4,	263.6,	263.6,	0.0);
(460437.3,	3752698.4,	263.6,	263.6,	0.0);	(460447.3,	3752698.4,	263.5,	263.5,	0.0);
(460457.3,	3752698.4,	263.4,	263.4,	0.0);	(460467.3,	3752698.4,	263.4,	263.4,	0.0);
(460477.3,	3752698.4,	263.3,	263.3,	0.0);	(460487.3,	3752698.4,	263.4,	263.4,	0.0);
(460497.3,	3752698.4,	263.4,	263.4,	0.0);	(460507.3,	3752698.4,	263.3,	263.3,	0.0);
(460517.3,	3752698.4,	263.3,	263.3,	0.0);	(460527.3,	3752698.4,	263.2,	263.2,	0.0);
(460537.3,	3752698.4,	263.2,	263.2,	0.0);	(460547.3,	3752698.4,	263.2,	263.2,	0.0);
(460557.3,	3752698.4,	263.2,	263.2,	0.0);	(460567.3,	3752698.4,	263.1,	263.1,	0.0);
(460577.3,	3752698.4,	263.1,	263.1,	0.0);	(460587.3,	3752698.4,	263.1,	263.1,	0.0);
(460597.3,	3752698.4,	263.1,	263.1,	0.0);	(460607.3,	3752698.4,	263.1,	263.1,	0.0);
(460617.3,	3752698.4,	263.1,	263.1,	0.0);	(460217.3,	3752708.4,	263.7,	263.7,	0.0);
(460227.3,	3752708.4,	263.7,	263.7,	0.0);	(460237.3,	3752708.4,	263.8,	263.8,	0.0);
(460247.3,	3752708.4,	263.8,	263.8,	0.0);	(460257.3,	3752708.4,	263.8,	263.8,	0.0);
(460267.3,	3752708.4,	263.8,	263.8,	0.0);	(460277.3,	3752708.4,	263.8,	263.8,	0.0);
(460287.3,	3752708.4,	263.8,	263.8,	0.0);	(460297.3,	3752708.4,	263.9,	263.9,	0.0);
(460307.3,	3752708.4,	263.9,	263.9,	0.0);	(460317.3,	3752708.4,	263.9,	263.9,	0.0);
(460327.3,	3752708.4,	263.9,	263.9,	0.0);	(460337.3,	3752708.4,	263.9,	263.9,	0.0);
(460347.3,	3752708.4,	263.8,	263.8,	0.0);	(460357.3,	3752708.4,	263.8,	263.8,	0.0);
(460367.3,	3752708.4,	263.8,	263.8,	0.0);	(460377.3,	3752708.4,	263.7,	263.7,	0.0);
(460387.3,	3752708.4,	263.7,	263.7,	0.0);	(460397.3,	3752708.4,	263.6,	263.6,	0.0);
(460407.3,	3752708.4,	263.6,	263.6,	0.0);	(460417.3,	3752708.4,	263.5,	263.5,	0.0);
(460427.3,	3752708.4,	263.4,	263.4,	0.0);	(460437.3,	3752708.4,	263.4,	263.4,	0.0);
(460447.3,	3752708.4,	263.4,	263.4,	0.0);	(460457.3,	3752708.4,	263.3,	263.3,	0.0);
(460467.3,	3752708.4,	263.2,	263.2,	0.0);	(460477.3,	3752708.4,	263.2,	263.2,	0.0);
(460487.3,	3752708.4,	263.2,	263.2,	0.0);	(460497.3,	3752708.4,	263.2,	263.2,	0.0);
(460507.3,	3752708.4,	263.2,	263.2,	0.0);	(460517.3,	3752708.4,	263.1,	263.1,	0.0);
(460527.3,	3752708.4,	263.1,	263.1,	0.0);	(460537.3,	3752708.4,	263.1,	263.1,	0.0);
(460547.3,	3752708.4,	263.0,	263.0,	0.0);	(460557.3,	3752708.4,	263.0,	263.0,	0.0);
(460567.3,	3752708.4,	263.0,	263.0,	0.0);	(460577.3,	3752708.4,	262.9,	262.9,	0.0);
(460587.3,	3752708.4,	262.9,	262.9,	0.0);	(460597.3,	3752708.4,	262.9,	262.9,	0.0);
(460607.3,	3752708.4,	262.9,	262.9,	0.0);	(460617.3,	3752708.4,	262.9,	262.9,	0.0);
(460627.3,	3752708.4,	262.9,	262.9,	0.0);	(460217.3,	3752718.4,	263.6,	263.6,	0.0);
(460227.3,	3752718.4,	263.7,	263.7,	0.0);	(460237.3,	3752718.4,	263.7,	263.7,	0.0);
(460247.3,	3752718.4,	263.7,	263.7,	0.0);	(460257.3,	3752718.4,	263.7,	263.7,	0.0);
(460267.3,	3752718.4,	263.7,	263.7,	0.0);	(460277.3,	3752718.4,	263.7,	263.7,	0.0);
(460287.3,	3752718.4,	263.7,	263.7,	0.0);	(460297.3,	3752718.4,	263.8,	263.8,	0.0);
(460307.3,	3752718.4,	263.8,	263.8,	0.0);	(460317.3,	3752718.4,	263.8,	263.8,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460327.3, 3752718.4,     263.8,     263.8,       0.0);
( 460347.3, 3752718.4,     263.7,     263.7,       0.0);
( 460367.3, 3752718.4,     263.6,     263.6,       0.0);
( 460387.3, 3752718.4,     263.5,     263.5,       0.0);
( 460407.3, 3752718.4,     263.4,     263.4,       0.0);
( 460427.3, 3752718.4,     263.3,     263.3,       0.0);
( 460447.3, 3752718.4,     263.2,     263.2,       0.0);
( 460467.3, 3752718.4,     263.2,     263.2,       0.0);
( 460487.3, 3752718.4,     263.1,     263.1,       0.0);
( 460507.3, 3752718.4,     263.0,     263.0,       0.0);
( 460527.3, 3752718.4,     262.9,     262.9,       0.0);
( 460547.3, 3752718.4,     262.9,     262.9,       0.0);
( 460567.3, 3752718.4,     262.8,     262.8,       0.0);
( 460587.3, 3752718.4,     262.8,     262.8,       0.0);
( 460607.3, 3752718.4,     262.7,     262.7,       0.0);
( 460627.3, 3752718.4,     262.7,     262.7,       0.0);
( 460647.3, 3752718.4,     262.5,     262.5,       0.0);
( 460217.3, 3752728.4,     263.6,     263.6,       0.0);
( 460237.3, 3752728.4,     263.6,     263.6,       0.0);
( 460257.3, 3752728.4,     263.6,     263.6,       0.0);
( 460277.3, 3752728.4,     263.6,     263.6,       0.0);
( 460297.3, 3752728.4,     263.7,     263.7,       0.0);
( 460317.3, 3752728.4,     263.7,     263.7,       0.0);
( 460337.3, 3752728.4,     263.6,     263.6,       0.0);
( 460357.3, 3752728.4,     263.6,     263.6,       0.0);
( 460377.3, 3752728.4,     263.4,     263.4,       0.0);
( 460397.3, 3752728.4,     263.3,     263.3,       0.0);
( 460417.3, 3752728.4,     263.2,     263.2,       0.0);
( 460437.3, 3752728.4,     263.2,     263.2,       0.0);
( 460457.3, 3752728.4,     263.1,     263.1,       0.0);
( 460477.3, 3752728.4,     262.9,     262.9,       0.0);
( 460497.3, 3752728.4,     262.9,     262.9,       0.0);
( 460517.3, 3752728.4,     262.8,     262.8,       0.0);
( 460537.3, 3752728.4,     262.7,     262.7,       0.0);
( 460557.3, 3752728.4,     262.7,     262.7,       0.0);
( 460577.3, 3752728.4,     262.6,     262.6,       0.0);
( 460597.3, 3752728.4,     262.6,     262.6,       0.0);
( 460617.3, 3752728.4,     262.5,     262.5,       0.0);
( 460637.3, 3752728.4,     262.4,     262.4,       0.0);
( 460657.3, 3752728.4,     262.2,     262.2,       0.0);
( 460207.3, 3752738.4,     263.5,     263.5,       0.0);
( 460227.3, 3752738.4,     263.5,     263.5,       0.0);
( 460247.3, 3752738.4,     263.6,     263.6,       0.0);
( 460267.3, 3752738.4,     263.6,     263.6,       0.0);
( 460287.3, 3752738.4,     263.6,     263.6,       0.0);
( 460307.3, 3752738.4,     263.6,     263.6,       0.0);
( 460327.3, 3752738.4,     263.5,     263.5,       0.0);
( 460347.3, 3752738.4,     263.4,     263.4,       0.0);
( 460337.3, 3752718.4,     263.8,     263.8,       0.0);
( 460357.3, 3752718.4,     263.7,     263.7,       0.0);
( 460377.3, 3752718.4,     263.6,     263.6,       0.0);
( 460397.3, 3752718.4,     263.4,     263.4,       0.0);
( 460417.3, 3752718.4,     263.4,     263.4,       0.0);
( 460437.3, 3752718.4,     263.3,     263.3,       0.0);
( 460457.3, 3752718.4,     263.2,     263.2,       0.0);
( 460477.3, 3752718.4,     263.1,     263.1,       0.0);
( 460497.3, 3752718.4,     263.0,     263.0,       0.0);
( 460517.3, 3752718.4,     262.9,     262.9,       0.0);
( 460537.3, 3752718.4,     262.9,     262.9,       0.0);
( 460557.3, 3752718.4,     262.8,     262.8,       0.0);
( 460577.3, 3752718.4,     262.8,     262.8,       0.0);
( 460597.3, 3752718.4,     262.8,     262.8,       0.0);
( 460617.3, 3752718.4,     262.7,     262.7,       0.0);
( 460637.3, 3752718.4,     262.6,     262.6,       0.0);
( 460207.3, 3752728.4,     263.5,     263.5,       0.0);
( 460227.3, 3752728.4,     263.6,     263.6,       0.0);
( 460247.3, 3752728.4,     263.6,     263.6,       0.0);
( 460267.3, 3752728.4,     263.6,     263.6,       0.0);
( 460287.3, 3752728.4,     263.7,     263.7,       0.0);
( 460307.3, 3752728.4,     263.7,     263.7,       0.0);
( 460327.3, 3752728.4,     263.6,     263.6,       0.0);
( 460347.3, 3752728.4,     263.6,     263.6,       0.0);
( 460367.3, 3752728.4,     263.5,     263.5,       0.0);
( 460387.3, 3752728.4,     263.4,     263.4,       0.0);
( 460407.3, 3752728.4,     263.2,     263.2,       0.0);
( 460427.3, 3752728.4,     263.2,     263.2,       0.0);
( 460447.3, 3752728.4,     263.1,     263.1,       0.0);
( 460467.3, 3752728.4,     263.0,     263.0,       0.0);
( 460487.3, 3752728.4,     262.9,     262.9,       0.0);
( 460507.3, 3752728.4,     262.8,     262.8,       0.0);
( 460527.3, 3752728.4,     262.8,     262.8,       0.0);
( 460547.3, 3752728.4,     262.7,     262.7,       0.0);
( 460567.3, 3752728.4,     262.6,     262.6,       0.0);
( 460587.3, 3752728.4,     262.6,     262.6,       0.0);
( 460607.3, 3752728.4,     262.5,     262.5,       0.0);
( 460627.3, 3752728.4,     262.5,     262.5,       0.0);
( 460647.3, 3752728.4,     262.4,     262.4,       0.0);
( 460197.3, 3752738.4,     263.4,     263.4,       0.0);
( 460217.3, 3752738.4,     263.5,     263.5,       0.0);
( 460237.3, 3752738.4,     263.6,     263.6,       0.0);
( 460257.3, 3752738.4,     263.6,     263.6,       0.0);
( 460277.3, 3752738.4,     263.6,     263.6,       0.0);
( 460297.3, 3752738.4,     263.6,     263.6,       0.0);
( 460317.3, 3752738.4,     263.6,     263.6,       0.0);
( 460337.3, 3752738.4,     263.4,     263.4,       0.0);
( 460357.3, 3752738.4,     263.4,     263.4,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460367.3,	3752738.4,	263.4,	263.4,	0.0);	(460377.3,	3752738.4,	263.3,	263.3,	0.0);
(460387.3,	3752738.4,	263.2,	263.2,	0.0);	(460397.3,	3752738.4,	263.2,	263.2,	0.0);
(460407.3,	3752738.4,	263.2,	263.2,	0.0);	(460417.3,	3752738.4,	263.1,	263.1,	0.0);
(460427.3,	3752738.4,	263.1,	263.1,	0.0);	(460437.3,	3752738.4,	263.0,	263.0,	0.0);
(460447.3,	3752738.4,	262.9,	262.9,	0.0);	(460457.3,	3752738.4,	262.9,	262.9,	0.0);
(460467.3,	3752738.4,	262.9,	262.9,	0.0);	(460477.3,	3752738.4,	262.8,	262.8,	0.0);
(460487.3,	3752738.4,	262.8,	262.8,	0.0);	(460497.3,	3752738.4,	262.7,	262.7,	0.0);
(460507.3,	3752738.4,	262.7,	262.7,	0.0);	(460517.3,	3752738.4,	262.6,	262.6,	0.0);
(460527.3,	3752738.4,	262.6,	262.6,	0.0);	(460537.3,	3752738.4,	262.5,	262.5,	0.0);
(460547.3,	3752738.4,	262.5,	262.5,	0.0);	(460557.3,	3752738.4,	262.5,	262.5,	0.0);
(460567.3,	3752738.4,	262.4,	262.4,	0.0);	(460577.3,	3752738.4,	262.4,	262.4,	0.0);
(460587.3,	3752738.4,	262.4,	262.4,	0.0);	(460597.3,	3752738.4,	262.4,	262.4,	0.0);
(460607.3,	3752738.4,	262.3,	262.3,	0.0);	(460617.3,	3752738.4,	262.3,	262.3,	0.0);
(460627.3,	3752738.4,	262.3,	262.3,	0.0);	(460637.3,	3752738.4,	262.2,	262.2,	0.0);
(460647.3,	3752738.4,	262.2,	262.2,	0.0);	(460657.3,	3752738.4,	262.1,	262.1,	0.0);
(460667.3,	3752738.4,	262.1,	262.1,	0.0);	(460197.3,	3752748.4,	263.4,	263.4,	0.0);
(460207.3,	3752748.4,	263.4,	263.4,	0.0);	(460217.3,	3752748.4,	263.4,	263.4,	0.0);
(460227.3,	3752748.4,	263.5,	263.5,	0.0);	(460237.3,	3752748.4,	263.5,	263.5,	0.0);
(460247.3,	3752748.4,	263.5,	263.5,	0.0);	(460257.3,	3752748.4,	263.5,	263.5,	0.0);
(460267.3,	3752748.4,	263.5,	263.5,	0.0);	(460277.3,	3752748.4,	263.6,	263.6,	0.0);
(460287.3,	3752748.4,	263.6,	263.6,	0.0);	(460297.3,	3752748.4,	263.5,	263.5,	0.0);
(460307.3,	3752748.4,	263.5,	263.5,	0.0);	(460317.3,	3752748.4,	263.4,	263.4,	0.0);
(460327.3,	3752748.4,	263.4,	263.4,	0.0);	(460337.3,	3752748.4,	263.4,	263.4,	0.0);
(460347.3,	3752748.4,	263.3,	263.3,	0.0);	(460357.3,	3752748.4,	263.2,	263.2,	0.0);
(460367.3,	3752748.4,	263.2,	263.2,	0.0);	(460377.3,	3752748.4,	263.2,	263.2,	0.0);
(460387.3,	3752748.4,	263.1,	263.1,	0.0);	(460397.3,	3752748.4,	263.1,	263.1,	0.0);
(460407.3,	3752748.4,	263.0,	263.0,	0.0);	(460417.3,	3752748.4,	262.9,	262.9,	0.0);
(460427.3,	3752748.4,	262.9,	262.9,	0.0);	(460437.3,	3752748.4,	262.9,	262.9,	0.0);
(460447.3,	3752748.4,	262.8,	262.8,	0.0);	(460457.3,	3752748.4,	262.8,	262.8,	0.0);
(460467.3,	3752748.4,	262.7,	262.7,	0.0);	(460477.3,	3752748.4,	262.6,	262.6,	0.0);
(460487.3,	3752748.4,	262.6,	262.6,	0.0);	(460497.3,	3752748.4,	262.6,	262.6,	0.0);
(460507.3,	3752748.4,	262.5,	262.5,	0.0);	(460517.3,	3752748.4,	262.4,	262.4,	0.0);
(460527.3,	3752748.4,	262.4,	262.4,	0.0);	(460537.3,	3752748.4,	262.3,	262.3,	0.0);
(460547.3,	3752748.4,	262.3,	262.3,	0.0);	(460557.3,	3752748.4,	262.3,	262.3,	0.0);
(460567.3,	3752748.4,	262.2,	262.2,	0.0);	(460577.3,	3752748.4,	262.2,	262.2,	0.0);
(460587.3,	3752748.4,	262.2,	262.2,	0.0);	(460597.3,	3752748.4,	262.2,	262.2,	0.0);
(460607.3,	3752748.4,	262.1,	262.1,	0.0);	(460617.3,	3752748.4,	262.1,	262.1,	0.0);
(460627.3,	3752748.4,	262.1,	262.1,	0.0);	(460637.3,	3752748.4,	262.0,	262.0,	0.0);
(460647.3,	3752748.4,	262.0,	262.0,	0.0);	(460657.3,	3752748.4,	261.9,	261.9,	0.0);
(460667.3,	3752748.4,	261.9,	261.9,	0.0);	(460187.3,	3752758.4,	263.3,	263.3,	0.0);
(460197.3,	3752758.4,	263.3,	263.3,	0.0);	(460207.3,	3752758.4,	263.3,	263.3,	0.0);
(460217.3,	3752758.4,	263.4,	263.4,	0.0);	(460227.3,	3752758.4,	263.4,	263.4,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460237.3, 3752758.4,     263.4,     263.4,       0.0);         ( 460247.3, 3752758.4,     263.4,     263.4,       0.0);
( 460257.3, 3752758.4,     263.4,     263.4,       0.0);         ( 460267.3, 3752758.4,     263.4,     263.4,       0.0);
( 460277.3, 3752758.4,     263.4,     263.4,       0.0);         ( 460287.3, 3752758.4,     263.4,     263.4,       0.0);
( 460297.3, 3752758.4,     263.4,     263.4,       0.0);         ( 460307.3, 3752758.4,     263.4,     263.4,       0.0);
( 460317.3, 3752758.4,     263.3,     263.3,       0.0);         ( 460327.3, 3752758.4,     263.3,     263.3,       0.0);
( 460337.3, 3752758.4,     263.2,     263.2,       0.0);         ( 460347.3, 3752758.4,     263.2,     263.2,       0.0);
( 460357.3, 3752758.4,     263.1,     263.1,       0.0);         ( 460367.3, 3752758.4,     263.1,     263.1,       0.0);
( 460377.3, 3752758.4,     263.0,     263.0,       0.0);         ( 460387.3, 3752758.4,     262.9,     262.9,       0.0);
( 460397.3, 3752758.4,     262.9,     262.9,       0.0);         ( 460407.3, 3752758.4,     262.9,     262.9,       0.0);
( 460417.3, 3752758.4,     262.8,     262.8,       0.0);         ( 460427.3, 3752758.4,     262.8,     262.8,       0.0);
( 460437.3, 3752758.4,     262.7,     262.7,       0.0);         ( 460447.3, 3752758.4,     262.6,     262.6,       0.0);
( 460457.3, 3752758.4,     262.6,     262.6,       0.0);         ( 460467.3, 3752758.4,     262.5,     262.5,       0.0);
( 460477.3, 3752758.4,     262.5,     262.5,       0.0);         ( 460487.3, 3752758.4,     262.4,     262.4,       0.0);
( 460497.3, 3752758.4,     262.4,     262.4,       0.0);         ( 460507.3, 3752758.4,     262.3,     262.3,       0.0);
( 460517.3, 3752758.4,     262.3,     262.3,       0.0);         ( 460527.3, 3752758.4,     262.2,     262.2,       0.0);
( 460537.3, 3752758.4,     262.2,     262.2,       0.0);         ( 460547.3, 3752758.4,     262.2,     262.2,       0.0);
( 460557.3, 3752758.4,     262.1,     262.1,       0.0);         ( 460567.3, 3752758.4,     262.1,     262.1,       0.0);
( 460577.3, 3752758.4,     262.0,     262.0,       0.0);         ( 460587.3, 3752758.4,     262.0,     262.0,       0.0);
( 460597.3, 3752758.4,     262.0,     262.0,       0.0);         ( 460607.3, 3752758.4,     261.9,     261.9,       0.0);
( 460617.3, 3752758.4,     261.9,     261.9,       0.0);         ( 460627.3, 3752758.4,     261.9,     261.9,       0.0);
( 460637.3, 3752758.4,     261.8,     261.8,       0.0);         ( 460647.3, 3752758.4,     261.8,     261.8,       0.0);
( 460657.3, 3752758.4,     261.7,     261.7,       0.0);         ( 460177.3, 3752768.4,     263.2,     263.2,       0.0);
( 460187.3, 3752768.4,     263.2,     263.2,       0.0);         ( 460197.3, 3752768.4,     263.2,     263.2,       0.0);
( 460207.3, 3752768.4,     263.3,     263.3,       0.0);         ( 460217.3, 3752768.4,     263.3,     263.3,       0.0);
( 460227.3, 3752768.4,     263.3,     263.3,       0.0);         ( 460237.3, 3752768.4,     263.3,     263.3,       0.0);
( 460247.3, 3752768.4,     263.3,     263.3,       0.0);         ( 460257.3, 3752768.4,     263.3,     263.3,       0.0);
( 460267.3, 3752768.4,     263.4,     263.4,       0.0);         ( 460277.3, 3752768.4,     263.4,     263.4,       0.0);
( 460287.3, 3752768.4,     263.3,     263.3,       0.0);         ( 460297.3, 3752768.4,     263.3,     263.3,       0.0);
( 460307.3, 3752768.4,     263.2,     263.2,       0.0);         ( 460317.3, 3752768.4,     263.2,     263.2,       0.0);
( 460327.3, 3752768.4,     263.2,     263.2,       0.0);         ( 460337.3, 3752768.4,     263.1,     263.1,       0.0);
( 460347.3, 3752768.4,     263.1,     263.1,       0.0);         ( 460357.3, 3752768.4,     263.0,     263.0,       0.0);
( 460367.3, 3752768.4,     263.0,     263.0,       0.0);         ( 460377.3, 3752768.4,     262.9,     262.9,       0.0);
( 460387.3, 3752768.4,     262.9,     262.9,       0.0);         ( 460397.3, 3752768.4,     262.8,     262.8,       0.0);
( 460407.3, 3752768.4,     262.7,     262.7,       0.0);         ( 460417.3, 3752768.4,     262.6,     262.6,       0.0);
( 460427.3, 3752768.4,     262.6,     262.6,       0.0);         ( 460437.3, 3752768.4,     262.6,     262.6,       0.0);
( 460447.3, 3752768.4,     262.5,     262.5,       0.0);         ( 460457.3, 3752768.4,     262.4,     262.4,       0.0);
( 460467.3, 3752768.4,     262.4,     262.4,       0.0);         ( 460477.3, 3752768.4,     262.3,     262.3,       0.0);
( 460487.3, 3752768.4,     262.2,     262.2,       0.0);         ( 460497.3, 3752768.4,     262.2,     262.2,       0.0);
( 460507.3, 3752768.4,     262.2,     262.2,       0.0);         ( 460517.3, 3752768.4,     262.1,     262.1,       0.0);
( 460527.3, 3752768.4,     262.0,     262.0,       0.0);         ( 460537.3, 3752768.4,     262.0,     262.0,       0.0);
( 460547.3, 3752768.4,     262.0,     262.0,       0.0);         ( 460557.3, 3752768.4,     261.9,     261.9,       0.0);
( 460567.3, 3752768.4,     261.9,     261.9,       0.0);         ( 460577.3, 3752768.4,     261.8,     261.8,       0.0);
( 460587.3, 3752768.4,     261.8,     261.8,       0.0);         ( 460597.3, 3752768.4,     261.8,     261.8,       0.0);
( 460607.3, 3752768.4,     261.7,     261.7,       0.0);         ( 460617.3, 3752768.4,     261.7,     261.7,       0.0);
( 460627.3, 3752768.4,     261.7,     261.7,       0.0);         ( 460637.3, 3752768.4,     261.6,     261.6,       0.0);
( 460647.3, 3752768.4,     261.6,     261.6,       0.0);         ( 460657.3, 3752768.4,     261.6,     261.6,       0.0);
( 460177.3, 3752778.4,     263.1,     263.1,       0.0);         ( 460187.3, 3752778.4,     263.1,     263.1,       0.0);
( 460197.3, 3752778.4,     263.2,     263.2,       0.0);         ( 460207.3, 3752778.4,     263.2,     263.2,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460217.3,	3752778.4,	263.2,	263.2,	0.0);	(460227.3,	3752778.4,	263.3,	263.3,	0.0);
(460237.3,	3752778.4,	263.3,	263.3,	0.0);	(460247.3,	3752778.4,	263.3,	263.3,	0.0);
(460257.3,	3752778.4,	263.2,	263.2,	0.0);	(460267.3,	3752778.4,	263.3,	263.3,	0.0);
(460277.3,	3752778.4,	263.3,	263.3,	0.0);	(460287.3,	3752778.4,	263.2,	263.2,	0.0);
(460297.3,	3752778.4,	263.1,	263.1,	0.0);	(460307.3,	3752778.4,	263.1,	263.1,	0.0);
(460317.3,	3752778.4,	263.1,	263.1,	0.0);	(460327.3,	3752778.4,	263.1,	263.1,	0.0);
(460337.3,	3752778.4,	263.0,	263.0,	0.0);	(460347.3,	3752778.4,	262.9,	262.9,	0.0);
(460357.3,	3752778.4,	262.9,	262.9,	0.0);	(460367.3,	3752778.4,	262.8,	262.8,	0.0);
(460377.3,	3752778.4,	262.7,	262.7,	0.0);	(460387.3,	3752778.4,	262.7,	262.7,	0.0);
(460397.3,	3752778.4,	262.6,	262.6,	0.0);	(460407.3,	3752778.4,	262.5,	262.5,	0.0);
(460417.3,	3752778.4,	262.5,	262.5,	0.0);	(460427.3,	3752778.4,	262.4,	262.4,	0.0);
(460437.3,	3752778.4,	262.4,	262.4,	0.0);	(460447.3,	3752778.4,	262.3,	262.3,	0.0);
(460457.3,	3752778.4,	262.2,	262.2,	0.0);	(460467.3,	3752778.4,	262.2,	262.2,	0.0);
(460477.3,	3752778.4,	262.1,	262.1,	0.0);	(460487.3,	3752778.4,	262.1,	262.1,	0.0);
(460497.3,	3752778.4,	262.1,	262.1,	0.0);	(460507.3,	3752778.4,	262.0,	262.0,	0.0);
(460517.3,	3752778.4,	261.9,	261.9,	0.0);	(460527.3,	3752778.4,	261.9,	261.9,	0.0);
(460537.3,	3752778.4,	261.8,	261.8,	0.0);	(460547.3,	3752778.4,	261.8,	261.8,	0.0);
(460557.3,	3752778.4,	261.8,	261.8,	0.0);	(460567.3,	3752778.4,	261.7,	261.7,	0.0);
(460577.3,	3752778.4,	261.7,	261.7,	0.0);	(460587.3,	3752778.4,	261.6,	261.6,	0.0);
(460597.3,	3752778.4,	261.6,	261.6,	0.0);	(460607.3,	3752778.4,	261.5,	261.5,	0.0);
(460617.3,	3752778.4,	261.5,	261.5,	0.0);	(460627.3,	3752778.4,	261.5,	261.5,	0.0);
(460637.3,	3752778.4,	261.4,	261.4,	0.0);	(460647.3,	3752778.4,	261.4,	261.4,	0.0);
(460167.3,	3752788.4,	263.0,	263.0,	0.0);	(460177.3,	3752788.4,	263.1,	263.1,	0.0);
(460187.3,	3752788.4,	263.1,	263.1,	0.0);	(460197.3,	3752788.4,	263.2,	263.2,	0.0);
(460207.3,	3752788.4,	263.2,	263.2,	0.0);	(460217.3,	3752788.4,	263.2,	263.2,	0.0);
(460227.3,	3752788.4,	263.2,	263.2,	0.0);	(460237.3,	3752788.4,	263.2,	263.2,	0.0);
(460247.3,	3752788.4,	263.2,	263.2,	0.0);	(460257.3,	3752788.4,	263.2,	263.2,	0.0);
(460267.3,	3752788.4,	263.2,	263.2,	0.0);	(460277.3,	3752788.4,	263.2,	263.2,	0.0);
(460287.3,	3752788.4,	263.1,	263.1,	0.0);	(460297.3,	3752788.4,	263.1,	263.1,	0.0);
(460307.3,	3752788.4,	263.0,	263.0,	0.0);	(460317.3,	3752788.4,	263.0,	263.0,	0.0);
(460327.3,	3752788.4,	262.9,	262.9,	0.0);	(460337.3,	3752788.4,	262.9,	262.9,	0.0);
(460347.3,	3752788.4,	262.8,	262.8,	0.0);	(460357.3,	3752788.4,	262.7,	262.7,	0.0);
(460367.3,	3752788.4,	262.6,	262.6,	0.0);	(460377.3,	3752788.4,	262.6,	262.6,	0.0);
(460387.3,	3752788.4,	262.5,	262.5,	0.0);	(460397.3,	3752788.4,	262.4,	262.4,	0.0);
(460407.3,	3752788.4,	262.4,	262.4,	0.0);	(460417.3,	3752788.4,	262.3,	262.3,	0.0);
(460427.3,	3752788.4,	262.2,	262.2,	0.0);	(460437.3,	3752788.4,	262.2,	262.2,	0.0);
(460447.3,	3752788.4,	262.1,	262.1,	0.0);	(460457.3,	3752788.4,	262.1,	262.1,	0.0);
(460467.3,	3752788.4,	262.0,	262.0,	0.0);	(460477.3,	3752788.4,	262.0,	262.0,	0.0);
(460487.3,	3752788.4,	261.9,	261.9,	0.0);	(460497.3,	3752788.4,	261.9,	261.9,	0.0);
(460507.3,	3752788.4,	261.8,	261.8,	0.0);	(460517.3,	3752788.4,	261.7,	261.7,	0.0);
(460527.3,	3752788.4,	261.7,	261.7,	0.0);	(460537.3,	3752788.4,	261.7,	261.7,	0.0);
(460547.3,	3752788.4,	261.6,	261.6,	0.0);	(460557.3,	3752788.4,	261.6,	261.6,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460567.3, 3752788.4,     261.5,     261.5,       0.0);         ( 460577.3, 3752788.4,     261.5,     261.5,       0.0);
( 460587.3, 3752788.4,     261.5,     261.5,       0.0);         ( 460597.3, 3752788.4,     261.4,     261.4,       0.0);
( 460607.3, 3752788.4,     261.4,     261.4,       0.0);         ( 460617.3, 3752788.4,     261.4,     261.4,       0.0);
( 460627.3, 3752788.4,     261.3,     261.3,       0.0);         ( 460637.3, 3752788.4,     261.3,     261.3,       0.0);
( 460157.3, 3752798.4,     262.9,     262.9,       0.0);         ( 460167.3, 3752798.4,     262.9,     262.9,       0.0);
( 460177.3, 3752798.4,     263.0,     263.0,       0.0);         ( 460187.3, 3752798.4,     263.0,     263.0,       0.0);
( 460197.3, 3752798.4,     263.1,     263.1,       0.0);         ( 460207.3, 3752798.4,     263.1,     263.1,       0.0);
( 460217.3, 3752798.4,     263.1,     263.1,       0.0);         ( 460227.3, 3752798.4,     263.1,     263.1,       0.0);
( 460237.3, 3752798.4,     263.1,     263.1,       0.0);         ( 460247.3, 3752798.4,     263.1,     263.1,       0.0);
( 460257.3, 3752798.4,     263.1,     263.1,       0.0);         ( 460267.3, 3752798.4,     263.1,     263.1,       0.0);
( 460277.3, 3752798.4,     263.0,     263.0,       0.0);         ( 460287.3, 3752798.4,     263.0,     263.0,       0.0);
( 460297.3, 3752798.4,     262.9,     262.9,       0.0);         ( 460307.3, 3752798.4,     262.9,     262.9,       0.0);
( 460317.3, 3752798.4,     262.9,     262.9,       0.0);         ( 460327.3, 3752798.4,     262.8,     262.8,       0.0);
( 460337.3, 3752798.4,     262.7,     262.7,       0.0);         ( 460347.3, 3752798.4,     262.6,     262.6,       0.0);
( 460357.3, 3752798.4,     262.5,     262.5,       0.0);         ( 460367.3, 3752798.4,     262.5,     262.5,       0.0);
( 460377.3, 3752798.4,     262.4,     262.4,       0.0);         ( 460387.3, 3752798.4,     262.3,     262.3,       0.0);
( 460397.3, 3752798.4,     262.2,     262.2,       0.0);         ( 460407.3, 3752798.4,     262.2,     262.2,       0.0);
( 460417.3, 3752798.4,     262.1,     262.1,       0.0);         ( 460427.3, 3752798.4,     262.1,     262.1,       0.0);
( 460437.3, 3752798.4,     262.0,     262.0,       0.0);         ( 460447.3, 3752798.4,     261.9,     261.9,       0.0);
( 460457.3, 3752798.4,     261.9,     261.9,       0.0);         ( 460467.3, 3752798.4,     261.8,     261.8,       0.0);
( 460477.3, 3752798.4,     261.8,     261.8,       0.0);         ( 460487.3, 3752798.4,     261.7,     261.7,       0.0);
( 460497.3, 3752798.4,     261.7,     261.7,       0.0);         ( 460507.3, 3752798.4,     261.6,     261.6,       0.0);
( 460517.3, 3752798.4,     261.6,     261.6,       0.0);         ( 460527.3, 3752798.4,     261.5,     261.5,       0.0);
( 460537.3, 3752798.4,     261.5,     261.5,       0.0);         ( 460547.3, 3752798.4,     261.4,     261.4,       0.0);
( 460557.3, 3752798.4,     261.4,     261.4,       0.0);         ( 460567.3, 3752798.4,     261.4,     261.4,       0.0);
( 460577.3, 3752798.4,     261.3,     261.3,       0.0);         ( 460587.3, 3752798.4,     261.3,     261.3,       0.0);
( 460597.3, 3752798.4,     261.2,     261.2,       0.0);         ( 460607.3, 3752798.4,     261.2,     261.2,       0.0);
( 460617.3, 3752798.4,     261.2,     261.2,       0.0);         ( 460627.3, 3752798.4,     261.1,     261.1,       0.0);
( 460147.3, 3752808.4,     262.6,     262.6,       0.0);         ( 460157.3, 3752808.4,     262.8,     262.8,       0.0);
( 460167.3, 3752808.4,     262.9,     262.9,       0.0);         ( 460177.3, 3752808.4,     262.9,     262.9,       0.0);
( 460187.3, 3752808.4,     262.9,     262.9,       0.0);         ( 460197.3, 3752808.4,     263.0,     263.0,       0.0);
( 460207.3, 3752808.4,     263.0,     263.0,       0.0);         ( 460217.3, 3752808.4,     263.0,     263.0,       0.0);
( 460227.3, 3752808.4,     263.0,     263.0,       0.0);         ( 460237.3, 3752808.4,     263.0,     263.0,       0.0);
( 460247.3, 3752808.4,     263.0,     263.0,       0.0);         ( 460257.3, 3752808.4,     263.0,     263.0,       0.0);
( 460267.3, 3752808.4,     262.9,     262.9,       0.0);         ( 460277.3, 3752808.4,     262.9,     262.9,       0.0);
( 460287.3, 3752808.4,     262.9,     262.9,       0.0);         ( 460297.3, 3752808.4,     262.8,     262.8,       0.0);
( 460307.3, 3752808.4,     262.7,     262.7,       0.0);         ( 460317.3, 3752808.4,     262.7,     262.7,       0.0);
( 460327.3, 3752808.4,     262.6,     262.6,       0.0);         ( 460337.3, 3752808.4,     262.5,     262.5,       0.0);
( 460347.3, 3752808.4,     262.4,     262.4,       0.0);         ( 460357.3, 3752808.4,     262.4,     262.4,       0.0);
( 460367.3, 3752808.4,     262.3,     262.3,       0.0);         ( 460377.3, 3752808.4,     262.2,     262.2,       0.0);
( 460387.3, 3752808.4,     262.1,     262.1,       0.0);         ( 460397.3, 3752808.4,     262.1,     262.1,       0.0);
( 460407.3, 3752808.4,     262.0,     262.0,       0.0);         ( 460417.3, 3752808.4,     261.9,     261.9,       0.0);
( 460427.3, 3752808.4,     261.9,     261.9,       0.0);         ( 460437.3, 3752808.4,     261.9,     261.9,       0.0);
( 460447.3, 3752808.4,     261.8,     261.8,       0.0);         ( 460457.3, 3752808.4,     261.8,     261.8,       0.0);
( 460467.3, 3752808.4,     261.7,     261.7,       0.0);         ( 460477.3, 3752808.4,     261.6,     261.6,       0.0);
( 460487.3, 3752808.4,     261.6,     261.6,       0.0);         ( 460497.3, 3752808.4,     261.5,     261.5,       0.0);
( 460507.3, 3752808.4,     261.5,     261.5,       0.0);         ( 460517.3, 3752808.4,     261.4,     261.4,       0.0);
( 460527.3, 3752808.4,     261.4,     261.4,       0.0);         ( 460537.3, 3752808.4,     261.3,     261.3,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460547.3,	3752808.4,	261.3,	261.3,	0.0);	(460557.3,	3752808.4,	261.2,	261.2,	0.0);
(460567.3,	3752808.4,	261.2,	261.2,	0.0);	(460577.3,	3752808.4,	261.1,	261.1,	0.0);
(460587.3,	3752808.4,	261.1,	261.1,	0.0);	(460597.3,	3752808.4,	261.1,	261.1,	0.0);
(460607.3,	3752808.4,	261.0,	261.0,	0.0);	(460617.3,	3752808.4,	261.0,	261.0,	0.0);
(460627.3,	3752808.4,	260.9,	260.9,	0.0);	(460147.3,	3752818.4,	262.5,	262.5,	0.0);
(460157.3,	3752818.4,	262.6,	262.6,	0.0);	(460167.3,	3752818.4,	262.7,	262.7,	0.0);
(460177.3,	3752818.4,	262.8,	262.8,	0.0);	(460187.3,	3752818.4,	262.9,	262.9,	0.0);
(460197.3,	3752818.4,	262.9,	262.9,	0.0);	(460207.3,	3752818.4,	262.9,	262.9,	0.0);
(460217.3,	3752818.4,	262.9,	262.9,	0.0);	(460227.3,	3752818.4,	262.9,	262.9,	0.0);
(460237.3,	3752818.4,	262.9,	262.9,	0.0);	(460247.3,	3752818.4,	262.9,	262.9,	0.0);
(460257.3,	3752818.4,	262.9,	262.9,	0.0);	(460267.3,	3752818.4,	262.8,	262.8,	0.0);
(460277.3,	3752818.4,	262.8,	262.8,	0.0);	(460287.3,	3752818.4,	262.7,	262.7,	0.0);
(460297.3,	3752818.4,	262.6,	262.6,	0.0);	(460307.3,	3752818.4,	262.5,	262.5,	0.0);
(460317.3,	3752818.4,	262.5,	262.5,	0.0);	(460327.3,	3752818.4,	262.4,	262.4,	0.0);
(460337.3,	3752818.4,	262.4,	262.4,	0.0);	(460347.3,	3752818.4,	262.3,	262.3,	0.0);
(460357.3,	3752818.4,	262.2,	262.2,	0.0);	(460367.3,	3752818.4,	262.1,	262.1,	0.0);
(460377.3,	3752818.4,	262.0,	262.0,	0.0);	(460387.3,	3752818.4,	262.0,	262.0,	0.0);
(460397.3,	3752818.4,	261.9,	261.9,	0.0);	(460407.3,	3752818.4,	261.8,	261.8,	0.0);
(460417.3,	3752818.4,	261.8,	261.8,	0.0);	(460427.3,	3752818.4,	261.8,	261.8,	0.0);
(460437.3,	3752818.4,	261.7,	261.7,	0.0);	(460447.3,	3752818.4,	261.6,	261.6,	0.0);
(460457.3,	3752818.4,	261.6,	261.6,	0.0);	(460467.3,	3752818.4,	261.5,	261.5,	0.0);
(460477.3,	3752818.4,	261.5,	261.5,	0.0);	(460487.3,	3752818.4,	261.4,	261.4,	0.0);
(460497.3,	3752818.4,	261.3,	261.3,	0.0);	(460507.3,	3752818.4,	261.3,	261.3,	0.0);
(460517.3,	3752818.4,	261.2,	261.2,	0.0);	(460527.3,	3752818.4,	261.2,	261.2,	0.0);
(460537.3,	3752818.4,	261.1,	261.1,	0.0);	(460547.3,	3752818.4,	261.1,	261.1,	0.0);
(460557.3,	3752818.4,	261.0,	261.0,	0.0);	(460567.3,	3752818.4,	261.0,	261.0,	0.0);
(460577.3,	3752818.4,	261.0,	261.0,	0.0);	(460587.3,	3752818.4,	260.9,	260.9,	0.0);
(460597.3,	3752818.4,	260.9,	260.9,	0.0);	(460607.3,	3752818.4,	260.8,	260.8,	0.0);
(460617.3,	3752818.4,	260.8,	260.8,	0.0);	(460137.3,	3752828.4,	262.2,	262.2,	0.0);
(460147.3,	3752828.4,	262.3,	262.3,	0.0);	(460157.3,	3752828.4,	262.4,	262.4,	0.0);
(460167.3,	3752828.4,	262.5,	262.5,	0.0);	(460177.3,	3752828.4,	262.7,	262.7,	0.0);
(460187.3,	3752828.4,	262.7,	262.7,	0.0);	(460197.3,	3752828.4,	262.8,	262.8,	0.0);
(460207.3,	3752828.4,	262.8,	262.8,	0.0);	(460217.3,	3752828.4,	262.8,	262.8,	0.0);
(460227.3,	3752828.4,	262.8,	262.8,	0.0);	(460237.3,	3752828.4,	262.8,	262.8,	0.0);
(460247.3,	3752828.4,	262.7,	262.7,	0.0);	(460257.3,	3752828.4,	262.7,	262.7,	0.0);
(460267.3,	3752828.4,	262.6,	262.6,	0.0);	(460277.3,	3752828.4,	262.6,	262.6,	0.0);
(460287.3,	3752828.4,	262.5,	262.5,	0.0);	(460297.3,	3752828.4,	262.4,	262.4,	0.0);
(460307.3,	3752828.4,	262.4,	262.4,	0.0);	(460317.3,	3752828.4,	262.3,	262.3,	0.0);
(460327.3,	3752828.4,	262.2,	262.2,	0.0);	(460337.3,	3752828.4,	262.2,	262.2,	0.0);
(460347.3,	3752828.4,	262.1,	262.1,	0.0);	(460357.3,	3752828.4,	262.0,	262.0,	0.0);
(460367.3,	3752828.4,	261.9,	261.9,	0.0);	(460377.3,	3752828.4,	261.9,	261.9,	0.0);
(460387.3,	3752828.4,	261.8,	261.8,	0.0);	(460397.3,	3752828.4,	261.7,	261.7,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460407.3, 3752828.4,     261.7,     261.7,       0.0);         ( 460417.3, 3752828.4,     261.6,     261.6,       0.0);
( 460427.3, 3752828.4,     261.6,     261.6,       0.0);         ( 460437.3, 3752828.4,     261.5,     261.5,       0.0);
( 460447.3, 3752828.4,     261.4,     261.4,       0.0);         ( 460457.3, 3752828.4,     261.4,     261.4,       0.0);
( 460467.3, 3752828.4,     261.3,     261.3,       0.0);         ( 460477.3, 3752828.4,     261.3,     261.3,       0.0);
( 460487.3, 3752828.4,     261.2,     261.2,       0.0);         ( 460497.3, 3752828.4,     261.2,     261.2,       0.0);
( 460507.3, 3752828.4,     261.1,     261.1,       0.0);         ( 460517.3, 3752828.4,     261.1,     261.1,       0.0);
( 460527.3, 3752828.4,     261.0,     261.0,       0.0);         ( 460537.3, 3752828.4,     261.0,     261.0,       0.0);
( 460547.3, 3752828.4,     260.9,     260.9,       0.0);         ( 460557.3, 3752828.4,     260.9,     260.9,       0.0);
( 460567.3, 3752828.4,     260.9,     260.9,       0.0);         ( 460577.3, 3752828.4,     260.8,     260.8,       0.0);
( 460587.3, 3752828.4,     260.7,     260.7,       0.0);         ( 460597.3, 3752828.4,     260.7,     260.7,       0.0);
( 460607.3, 3752828.4,     260.7,     260.7,       0.0);         ( 460127.3, 3752838.4,     261.9,     261.9,       0.0);
( 460137.3, 3752838.4,     262.0,     262.0,       0.0);         ( 460147.3, 3752838.4,     262.1,     262.1,       0.0);
( 460157.3, 3752838.4,     262.2,     262.2,       0.0);         ( 460167.3, 3752838.4,     262.4,     262.4,       0.0);
( 460177.3, 3752838.4,     262.5,     262.5,       0.0);         ( 460187.3, 3752838.4,     262.5,     262.5,       0.0);
( 460197.3, 3752838.4,     262.6,     262.6,       0.0);         ( 460207.3, 3752838.4,     262.6,     262.6,       0.0);
( 460217.3, 3752838.4,     262.6,     262.6,       0.0);         ( 460227.3, 3752838.4,     262.6,     262.6,       0.0);
( 460237.3, 3752838.4,     262.6,     262.6,       0.0);         ( 460247.3, 3752838.4,     262.5,     262.5,       0.0);
( 460257.3, 3752838.4,     262.5,     262.5,       0.0);         ( 460267.3, 3752838.4,     262.4,     262.4,       0.0);
( 460277.3, 3752838.4,     262.4,     262.4,       0.0);         ( 460287.3, 3752838.4,     262.3,     262.3,       0.0);
( 460297.3, 3752838.4,     262.2,     262.2,       0.0);         ( 460307.3, 3752838.4,     262.2,     262.2,       0.0);
( 460317.3, 3752838.4,     262.1,     262.1,       0.0);         ( 460327.3, 3752838.4,     262.1,     262.1,       0.0);
( 460337.3, 3752838.4,     262.0,     262.0,       0.0);         ( 460347.3, 3752838.4,     261.9,     261.9,       0.0);
( 460357.3, 3752838.4,     261.9,     261.9,       0.0);         ( 460367.3, 3752838.4,     261.8,     261.8,       0.0);
( 460377.3, 3752838.4,     261.7,     261.7,       0.0);         ( 460387.3, 3752838.4,     261.6,     261.6,       0.0);
( 460397.3, 3752838.4,     261.6,     261.6,       0.0);         ( 460407.3, 3752838.4,     261.5,     261.5,       0.0);
( 460417.3, 3752838.4,     261.4,     261.4,       0.0);         ( 460427.3, 3752838.4,     261.4,     261.4,       0.0);
( 460437.3, 3752838.4,     261.4,     261.4,       0.0);         ( 460447.3, 3752838.4,     261.3,     261.3,       0.0);
( 460457.3, 3752838.4,     261.2,     261.2,       0.0);         ( 460467.3, 3752838.4,     261.2,     261.2,       0.0);
( 460477.3, 3752838.4,     261.1,     261.1,       0.0);         ( 460487.3, 3752838.4,     261.1,     261.1,       0.0);
( 460497.3, 3752838.4,     261.0,     261.0,       0.0);         ( 460507.3, 3752838.4,     260.9,     260.9,       0.0);
( 460517.3, 3752838.4,     260.9,     260.9,       0.0);         ( 460527.3, 3752838.4,     260.8,     260.8,       0.0);
( 460537.3, 3752838.4,     260.8,     260.8,       0.0);         ( 460547.3, 3752838.4,     260.8,     260.8,       0.0);
( 460557.3, 3752838.4,     260.8,     260.8,       0.0);         ( 460567.3, 3752838.4,     260.7,     260.7,       0.0);
( 460577.3, 3752838.4,     260.6,     260.6,       0.0);         ( 460587.3, 3752838.4,     260.6,     260.6,       0.0);
( 460597.3, 3752838.4,     260.5,     260.5,       0.0);         ( 460127.3, 3752848.4,     261.7,     261.7,       0.0);
( 460137.3, 3752848.4,     261.8,     261.8,       0.0);         ( 460147.3, 3752848.4,     261.9,     261.9,       0.0);
( 460157.3, 3752848.4,     262.1,     262.1,       0.0);         ( 460167.3, 3752848.4,     262.2,     262.2,       0.0);
( 460177.3, 3752848.4,     262.3,     262.3,       0.0);         ( 460187.3, 3752848.4,     262.3,     262.3,       0.0);
( 460197.3, 3752848.4,     262.4,     262.4,       0.0);         ( 460207.3, 3752848.4,     262.4,     262.4,       0.0);
( 460217.3, 3752848.4,     262.4,     262.4,       0.0);         ( 460227.3, 3752848.4,     262.4,     262.4,       0.0);
( 460237.3, 3752848.4,     262.4,     262.4,       0.0);         ( 460247.3, 3752848.4,     262.3,     262.3,       0.0);
( 460257.3, 3752848.4,     262.3,     262.3,       0.0);         ( 460267.3, 3752848.4,     262.2,     262.2,       0.0);
( 460277.3, 3752848.4,     262.2,     262.2,       0.0);         ( 460287.3, 3752848.4,     262.1,     262.1,       0.0);
( 460297.3, 3752848.4,     262.0,     262.0,       0.0);         ( 460307.3, 3752848.4,     262.0,     262.0,       0.0);
( 460317.3, 3752848.4,     261.9,     261.9,       0.0);         ( 460327.3, 3752848.4,     261.9,     261.9,       0.0);
( 460337.3, 3752848.4,     261.8,     261.8,       0.0);         ( 460347.3, 3752848.4,     261.7,     261.7,       0.0);
( 460357.3, 3752848.4,     261.7,     261.7,       0.0);         ( 460367.3, 3752848.4,     261.6,     261.6,       0.0);
( 460377.3, 3752848.4,     261.5,     261.5,       0.0);         ( 460387.3, 3752848.4,     261.4,     261.4,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460397.3,	3752848.4,	261.4,	261.4,	0.0);	(460407.3,	3752848.4,	261.3,	261.3,	0.0);
(460417.3,	3752848.4,	261.3,	261.3,	0.0);	(460427.3,	3752848.4,	261.2,	261.2,	0.0);
(460437.3,	3752848.4,	261.2,	261.2,	0.0);	(460447.3,	3752848.4,	261.1,	261.1,	0.0);
(460457.3,	3752848.4,	261.1,	261.1,	0.0);	(460467.3,	3752848.4,	261.1,	261.1,	0.0);
(460477.3,	3752848.4,	261.0,	261.0,	0.0);	(460487.3,	3752848.4,	260.9,	260.9,	0.0);
(460497.3,	3752848.4,	260.9,	260.9,	0.0);	(460507.3,	3752848.4,	260.8,	260.8,	0.0);
(460517.3,	3752848.4,	260.8,	260.8,	0.0);	(460527.3,	3752848.4,	260.7,	260.7,	0.0);
(460537.3,	3752848.4,	260.6,	260.6,	0.0);	(460547.3,	3752848.4,	260.6,	260.6,	0.0);
(460557.3,	3752848.4,	260.6,	260.6,	0.0);	(460567.3,	3752848.4,	260.5,	260.5,	0.0);
(460577.3,	3752848.4,	260.4,	260.4,	0.0);	(460587.3,	3752848.4,	260.4,	260.4,	0.0);
(460597.3,	3752848.4,	260.3,	260.3,	0.0);	(460117.3,	3752858.4,	261.4,	261.4,	0.0);
(460127.3,	3752858.4,	261.5,	261.5,	0.0);	(460137.3,	3752858.4,	261.6,	261.6,	0.0);
(460147.3,	3752858.4,	261.8,	261.8,	0.0);	(460157.3,	3752858.4,	261.9,	261.9,	0.0);
(460167.3,	3752858.4,	262.0,	262.0,	0.0);	(460177.3,	3752858.4,	262.0,	262.0,	0.0);
(460187.3,	3752858.4,	262.1,	262.1,	0.0);	(460197.3,	3752858.4,	262.2,	262.2,	0.0);
(460207.3,	3752858.4,	262.2,	262.2,	0.0);	(460217.3,	3752858.4,	262.2,	262.2,	0.0);
(460227.3,	3752858.4,	262.2,	262.2,	0.0);	(460237.3,	3752858.4,	262.2,	262.2,	0.0);
(460247.3,	3752858.4,	262.1,	262.1,	0.0);	(460257.3,	3752858.4,	262.1,	262.1,	0.0);
(460267.3,	3752858.4,	262.0,	262.0,	0.0);	(460277.3,	3752858.4,	262.0,	262.0,	0.0);
(460287.3,	3752858.4,	261.9,	261.9,	0.0);	(460297.3,	3752858.4,	261.8,	261.8,	0.0);
(460307.3,	3752858.4,	261.8,	261.8,	0.0);	(460317.3,	3752858.4,	261.7,	261.7,	0.0);
(460327.3,	3752858.4,	261.7,	261.7,	0.0);	(460337.3,	3752858.4,	261.6,	261.6,	0.0);
(460347.3,	3752858.4,	261.6,	261.6,	0.0);	(460357.3,	3752858.4,	261.5,	261.5,	0.0);
(460367.3,	3752858.4,	261.4,	261.4,	0.0);	(460377.3,	3752858.4,	261.4,	261.4,	0.0);
(460387.3,	3752858.4,	261.3,	261.3,	0.0);	(460397.3,	3752858.4,	261.2,	261.2,	0.0);
(460407.3,	3752858.4,	261.2,	261.2,	0.0);	(460417.3,	3752858.4,	261.1,	261.1,	0.0);
(460427.3,	3752858.4,	261.1,	261.1,	0.0);	(460437.3,	3752858.4,	261.0,	261.0,	0.0);
(460447.3,	3752858.4,	260.9,	260.9,	0.0);	(460457.3,	3752858.4,	260.9,	260.9,	0.0);
(460467.3,	3752858.4,	260.9,	260.9,	0.0);	(460477.3,	3752858.4,	260.8,	260.8,	0.0);
(460487.3,	3752858.4,	260.7,	260.7,	0.0);	(460497.3,	3752858.4,	260.7,	260.7,	0.0);
(460507.3,	3752858.4,	260.7,	260.7,	0.0);	(460517.3,	3752858.4,	260.6,	260.6,	0.0);
(460527.3,	3752858.4,	260.6,	260.6,	0.0);	(460537.3,	3752858.4,	260.5,	260.5,	0.0);
(460547.3,	3752858.4,	260.4,	260.4,	0.0);	(460557.3,	3752858.4,	260.4,	260.4,	0.0);
(460567.3,	3752858.4,	260.3,	260.3,	0.0);	(460577.3,	3752858.4,	260.3,	260.3,	0.0);
(460587.3,	3752858.4,	260.2,	260.2,	0.0);	(460117.3,	3752868.4,	261.2,	261.2,	0.0);
(460127.3,	3752868.4,	261.3,	261.3,	0.0);	(460137.3,	3752868.4,	261.4,	261.4,	0.0);
(460147.3,	3752868.4,	261.6,	261.6,	0.0);	(460157.3,	3752868.4,	261.7,	261.7,	0.0);
(460167.3,	3752868.4,	261.7,	261.7,	0.0);	(460177.3,	3752868.4,	261.8,	261.8,	0.0);
(460187.3,	3752868.4,	261.9,	261.9,	0.0);	(460197.3,	3752868.4,	261.9,	261.9,	0.0);
(460207.3,	3752868.4,	262.0,	262.0,	0.0);	(460217.3,	3752868.4,	262.0,	262.0,	0.0);
(460227.3,	3752868.4,	262.0,	262.0,	0.0);	(460237.3,	3752868.4,	261.9,	261.9,	0.0);
(460247.3,	3752868.4,	261.9,	261.9,	0.0);	(460257.3,	3752868.4,	261.9,	261.9,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460267.3, 3752868.4,     261.8,     261.8,       0.0);         ( 460277.3, 3752868.4,     261.8,     261.8,       0.0);
( 460287.3, 3752868.4,     261.7,     261.7,       0.0);         ( 460297.3, 3752868.4,     261.6,     261.6,       0.0);
( 460307.3, 3752868.4,     261.6,     261.6,       0.0);         ( 460317.3, 3752868.4,     261.5,     261.5,       0.0);
( 460327.3, 3752868.4,     261.5,     261.5,       0.0);         ( 460337.3, 3752868.4,     261.4,     261.4,       0.0);
( 460347.3, 3752868.4,     261.4,     261.4,       0.0);         ( 460357.3, 3752868.4,     261.3,     261.3,       0.0);
( 460367.3, 3752868.4,     261.2,     261.2,       0.0);         ( 460377.3, 3752868.4,     261.2,     261.2,       0.0);
( 460387.3, 3752868.4,     261.1,     261.1,       0.0);         ( 460397.3, 3752868.4,     261.1,     261.1,       0.0);
( 460407.3, 3752868.4,     261.0,     261.0,       0.0);         ( 460417.3, 3752868.4,     260.9,     260.9,       0.0);
( 460427.3, 3752868.4,     260.9,     260.9,       0.0);         ( 460437.3, 3752868.4,     260.9,     260.9,       0.0);
( 460447.3, 3752868.4,     260.8,     260.8,       0.0);         ( 460457.3, 3752868.4,     260.8,     260.8,       0.0);
( 460467.3, 3752868.4,     260.7,     260.7,       0.0);         ( 460477.3, 3752868.4,     260.6,     260.6,       0.0);
( 460487.3, 3752868.4,     260.5,     260.5,       0.0);         ( 460497.3, 3752868.4,     260.5,     260.5,       0.0);
( 460507.3, 3752868.4,     260.5,     260.5,       0.0);         ( 460517.3, 3752868.4,     260.4,     260.4,       0.0);
( 460527.3, 3752868.4,     260.4,     260.4,       0.0);         ( 460537.3, 3752868.4,     260.4,     260.4,       0.0);
( 460547.3, 3752868.4,     260.3,     260.3,       0.0);         ( 460557.3, 3752868.4,     260.2,     260.2,       0.0);
( 460567.3, 3752868.4,     260.2,     260.2,       0.0);         ( 460577.3, 3752868.4,     260.1,     260.1,       0.0);
( 460107.3, 3752878.4,     260.9,     260.9,       0.0);         ( 460117.3, 3752878.4,     261.0,     261.0,       0.0);
( 460127.3, 3752878.4,     261.1,     261.1,       0.0);         ( 460137.3, 3752878.4,     261.2,     261.2,       0.0);
( 460147.3, 3752878.4,     261.3,     261.3,       0.0);         ( 460157.3, 3752878.4,     261.4,     261.4,       0.0);
( 460167.3, 3752878.4,     261.5,     261.5,       0.0);         ( 460177.3, 3752878.4,     261.6,     261.6,       0.0);
( 460187.3, 3752878.4,     261.7,     261.7,       0.0);         ( 460197.3, 3752878.4,     261.7,     261.7,       0.0);
( 460207.3, 3752878.4,     261.7,     261.7,       0.0);         ( 460217.3, 3752878.4,     261.8,     261.8,       0.0);
( 460227.3, 3752878.4,     261.7,     261.7,       0.0);         ( 460237.3, 3752878.4,     261.7,     261.7,       0.0);
( 460247.3, 3752878.4,     261.7,     261.7,       0.0);         ( 460257.3, 3752878.4,     261.7,     261.7,       0.0);
( 460267.3, 3752878.4,     261.6,     261.6,       0.0);         ( 460277.3, 3752878.4,     261.6,     261.6,       0.0);
( 460287.3, 3752878.4,     261.5,     261.5,       0.0);         ( 460297.3, 3752878.4,     261.4,     261.4,       0.0);
( 460307.3, 3752878.4,     261.4,     261.4,       0.0);         ( 460317.3, 3752878.4,     261.3,     261.3,       0.0);
( 460327.3, 3752878.4,     261.3,     261.3,       0.0);         ( 460337.3, 3752878.4,     261.2,     261.2,       0.0);
( 460347.3, 3752878.4,     261.2,     261.2,       0.0);         ( 460357.3, 3752878.4,     261.1,     261.1,       0.0);
( 460367.3, 3752878.4,     261.0,     261.0,       0.0);         ( 460377.3, 3752878.4,     261.0,     261.0,       0.0);
( 460387.3, 3752878.4,     260.9,     260.9,       0.0);         ( 460397.3, 3752878.4,     260.9,     260.9,       0.0);
( 460407.3, 3752878.4,     260.8,     260.8,       0.0);         ( 460417.3, 3752878.4,     260.8,     260.8,       0.0);
( 460427.3, 3752878.4,     260.7,     260.7,       0.0);         ( 460437.3, 3752878.4,     260.7,     260.7,       0.0);
( 460447.3, 3752878.4,     260.7,     260.7,       0.0);         ( 460457.3, 3752878.4,     260.6,     260.6,       0.0);
( 460467.3, 3752878.4,     260.5,     260.5,       0.0);         ( 460477.3, 3752878.4,     260.4,     260.4,       0.0);
( 460487.3, 3752878.4,     260.4,     260.4,       0.0);         ( 460497.3, 3752878.4,     260.4,     260.4,       0.0);
( 460507.3, 3752878.4,     260.3,     260.3,       0.0);         ( 460517.3, 3752878.4,     260.3,     260.3,       0.0);
( 460527.3, 3752878.4,     260.2,     260.2,       0.0);         ( 460537.3, 3752878.4,     260.2,     260.2,       0.0);
( 460547.3, 3752878.4,     260.1,     260.1,       0.0);         ( 460557.3, 3752878.4,     260.1,     260.1,       0.0);
( 460567.3, 3752878.4,     260.0,     260.0,       0.0);         ( 460577.3, 3752878.4,     259.9,     259.9,       0.0);
( 460097.3, 3752888.4,     260.5,     260.5,       0.0);         ( 460107.3, 3752888.4,     260.6,     260.6,       0.0);
( 460117.3, 3752888.4,     260.8,     260.8,       0.0);         ( 460127.3, 3752888.4,     260.9,     260.9,       0.0);
( 460137.3, 3752888.4,     261.0,     261.0,       0.0);         ( 460147.3, 3752888.4,     261.1,     261.1,       0.0);
( 460157.3, 3752888.4,     261.2,     261.2,       0.0);         ( 460167.3, 3752888.4,     261.3,     261.3,       0.0);
( 460177.3, 3752888.4,     261.4,     261.4,       0.0);         ( 460187.3, 3752888.4,     261.4,     261.4,       0.0);
( 460197.3, 3752888.4,     261.5,     261.5,       0.0);         ( 460207.3, 3752888.4,     261.5,     261.5,       0.0);
( 460217.3, 3752888.4,     261.5,     261.5,       0.0);         ( 460227.3, 3752888.4,     261.5,     261.5,       0.0);
( 460237.3, 3752888.4,     261.5,     261.5,       0.0);         ( 460247.3, 3752888.4,     261.5,     261.5,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460257.3,	3752888.4,	261.4,	261.4,	0.0);	(460267.3,	3752888.4,	261.4,	261.4,	0.0);
(460277.3,	3752888.4,	261.3,	261.3,	0.0);	(460287.3,	3752888.4,	261.3,	261.3,	0.0);
(460297.3,	3752888.4,	261.2,	261.2,	0.0);	(460307.3,	3752888.4,	261.1,	261.1,	0.0);
(460317.3,	3752888.4,	261.1,	261.1,	0.0);	(460327.3,	3752888.4,	261.1,	261.1,	0.0);
(460337.3,	3752888.4,	261.0,	261.0,	0.0);	(460347.3,	3752888.4,	261.0,	261.0,	0.0);
(460357.3,	3752888.4,	260.9,	260.9,	0.0);	(460367.3,	3752888.4,	260.9,	260.9,	0.0);
(460377.3,	3752888.4,	260.8,	260.8,	0.0);	(460387.3,	3752888.4,	260.7,	260.7,	0.0);
(460397.3,	3752888.4,	260.7,	260.7,	0.0);	(460407.3,	3752888.4,	260.7,	260.7,	0.0);
(460417.3,	3752888.4,	260.6,	260.6,	0.0);	(460427.3,	3752888.4,	260.6,	260.6,	0.0);
(460437.3,	3752888.4,	260.5,	260.5,	0.0);	(460447.3,	3752888.4,	260.5,	260.5,	0.0);
(460457.3,	3752888.4,	260.4,	260.4,	0.0);	(460467.3,	3752888.4,	260.3,	260.3,	0.0);
(460477.3,	3752888.4,	260.3,	260.3,	0.0);	(460487.3,	3752888.4,	260.2,	260.2,	0.0);
(460497.3,	3752888.4,	260.2,	260.2,	0.0);	(460507.3,	3752888.4,	260.2,	260.2,	0.0);
(460517.3,	3752888.4,	260.1,	260.1,	0.0);	(460527.3,	3752888.4,	260.1,	260.1,	0.0);
(460537.3,	3752888.4,	260.1,	260.1,	0.0);	(460547.3,	3752888.4,	260.0,	260.0,	0.0);
(460557.3,	3752888.4,	259.9,	259.9,	0.0);	(460567.3,	3752888.4,	259.8,	259.8,	0.0);
(460097.3,	3752898.4,	260.2,	260.2,	0.0);	(460107.3,	3752898.4,	260.4,	260.4,	0.0);
(460117.3,	3752898.4,	260.5,	260.5,	0.0);	(460127.3,	3752898.4,	260.7,	260.7,	0.0);
(460137.3,	3752898.4,	260.8,	260.8,	0.0);	(460147.3,	3752898.4,	260.9,	260.9,	0.0);
(460157.3,	3752898.4,	260.9,	260.9,	0.0);	(460167.3,	3752898.4,	261.1,	261.1,	0.0);
(460177.3,	3752898.4,	261.1,	261.1,	0.0);	(460187.3,	3752898.4,	261.2,	261.2,	0.0);
(460197.3,	3752898.4,	261.2,	261.2,	0.0);	(460207.3,	3752898.4,	261.2,	261.2,	0.0);
(460217.3,	3752898.4,	261.3,	261.3,	0.0);	(460227.3,	3752898.4,	261.2,	261.2,	0.0);
(460237.3,	3752898.4,	261.2,	261.2,	0.0);	(460247.3,	3752898.4,	261.2,	261.2,	0.0);
(460257.3,	3752898.4,	261.2,	261.2,	0.0);	(460267.3,	3752898.4,	261.2,	261.2,	0.0);
(460277.3,	3752898.4,	261.1,	261.1,	0.0);	(460287.3,	3752898.4,	261.1,	261.1,	0.0);
(460297.3,	3752898.4,	261.0,	261.0,	0.0);	(460307.3,	3752898.4,	260.9,	260.9,	0.0);
(460317.3,	3752898.4,	260.9,	260.9,	0.0);	(460327.3,	3752898.4,	260.8,	260.8,	0.0);
(460337.3,	3752898.4,	260.8,	260.8,	0.0);	(460347.3,	3752898.4,	260.7,	260.7,	0.0);
(460357.3,	3752898.4,	260.7,	260.7,	0.0);	(460367.3,	3752898.4,	260.7,	260.7,	0.0);
(460377.3,	3752898.4,	260.6,	260.6,	0.0);	(460387.3,	3752898.4,	260.5,	260.5,	0.0);
(460397.3,	3752898.4,	260.5,	260.5,	0.0);	(460407.3,	3752898.4,	260.5,	260.5,	0.0);
(460417.3,	3752898.4,	260.4,	260.4,	0.0);	(460427.3,	3752898.4,	260.4,	260.4,	0.0);
(460437.3,	3752898.4,	260.3,	260.3,	0.0);	(460447.3,	3752898.4,	260.3,	260.3,	0.0);
(460457.3,	3752898.4,	260.2,	260.2,	0.0);	(460467.3,	3752898.4,	260.1,	260.1,	0.0);
(460477.3,	3752898.4,	260.1,	260.1,	0.0);	(460487.3,	3752898.4,	260.1,	260.1,	0.0);
(460497.3,	3752898.4,	260.0,	260.0,	0.0);	(460507.3,	3752898.4,	260.0,	260.0,	0.0);
(460517.3,	3752898.4,	259.9,	259.9,	0.0);	(460527.3,	3752898.4,	259.9,	259.9,	0.0);
(460537.3,	3752898.4,	259.9,	259.9,	0.0);	(460547.3,	3752898.4,	259.8,	259.8,	0.0);
(460557.3,	3752898.4,	259.8,	259.8,	0.0);	(460087.3,	3752908.4,	259.9,	259.9,	0.0);
(460097.3,	3752908.4,	260.0,	260.0,	0.0);	(460107.3,	3752908.4,	260.1,	260.1,	0.0);
(460117.3,	3752908.4,	260.3,	260.3,	0.0);	(460127.3,	3752908.4,	260.4,	260.4,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460137.3, 3752908.4,     260.6,     260.6,       0.0);         ( 460147.3, 3752908.4,     260.6,     260.6,       0.0);
( 460157.3, 3752908.4,     260.7,     260.7,       0.0);         ( 460167.3, 3752908.4,     260.8,     260.8,       0.0);
( 460177.3, 3752908.4,     260.9,     260.9,       0.0);         ( 460187.3, 3752908.4,     260.9,     260.9,       0.0);
( 460197.3, 3752908.4,     260.9,     260.9,       0.0);         ( 460207.3, 3752908.4,     261.0,     261.0,       0.0);
( 460217.3, 3752908.4,     261.0,     261.0,       0.0);         ( 460227.3, 3752908.4,     261.0,     261.0,       0.0);
( 460237.3, 3752908.4,     261.0,     261.0,       0.0);         ( 460247.3, 3752908.4,     260.9,     260.9,       0.0);
( 460257.3, 3752908.4,     261.0,     261.0,       0.0);         ( 460267.3, 3752908.4,     260.9,     260.9,       0.0);
( 460277.3, 3752908.4,     260.9,     260.9,       0.0);         ( 460287.3, 3752908.4,     260.8,     260.8,       0.0);
( 460297.3, 3752908.4,     260.8,     260.8,       0.0);         ( 460307.3, 3752908.4,     260.7,     260.7,       0.0);
( 460317.3, 3752908.4,     260.7,     260.7,       0.0);         ( 460327.3, 3752908.4,     260.6,     260.6,       0.0);
( 460337.3, 3752908.4,     260.5,     260.5,       0.0);         ( 460347.3, 3752908.4,     260.5,     260.5,       0.0);
( 460357.3, 3752908.4,     260.5,     260.5,       0.0);         ( 460367.3, 3752908.4,     260.5,     260.5,       0.0);
( 460377.3, 3752908.4,     260.4,     260.4,       0.0);         ( 460387.3, 3752908.4,     260.3,     260.3,       0.0);
( 460397.3, 3752908.4,     260.3,     260.3,       0.0);         ( 460407.3, 3752908.4,     260.3,     260.3,       0.0);
( 460417.3, 3752908.4,     260.2,     260.2,       0.0);         ( 460427.3, 3752908.4,     260.2,     260.2,       0.0);
( 460437.3, 3752908.4,     260.1,     260.1,       0.0);         ( 460447.3, 3752908.4,     260.1,     260.1,       0.0);
( 460457.3, 3752908.4,     260.0,     260.0,       0.0);         ( 460467.3, 3752908.4,     260.0,     260.0,       0.0);
( 460477.3, 3752908.4,     259.9,     259.9,       0.0);         ( 460487.3, 3752908.4,     259.9,     259.9,       0.0);
( 460497.3, 3752908.4,     259.9,     259.9,       0.0);         ( 460507.3, 3752908.4,     259.8,     259.8,       0.0);
( 460517.3, 3752908.4,     259.8,     259.8,       0.0);         ( 460527.3, 3752908.4,     259.8,     259.8,       0.0);
( 460537.3, 3752908.4,     259.7,     259.7,       0.0);         ( 460547.3, 3752908.4,     259.7,     259.7,       0.0);
( 460077.3, 3752918.4,     259.5,     259.5,       0.0);         ( 460087.3, 3752918.4,     259.6,     259.6,       0.0);
( 460097.3, 3752918.4,     259.7,     259.7,       0.0);         ( 460107.3, 3752918.4,     259.9,     259.9,       0.0);
( 460117.3, 3752918.4,     260.0,     260.0,       0.0);         ( 460127.3, 3752918.4,     260.2,     260.2,       0.0);
( 460137.3, 3752918.4,     260.3,     260.3,       0.0);         ( 460147.3, 3752918.4,     260.3,     260.3,       0.0);
( 460157.3, 3752918.4,     260.4,     260.4,       0.0);         ( 460167.3, 3752918.4,     260.5,     260.5,       0.0);
( 460177.3, 3752918.4,     260.6,     260.6,       0.0);         ( 460187.3, 3752918.4,     260.6,     260.6,       0.0);
( 460197.3, 3752918.4,     260.7,     260.7,       0.0);         ( 460207.3, 3752918.4,     260.7,     260.7,       0.0);
( 460217.3, 3752918.4,     260.7,     260.7,       0.0);         ( 460227.3, 3752918.4,     260.7,     260.7,       0.0);
( 460237.3, 3752918.4,     260.7,     260.7,       0.0);         ( 460247.3, 3752918.4,     260.7,     260.7,       0.0);
( 460257.3, 3752918.4,     260.7,     260.7,       0.0);         ( 460267.3, 3752918.4,     260.7,     260.7,       0.0);
( 460277.3, 3752918.4,     260.7,     260.7,       0.0);         ( 460287.3, 3752918.4,     260.6,     260.6,       0.0);
( 460297.3, 3752918.4,     260.6,     260.6,       0.0);         ( 460307.3, 3752918.4,     260.5,     260.5,       0.0);
( 460317.3, 3752918.4,     260.4,     260.4,       0.0);         ( 460327.3, 3752918.4,     260.4,     260.4,       0.0);
( 460337.3, 3752918.4,     260.3,     260.3,       0.0);         ( 460347.3, 3752918.4,     260.2,     260.2,       0.0);
( 460357.3, 3752918.4,     260.2,     260.2,       0.0);         ( 460367.3, 3752918.4,     260.1,     260.1,       0.0);
( 460377.3, 3752918.4,     260.1,     260.1,       0.0);         ( 460387.3, 3752918.4,     260.1,     260.1,       0.0);
( 460397.3, 3752918.4,     260.1,     260.1,       0.0);         ( 460407.3, 3752918.4,     260.1,     260.1,       0.0);
( 460417.3, 3752918.4,     260.0,     260.0,       0.0);         ( 460427.3, 3752918.4,     260.0,     260.0,       0.0);
( 460437.3, 3752918.4,     259.9,     259.9,       0.0);         ( 460447.3, 3752918.4,     259.9,     259.9,       0.0);
( 460457.3, 3752918.4,     259.8,     259.8,       0.0);         ( 460467.3, 3752918.4,     259.8,     259.8,       0.0);
( 460477.3, 3752918.4,     259.7,     259.7,       0.0);         ( 460487.3, 3752918.4,     259.7,     259.7,       0.0);
( 460497.3, 3752918.4,     259.7,     259.7,       0.0);         ( 460507.3, 3752918.4,     259.7,     259.7,       0.0);
( 460517.3, 3752918.4,     259.6,     259.6,       0.0);         ( 460527.3, 3752918.4,     259.6,     259.6,       0.0);
( 460537.3, 3752918.4,     259.5,     259.5,       0.0);         ( 460547.3, 3752918.4,     259.5,     259.5,       0.0);
( 460077.3, 3752928.4,     259.2,     259.2,       0.0);         ( 460087.3, 3752928.4,     259.3,     259.3,       0.0);
( 460097.3, 3752928.4,     259.5,     259.5,       0.0);         ( 460107.3, 3752928.4,     259.6,     259.6,       0.0);
( 460117.3, 3752928.4,     259.8,     259.8,       0.0);         ( 460127.3, 3752928.4,     259.9,     259.9,       0.0);
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Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460137.3,	3752928.4,	260.0,	260.0,	0.0);	(460147.3,	3752928.4,	260.0,	260.0,	0.0);
(460157.3,	3752928.4,	260.1,	260.1,	0.0);	(460167.3,	3752928.4,	260.2,	260.2,	0.0);
(460177.3,	3752928.4,	260.3,	260.3,	0.0);	(460187.3,	3752928.4,	260.3,	260.3,	0.0);
(460197.3,	3752928.4,	260.4,	260.4,	0.0);	(460207.3,	3752928.4,	260.4,	260.4,	0.0);
(460217.3,	3752928.4,	260.4,	260.4,	0.0);	(460227.3,	3752928.4,	260.4,	260.4,	0.0);
(460237.3,	3752928.4,	260.4,	260.4,	0.0);	(460247.3,	3752928.4,	260.4,	260.4,	0.0);
(460257.3,	3752928.4,	260.3,	260.3,	0.0);	(460267.3,	3752928.4,	260.3,	260.3,	0.0);
(460277.3,	3752928.4,	260.3,	260.3,	0.0);	(460287.3,	3752928.4,	260.4,	260.4,	0.0);
(460297.3,	3752928.4,	260.3,	260.3,	0.0);	(460307.3,	3752928.4,	260.2,	260.2,	0.0);
(460317.3,	3752928.4,	260.2,	260.2,	0.0);	(460327.3,	3752928.4,	260.1,	260.1,	0.0);
(460337.3,	3752928.4,	260.1,	260.1,	0.0);	(460347.3,	3752928.4,	260.0,	260.0,	0.0);
(460357.3,	3752928.4,	259.9,	259.9,	0.0);	(460367.3,	3752928.4,	259.8,	259.8,	0.0);
(460377.3,	3752928.4,	259.8,	259.8,	0.0);	(460387.3,	3752928.4,	259.8,	259.8,	0.0);
(460397.3,	3752928.4,	259.8,	259.8,	0.0);	(460407.3,	3752928.4,	259.8,	259.8,	0.0);
(460417.3,	3752928.4,	259.8,	259.8,	0.0);	(460427.3,	3752928.4,	259.7,	259.7,	0.0);
(460437.3,	3752928.4,	259.7,	259.7,	0.0);	(460447.3,	3752928.4,	259.7,	259.7,	0.0);
(460457.3,	3752928.4,	259.6,	259.6,	0.0);	(460467.3,	3752928.4,	259.6,	259.6,	0.0);
(460477.3,	3752928.4,	259.5,	259.5,	0.0);	(460487.3,	3752928.4,	259.5,	259.5,	0.0);
(460497.3,	3752928.4,	259.5,	259.5,	0.0);	(460507.3,	3752928.4,	259.4,	259.4,	0.0);
(460517.3,	3752928.4,	259.4,	259.4,	0.0);	(460527.3,	3752928.4,	259.4,	259.4,	0.0);
(460537.3,	3752928.4,	259.3,	259.3,	0.0);	(460067.3,	3752938.4,	258.8,	258.8,	0.0);
(460077.3,	3752938.4,	259.0,	259.0,	0.0);	(460087.3,	3752938.4,	259.1,	259.1,	0.0);
(460097.3,	3752938.4,	259.2,	259.2,	0.0);	(460107.3,	3752938.4,	259.4,	259.4,	0.0);
(460117.3,	3752938.4,	259.5,	259.5,	0.0);	(460127.3,	3752938.4,	259.6,	259.6,	0.0);
(460137.3,	3752938.4,	259.7,	259.7,	0.0);	(460147.3,	3752938.4,	259.8,	259.8,	0.0);
(460157.3,	3752938.4,	259.8,	259.8,	0.0);	(460167.3,	3752938.4,	259.9,	259.9,	0.0);
(460177.3,	3752938.4,	260.0,	260.0,	0.0);	(460187.3,	3752938.4,	260.0,	260.0,	0.0);
(460197.3,	3752938.4,	260.1,	260.1,	0.0);	(460207.3,	3752938.4,	260.1,	260.1,	0.0);
(460217.3,	3752938.4,	260.1,	260.1,	0.0);	(460227.3,	3752938.4,	260.1,	260.1,	0.0);
(460237.3,	3752938.4,	260.1,	260.1,	0.0);	(460247.3,	3752938.4,	260.1,	260.1,	0.0);
(460257.3,	3752938.4,	260.0,	260.0,	0.0);	(460267.3,	3752938.4,	260.0,	260.0,	0.0);
(460277.3,	3752938.4,	260.0,	260.0,	0.0);	(460287.3,	3752938.4,	260.0,	260.0,	0.0);
(460297.3,	3752938.4,	260.0,	260.0,	0.0);	(460307.3,	3752938.4,	260.0,	260.0,	0.0);
(460317.3,	3752938.4,	259.9,	259.9,	0.0);	(460327.3,	3752938.4,	259.9,	259.9,	0.0);
(460337.3,	3752938.4,	259.9,	259.9,	0.0);	(460347.3,	3752938.4,	259.8,	259.8,	0.0);
(460357.3,	3752938.4,	259.7,	259.7,	0.0);	(460367.3,	3752938.4,	259.7,	259.7,	0.0);
(460377.3,	3752938.4,	259.6,	259.6,	0.0);	(460387.3,	3752938.4,	259.6,	259.6,	0.0);
(460397.3,	3752938.4,	259.5,	259.5,	0.0);	(460407.3,	3752938.4,	259.5,	259.5,	0.0);
(460417.3,	3752938.4,	259.5,	259.5,	0.0);	(460427.3,	3752938.4,	259.5,	259.5,	0.0);
(460437.3,	3752938.4,	259.5,	259.5,	0.0);	(460447.3,	3752938.4,	259.4,	259.4,	0.0);
(460457.3,	3752938.4,	259.4,	259.4,	0.0);	(460467.3,	3752938.4,	259.4,	259.4,	0.0);
(460477.3,	3752938.4,	259.4,	259.4,	0.0);	(460487.3,	3752938.4,	259.3,	259.3,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460497.3, 3752938.4,     259.3,     259.3,       0.0);         ( 460507.3, 3752938.4,     259.3,     259.3,       0.0);
( 460517.3, 3752938.4,     259.2,     259.2,       0.0);         ( 460527.3, 3752938.4,     259.2,     259.2,       0.0);
( 460067.3, 3752948.4,     258.7,     258.7,       0.0);         ( 460077.3, 3752948.4,     258.8,     258.8,       0.0);
( 460087.3, 3752948.4,     258.9,     258.9,       0.0);         ( 460097.3, 3752948.4,     259.0,     259.0,       0.0);
( 460107.3, 3752948.4,     259.1,     259.1,       0.0);         ( 460117.3, 3752948.4,     259.2,     259.2,       0.0);
( 460127.3, 3752948.4,     259.3,     259.3,       0.0);         ( 460137.3, 3752948.4,     259.4,     259.4,       0.0);
( 460147.3, 3752948.4,     259.5,     259.5,       0.0);         ( 460157.3, 3752948.4,     259.5,     259.5,       0.0);
( 460167.3, 3752948.4,     259.6,     259.6,       0.0);         ( 460177.3, 3752948.4,     259.7,     259.7,       0.0);
( 460187.3, 3752948.4,     259.8,     259.8,       0.0);         ( 460197.3, 3752948.4,     259.8,     259.8,       0.0);
( 460207.3, 3752948.4,     259.8,     259.8,       0.0);         ( 460217.3, 3752948.4,     259.8,     259.8,       0.0);
( 460227.3, 3752948.4,     259.8,     259.8,       0.0);         ( 460237.3, 3752948.4,     259.8,     259.8,       0.0);
( 460247.3, 3752948.4,     259.8,     259.8,       0.0);         ( 460257.3, 3752948.4,     259.7,     259.7,       0.0);
( 460267.3, 3752948.4,     259.7,     259.7,       0.0);         ( 460277.3, 3752948.4,     259.7,     259.7,       0.0);
( 460287.3, 3752948.4,     259.6,     259.6,       0.0);         ( 460297.3, 3752948.4,     259.7,     259.7,       0.0);
( 460307.3, 3752948.4,     259.7,     259.7,       0.0);         ( 460317.3, 3752948.4,     259.7,     259.7,       0.0);
( 460327.3, 3752948.4,     259.7,     259.7,       0.0);         ( 460337.3, 3752948.4,     259.6,     259.6,       0.0);
( 460347.3, 3752948.4,     259.6,     259.6,       0.0);         ( 460357.3, 3752948.4,     259.5,     259.5,       0.0);
( 460367.3, 3752948.4,     259.5,     259.5,       0.0);         ( 460377.3, 3752948.4,     259.4,     259.4,       0.0);
( 460387.3, 3752948.4,     259.4,     259.4,       0.0);         ( 460397.3, 3752948.4,     259.3,     259.3,       0.0);
( 460407.3, 3752948.4,     259.3,     259.3,       0.0);         ( 460417.3, 3752948.4,     259.2,     259.2,       0.0);
( 460427.3, 3752948.4,     259.2,     259.2,       0.0);         ( 460437.3, 3752948.4,     259.2,     259.2,       0.0);
( 460447.3, 3752948.4,     259.2,     259.2,       0.0);         ( 460457.3, 3752948.4,     259.2,     259.2,       0.0);
( 460467.3, 3752948.4,     259.2,     259.2,       0.0);         ( 460477.3, 3752948.4,     259.2,     259.2,       0.0);
( 460487.3, 3752948.4,     259.1,     259.1,       0.0);         ( 460497.3, 3752948.4,     259.1,     259.1,       0.0);
( 460507.3, 3752948.4,     259.1,     259.1,       0.0);         ( 460517.3, 3752948.4,     259.1,     259.1,       0.0);
( 460057.3, 3752958.4,     258.5,     258.5,       0.0);         ( 460067.3, 3752958.4,     258.5,     258.5,       0.0);
( 460077.3, 3752958.4,     258.6,     258.6,       0.0);         ( 460087.3, 3752958.4,     258.7,     258.7,       0.0);
( 460097.3, 3752958.4,     258.8,     258.8,       0.0);         ( 460107.3, 3752958.4,     258.9,     258.9,       0.0);
( 460117.3, 3752958.4,     259.0,     259.0,       0.0);         ( 460127.3, 3752958.4,     259.1,     259.1,       0.0);
( 460137.3, 3752958.4,     259.1,     259.1,       0.0);         ( 460147.3, 3752958.4,     259.2,     259.2,       0.0);
( 460157.3, 3752958.4,     259.2,     259.2,       0.0);         ( 460167.3, 3752958.4,     259.3,     259.3,       0.0);
( 460177.3, 3752958.4,     259.4,     259.4,       0.0);         ( 460187.3, 3752958.4,     259.5,     259.5,       0.0);
( 460197.3, 3752958.4,     259.5,     259.5,       0.0);         ( 460207.3, 3752958.4,     259.5,     259.5,       0.0);
( 460217.3, 3752958.4,     259.5,     259.5,       0.0);         ( 460227.3, 3752958.4,     259.5,     259.5,       0.0);
( 460237.3, 3752958.4,     259.5,     259.5,       0.0);         ( 460247.3, 3752958.4,     259.5,     259.5,       0.0);
( 460257.3, 3752958.4,     259.4,     259.4,       0.0);         ( 460267.3, 3752958.4,     259.4,     259.4,       0.0);
( 460277.3, 3752958.4,     259.4,     259.4,       0.0);         ( 460287.3, 3752958.4,     259.3,     259.3,       0.0);
( 460297.3, 3752958.4,     259.3,     259.3,       0.0);         ( 460307.3, 3752958.4,     259.3,     259.3,       0.0);
( 460317.3, 3752958.4,     259.4,     259.4,       0.0);         ( 460327.3, 3752958.4,     259.4,     259.4,       0.0);
( 460337.3, 3752958.4,     259.4,     259.4,       0.0);         ( 460347.3, 3752958.4,     259.4,     259.4,       0.0);
( 460357.3, 3752958.4,     259.3,     259.3,       0.0);         ( 460367.3, 3752958.4,     259.3,     259.3,       0.0);
( 460377.3, 3752958.4,     259.2,     259.2,       0.0);         ( 460387.3, 3752958.4,     259.2,     259.2,       0.0);
( 460397.3, 3752958.4,     259.1,     259.1,       0.0);         ( 460407.3, 3752958.4,     259.1,     259.1,       0.0);
( 460417.3, 3752958.4,     259.1,     259.1,       0.0);         ( 460427.3, 3752958.4,     259.0,     259.0,       0.0);
( 460437.3, 3752958.4,     259.0,     259.0,       0.0);         ( 460447.3, 3752958.4,     258.9,     258.9,       0.0);
( 460457.3, 3752958.4,     258.9,     258.9,       0.0);         ( 460467.3, 3752958.4,     259.0,     259.0,       0.0);
( 460477.3, 3752958.4,     259.0,     259.0,       0.0);         ( 460487.3, 3752958.4,     259.0,     259.0,       0.0);
( 460497.3, 3752958.4,     258.9,     258.9,       0.0);         ( 460507.3, 3752958.4,     258.9,     258.9,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460517.3,	3752958.4,	258.9,	258.9,	0.0);	(460057.3,	3752968.4,	258.4,	258.4,	0.0);
(460067.3,	3752968.4,	258.4,	258.4,	0.0);	(460087.3,	3752968.4,	258.6,	258.6,	0.0);
(460097.3,	3752968.4,	258.7,	258.7,	0.0);	(460107.3,	3752968.4,	258.7,	258.7,	0.0);
(460117.3,	3752968.4,	258.8,	258.8,	0.0);	(460127.3,	3752968.4,	258.8,	258.8,	0.0);
(460137.3,	3752968.4,	258.9,	258.9,	0.0);	(460147.3,	3752968.4,	258.9,	258.9,	0.0);
(460157.3,	3752968.4,	259.0,	259.0,	0.0);	(460167.3,	3752968.4,	259.0,	259.0,	0.0);
(460177.3,	3752968.4,	259.1,	259.1,	0.0);	(460187.3,	3752968.4,	259.2,	259.2,	0.0);
(460197.3,	3752968.4,	259.2,	259.2,	0.0);	(460207.3,	3752968.4,	259.3,	259.3,	0.0);
(460217.3,	3752968.4,	259.3,	259.3,	0.0);	(460227.3,	3752968.4,	259.2,	259.2,	0.0);
(460237.3,	3752968.4,	259.2,	259.2,	0.0);	(460247.3,	3752968.4,	259.2,	259.2,	0.0);
(460257.3,	3752968.4,	259.2,	259.2,	0.0);	(460267.3,	3752968.4,	259.1,	259.1,	0.0);
(460277.3,	3752968.4,	259.1,	259.1,	0.0);	(460287.3,	3752968.4,	259.1,	259.1,	0.0);
(460297.3,	3752968.4,	259.0,	259.0,	0.0);	(460307.3,	3752968.4,	259.0,	259.0,	0.0);
(460317.3,	3752968.4,	259.2,	259.2,	0.0);	(460327.3,	3752968.4,	259.2,	259.2,	0.0);
(460337.3,	3752968.4,	259.2,	259.2,	0.0);	(460347.3,	3752968.4,	259.2,	259.2,	0.0);
(460357.3,	3752968.4,	259.1,	259.1,	0.0);	(460367.3,	3752968.4,	259.1,	259.1,	0.0);
(460377.3,	3752968.4,	259.1,	259.1,	0.0);	(460387.3,	3752968.4,	259.0,	259.0,	0.0);
(460397.3,	3752968.4,	258.9,	258.9,	0.0);	(460407.3,	3752968.4,	258.9,	258.9,	0.0);
(460417.3,	3752968.4,	258.9,	258.9,	0.0);	(460427.3,	3752968.4,	258.8,	258.8,	0.0);
(460437.3,	3752968.4,	258.8,	258.8,	0.0);	(460447.3,	3752968.4,	258.8,	258.8,	0.0);
(460457.3,	3752968.4,	258.8,	258.8,	0.0);	(460467.3,	3752968.4,	258.7,	258.7,	0.0);
(460477.3,	3752968.4,	258.8,	258.8,	0.0);	(460487.3,	3752968.4,	258.8,	258.8,	0.0);
(460497.3,	3752968.4,	258.8,	258.8,	0.0);	(460507.3,	3752968.4,	258.8,	258.8,	0.0);
(460057.3,	3752978.4,	258.4,	258.4,	0.0);	(460097.3,	3752978.4,	258.6,	258.6,	0.0);
(460107.3,	3752978.4,	258.6,	258.6,	0.0);	(460117.3,	3752978.4,	258.6,	258.6,	0.0);
(460127.3,	3752978.4,	258.7,	258.7,	0.0);	(460137.3,	3752978.4,	258.7,	258.7,	0.0);
(460147.3,	3752978.4,	258.8,	258.8,	0.0);	(460157.3,	3752978.4,	258.8,	258.8,	0.0);
(460167.3,	3752978.4,	258.8,	258.8,	0.0);	(460177.3,	3752978.4,	258.8,	258.8,	0.0);
(460187.3,	3752978.4,	258.9,	258.9,	0.0);	(460197.3,	3752978.4,	259.0,	259.0,	0.0);
(460207.3,	3752978.4,	259.0,	259.0,	0.0);	(460217.3,	3752978.4,	259.1,	259.1,	0.0);
(460227.3,	3752978.4,	259.0,	259.0,	0.0);	(460237.3,	3752978.4,	259.0,	259.0,	0.0);
(460247.3,	3752978.4,	259.0,	259.0,	0.0);	(460257.3,	3752978.4,	259.0,	259.0,	0.0);
(460267.3,	3752978.4,	258.9,	258.9,	0.0);	(460277.3,	3752978.4,	258.9,	258.9,	0.0);
(460287.3,	3752978.4,	258.9,	258.9,	0.0);	(460297.3,	3752978.4,	258.8,	258.8,	0.0);
(460307.3,	3752978.4,	258.8,	258.8,	0.0);	(460317.3,	3752978.4,	258.9,	258.9,	0.0);
(460327.3,	3752978.4,	258.9,	258.9,	0.0);	(460337.3,	3752978.4,	259.0,	259.0,	0.0);
(460347.3,	3752978.4,	259.0,	259.0,	0.0);	(460357.3,	3752978.4,	258.9,	258.9,	0.0);
(460367.3,	3752978.4,	258.9,	258.9,	0.0);	(460377.3,	3752978.4,	258.9,	258.9,	0.0);
(460387.3,	3752978.4,	258.8,	258.8,	0.0);	(460397.3,	3752978.4,	258.7,	258.7,	0.0);
(460407.3,	3752978.4,	258.7,	258.7,	0.0);	(460417.3,	3752978.4,	258.7,	258.7,	0.0);
(460427.3,	3752978.4,	258.6,	258.6,	0.0);	(460437.3,	3752978.4,	258.6,	258.6,	0.0);
(460447.3,	3752978.4,	258.6,	258.6,	0.0);	(460457.3,	3752978.4,	258.6,	258.6,	0.0);

Model Output
Unit Emission Rates (1 g/s)

```
( 460467.3, 3752978.4,     258.6,     258.6,       0.0);         ( 460477.3, 3752978.4,     258.6,     258.6,       0.0);
( 460487.3, 3752978.4,     258.6,     258.6,       0.0);         ( 460497.3, 3752978.4,     258.6,     258.6,       0.0);
( 460097.3, 3752988.4,     258.5,     258.5,       0.0);         ( 460107.3, 3752988.4,     258.5,     258.5,       0.0);
( 460117.3, 3752988.4,     258.5,     258.5,       0.0);         ( 460127.3, 3752988.4,     258.6,     258.6,       0.0);
( 460137.3, 3752988.4,     258.6,     258.6,       0.0);         ( 460147.3, 3752988.4,     258.6,     258.6,       0.0);
( 460157.3, 3752988.4,     258.6,     258.6,       0.0);         ( 460167.3, 3752988.4,     258.6,     258.6,       0.0);
( 460177.3, 3752988.4,     258.6,     258.6,       0.0);         ( 460187.3, 3752988.4,     258.7,     258.7,       0.0);
( 460197.3, 3752988.4,     258.8,     258.8,       0.0);         ( 460207.3, 3752988.4,     258.9,     258.9,       0.0);
( 460217.3, 3752988.4,     258.9,     258.9,       0.0);         ( 460227.3, 3752988.4,     258.9,     258.9,       0.0);
( 460237.3, 3752988.4,     258.9,     258.9,       0.0);         ( 460247.3, 3752988.4,     258.9,     258.9,       0.0);
( 460257.3, 3752988.4,     258.8,     258.8,       0.0);         ( 460267.3, 3752988.4,     258.8,     258.8,       0.0);
( 460277.3, 3752988.4,     258.8,     258.8,       0.0);         ( 460287.3, 3752988.4,     258.7,     258.7,       0.0);
( 460297.3, 3752988.4,     258.7,     258.7,       0.0);         ( 460307.3, 3752988.4,     258.7,     258.7,       0.0);
( 460317.3, 3752988.4,     258.6,     258.6,       0.0);         ( 460327.3, 3752988.4,     258.7,     258.7,       0.0);
( 460337.3, 3752988.4,     258.7,     258.7,       0.0);         ( 460347.3, 3752988.4,     258.8,     258.8,       0.0);
( 460357.3, 3752988.4,     258.7,     258.7,       0.0);         ( 460367.3, 3752988.4,     258.7,     258.7,       0.0);
( 460377.3, 3752988.4,     258.7,     258.7,       0.0);         ( 460387.3, 3752988.4,     258.6,     258.6,       0.0);
( 460397.3, 3752988.4,     258.5,     258.5,       0.0);         ( 460407.3, 3752988.4,     258.5,     258.5,       0.0);
( 460417.3, 3752988.4,     258.5,     258.5,       0.0);         ( 460427.3, 3752988.4,     258.4,     258.4,       0.0);
( 460437.3, 3752988.4,     258.4,     258.4,       0.0);         ( 460447.3, 3752988.4,     258.4,     258.4,       0.0);
( 460457.3, 3752988.4,     258.4,     258.4,       0.0);         ( 460467.3, 3752988.4,     258.4,     258.4,       0.0);
( 460477.3, 3752988.4,     258.4,     258.4,       0.0);         ( 460487.3, 3752988.4,     258.4,     258.4,       0.0);
( 460117.3, 3752998.4,     258.4,     258.4,       0.0);         ( 460127.3, 3752998.4,     258.5,     258.5,       0.0);
( 460137.3, 3752998.4,     258.5,     258.5,       0.0);         ( 460147.3, 3752998.4,     258.5,     258.5,       0.0);
( 460157.3, 3752998.4,     258.5,     258.5,       0.0);         ( 460167.3, 3752998.4,     258.5,     258.5,       0.0);
( 460177.3, 3752998.4,     258.6,     258.6,       0.0);         ( 460187.3, 3752998.4,     258.6,     258.6,       0.0);
( 460197.3, 3752998.4,     258.7,     258.7,       0.0);         ( 460207.3, 3752998.4,     258.7,     258.7,       0.0);
( 460217.3, 3752998.4,     258.8,     258.8,       0.0);         ( 460227.3, 3752998.4,     258.8,     258.8,       0.0);
( 460237.3, 3752998.4,     258.8,     258.8,       0.0);         ( 460247.3, 3752998.4,     258.7,     258.7,       0.0);
( 460257.3, 3752998.4,     258.7,     258.7,       0.0);         ( 460267.3, 3752998.4,     258.7,     258.7,       0.0);
( 460277.3, 3752998.4,     258.7,     258.7,       0.0);         ( 460287.3, 3752998.4,     258.6,     258.6,       0.0);
( 460297.3, 3752998.4,     258.6,     258.6,       0.0);         ( 460307.3, 3752998.4,     258.6,     258.6,       0.0);
( 460317.3, 3752998.4,     258.5,     258.5,       0.0);         ( 460327.3, 3752998.4,     258.4,     258.4,       0.0);
( 460337.3, 3752998.4,     258.4,     258.4,       0.0);         ( 460347.3, 3752998.4,     258.5,     258.5,       0.0);
( 460357.3, 3752998.4,     258.5,     258.5,       0.0);         ( 460367.3, 3752998.4,     258.5,     258.5,       0.0);
( 460377.3, 3752998.4,     258.4,     258.4,       0.0);         ( 460387.3, 3752998.4,     258.4,     258.4,       0.0);
( 460397.3, 3752998.4,     258.4,     258.4,       0.0);         ( 460407.3, 3752998.4,     258.3,     258.3,       0.0);
( 460417.3, 3752998.4,     258.2,     258.2,       0.0);         ( 460427.3, 3752998.4,     258.2,     258.2,       0.0);
( 460437.3, 3752998.4,     258.2,     258.2,       0.0);         ( 460447.3, 3752998.4,     258.2,     258.2,       0.0);
( 460457.3, 3752998.4,     258.2,     258.2,       0.0);         ( 460467.3, 3752998.4,     258.2,     258.2,       0.0);
( 460477.3, 3752998.4,     258.2,     258.2,       0.0);         ( 460157.3, 3753008.4,     258.4,     258.4,       0.0);
( 460167.3, 3753008.4,     258.4,     258.4,       0.0);         ( 460177.3, 3753008.4,     258.5,     258.5,       0.0);
( 460187.3, 3753008.4,     258.5,     258.5,       0.0);         ( 460197.3, 3753008.4,     258.5,     258.5,       0.0);
( 460207.3, 3753008.4,     258.6,     258.6,       0.0);         ( 460217.3, 3753008.4,     258.6,     258.6,       0.0);
( 460227.3, 3753008.4,     258.6,     258.6,       0.0);         ( 460237.3, 3753008.4,     258.6,     258.6,       0.0);
( 460247.3, 3753008.4,     258.6,     258.6,       0.0);         ( 460257.3, 3753008.4,     258.6,     258.6,       0.0);
( 460267.3, 3753008.4,     258.6,     258.6,       0.0);         ( 460277.3, 3753008.4,     258.6,     258.6,       0.0);
( 460287.3, 3753008.4,     258.5,     258.5,       0.0);         ( 460297.3, 3753008.4,     258.5,     258.5,       0.0);
```

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(460307.3,	3753008.4,	258.4,	258.4,	0.0);	(460317.3,	3753008.4,	258.4,	258.4,	0.0);
(460327.3,	3753008.4,	258.3,	258.3,	0.0);	(460337.3,	3753008.4,	258.3,	258.3,	0.0);
(460347.3,	3753008.4,	258.2,	258.2,	0.0);	(460357.3,	3753008.4,	258.3,	258.3,	0.0);
(460367.3,	3753008.4,	258.3,	258.3,	0.0);	(460377.3,	3753008.4,	258.2,	258.2,	0.0);
(460387.3,	3753008.4,	258.2,	258.2,	0.0);	(460397.3,	3753008.4,	258.2,	258.2,	0.0);
(460407.3,	3753008.4,	258.1,	258.1,	0.0);	(460417.3,	3753008.4,	258.0,	258.0,	0.0);
(460427.3,	3753008.4,	258.0,	258.0,	0.0);	(460437.3,	3753008.4,	258.0,	258.0,	0.0);
(460447.3,	3753008.4,	258.0,	258.0,	0.0);	(460457.3,	3753008.4,	258.0,	258.0,	0.0);
(460467.3,	3753008.4,	258.0,	258.0,	0.0);	(460477.3,	3753008.4,	258.0,	258.0,	0.0);
(460207.3,	3753018.4,	258.5,	258.5,	0.0);	(460217.3,	3753018.4,	258.5,	258.5,	0.0);
(460227.3,	3753018.4,	258.5,	258.5,	0.0);	(460237.3,	3753018.4,	258.5,	258.5,	0.0);
(460247.3,	3753018.4,	258.5,	258.5,	0.0);	(460257.3,	3753018.4,	258.5,	258.5,	0.0);
(460267.3,	3753018.4,	258.5,	258.5,	0.0);	(460277.3,	3753018.4,	258.5,	258.5,	0.0);
(460287.3,	3753018.4,	258.4,	258.4,	0.0);	(460297.3,	3753018.4,	258.4,	258.4,	0.0);
(460307.3,	3753018.4,	258.3,	258.3,	0.0);	(460317.3,	3753018.4,	258.3,	258.3,	0.0);
(460327.3,	3753018.4,	258.2,	258.2,	0.0);	(460337.3,	3753018.4,	258.2,	258.2,	0.0);
(460347.3,	3753018.4,	258.1,	258.1,	0.0);	(460357.3,	3753018.4,	258.1,	258.1,	0.0);
(460367.3,	3753018.4,	258.1,	258.1,	0.0);	(460377.3,	3753018.4,	258.0,	258.0,	0.0);
(460387.3,	3753018.4,	258.0,	258.0,	0.0);	(460397.3,	3753018.4,	257.9,	257.9,	0.0);
(460407.3,	3753018.4,	257.9,	257.9,	0.0);	(460417.3,	3753018.4,	257.8,	257.8,	0.0);
(460427.3,	3753018.4,	257.8,	257.8,	0.0);	(460437.3,	3753018.4,	257.8,	257.8,	0.0);
(460447.3,	3753018.4,	257.8,	257.8,	0.0);	(460457.3,	3753018.4,	257.8,	257.8,	0.0);
(460287.3,	3753028.4,	258.3,	258.3,	0.0);	(460297.3,	3753028.4,	258.2,	258.2,	0.0);
(460307.3,	3753028.4,	258.2,	258.2,	0.0);	(460317.3,	3753028.4,	258.2,	258.2,	0.0);
(460327.3,	3753028.4,	258.1,	258.1,	0.0);	(460337.3,	3753028.4,	258.0,	258.0,	0.0);
(460347.3,	3753028.4,	257.9,	257.9,	0.0);	(460357.3,	3753028.4,	257.9,	257.9,	0.0);
(460367.3,	3753028.4,	257.9,	257.9,	0.0);	(460377.3,	3753028.4,	257.8,	257.8,	0.0);
(460387.3,	3753028.4,	257.8,	257.8,	0.0);	(460397.3,	3753028.4,	257.8,	257.8,	0.0);
(460407.3,	3753028.4,	257.7,	257.7,	0.0);	(460417.3,	3753028.4,	257.6,	257.6,	0.0);
(460317.3,	3753038.4,	258.0,	258.0,	0.0);	(460327.3,	3753038.4,	257.9,	257.9,	0.0);
(460337.3,	3753038.4,	257.9,	257.9,	0.0);					

Model Output
Unit Emission Rates (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
LESS THAN 1.0 METER; WITHIN OPENPIT; OR BEYOND 80KM FOR FASTAREA/FASTALL

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)	DISTANCE (METERS)
L0000026	460097.3	3752988.4	-0.23
L0000027	460117.3	3752998.4	-2.24
L0000028	460117.3	3752998.4	-4.64
L0000028	460127.3	3752998.4	-3.62
L0000029	460127.3	3752998.4	0.39
L0000029	460137.3	3752998.4	-2.26
L0000030	460157.3	3753008.4	-6.57
L0000031	460157.3	3753008.4	-2.73
L0000031	460167.3	3753008.4	-6.10
L0000031	460177.3	3753008.4	-0.74
L0000032	460177.3	3753008.4	-2.63
L0000032	460187.3	3753008.4	-1.55
L0000033	460197.3	3753008.4	-0.02
L0000033	460207.3	3753018.4	-2.65
L0000034	460207.3	3753018.4	-6.34
L0000034	460217.3	3753018.4	-4.74
L0000035	460217.3	3753018.4	-1.02
L0000035	460227.3	3753018.4	-3.58
L0000036	460237.3	3753018.4	0.09
L0000039	460287.3	3753028.4	0.33
L0000041	460317.3	3753038.4	-2.63
L0000042	460327.3	3753038.4	0.71

Model Output
Unit Emission Rates (1 g/s)


```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                    *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                  (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1

              NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                 *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                  (METERS/SEC)

                                      1.54,   3.09,   5.14,   8.23,  10.80,
```

Model Output
Unit Emission Rates (1 g/s)

```
*** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
*** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                    PAGE 127
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                  *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\met data\KRAL_V9_ADJU\KRAL_v9.SFC                                          Met Version:  16216
  Profile file:   Q:\RIV-24.0\8_Tech Studies\HRA\C - Air Dispersion Model Output\met data\KRAL_V9_
  Surface format: FREE
  Profile format: FREE
  Surface station no.:     3171                  Upper air station no.:     3190
                 Name: UNKNOWN                                     Name: UNKNOWN
                 Year:   2012                                      Year:   2012
```

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-25.6	0.266	-9.000	-9.000	-999.	330.	77.9	0.15	2.40	1.00	2.93	55.	10.1	288.1	2.0
12	01	01	1	02	-26.8	0.277	-9.000	-9.000	-999.	351.	84.7	0.15	2.40	1.00	3.05	55.	10.1	287.0	2.0
12	01	01	1	03	-21.5	0.221	-9.000	-9.000	-999.	250.	53.5	0.15	2.40	1.00	2.45	74.	10.1	284.2	2.0
12	01	01	1	04	-22.0	0.227	-9.000	-9.000	-999.	260.	56.8	0.15	2.40	1.00	2.52	77.	10.1	285.9	2.0
12	01	01	1	05	-20.0	0.206	-9.000	-9.000	-999.	225.	46.8	0.15	2.40	1.00	2.30	80.	10.1	285.4	2.0
12	01	01	1	06	-14.4	0.171	-9.000	-9.000	-999.	170.	32.1	0.15	2.40	1.00	1.93	79.	10.1	287.0	2.0
12	01	01	1	07	-14.9	0.174	-9.000	-9.000	-999.	174.	33.2	0.15	2.40	1.00	1.96	77.	10.1	284.2	2.0
12	01	01	1	08	-11.9	0.169	-9.000	-9.000	-999.	167.	36.1	0.15	2.40	0.53	1.89	77.	10.1	288.1	2.0
12	01	01	1	09	40.4	0.234	0.359	0.006	40.	272.	-28.1	0.15	2.40	0.31	2.10	81.	10.1	289.2	2.0
12	01	01	1	10	112.6	0.246	0.742	0.005	129.	293.	-11.8	0.15	2.40	0.24	1.99	101.	10.1	296.4	2.0
12	01	01	1	11	161.0	0.402	1.188	0.005	369.	611.	-35.6	0.15	2.40	0.21	3.68	78.	10.1	298.8	2.0
12	01	01	1	12	184.7	0.337	1.516	0.005	668.	473.	-18.4	0.15	2.40	0.20	2.89	68.	10.1	300.4	2.0
12	01	01	1	13	183.9	0.310	1.809	0.005	1139.	414.	-14.2	0.15	2.40	0.20	2.57	64.	10.1	302.5	2.0
12	01	01	1	14	156.6	0.374	1.852	0.005	1434.	549.	-29.5	0.15	2.40	0.22	3.37	63.	10.1	303.1	2.0
12	01	01	1	15	104.3	0.382	1.658	0.005	1546.	567.	-47.2	0.15	2.40	0.25	3.59	62.	10.1	302.5	2.0
12	01	01	1	16	31.8	0.374	1.123	0.005	1573.	550.	-145.8	0.15	2.40	0.34	3.76	69.	10.1	300.9	2.0
12	01	01	1	17	-23.3	0.276	-9.000	-9.000	-999.	354.	84.0	0.15	2.40	0.62	3.03	59.	10.1	297.5	2.0
12	01	01	1	18	-21.5	0.229	-9.000	-9.000	-999.	264.	57.8	0.15	2.40	1.00	2.54	54.	10.1	295.4	2.0
12	01	01	1	19	-19.3	0.204	-9.000	-9.000	-999.	221.	45.6	0.15	2.40	1.00	2.27	79.	10.1	292.0	2.0
12	01	01	1	20	-20.7	0.218	-9.000	-9.000	-999.	244.	52.2	0.15	2.40	1.00	2.42	79.	10.1	292.5	2.0
12	01	01	1	21	-19.7	0.206	-9.000	-9.000	-999.	225.	46.9	0.15	2.40	1.00	2.30	95.	10.1	290.9	2.0
12	01	01	1	22	-17.6	0.190	-9.000	-9.000	-999.	199.	39.8	0.15	2.40	1.00	2.13	78.	10.1	290.4	2.0
12	01	01	1	23	-20.3	0.211	-9.000	-9.000	-999.	233.	49.0	0.15	2.40	1.00	2.35	52.	10.1	289.2	2.0
12	01	01	1	24	-16.4	0.183	-9.000	-9.000	-999.	189.	37.0	0.15	2.40	1.00	2.06	75.	10.1	288.8	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.1	1	55.	2.93	288.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

Model Output
Unit Emission Rates (1 g/s)

```
 *** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
 *** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                     PAGE 272
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                    *** THE SUMMARY OF MAXIMUM PERIOD ( 43848 HRS) RESULTS ***


                                 ** CONC OF OTHER    IN MICROGRAMS/M**3                        **

                                                                                                          NETWORK
GROUP ID                      AVERAGE CONC               RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

RAIL      1ST HIGHEST VALUE IS      10.51671 AT (  460147.28,  3752998.36,   258.53,   258.53,    0.00)  DC
          2ND HIGHEST VALUE IS      10.32444 AT (  460247.28,  3753018.36,   258.53,   258.53,    0.00)  DC
          3RD HIGHEST VALUE IS      10.12662 AT (  460057.28,  3752978.36,   258.35,   258.35,    0.00)  DC
          4TH HIGHEST VALUE IS      10.11981 AT (  460107.28,  3752988.36,   258.53,   258.53,    0.00)  DC
          5TH HIGHEST VALUE IS      10.11588 AT (  460337.28,  3753038.36,   257.87,   257.87,    0.00)  DC
          6TH HIGHEST VALUE IS      10.09659 AT (  460157.28,  3752998.36,   258.53,   258.53,    0.00)  DC
          7TH HIGHEST VALUE IS      10.05555 AT (  460207.28,  3753008.36,   258.60,   258.60,    0.00)  DC
          8TH HIGHEST VALUE IS       9.98544 AT (  460297.28,  3753028.36,   258.25,   258.25,    0.00)  DC
          9TH HIGHEST VALUE IS       9.83656 AT (  460257.28,  3753018.36,   258.53,   258.53,    0.00)  DC
         10TH HIGHEST VALUE IS       9.75541 AT (  460167.28,  3753008.36,   258.44,   258.44,    0.00)  DC

TRUCKS    1ST HIGHEST VALUE IS       0.21150 AT (  460117.28,  3752998.36,   258.43,   258.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.21115 AT (  460157.28,  3753008.36,   258.43,   258.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.20784 AT (  460127.28,  3752998.36,   258.48,   258.48,    0.00)  DC
          4TH HIGHEST VALUE IS       0.20756 AT (  460167.28,  3753008.36,   258.44,   258.44,    0.00)  DC
          5TH HIGHEST VALUE IS       0.20615 AT (  460207.28,  3753018.36,   258.48,   258.48,    0.00)  DC
          6TH HIGHEST VALUE IS       0.20429 AT (  460137.28,  3752998.36,   258.53,   258.53,    0.00)  DC
          7TH HIGHEST VALUE IS       0.20396 AT (  460177.28,  3753008.36,   258.50,   258.50,    0.00)  DC
          8TH HIGHEST VALUE IS       0.20395 AT (  460097.28,  3752988.36,   258.50,   258.50,    0.00)  DC
          9TH HIGHEST VALUE IS       0.20347 AT (  460057.28,  3752978.36,   258.35,   258.35,    0.00)  DC
         10TH HIGHEST VALUE IS       0.20257 AT (  460217.28,  3753018.36,   258.52,   258.52,    0.00)  DC

CARS      1ST HIGHEST VALUE IS       0.28026 AT (  460207.28,  3753018.36,   258.48,   258.48,    0.00)  DC
          2ND HIGHEST VALUE IS       0.27938 AT (  460157.28,  3753008.36,   258.43,   258.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.27610 AT (  460217.28,  3753018.36,   258.52,   258.52,    0.00)  DC
          4TH HIGHEST VALUE IS       0.27535 AT (  460167.28,  3753008.36,   258.44,   258.44,    0.00)  DC
          5TH HIGHEST VALUE IS       0.27458 AT (  460317.28,  3753038.36,   258.01,   258.01,    0.00)  DC
          6TH HIGHEST VALUE IS       0.27335 AT (  460117.28,  3752998.36,   258.43,   258.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.27214 AT (  460227.28,  3753018.36,   258.53,   258.53,    0.00)  DC
          8TH HIGHEST VALUE IS       0.27127 AT (  460177.28,  3753008.36,   258.50,   258.50,    0.00)  DC
          9TH HIGHEST VALUE IS       0.27071 AT (  460327.28,  3753038.36,   257.94,   257.94,    0.00)  DC
         10TH HIGHEST VALUE IS       0.26926 AT (  460127.28,  3752998.36,   258.48,   258.48,    0.00)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

Model Output
Unit Emission Rates (1 g/s)

```
 *** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
 *** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                     PAGE 273
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                  ** CONC OF OTHER    IN MICROGRAMS/M**3                        **

                                                   DATE                                                                  NETWORK
GROUP ID                        AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

RAIL     HIGH   1ST HIGH VALUE IS     181.97843  ON 12113008: AT (  460147.28,  3752998.36,   258.53,   258.53,    0.00)  DC

TRUCKS   HIGH   1ST HIGH VALUE IS      31.22081  ON 15021808: AT (  460057.28,  3752978.36,   258.35,   258.35,    0.00)  DC

CARS     HIGH   1ST HIGH VALUE IS      35.52582  ON 12012408: AT (  460057.28,  3752978.36,   258.35,   258.35,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

Model Output
Unit Emission Rates (1 g/s)

```
*** AERMOD - VERSION  18081 ***   *** Arlington High School HRA                                          ***        01/10/19
*** AERMET - VERSION  16216 ***   *** Riverside, CA                                                      ***        11:22:37
                                                                                                                    PAGE 274
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            2 Warning Message(s)
A Total of         1638 Informational Message(s)

A Total of        43848 Hours Were Processed

A Total of         1039 Calm Hours Identified

A Total of          599 Missing Hours Identified (  1.37 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186    1510       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used          0.50
ME W187    1510       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

Appendix D. Risk Calculations

Appendix

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Table D1
MER Concentration Worksheet
Toxic Air Contaminants - Mobile Sources

Source No. (a)	Source (b)	Contaminant (c)	Weight Fraction (d)	Emission Rates[1] **Annual Avg** (g/s) (e)	AERMOD Output[2] **Annual Avg** (µg/m^3) (f)	Annual Average MER Concentration (µg/m^3) (g)	Emission Rates[1] **1-Hour** (g/s) (h)	AERMOD Output[2] **1-Hour** (µg/m^3) (i)	Acute (1-Hour) MER Concentration (µg/m^3) (j)
Staff Scenario									
1	SR-91 Trucks (DPM)	Diesel Particulate	1.00E+00	3.02E-03	0.212	6.39E-04	n/a		
	SR-91 Cars (TOG)	Acetaldehyde	2.80E-03	3.30E-02	0.280	2.59E-05	2.98E-02	35.53	2.96E-03
		Acrolein	1.30E-03			1.20E-05			1.37E-03
		Benzene	2.83E-02			2.62E-04			2.99E-02
		1,3-Butadiene	5.50E-03			5.09E-05			5.82E-03
		Ethyl benzene	1.17E-02			1.08E-04			1.24E-02
		Formaldehyde	1.58E-02			1.46E-04			1.67E-02
		Hexane	3.14E-02			2.91E-04			3.32E-02
		Methanol	1.20E-03			1.11E-05			1.27E-03
		Methyl Ethyl Ketone	2.00E-04			1.85E-06			2.11E-04
		Naphthalene	5.00E-04			4.63E-06			5.29E-04
		Propylene	3.06E-02			2.83E-04			3.24E-02
		Styrene	1.20E-03			1.11E-05			1.27E-03
		Toluene	7.46E-02			6.90E-04			7.89E-02
		Xylenes	5.38E-02			4.98E-04			5.69E-02
Student Scenario									
1	SR-91 Trucks (DPM)	Diesel Particulate	1.00E+00	2.73E-03	0.212	5.76E-04	n/a		
	SR-91 Cars (TOG)	Acetaldehyde	2.80E-03	2.98E-02	0.280	2.34E-05	2.98E-02	35.53	2.96E-03
		Acrolein	1.30E-03			1.08E-05			1.37E-03
		Benzene	2.83E-02			2.36E-04			2.99E-02
		1,3-Butadiene	5.50E-03			4.59E-05			5.82E-03
		Ethylbenzene	1.17E-02			9.76E-05			1.24E-02
		Formaldehyde	1.58E-02			1.32E-04			1.67E-02
		Hexane	3.14E-02			2.62E-04			3.32E-02
		Methanol	1.20E-03			1.00E-05			1.27E-03
		Methyl Ethyl Ketone	2.00E-04			1.67E-06			2.11E-04
		Naphthalene	5.00E-04			4.17E-06			5.29E-04
		Propylene	3.06E-02			2.55E-04			3.24E-02
		Styrene	1.20E-03			1.00E-05			1.27E-03
		Toluene	7.46E-02			6.22E-04			7.89E-02
		Xylenes	5.38E-02			4.49E-04			5.69E-02
Staff and Student Scenarios									
2	BNSF Locomotives	Diesel Particulate	1.00E+00	8.94E-03	10.52	9.40E-02	n/a		
	Metrolink Locomotives	Diesel Particulate	1.00E+00	1.90E-04	10.52	2.00E-03	n/a		
Note: Maximum Exposed Receptor (MER)						For Cancer/Chronic Calculation			For Acute Calculation

[1] Emission Rates, per source, from Source Emissions Inventories (Appendix A).

[2] AERMOD Output (Appendix C) at the maximum exposed receptor (MER) are based on unit emission rates for emission sources (1 g/s per source).

Table D2
HARP2 Results for Cancer Risk and Chronic Hazards
School Scenario

No.	Source	Contaminant	Carcinogenic Risks		Chronic Non-Cancer Risks [2] - Toxicological Endpoints*											
			Staff	**Students**	CV	CNS	IMMUN	KIDNEY	GILV	REPRO	**RESP**	SKIN	EYE	BONE	ENDO	BLOOD
			per million	per million												
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
1	SR-91 Trucks (DPM)	Diesel Particulate	4.0E-02	1.0E-02							1.28E-04					
	SR-91 Cars (TOG)	Acetaldehyde	1.5E-05	3.8E-06							1.85E-07					
		Acrolein									3.43E-05					
		Benzene	1.5E-03	3.8E-04												8.73E-05
		1,3-Butadiene	1.7E-03	4.4E-04						2.55E-05						
		Ethylbenzene	5.3E-05	1.4E-05				5.40E-08	5.40E-08	5.40E-08					5.40E-08	
		Formaldehyde	1.7E-04	4.5E-05							1.62E-05					
		Hexane				4.16E-08										
		Methanol								2.78E-09						
		Methyl Ethyl Ketone														
		Naphthalene	3.1E-05	8.0E-06							5.14E-07					
		Propylene									9.43E-08					
		Styrene				1.23E-08										
		Toluene				2.30E-06				2.30E-06	2.30E-06					
		Xylenes				7.11E-07					7.11E-07		7.11E-07			
2	BNSF Locomotives	Diesel Particulate	5.8E+00	1.7E+00							1.88E-02					
	Metrolink Locomotives	Diesel Particulate	1.2E-01	3.5E-02							4.00E-04					
		Total - All Sources	**6.0**	**1.7**	0.00E+00	3.07E-06	0.00E+00	5.40E-08	5.40E-08	2.78E-05	**1.94E-02**	0.00E+00	7.11E-07	0.00E+00	5.40E-08	8.73E-05

Note: Health risks calculated using HARP2, Risk Assessment Standalone Tool, version 19044 (CARB, 2019).

Total Cancer Risk	**Staff**	**6.0**	per million
Total Cancer Risk	**Students**	**1.7**	per million
Maximum Chronic Hazard Index		**1.94E-02**	**RESP**

	Staff	Students	
	16 < 70 years	2 < 16 years	age bin
Dose Exposure Factors:	250	180	exposure frequency (days/year)
	230	520	8-hour inhalation rate (L/kg-8 hours) [1]
	1	1	inhalation absorption factor
Risk Calculation Factors:	1	3	age sensitivity factor
	25	4	exposure duration (years)
	70	70	averaging time (years)

* Key to Toxicological Endpoints

CV	Cardiovascular System
CNS	Central Nervous System
IMMUN	Immune System
KIDN	Kidneys
GILV	Gastrointestinal Tract and Liver/Alimentary Tract
RESP	Respiratory System
REPRO	Reproductive System
SKIN	Skin irritation and/or other effects
EYE	Eye irritation and/or other effects
BONE	Bones and Teeth
ENDO	Endocrine System
BLOOD	Hematological System

[1] 8-hour inhalation rate taken as the 95th percentile breathing rates for Moderate Intensity Activities (OEHHA, 2015).

[2] Staff Scenario emission rates produced higher chronic hazard indices, compared to Student Scenario emission rates.

Table D3
HARP2 Results for Acute Hazards

Source No.	Source	Contaminant	Acute Non-Cancer Risks - Toxicological Endpoints*											
			CV	CNS	IMMUN	KIDNEY	GILV	**REPRO**	RESP	SKIN	EYE	BONE	ENDO	BLOOD
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
1	SR-91 Trucks (DPM)	Diesel Particulate												
	SR-91 Cars (TOG)	Acetaldehyde							6.30E-06		6.30E-06			
		Acrolein							5.48E-04		5.48E-04			
		Benzene			1.11E-03			1.11E-03						1.11E-03
		1,3-Butadiene						8.82E-06						
		Ethylbenzene												
		Formaldehyde									3.04E-04			
		Hexane												
		Methanol		4.54E-08										
		Methyl Ethyl Ketone							1.62E-08		1.62E-08			
		Naphthalene												
		Propylene												
		Styrene						6.05E-08	6.05E-08		6.05E-08			
		Toluene		2.13E-06				2.13E-06	2.13E-06		2.13E-06			
		Xylenes		2.59E-06					2.59E-06		2.59E-06			
2	BNSF Locomotives	Diesel Particulate												
	Metrolink Locomotives	Diesel Particulate												
		Total - All Sources	0.00E+00	4.76E-06	1.11E-03	0.00E+00	0.00E+00	**1.12E-03**	5.59E-04	0.00E+00	8.63E-04	0.00E+00	0.00E+00	1.11E-03

Note: Staff and Student scenarios produce the same acute (1-hour) hazard indices.

Note: Health risks calculated using HARP2, Risk Assessment Standalone Tool, version 19044 (CARB, 2019).

Maximum Acute Hazard Index 1.12E-03 Repro

* Key to Toxicological Endpoints

CV	Cardiovascular System	RESP	Respiratory System
CNS	Central Nervous System	SKIN	Skin irritation and/or other effects
IMMUN	Immune System	EYE	Eye irritation and/or other effects
KIDN	Kidneys	BONE	Bones and Teeth
GILV	Gastrointestinal Tract and Liver/Alimentary Tract	ENDO	Endocrine System
REPRO	Reproductive System	BLOOD	Hematological System

Table D4
HARP2 Results for 8-Hour Hazards

Source No.	Source	Contaminant	8-Hour Non-Cancer Risks - Toxicological Endpoints*											
			CV	CNS	IMMUN	KIDNEY	GILV	REPRO	RESP	SKIN	EYE	BONE	ENDO	**BLOOD**
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
1	SR-91 Trucks (DPM)	Diesel Particulate												
	SR-91 Cars (TOG)	Acetaldehyde							8.63E-08					
		Acrolein							1.71E-05					
		Benzene												8.73E-05
		1,3-Butadiene						5.66E-06						
		Ethylbenzene												
		Formaldehyde							1.62E-05					
		Hexane												
		Methanol												
		Methyl Ethyl Ketone												
		Naphthalene												
		Propylene												
		Styrene												
		Toluene												
		Xylenes												
2	BNSF Locomotives	Diesel Particulate												
	Metrolink Locomotives	Diesel Particulate												
		Total - All Sources	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.66E-06	3.35E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**8.73E-05**

Note: Staff Scenario emission rates produced higher 8-hour chronic hazard indices, compared to Student Scenario emission rates.

Note: Health risks calculated using HARP2, Risk Assessment Standalone Tool, version 19044 (CARB, 2019).

Maximum 8-Hour Hazard Index 8.73E-05 Blood

* Key to Toxicological Endpoints

CV	Cardiovascular System	RESP	Respiratory System
CNS	Central Nervous System	SKIN	Skin irritation and/or other effects
IMMUN	Immune System	EYE	Eye irritation and/or other effects
KIDN	Kidneys	BONE	Bones and Teeth
GILV	Gastrointestinal Tract and Liver/Alimentary Tract	ENDO	Endocrine System
REPRO	Reproductive System	BLOOD	Hematological System

Appendix J Rail Safety Study

Appendices

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January 2019 | Rail Safety Study

ARLINGTON HIGH SCHOOL MODERNIZATION

Riverside Unified School District

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PLACEWORKS

PLACEWORKS

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1. Introduction

1.1 PURPOSE

This report presents the results of a Rail Safety Study (RSS) prepared for the Riverside Unified School District (District) which is evaluating modernization of the existing facilities at Arlington High School. The RSS identifies rail lines within a 1,500-foot radius of the school site and evaluates the actual or potential endangerment to school occupants from an incident (derailment or other accident) that could occur along the rail lines.

1.2 SCHOOL SITE LOCATION

The District is proposing improvements to portions of the existing Arlington High School, which is located at 2951 Jackson Street, City of Riverside, Riverside County, California. The proposed project includes modernizing the Media Arts Academy, Administration Building, pool, and student courtyard and the addition of new facilities. The 45-acre existing campus is bounded by Irving Street to the east, a Burlington Northern Santa Fe (BNSF) Railway Company right-of-way to the north, Jackson Street to the west, and Lincoln Avenue to the south (Figure 1). State Route 91 (SR-91) is approximately 1,000 feet northwest of the site.

1.3 REGULATORY REQUIREMENTS

Under Education Code Section 17251, the California Department of Education (CDE) requires preparation of a rail safety study if a school is within 1,500 feet of a railroad easement. CDE standards and regulations for this process are presented in California Code of Regulations, Title 5, Sections 14010, 14011, and 14012. Information on assessing safety hazard related to railroads is discussed in Section 14010 (d):

> *If the proposed site is within 1,500 feet of a railroad track easement, a safety study shall be done by a competent professional trained in assessing cargo manifests, frequency, speed, and schedule of railroad traffic, grade, curves, type and condition of track needed for sound and safety barriers, need for pedestrian and vehicle safeguards at railroad crossings, presence of high pressure gas lines near the tracks that could rupture in the event of a derailment, preparation of an evacuation plan. In addition to the analysis, possible and reasonable mitigation measures must be identified.*

1.4 STUDY OBJECTIVES

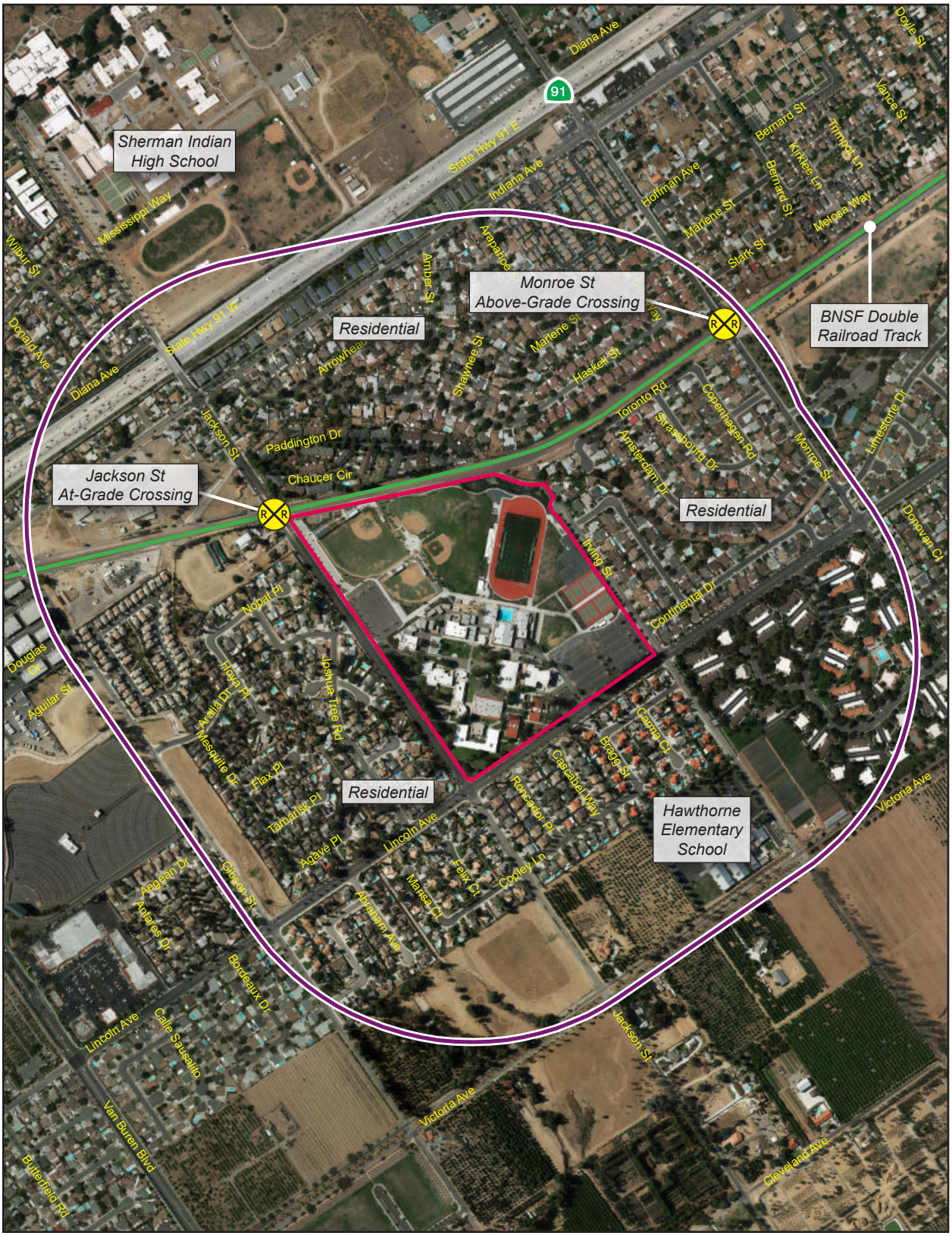
To meet the requirements of CCR Title 5 Sections 14010(d), and CDE's policy on railroads, the following objectives have been established:

- Identify all active and inactive rail lines located within 1,500 feet of proposed or existing school sites.
- Identify all natural gas and hazardous liquid pipelines crossing or located within railroad track easements that lie within 1,500 feet of proposed or existing school sites.
- Identify track characteristics, including whether it is single or double track, curvature, track gradient, switching equipment, signage, and warning systems.
- Identify locations and characteristics of crossings, including type (vehicular or pedestrian), relationship to rail line (at grade, elevated, or below grade), and accident history.
- Identify rail line operational information, including type of rail traffic (passenger, freight, or both), type of cargo (hazardous and/or non-hazardous), frequency of train traffic, length of trains, speed, and track maintenance schedule (if available).
- Conduct an incident analysis, using accident data provided by federal and state agencies (National Transportation Safety Board, Federal Railroad Administration, Federal Transportation Administration, and California Public Utilities Commission) to determine the probability of an accident occurring within 1,500 feet of the proposed school site.
- Conduct an additional site-specific analysis of potential risk to occupants of the proposed school site, based on rail line characteristics, train speeds, presence of at-grade vehicle crossings, etc.

1.5 ASSESSMENT METHODOLOGY

The RSS process is composed of three steps. The first step is to collect existing information on the rail line and conduct a qualitative safety assessment, based on rail traffic, type of cargo, train speed, and highway-rail crossings. The second step involves calculating the probability of an accident or derailment on the rail line within a 1,500-foot radius of the school. Finally, the accident/derailment probability is modified to take into account site-specific conditions, including accident data for the railroad owner/operator and the probability that the students would be in school when an accident occurs. The results are used to determine the likelihood that a railroad incident would result in an unacceptable safety hazard to occupants of the school.

Figure 1 - Site Location and Railroad Location Map



School Boundary

1,500-ft Radius

At/Above-Grade Railroad Crossing

0 1,000
Scale (Feet)

Source: ESRI, 2018

PlaceWorks

1. Introduction

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2. Railroad Operating Conditions

2.1 RAILROAD LOCATION AND OWNERSHIP

There is one railroad right-of-way that contains two mainline tracks within 1,500 feet of the school site. Burlington Northern Santa Fe Railway owns the double track rail lines within a 100-foot wide easement immediately north of the school site. The closest track is approximately 30 feet from the school's property boundary at its nearest location. The tracks are oriented in a southwest-to-northeast direction with both freight and passenger traffic along this line.

BNSF owns and operates freight traffic associated with the San Bernardino-Redondo Junction Line of the San Bernardino Subdivision on the tracks near the school site. Additionally, there is Metrolink and Amtrak passenger train traffic on these tracks. The Southern California Regional Rail Authority (SCRRA) operates the Inland Empire-Orange County Line and the 91/Perris Valley Line of the Metrolink commuter rail system along the railroad easement at this location. The Inland Empire-Orange County Line provides service from Downtown San Bernardino to Oceanside, and the 91/Perris Valley Line provides service from LA Union Station to Perris. The nearest station to the site is the Metrolink Riverside – La Sierra Station, which is approximately 2.4 mile southwest from the site. Additionally, Amtrak Southwest Chief operates passenger trains in the late evening/early morning hours along the railroad easement at this location.

There is one at-grade crossing within 1,500 feet of the site at Jackson Street, approximately 40 feet from the school site's northwest corner and one above-grade crossing at Monroe Street, which is approximately 1,420 feet northeast from the school's property boundary. The location of the rail lines and the highway-rail crossings with respect to the school site are shown in Figure 1.

2.2 SITE RECONNAISSANCE

PlaceWorks conducted a site reconnaissance on November 26, 2018 during typical afternoon school hours (12:40 pm to 4:40 pm). Photographs documenting the condition of the tracks and highway-rail crossings are provided in Appendix A. Table B in Appendix B provides more detailed observations from the site reconnaissance, including the number of locomotives, the number and type of cars, direction, and approximate speed. The reconnaissance consisted of evaluating the following:

- Train traffic
- Track condition
- Presence of spurs
- Highway-rail crossings
- Safety devices at each crossing (signage, flashing lights, and gates)
- Potential for trespass by students onto the railroad easement during travel to and from school.

2. Railroad Operating Conditions

2.2.1 Track Conditions

The railroad easement north of the site is approximately 100 feet wide and contains two main line BNSF tracks. The tracks are constructed of continuously welded steel, are maintained to Class 4 standards, and appeared to be in good condition at the time of the site reconnaissance. The tracks are relatively straight north of the school site but just east of the site the track curves gently to the northeast.

The BNSF track is part of the San Bernardino Subdivision, which extends from Redondo to San Bernardino. The Federal Rail Administration (FRA) website states that there are a total of 78 trains per day that pass by the school site on this section of track. BNSF operates approximately 51 freight trains per day, Metrolink operates 25 passenger trains per day, and Amtrak operates 2 passenger trains per day along the tracks next to the school site. According to the latest BNSF timetable, the maximum speed for passenger trains along this section of tracks is 55 mph and freight trains are limited to 50 mph unless the train exceeds 10,000 feet in length in which case the maximum speed is 45 mph.

A total of 12 trains were observed during PlaceWorks' site reconnaissance on November 26, 2018 between the hours of 12:40 pm to 4:40 pm. Of the observed trains, 9 were BNSF freight trains. The majority of freight traffic is intermodal trains (68%) along the San Bernardino Subdivision. Eight of the nine freight trains observed during PlaceWorks' site reconnaissance were intermodal trains with single and double stack container cars. The other freight train was a BNSF ethanol unit train consisting entirely of tanker cars that most likely was headed to the West Colton terminal for offloading. The freight trains observed during the site reconnaissance consist of two to five locomotives and 70 to 140 intermodal container cars and/or tank cars, with an average estimated speed of 43 mph. Note that the estimated speeds of the trains are approximations, based on the train length and time it takes for the train to past by a fixed location.

The latest Metrolink schedule (December 13, 2018) for the Inland Empire-Orange County Line and 91/Perris Valley Line shows a total of 25 trains per weekday passing by the site. However, only 8 of those trains travel by the site during typical school hours (7:00 am to 4:00 pm), all associated with the Inland Empire-Orange County Line. The SCRRA reports average speeds of 39 mph along the Inland Empire-Orange County Metrolink line.

Three Metrolink passenger trains were observed passing by the school site during PlaceWorks' site reconnaissance. The frequency and times of day the Metrolink trains were observed passing the site were consistent with the latest Metrolink schedule. Although the maximum allowable passenger train speed along this section of tracks near the school site is 55 mph, the estimated speed during the site reconnaissance was 48 mph. Note that the estimated speeds of the trains are approximations, based on the train length and time it takes for the train to pass by a fixed location. Table B in Appendix B provides more detailed observations from the site reconnaissance.

The Metrolink trains observed during the site reconnaissance consisted of one locomotive and 6 bi-level coach cars. Two of the Metrolink trains had the new Tier 4 locomotives (EMD F125) equipped with Positive Train Control (PTC); one of the trains had the older EMD F59PH locomotive. The trains are operated in a push-pull mode, with the westbound Metrolink trains being pushed by a locomotive at the rear of the train

and a cab car at the front of the train, and the southbound trains being pulled by a locomotive at the front of the train.

Positive Train Control (PTC) technology is currently being installed on the Inland Empire-Orange County Line and 91/Perris Valley line, as well as the rest of the Metrolink rail network, which reduces train-to-train collisions, over-speed derailments, and casualties or injuries to roadway workers. The PTC system involves a collision avoidance system using GPS equipment on the locomotive, data radio at the control center, and a bi-directional wireless data link between the train and control center. Warnings and overrides are made if the train exceeds established parameters, or a potential danger of collision is identified.

Additionally, two Amtrak Southwest Chief passenger trains cross Jackson Street in the evening/early morning hours when students and staff are not present at the school site. The Amtrak Southwest Chief trains typically consist of two locomotives and 11 passenger cars. However, because these trains do not travel during school hours or during the hours when students are traveling to or from the school site, no further analysis of the Amtrak trains is included in this rail safety study.

During PlaceWorks' site reconnaissance, the at-grade Jackson Street crossing was monitored during typical afternoon commute hours (12:40 pm to 4:40 pm) to determine pedestrian usage and to see whether pedestrians were trespassing within the railroad right-of-way. A total of 185 pedestrians were observed between 12:30 pm and 4:40 pm; 171 students and 14 adults. In the vicinity of the school site, there is chain link fencing on the south side of the railroad easement and a concrete block wall along the north side of the easement to restrict access and minimize the potential for trespassing. No students were seen in the railroad right-of-way or trespassing along the tracks and a crossing guard was stationed at the crossing between 2:40 pm and 3:30 pm. However, eight adult pedestrians were observed trespassing during the observation period walking parallel to the tracks within the railroad right-of-way.

There is another highway-rail crossing at Monroe Street. However, it is grade separated with the railroad tracks passing over the roadway. Therefore, there is no potential for trespassing within the right-of-way or safety issues related to pedestrian usage at this location.

2.2.2 Highway-Rail Crossings

There is one at-grade highway-rail crossing at Jackson Street and one grade-separated crossing at Monroe Street that are within 1,500 feet of the school site. The at-grade Jackson Street crossing creates a risk for trespass. However, the tracks are fenced on both sides of the easement, making trespass unlikely near the school site. Detailed information regarding the at-grade crossing is provided in Appendix B and summarized herein:

Jackson Street Crossing – Post Mile: 0015.825, DOT: 026507V

The Jackson Street at-grade crossing is approximately 40 feet northwest of the school site and crosses the railroad tracks at a 90-degree angle. Jackson Street is a four-lane street at this location. At the intersection of the track and roadway, there are train-activated quad automatic gates, mast-mounted flashing lights, bells, crossbucks, signage, and pavement markings. The crossing surface between the tracks is concrete.

According to FRA records, there were three accidents at this crossing in the past with one fatality. The accident record is provided in Appendix B and summarized herein:

Table 1 Accident Reports – Jackson Street

Accident Date	Vehicle Involved	Cause of Accident	Number of Injuries	Number of Fatalities
04/20/2010	Auto	Stopped on crossing and struck by BNSF train	0	0
04/22/2009	Pedestrian	Moving over crossing and struck by Metrolink train	0	1
01/12/1992	Auto	Moving over crossing and struck by ATSF train	0	0

Crossing Accident Prediction

The accident prediction for this crossing was determined, according to the protocol specified in the Department of Transportation (DOT) Railroad-Highway Crossing Handbook (DOT, 2007). The prediction is based on the physical and operating characteristics of the crossing as well as five years of accident history data. The results are provided in Appendix B and summarized herein:

Table 2 Crossing Accident Prediction

Crossing Location	Probability of Train-Vehicle Accident
Jackson Street	0.048

The available data indicate that the probability of a vehicle-train collision at the Jackson Street crossing, which is the only at-grade crossing within 1,500 feet of the school site, within a one year time frame is 4.8 percent.

Monroe Street Crossing – Post Mile: 0015.289, DOT: 026505G

The Monroe Street crossing is about 1,420 feet northeast of the school site and is grade separated with a roadway underpass. There are no safety devices associated with this crossing because of the grade separation and no accidents have been reported, as per the FRA records.

The attendance area for Arlington High School includes the area north of the railroad tracks. Therefore, a portion of high school students would have to cross the tracks or enter the railroad right-of-way to reach the school site. During PlaceWorks' site reconnaissance, a total of 185 pedestrians were observed using the Jackson Street crossing, including 171 students. Additionally, a crossing guard was stationed at the crossing during the site reconnaissance between 2:40 pm and 3:20 pm. No students were observed short-cutting across the track or trespassing within the railroad easement.

In the vicinity of the school site, the railroad right-of-way is fenced on the north and south sides of the easement which restricts the potential for trespassing within the easement. However, there is unrestricted access to the railroad right-of-way at the Jackson Street crossing, and the Safe Routes to School program should address safety precautions to be used by students traveling to and from the school site.

2.3 HAZARDOUS MATERIAL TRANSPORT

Metrolink is a commuter rail line and does not ship hazardous materials. However, BNSF has the authorization to transport all types of cargo, based on Department of Transportation (DOT) and FRA

regulations, which includes hazardous materials and chemicals. The freight traffic along the tracks near the school site is fairly heavy; nine freight trains were observed during PlaceWorks' site reconnaissance within a 4-hour period between 12:40 pm and 4:40 pm. It is therefore possible that 18 freight trains could pass by the school site during typical school hours (7:00 am to 4:00 pm). Most of the freight trains along this line are associated with intermodal transport and are carrying single or double-stacked containers. Eight of the nine freight trains observed during PlaceWorks' site reconnaissance were intermodal transport trains. Since all of the transported goods are shipped within enclosed container units, the possibility of a hazardous material release impacting the school site is minimal.

However, one of the freight trains that passed by the site during the site reconnaissance consisted entirely of tanker cars that were carrying ethanol. If the freight train was involved in a derailment and one of the tanker cars released its contents, it could potentially impact the school site. However, the transport of hazardous materials and chemicals constitutes less than 4% of the total freight traffic in California (AAR, 2017). Additionally, no hazardous material releases from trains traveling within Riverside County have been reported in the last ten years (FRA, 2018). It should be noted that accidents involving ethanol trains are extremely rare and as new tank cars adhering to the DOT 117 safety standard are put into service, the safety record will continue to improve.

2.4 HIGH PRESSURE NATURAL GAS AND HAZARDOUS LIQUID PIPELINES

Information obtained from the National Pipeline Mapping System (NPMS) and the analysis provided in the Pipeline Safety Hazard Assessment (PlaceWorks, 2018) indicate that there are no hazardous liquid or natural gas pipelines located within the BNSF railroad right-of-way and no pipelines cross the railroad rights-of-way within 1,500 feet of the school site. Since no pipelines are located within or cross the railroad easements, there is no possibility of a railroad derailment causing pipeline damage or rupture.

2.5 RAILROAD NOISE

Railroad noise levels are dependent on the type of track, number of locomotives, number of cars, speed of trains, and the presence of at-grade crossings that require the engineer to sound warning horns/whistles. Noise sources associated with freight and passenger trains include:

- Wheel/Rail Rolling Noise. This results from the interaction of steel wheels rolling on steel rails. It increases in direct proportion to train speed and increases at locations with special track work, such as crossovers and turnouts. The BNSF tracks in the vicinity of the school site are straight with no crossovers or turnouts. The average speed of freight and passenger trains in the vicinity of the school site was assumed to be 44 mph. The tracks in the vicinity of the school site are constructed of continuously welded steel, which greatly reduces the noise of passing trains.
- Train Horn. The CPUC requires a train audible warning to be sounded in advance of every at-grade crossing. The train horns must be between 96 and 110 decibels at 100 feet. However, the City of Riverside implemented Quiet Zones in 2016 for the 7-stretch of BNSF railway line between Mary Street to the northeast and Buchanan Street to the southwest of the school site (City of Riverside, 2018). No

train horn noises were observed during PlaceWorks' site reconnaissance. Thus, train horn noise was eliminated from further evaluation.

- Grade Crossing Bells. The CPUC also requires that at-grade crossings be equipped with bells that ring when a train is approaching the crossing. Because this noise source is minor compared to wheel/rail rolling noise, this noise source was not subject to further evaluation.

The methodology presented in the Transit Noise and Vibration Impact Assessment (FTA, 2006) was used to calculate potential noise levels at the school site. For this evaluation, it was assumed that BNSF freight traffic consisted of 18 trains per day during school hours traveling at 43 mph consisting of a maximum of five locomotives and 140 freight cars. Likewise, it was assumed that Metrolink train traffic consists of 8 trains per day when school is in session, traveling at 46 mph, and consisting of one locomotive and 6 passenger cars. The nearest railroad track is approximately 700 feet north of the school's nearest classroom building. The CREATE Railroad Noise Model spreadsheet (HMMH, 2006) was used to estimate sound levels for these trains at the nearest classroom building. A Category 3 Land Use (institutional land use with primarily daytime and evening uses, such as schools, libraries, churches, and theaters) was used for the analysis.

The results are provided in Appendix C and are summarized as follows:

- BNSF freight trains and Metrolink passenger trains (maximum 4 trains/hour during school hours) = 61 dBA L_{eq} (1 hour) at nearest school building

The CalGreen building code has applicable noise standards for non-residential buildings (State of California, 2017). The building code has a performance standard that the interior noise environment attributable to exterior sources does not exceed an hourly equivalent noise level (Leq – 1 hr) of 50 dBA. Assuming a reduction of 15 dBA for interior noise levels as compared to exterior noise levels and conservatively assuming that the windows in the nearest classroom at 700 feet from the nearest track are open, the highest predicted noise level at the nearest classroom to the tracks is 61 dBA – 15 dBA = 46 dBA Leq (1 hr). This noise level is below the CalGreen interior noise standard of 50 dBA Leq (1 hr). Therefore, noise from trains traveling along the railroad tracks are not anticipated to adversely impact students and staff at the school site.

2.6 POTENTIAL FOR TRESPASS OVER THE RAILROAD EASEMENT

A potential safety issue is the trespass of students in the railroad easements during their travel to and from school. Arlington High School's specified attendance area includes residences south and north of the railroad tracks. Thus, some of the high school students would have to cross the tracks to reach the school site. However, there is a concrete block wall on the north side of the track adjacent to the residential development to the north and a chain link fence on the south side of the track adjacent to the school site. The presence of residences and concrete walls limits the potential for short-cutting across the track in these areas near the school site. The Jackson Street at-grade crossing is equipped with chain link fencing on either side of the street to partially restrict access to the railroad easement at the crossing location.

During PlaceWorks' site reconnaissance, 171 students and 14 adults were observed using the Jackson Street crossing between the hours of 12:30 pm and 4:40 pm. A crossing guard was stationed at the crossing between

2:40 pm and 3:30 pm. None of the students were seen trespassing within the railroad right-of-way or short-cutting across the tracks. The potential for trespass as a route to school is low due to the presence of crossing guard, fencing around the tracks in the vicinity of the school site, and limited access to the tracks at other locations.

However, accidents involving trespassers on railroad easements account for more than 400 trespasser fatalities and 500 related injuries every year (Metro Magazine, 2015). Accidents involving trespassers on railroad easements accounted for 123 fatalities and 91 injuries in California in 2017 (CPUC, 2018). Therefore, the potential danger of trespass on the railroad track or engaging in unsafe crossing practices at intersections should be addressed as part of the Safe Routes to School program.

2. Railroad Operating Conditions

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3. Incident Analysis and Determination of Risk

The probability that an accident or derailment could occur along the section of track within 1,500 feet of the school site was determined based on railroad accident rates and site-specific conditions. The Amtrak passenger trains were not included in this analysis because they travel during the late evening/early morning hours when students and staff are not in transit or in attendance at the school. Therefore, an accident or derailment involving Amtrak passenger trains would not impact the school site.

3.1 RAILROAD ACCIDENT RATES

Nationwide accident and derailment rates from the FRA for the last five years of record were used to determine the probability of heavy rail accidents along the BNSF transit system (FRA, 2018). The results are summarized in Table 3.

Table 3 Nationwide BNSF Accident and Derailment Rates

Year	Total Train Miles (millions)	Total Train Accidents	Total Derailments	Derailment Probability	Accident Rate/Train Mile	Derailment Rate/Train Mile
2013	185.2	1,355	282	0.21	7.3E-06	1.5E-06
2014	190.0	1,409	301	0.21	7.4E-06	1.6E-06
2015	185.7	1,335	316	0.24	7.2E-06	1.7E-06
2016	171.2	1,260	265	0.21	7.4E-06	1.5E-06
2017	179.7	1,270	272	0.21	7.1E-06	1.5E-06
Average	**182.4**	**1,326**	**287**	**0.22**	**7.3E-06**	**1.6E-06**

The FRA website was also accessed to determine the railroad accident and derailment rates for passenger trains operated by Metrolink (FRA, 2018). The results are summarized in Table 4.

Table 4 Statewide Metrolink Accident and Derailment Rates

Year	Total Train Miles (millions)	Total Train Accidents	Total Derailments	Derailment Probability	Accident Rate/Train Mile	Derailment Rate/Train Mile
2013	2.80	67	1	0.015	2.4E-05	3.6E-07
2014	2.71	51	1	0.020	1.9E-05	3.7E-07
2015	2.67	53	1	0.019	2.0E-05	3.7E-07
2016	2.74	86	4	0.047	3.1E-05	1.5E-06
2017	2.77	64	2	0.031	2.3E-05	7.2E-07
Average	**2.74**	**64**	**2**	**0.028**	**2.3E-05**	**6.6E-07**

Next, the railroad accident and derailment rates were determined using FRA data for BNSF main line tracks and Metrolink trains in Riverside County over a 5-year period from 2013 to 2017. The information is summarized in Table 5.

3. Incident Analysis and Determination of Risk

Table 5 BNSF and Metrolink Accidents and Derailments for Riverside County

Year	2013	2014	2015	2016	2017	Total
BNSF – Riverside County						
Accidents	4	6	8	10	10	**38**
Accidents on Main Track	4	6	8	9	10	**37**
% of Total Accidents on Main Track	100%	100%	100%	90%	100%	**97%**
Derailments	0	0	1	1	0	**2**
% of Accidents as Derailments	0%	0%	13%	10%	0%	**5%**
Total Hazardous Material Releases	0	0	0	0	0	**0**
% of Accidents as Hazardous Material Release	0%	0%	0%	0%	0%	**0%**
Metrolink – Riverside County						
Accidents	0	0	0	1	0	**1**
Accidents on Main Track	0	0	0	0	0	**0**
% of Total Accidents on Main Track	0%	0%	0%	0%	0%	**0%**
Derailments	0	0	0	1	0	**1**
% of Accidents as Derailments	0%	0%	0%	100%	0%	**100%**

As can be seen from these data, 38 accidents have occurred along BNSF tracks within Riverside County in the last five years. The majority (37 of 38) of the accidents involved a BNSF trains traveling on a main line track and two derailments occurred. Since the track in close proximity to the school site is a main line track, the calculated nationwide accident rate per train mile for BNSF of 7.3E-06 was modified to account for the accident rate on main lines in Riverside County by multiplying by a factor of 0.97. The Riverside County derailment rate per train mile of 0.05 was used in the analysis for BNSF main lines near the school site because this rate is less than the nationwide derailment probability of 0.22. There were no releases of hazardous materials during any of the BNSF freight train accidents during this five-year period.

Only one accident has occurred on Metrolink main tracks within Riverside County in the last five years. The accident occurred on a yard track with switching operations. No derailments on main line tracks were reported during this time period. Because of the very low frequency of accidents in Riverside County for Metrolink passenger trains and the fact that there were no accidents on main line tracks, a site-specific adjustment to the Metrolink average accident and derailment rates could not be made. However, it should be noted that use of the Statewide Metrolink rates on all of the lines in southern California will overestimate the probability of accidents and derailments in the Riverside County area and in the vicinity of the school site. Releases of hazardous materials are not relevant for Metrolink systems since they only carry passengers.

The probability of a hazardous material release if an accident were to occur could not be calculated from the data reported above, because there were no hazardous material releases in Riverside County along BNSF tracks over the past five years. Therefore, the following equation was used to determine the probability of a hazardous material release:

$$P_{HAZ} = P_D \times P_T \times P_R$$

Where P_{HAZ} = probability of a derailment resulting in a hazardous material release
P_D = annual BNSF derailment rate = 3.6E-07
P_T = probability of train carrying hazardous materials (0.225 from AAR analysis)
P_R = probability of hazardous material release = 0.0029x + 0.0243 (Barkan et al, 2003)
x = speed of train in mph = 43 mph

The calculated probability of a hazardous material release is 1.2×10^{-8}. The actual rate in Riverside County is expected to be much less than this value due to the limited transport of hazardous materials in this area.

Based on the information presented above, the accident and derailment rates used for this risk assessment are as follows:

- Main line accident rate for BNSF freight trains in Riverside County – 7.1×10^{-6}
- Main line derailment rate for BNSF freight trains in Riverside County – 3.6×10^{-7}
- Probability of a hazardous material release – 1.2×10^{-8}
- Main line accident rate for Metrolink passenger trains in Riverside County – 2.3×10^{-5}
- Main line derailment rate for Metrolink passenger trains in Riverside County – 6.6×10^{-7}

3.2 SITE SPECIFIC INCIDENT ANALYSIS

The likelihood of an accident or derailment occurring within a 1,500-foot radius of the school during school hours was determined using the calculated accident and derailment rates presented in Section 3.1. The site reconnaissance conducted by PlaceWorks and the FRA information indicate that the number of trains passing by the school site is likely to be 26 (18 BNSF freight trains and 8 Metrolink trains) during typical school hours (7:00 am to 4:00 pm). The length of the rail lines within a 1,500-foot radius of the school site was calculated to be 4,380 feet, or 0.83 mile. The probability of an accident or derailment on the BNSF tracks occurring within a 1,500-foot radius of the school site is calculated as follows:

$$PA = P(A) \times D \times N$$

or

$$PD = P(D) \times D \times N$$

or

$$PH = P(H) \times D \times N$$

Where	PA	=	probability of an accident occurring within a 1,500-foot radius of the school site
	PD	=	probability of a derailment occurring within a 1,500-foot radius of the school site
	PH	=	probability of a hazardous material release occurring within a 1,500-foot radius
	P(A)	=	weighted probability of a BNSF or Metrolink accident per mile per year = 1.2×10^{-5}
	P(D)	=	weighted probability of a BNSF or Metrolink derailment per mile per year = 4.5×10^{-7}
	P(H)	=	probability of a hazardous material release = 1.2×10^{-8}
	D	=	distance along rail tracks within 1,500 feet of the school = 4,380 feet = 0.83 mile
	N	=	number of trains per year, during school attendance hours and days
		=	26 trains per day during school hours x 180 days/year = 4,680 trains/year

The calculated probabilities are:

- Annual probability of a BNSF or Metrolink accident within 1,500 feet of the school site = 4.7×10^{-2}
- Annual probability of a BNSF derailment within 1,500 feet of the school site = 1.8×10^{-3}
- Annual probability of a BNSF hazardous material release within 1,500 feet of the school site = 4.6×10^{-5}

This is equivalent to a BNSF or Metrolink accident in the vicinity of the school site once every 21 years or a derailment once every 570 years. The probability of a hazardous material release happening in the vicinity of the school site is estimated to occur once every 21,700 years.

3.3 ADDITIONAL INCIDENT ANALYSIS

Based on a review of FRA accident reports in Riverside County for the last five years, there have been 37 rail accidents on the BNSF main line. One major concern is the possibility of debris from a derailment impacting the students and staff at the school. A study conducted by the Los Angeles Unified School District (LAUSD) indicated that debris from a derailment typically extends no more than 128 feet (about 1.5 rail car lengths) from the centerline of the track. The nearest BNSF track is approximately 30 feet from the edge of the school site and there are no intervening structures (other than trees, vegetation, and fencing) between the tracks and the school property. Therefore, there is the potential of debris from a derailment reaching the campus site. A more quantitative derailment risk analysis was conducted based on the following parameters:

- Distance along track where the hazard footprint (derailment debris) could reach the project site.
- Probability that students or staff would be at the campus when the accident/derailment occurs.

The derailment segment distance can be calculated using the following equation:

$$L = 2[D^2 - X^2]^{1/2} + SF$$

Where L = railroad segment from which derailment debris could reach the campus property line (ft)
D = distance of concern (debris impact area) = 128 feet
X = distance from railroad to campus property line = 30 feet
SF = campus frontage length parallel to railroad easement = 1,260 feet

The resultant derailment segment distance (L) is calculated to be 1,509 feet. Next, the probability that staff or students would be present at the campus when a train derails was calculated. The school attendance time was conservatively assumed to be 9 hours per day for 180 days per calendar year. This yields an annual attendance rate of 18 percent. The total derailment rate per mile per year used for BNSF and Metrolink trains is 4.5×10^{-7}. Then the site-specific probability of a derailment impacting the site can be calculated as follows:

$$P_{ss} = R_D \times L \times S \times N$$

Where P_{ss} = Site-specific probability of a derailment impacting the campus site
R_D = Derailment rate/mile/year (BNSF and Metrolink) = 4.5×10^{-7}
L = Rail segment from which derailment debris could impact the site = 1,507 feet = 0.29 mile
S = Probability that staff or students are at the campus when the incident occurs = 0.18
N = Number of trains/year = 4,680 trains/year

3. Incident Analysis and Determination of Risk

The site-specific derailment probability is estimated to be 1.1×10^{-4}. This equates to one rail derailment near the school campus every 9,200 years that could potentially impact the school with debris. This analysis assumes that there are no barriers between the railroad right-of-way and the campus site to minimize potential impacts. The presence of chain-link fencing, trees, and vegetation along the school's property boundary would limit the entry of derailment debris.

Another concern is the possibility of a derailment resulting in the release of hazardous materials that could impact students and staff at the school. As reported in Section 3.2, there have been no hazardous material releases from BNSF freight trains in Riverside County for the past five years of record. Additionally, the calculated probability of a hazardous material release happening in the vicinity of the school site is estimated to occur once every 21,700 years. In general, the transport of hazardous materials and chemicals does not constitute a major portion of the total freight traffic in California. In 2015, intermodal transport consisted of 70% of the total freight traffic originating in California and chemical transport was less than 4% of the total freight traffic (AAR, 2017). Also, the hazardous materials accident-caused release rate has declined by nearly 90% since 1980 (Barkan et al, 2003). Therefore, the probability of a hazardous material release impacting students and staff is considered low in the unlikely occurrence of a derailment near the school site.

3. Incident Analysis and Determination of Risk

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4. Findings and Conclusions

Findings

- The Burlington Northern Santa Fe (BNSF) Railway Company owns the double mainline tracks located adjacent and north of the school site and operates freight traffic along these lines. The closest track is approximately 30 feet from the school's property boundary at its nearest location. Metrolink and Amtrak have trackage rights to run passenger trains along these tracks.
- The BNSF tracks are Class 4 with continuously welded rail. Trains passing by the school site were estimated to be traveling at approximately 43 mph.
- There are approximately 51 BNSF freight trains that pass by the school site daily. A total of 18 BNSF trains were assumed to pass the site during typical school hours of 7:00 am to 4:00 pm.
- During PlaceWorks' site reconnaissance on November 26, 2018 between the hours of 12:40 pm and 4:40 pm, nine BNSF freight trains and three Metrolink passenger trains were observed passing the Jackson Street at-grade crossing. The number of Metrolink trains and times were consistent with the latest Metrolink schedule.
- The BNSF freight trains typically consisted of two to five locomotives and 70 to 140 freight cars.
- Eight of the nine BNSF freight trains were intermodal transport trains with single- and double-stacked containers. The other BNSF freight train was an ethanol unit train with tanker cars.
- The Metrolink commuter trains typically consisted of one locomotive and six bi-level passenger cars.
- There are 25 Metrolink commuter trains passing by the school site during the hours between 4:50 am and 8:00 pm, according to the latest Metrolink schedule. A total of 8 Metrolink trains were assumed to pass the site during school hours of 7:00 am to 4:00 pm.
- The Amtrak Southwest Chief operates two passenger trains per day that pass by the school site during the hours between 7:00 pm and 6:00 am, according to the latest Amtrak schedule
- Because Amtrak trains use these tracks during evening and early morning hours when students and staff are not present at the school site, no further analysis was conducted for these trains.
- There is one at-grade crossing within 1,500 feet of the school site at Jackson Street, which is approximately 40 feet northwest of the school site, and one above-grade crossing at Monroe Street, which is approximately 1,420 feet northeast from the school's property boundary. During PlaceWorks' site reconnaissance, 171 students and 14 adults were seen using the Jackson Street crossing. A crossing guard was stationed at the crossing between 2:40 pm and 3:30 pm. No students were observed trespassing within the railroad easement.

Conclusions

- The potential for trespass as a route to school is low due to the presence of a crossing guard during typical school commuting hours, fencing around the tracks in the vicinity of the school site, and limited access to the tracks at other locations. There is a concrete block wall on the north side of the track

4. Findings and Conclusions

adjacent to the residential development to the north which limits the potential for short-cutting across the track in these areas near the school site

- The Jackson Street at-grade crossing has appropriate safety devices, including quad crossing gates, which minimize the potential for vehicle/train or pedestrian/train interaction.
- The probability of a BNSF or Metrolink accident or derailment occurring near the school site is calculated to be 4.7×10^{-2} and 1.8×10^{-3}, respectively. This is equivalent to a BNSF or Metrolink accident in the vicinity of the school site once every 21 years or a BNSF or Metrolink derailment once every 570 years.
- The probability of debris impacting the school site is calculated to be is estimated to be 1.1×10^{-4} from a site-specific derailment. This is equivalent to one rail derailment near the school campus every 9,200 years that could potentially impact the school with debris. The presence of chain-link fencing, trees, and vegetation along the school's property boundary would minimize the entry of derailment debris.
- The noise level from BNSF freight trains and Metrolink passenger trains in the interior of the nearest school building was estimated to be 46 dBA Leq (1 hr), which is below the CalGreen performance standard of 50 dBA Leq (1 hr).

In summary, there are no unusual circumstances present that would present special risks to students or staff at the school site from operations along the BNSF railroad tracks.

5. Recommendations

Based on the analysis presented in the previous sections, there are no mitigation measures or special provisions required at this school site. However, there are numerous BNSF and Metrolink trains traveling within 1,500 feet of the school site before, during, and after school hours. Therefore, pedestrian safety and the dangers of trespassing in railroad right-of-ways should be addressed in the Safe Routes to School program.

SCRRA/Metrolink has developed a Safety Education Program as a service to schools and communities along Metrolink lines. The Safety Education Program incorporates Operation Lifesaver, which is a non-profit international public education program established in 1972 to end collisions, death, and injuries at highway-rail crossings and on railroad right-of-ways. The program addresses rail safety and teaches students, at age-appropriate levels, to understand rail signage, the importance of avoiding the railroad easements, and safe driving skills in the vicinity of railroads. Operation Lifesaver provides free presentations to schools and community groups, and offer free programs to students that attend schools within a 0.5-mile radius of a railroad track.

5. Recommendations

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6. References

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Appendix A. Photographic Essay

Appendix

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PLACEWORKS

PHOTO ESSAY

Client Name: Riverside Unified School District

Site Location: Arlington High School

Project No.: RIV-24.0

Photo No:	**Date:**
3	11/26/2018

Description:

View looking to the east of the railroad right-of-way and south tracks, which are fenced off on both sides of easement to limit the potential for short-cutting across the track. School playfields are visible in background of photograph.

Photo No:	**Date:**
4	11/26/2018

Description:

The photograph shows active crossing signals, lights, roadway signage, and traffic barriers. View looking to the northwest.

PLACEWORKS

PHOTO ESSAY

Client Name: Riverside Unified School District

Site Location: Arlington High School

Project No.: RIV-24.0

Photo No:	**Date:**
5	11/26/2018

Description:

Crossing guard stationed at railroad crossing from 2:40 PM to 3:30 PM.

Photo No:	**Date:**
6	11/26/2018

Description:

Additional signage marking the rail crossing.

PLACEWORKS

PHOTO ESSAY

Client Name: Riverside Unified School District

Site Location: Arlington High School

Project No.: RIV-24.0

Photo No:	**Date:**
7	11/26/2018

Description:

A BNSF freight train observed crossing Jackson Street with double stack containers cars.

Photo No:	**Date:**
8	11/26/2018

Description:

Metrolink passenger train observed crossing Jackson Street, heading east.

PLACEWORKS

PHOTO ESSAY

Client Name: Riverside Unified School District

Site Location: Arlington High School

Project No.: RIV-24.0

Photo No:	**Date:**
9	11/26/2018

Description:

A BNSF locomotive observed crossing Jackson Street, headed east.

Photo No:	**Date:**
10	12/18/2018

Description:

View looking to the northwest at the Monroe Street railroad crossing. The photo shows the above-grade crossing for vehicles and pedestrian pathways. Photograph courtesy of Google Earth Pro street view (version 7.3.2.5491, 2018).

Appendix B. Highway-Rail Crossing Data

Appendix

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TABLE B

Jackson Street Crossing - Site Reconnissance

11/26/2018 - 12:40 PM to 4:40 PM

Jackson Street Crossing (Double Track owned by BNSF)									
time	owner/ operator	# locomotives	locomotive number	# freight cars	# passenger cars	elapsed time (s)	direction	speed (mph)	notes
12:48 PM	Metrolink	1			6	8	Westbound	48	
1:54 PM	Metrolink	1			6	8	Eastbound	48	
2:11 PM	BNSF	5	7772	98		106	Eastbound	40	
2:22 PM	BNSF	3	8083	103		92	Westbound	47	
2:46 PM	BNSF	4	7442	70		67	Westbound	46	Crossing Guard present from 2:40 PM to 3:30 PM to help students at railway crossing.
3:09 PM	Metrolink	1			6	8	Westbound	48	
3:16 PM	BNSF	2	6512	77		97	Eastbound	34	
3:30 PM	BNSF	3	4279	120		132	Westbound	38	
3:37 PM	BNSF	2	113			3	Westbound	34	
4:21 PM	BNSF	4	7580	94		90	Westbound	45	
4:31 PM	BNSF	4	7375	140		123	Eastbound	48	
4:37 PM	BNSF	3	6702	135		108	Westbound	53	
								44	**Average**

Scouting Observations - Jackson Street
One at-grade crossing with signage.
BNSF track appears to be continuously welded rail (CWR).
During observation, 185 pedestrians were seen using the crossing (171 students, and 14 non-students). Students were all using the crossing safely.
Crossing Number: 026507V

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date *(MM/DD/YYYY)*: 04 / 11 / 2017

B. Reporting Agency: ☐ Railroad ☐ Transit ☒ State ☐ Other

C. Reason for Update *(Select only one)*: ☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction

D. DOT Crossing Inventory Number: 026507V

Part I: Location and Classification Information

1. Primary Operating Railroad: BNSF Railway Company [BNSF]

2. State: CALIFORNIA

3. County: RIVERSIDE

4. City / Municipality: ☒ In ☐ Near RIVERSIDE

5. Street/Road Name & Block Number: JACKSON ST *(Street/Road Name)* | * *(Block Number)*

6. Highway Type & No.: ls

7. Do Other Railroads Operate a Separate Track at Crossing? ☐ Yes ☒ No
If Yes, Specify RR: _____, _____, _____, _____

8. Do Other Railroads Operate Over Your Track at Crossing? ☒ Yes ☐ No
If Yes, Specify RR: ATK, SCAX, _____, _____

9. Railroad Division or Region: ☐ None CALIFORNIA

10. Railroad Subdivision or District: ☐ None SAN BERNARDINO

11. Branch or Line Name: ☐ None SAN BERN-REDO J

12. RR Milepost: _____ | 0015.825 | _____ *(prefix)* | *(nnnn.nnn)* | *(suffix)*

13. Line Segment *: 7602

14. Nearest RR Timetable Station *: may

15. Parent RR *(if applicable)*: ☒ N/A

16. Crossing Owner *(if applicable)*: ☐ N/A BNSF

17. Crossing Type: ☒ Public ☐ Private

18. Crossing Purpose: ☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.

19. Crossing Position: ☒ At Grade ☐ RR Under ☐ RR Over

20. Public Access *(if Private Crossing)*: ☐ Yes ☐ No

21. Type of Train: ☒ Freight ☐ Transit ☒ Intercity Passenger ☐ Shared Use Transit ☒ Commuter ☐ Tourist/Other

22. Average Passenger Train Count Per Day: ☐ Less Than One Per Day ☒ Number Per Day 27

23. Type of Land Use: ☐ Open Space ☐ Farm ☒ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number? ☐ Yes ☒ No If Yes, Provide Crossing Number _____

25. Quiet Zone *(FRA provided)*: ☐ No ☒ 24 Hr ☐ Partial ☐ Chicago Excused Date Established 11/17/2016 12:00:

26. HSR Corridor ID: _____ ☒ N/A

27. Latitude in decimal degrees *(WGS84 std: nn.nnnnnnn)*: 33.916500

28. Longitude in decimal degrees *(WGS84 std: -nnn.nnnnnnn)*: -117.43254

29. Lat/Long Source: ☒ Actual ☐ Estimated

30.A. Railroad Use *:

31.A. State Use *: CPUC 002B-15.80

30.B. Railroad Use *:

31.B. State Use *:

30.C. Railroad Use *:

31.C. State Use *:

30.D. Railroad Use *:

31.D. State Use *:

32.A. Narrative *(Railroad Use)* *:

32.B. Narrative *(State Use)* *:

33. Emergency Notification Telephone No. *(posted)*: 800-832-5452

34. Railroad Contact *(Telephone No.)*: 817-352-1549

35. State Contact *(Telephone No.)*: 415-703-3722

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains *(6 AM to 6 PM)*: 39

1.B. Total Night Thru Trains *(6 PM to 6 AM)*: 39

1.C. Total Switching Trains: 0

1.D. Total Transit Trains: 0

1.E. Check if Less Than One Movement Per Day ☐
How many trains per week? _____

2. Year of Train Count Data *(YYYY)*: 2013

3. Speed of Train at Crossing
3.A. Maximum Timetable Speed *(mph)*: 60
3.B. Typical Speed Range Over Crossing *(mph)* From 1 to 60

4. Type and Count of Tracks
Main 2 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection *(Main Track only)*
☒ Constant Warning Time ☐ Motion Detection ☐ AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled? ☒ Yes ☐ No

7.A. Event Recorder ☒ Yes ☐ No

7.B. Remote Health Monitoring ☐ Yes ☒ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)* 04/11/2017	PAGE 2	D. Crossing Inventory Number *(7 char.)* 026507V

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)* 0

2.B. STOP Signs *(R1-1) (count)* 0

2.C. YIELD Signs *(R1-2) (count)* 0

2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
☒ W10-1 2 ☐ W10-3 ____ ☐ W10-11 ____
☐ W10-2 ____ ☐ W10-4 ____ ☐ W10-12 ____

2.E. Low Ground Clearance Sign *(W10-5)*
☐ Yes *(count____)*
☒ No

2.F. Pavement Markings
☒ Stop Lines ☐ Dynamic Envelope
☒ RR Xing Symbols ☐ None

2.G. Channelization Devices/Medians
☒ All Approaches ☒ Median
☐ One Approach ☐ None

2.H. EXEMPT Sign *(R15-3)*
☐ Yes
☒ No

2.I. ENS Sign *(I-13)* Displayed
☐ Yes
☒ No

2.J. Other MUTCD Signs ☒ Yes ☐ No
Specify Type ____ Count ____
Specify Type ____ Count ____
Specify Type ____ Count ____

2.K. Private Crossing Signs *(if private)*
☐ Yes ☐ No

2.L. LED Enhanced Signs *(List types)*
0

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*
Roadway 4
Pedestrian 0

3.B. Gate Configuration
☒ 2 Quad ☐ Full *(Barrier)* Resistance
☐ 3 Quad
☐ 4 Quad ☒ Median Gates

3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*
Over Traffic Lane 0 ☐ Incandescent
Not Over Traffic Lane 0 ☐ LED

3.D. Mast Mounted Flashing Lights *(count of masts)* 6
☐ Incandescent ☒ LED
☒ Back Lights Included ☐ Side Lights Included

3.E. Total Count of Flashing Light Pairs
12

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*
09 / 2016 ☐ Not Required

3.G. Wayside Horn
☐ Yes Installed on *(MM/YYYY)* ____/____
☒ No

3.H. Highway Traffic Signals Controlling Crossing
☐ Yes ☒ No

3.I. Bells *(count)*
4

3.J. Non-Train Active Warning
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☒ None

3.K. Other Flashing Lights or Warning Devices
Count 0 Specify type ____

4.A. Does nearby Hwy Intersection have Traffic Signals?
☐ Yes ☒ No

4.B. Hwy Traffic Signal Interconnection
☒ Not Interconnected
☐ For Traffic Signals
☐ For Warning Signs

4.C. Hwy Traffic Signal Preemption
☐ Simultaneous
☐ Advance

5. Highway Traffic Pre-Signals
☐ Yes ☒ No
Storage Distance * ____
Stop Line Distance * ____

6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes - Photo/Video Recording
☐ Yes – Vehicle Presence Detection
☒ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad
☐ One-way Traffic
☒ Two-way Traffic
☐ Divided Traffic
Number of Lanes 4

2. Is Roadway/Pathway Paved? ☒ Yes ☐ No

3. Does Track Run Down a Street? ☐ Yes ☒ No

4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)* ☒ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* 08 / 2011 Width * 24 Length * 104
☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* ____

6. Intersecting Roadway within 500 feet?
☒ Yes ☐ No If Yes, Approximate Distance *(feet)* 210

7. Smallest Crossing Angle
☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°

8. Is Commercial Power Available? *
☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System
☐ (01) Interstate Highway System
☐ (02) Other Nat Hwy System (NHS)
☒ (03) Federal AID, Not NHS
☐ (08) Non-Federal Aid

2. Functional Classification of Road at Crossing
☐ (0) Rural ☒ (1) Urban
☐ (1) Interstate ☒ (5) Major Collector
☐ (2) Other Freeways and Expressways
☐ (3) Other Principal Arterial ☐ (6) Minor Collector
☐ (4) Minor Arterial ☐ (7) Local

3. Is Crossing on State Highway System?
☐ Yes ☒ No

4. Highway Speed Limit
40 MPH
☒ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*
Year 2016 AADT 7581

8. Estimated Percent Trucks
03 %

9. Regularly Used by School Buses?
☒ Yes ☐ No Average Number per Day 75

10. Emergency Services Route
☒ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by ____ Organization ____ Phone ____ Date ____

Public reporting burden for this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information. According to the Paperwork Reduction Act of 1995, a federal agency may not conduct or sponsor, and a person is not required to, nor shall a person be subject to a penalty for failure to comply with, a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for information collection is 2130-0017. Send comments regarding this burden estimate or any other aspect of this collection, including for reducing this burden to: Information Collection Officer, Federal Railroad Administration, 1200 New Jersey Ave. SE, MS-25 Washington, DC 20590.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION (FRA)

HIGHWAY-RAIL GRADE CROSSING ACCIDENT/INCIDENT REPORT

OMB Approval No. 2130-0500

Name Of	Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad: BNSF Railway Company [BNSF]	1a. BNSF	1b. CA0410203
2. Other Railroad Involved in Train Accident/Incident	2a.	2b.
3. Railroad Responsible for Track Maintenance: BNSF Railway Company [BNSF]	3a. BNSF	3b. CA0410203

4. U.S. DOT-AAR Grade Crossing ID No.: 026507V
5. Date of Accident/Incident: 04/20/10
6. Time of Accident/Incident: 11:40 AM

7. Nearest Railroad Station: RIVERSIDE
8. Division: CALIFORNIA
9. County: RIVERSIDE
10. State Abbr.: 06 Code: CA

11. City (if in a city): RIVERSIDE
12. Highway Name or No.: JACKSON ST
☑ Public ☐ Private

Highway User Involved

13. Type — A. Auto, B. Truck, C. Truck-trailer, D. Pick-up truck, E. Van, F. Bus, G. School Bus, H. Motorcycle, J. Other Motor Vehicle, K. Pedestrian, M. Other (specify) — Code: A

14. Vehicle Speed (est. mph at impact): 0
15. Direction (geographical) 1. North 2. South 3. East 4. West — Code: 3

16. Position 1. Stalled on crossing 2. Stopped on Crossing 3. Moving over crossing 4. Trapped — Code: 2

20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code: 2

Rail Equipment Involved

17. Equipment — 1. Train (units pulling), 2. Train (units pushing), 3. Train (standing), 4. Car(s) (moving), 5. Car(s) (standing), 6. Light loco(s) (moving), 7. Light loco(s) (standing), 8. Other (specify), A. Train pulling- RCL, B. Train pushing- RCL, C. Train standing- RCL — Code: 1

18. Position of Car Unit in Train: 1

19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user — Code: 1

20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code: 4

20c. State the name and quantity of the hazardous material released, if any

21. Temperature (specify if minus): 68 °F
22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark — Code: 2
23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow — Code: 2

24. Type of Equipment Consist (single entry) 1. Freight train 2. Passenger train 3. Commuter train 4. Work train 5. Single car 6. Cut of cars 7. Yard/Switching 8. Light loco(s) 9. Main./inspect. car A. Spec. MoW Equip. — Code: 1
25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry — Code: 1
26. Track Number or Name: MAIN 1 TRACK

27. FRA Track Class: 4
28. Number of Locomotive Units: 6
29. Number of Cars: 106
30. Consist Speed (Recorded if available) R. Recorded E. Estimated: 49 mph — Code: R
31. Time Table Direction 1. North 2. South 3. East 4. West — Code: 3

32. Type of Crossing Warning 1. Gates 2. Cantilever FLS 3. Standard FLS 4. Wig wags 5. Hwy. traffic signals 6. Audible 7. Crossbucks 8. Stop signs 9. Watchman 10. Flagged by crew 11. Other (specify) 12. None
Code(s): 01 03
33. Signaled Crossing Warning: 20 sec warn min (1);
34. Whistle Ban 1. Yes 2. No 3. Unknown — Code: 2

35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach — Code: 2
36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown — Code: 2
37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown — Code: 2

38. Driver's Age: 46
39. Driver's Gender 1. Male 2. Female — Code: 1
40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown — Code: 2
41. Driver 1. Drove around or thru the gate 2. Stopped and then proceeded 3. Did not stop 4. Stopped on crossing 5. Other (specify) — Code: 5

42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown — Code: 1
43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 2. Standing railroad equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicles 7. Other (specify) 8. Not Obstructed — Code: 8

Casualties to:	Killed	Injured
46. Highway-Rail Crossing Users	0	0
49. Railroad Employees	0	0
52. Passengers on Train	0	0

44. Driver was 1. Killed 2. Injured 3. Uninjured — Code:
45. Was Driver in the Vehicle? 1. Yes 2. No — Code: 1
47. Highway Vehicle Property Damage (est. dollar damage): $6,000
48. Total Number of Highway-Rail Crossing Users (include driver): 1
50. Total Number of People on Train (include passengers and crew): 2
51. Is a Rail Equipment Accident / Incident Report Being Filed 1. Yes 2. No — Code: 2

53a. Special Study Block
53b. Special Study Block

54. Narrative Description
SUICIDE. 41: DROVE UNDER ACTIVATING GATES AND STOPPED ON TRACKS

55. Typed Name and Title
56. Signature
57. Date

FORM FRA F 6180.57 * NOTE THAT ALL CASUALTIES MUST BE REPORTED ON FORM FRA F 6180.55A

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION (FRA)

HIGHWAY-RAIL GRADE CROSSING ACCIDENT/INCIDENT REPORT

OMB Approval No. 2130-0500

Name Of	Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad: Southern California Regional Rail Authority	1a. SCAX	1b. 042209
2. Other Railroad Involved in Train Accident/Incident	2a.	2b.
3. Railroad Responsible for Track Maintenance: BNSF Railway Company [BNSF]	3a. BNSF	3b. XXX

4. U.S. DOT-AAR Grade Crossing ID No.: 026507V
5. Date of Accident/Incident: 04/22/09
6. Time of Accident/Incident: 07:38 AM

7. Nearest Railroad Station: LA SIERRA
8. Division: SYSTEM
9. County: RIVERSIDE
10. State Abbr.: 06 Code: CA
11. City (if in a city):
12. Highway Name or No.: JACKSON STREET ☑ Public ☐ Private

Highway User Involved

13. Type — A. Auto, B. Truck, C. Truck-trailer, D. Pick-up truck, E. Van, F. Bus, G. School Bus, H. Motorcycle, J. Other Motor Vehicle, K. Pedestrian, M. Other (specify) — Code: K

14. Vehicle Speed (est. mph at impact):
15. Direction (geographical) — 1. North 2. South 3. East 4. West — Code: 2

16. Position — 1. Stalled on crossing 2. Stopped on Crossing 3. Moving over crossing 4. Trapped — Code: 3

20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? — 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code: 4

Rail Equipment Involved

17. Equipment — 1. Train (units pulling) 2. Train (units pushing) 3. Train (standing) 4. Car(s) (moving) 5. Car(s) (standing) 6. Light loco(s) (moving) 7. Light loco(s) (standing) 8. Other (specify) A. Train pulling- RCL B. Train pushing- RCL C. Train standing- RCL — Code: 1

18. Position of Car Unit in Train: 1

19. Circumstance — 1. Rail equipment struck highway user 2. Rail equipment struck by highway user — Code: 1

20b. Was there a hazardous materials release by — 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code: 4

20c. State the name and quantity of the hazardous material released, if any

21. Temperature (specify if minus): 75 °F

22. Visibility (single entry) — 1. Dawn 2. Day 3. Dusk 4. Dark — Code: 1

23. Weather (single entry) — 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow — Code: 1

24. Type of Equipment Consist (single entry) — 1. Freight train 2. Passenger train 3. Commuter train 4. Work train 5. Single car 6. Cut of cars 7. Yard/Switching 8. Light loco(s) 9. Main./inspect. car A. Spec. MoW Equip. — Code: 3

25. Track Type Used by Rail Equipment Involved — 1. Main 2. Yard 3. Siding 4. Industry — Code: 1

26. Track Number or Name: MAIN

27. FRA Track Class: 3

28. Number of Locomotive Units: 2

29. Number of Cars: 3

30. Consist Speed (Recorded if available) — R. Recorded E. Estimated: 55 mph — Code: R

31. Time Table Direction — 1. North 2. South 3. East 4. West — Code: 3

32. Type of Crossing Warning — 1. Gates 2. Cantilever FLS 3. Standard FLS 4. Wig wags 5. Hwy. traffic signals 6. Audible 7. Crossbucks 8. Stop signs 9. Watchman 10. Flagged by crew 11. Other (specify) 12. None

Code(s): 01 06

33. Signaled Crossing Warning: 20 sec warn min (1);

34. Whistle Ban — 1. Yes 2. No 3. Unknown — Code: 2

35. Location of Warning — 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach — Code: 1

36. Crossing Warning Interconnected with Highway Signals — 1. Yes 2. No 3. Unknown — Code:

37. Crossing Illuminated by Street Lights or Special Lights — 1. Yes 2. No 3. Unknown — Code: 3

38. Driver's Age: 10

39. Driver's Gender — 1. Male 2. Female — Code: 1

40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train — 1. Yes 2. No 3. Unknown — Code:

41. Driver — 1. Drove around or thru the gate 2. Stopped and then proceeded 3. Did not stop 4. Stopped on crossing 5. Other (specify) — Code:

42. Driver Passed Standing Highway Vehicle — 1. Yes 2. No 3. Unknown — Code:

43. View of Track Obscured by (primary obstruction) — 1. Permanent Structure 2. Standing railroad equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicles 7. Other (specify) 8. Not Obstructed — Code: 3

Casualties to:	Killed	Injured
46. Highway-Rail Crossing Users	1	0
49. Railroad Employees	0	0
52. Passengers on Train	0	0

44. Driver was — 1. Killed 2. Injured 3. Uninjured — Code:

45. Was Driver in the Vehicle? — 1. Yes 2. No — Code:

47. Highway Vehicle Property Damage (est. dollar damage): $0

48. Total Number of Highway-Rail Crossing Users (include driver): 1

50. Total Number of People on Train (include passengers and crew): 25

51. Is a Rail Equipment Accident / Incident Report Being Filed — 1. Yes 2. No — Code: 2

53a. Special Study Block

53b. Special Study Block

54. Narrative Description

PEDESTRIAN INGORNED WARNING OF FRIENDS AND CROSSED DOUBLE TRACKS AT JACKSON STREET AFTER WESTBOUND FREIGHT PASSED AND WAS STRUCK BY EASTBOUND COMMUTER TRAIN. NOTE: QUES. 28 UPDATED 1/25/10

55. Typed Name and Title

56. Signature

57. Date

FORM FRA F 6180.57

* NOTE THAT ALL CASUALTIES MUST BE REPORTED ON FORM FRA F 6180.55A

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION (FRA)

HIGHWAY-RAIL GRADE CROSSING ACCIDENT/INCIDENT REPORT

OMB Approval No. 2130-0500

Name Of	Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad: Atchison, Topeka & Santa Fe Railway Company	1a. ATSF	1b. 030192204
2. Other Railroad Involved in Train Accident/Incident	2a.	2b.
3. Railroad Responsible for Track Maintenance: Atchison, Topeka & Santa Fe Railway Company	3a. ATSF	3b. 030192204

4. U.S. DOT-AAR Grade Crossing ID No.: 026507V
5. Date of Accident/Incident: 01/12/92
6. Time of Accident/Incident: 08:10 AM

7. Nearest Railroad Station: ARLINGTON
8. Division:
9. County: RIVERSIDE
10. State Abbr.: 06 Code: CA

11. City (if in a city): RIVERSIDE
12. Highway Name or No.: JACKSON STREET ☑ Public ☐ Private

Highway User Involved

13. Type — A. Auto, B. Truck, C. Truck-trailer, D. Pick-up truck, E. Van, F. Bus, G. School Bus, H. Motorcycle, J. Other Motor Vehicle, K. Pedestrian, M. Other (specify) — Code: A

14. Vehicle Speed (est. mph at impact): 30

15. Direction (geographical): 1. North 2. South 3. East 4. West — Code: 2

16. Position: 1. Stalled on crossing 2. Stopped on Crossing 3. Moving over crossing 4. Trapped — Code: 3

20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code: 4

Rail Equipment Involved

17. Equipment — 1. Train (units pulling), 2. Train (units pushing), 3. Train (standing), 4. Car(s) (moving), 5. Car(s) (standing), 6. Light loco(s) (moving), 7. Light loco(s) (standing), 8. Other (specify), A. Train pulling- RCL, B. Train pushing- RCL, C. Train standing- RCL — Code: 4

18. Position of Car Unit in Train: 1

19. Circumstance: 1. Rail equipment struck highway user 2. Rail equipment struck by highway user — Code: 1

20b. Was there a hazardous materials release by: 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code:

20c. State the name and quantity of the hazardous material released, if any

21. Temperature (specify if minus): 55 °F

22. Visibility (single entry): 1. Dawn 2. Day 3. Dusk 4. Dark — Code: 2

23. Weather (single entry): 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow — Code: 1

24. Type of Equipment Consist (single entry): 1. Freight train 2. Passenger train 3. Commuter train 4. Work train 5. Single car 6. Cut of cars 7. Yard/Switching 8. Light loco(s) 9. Main./inspect. car A. Spec. MoW Equip. — Code: 4

25. Track Type Used by Rail Equipment Involved: 1. Main 2. Yard 3. Siding 4. Industry — Code: 1

26. Track Number or Name: MAIN

27. FRA Track Class: 4

28. Number of Locomotive Units: 0

29. Number of Cars: 1

30. Consist Speed (Recorded if available): R. Recorded E. Estimated — 20 mph — Code: E

31. Time Table Direction: 1. North 2. South 3. East 4. West — Code: 3

32. Type of Crossing Warning: 1. Gates 2. Cantilever FLS 3. Standard FLS 4. Wig wags 5. Hwy. traffic signals 6. Audible 7. Crossbucks 8. Stop signs 9. Watchman 10. Flagged by crew 11. Other (specify) 12. None

Code(s): 01

33. Signaled Crossing Warning: 20 sec warn min (1);

34. Whistle Ban: 1. Yes 2. No 3. Unknown — Code:

35. Location of Warning: 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach — Code: 1

36. Crossing Warning Interconnected with Highway Signals: 1. Yes 2. No 3. Unknown — Code: 1

37. Crossing Illuminated by Street Lights or Special Lights: 1. Yes 2. No 3. Unknown — Code: 1

38. Driver's Age:

39. Driver's Gender: 1. Male 2. Female — Code:

40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train: 1. Yes 2. No 3. Unknown — Code: 2

41. Driver: 1. Drove around or thru the gate 2. Stopped and then proceeded 3. Did not stop 4. Stopped on crossing 5. Other (specify) — Code: 4

42. Driver Passed Standing Highway Vehicle: 1. Yes 2. No 3. Unknown — Code: 2

43. View of Track Obscured by (primary obstruction): 1. Permanent Structure 2. Standing railroad equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicles 7. Other (specify) 8. Not Obstructed — Code: 1

Casualties to:	Killed	Injured
46. Highway-Rail Crossing Users	0	0
49. Railroad Employees	0	0
52. Passengers on Train	0	0

44. Driver was: 1. Killed 2. Injured 3. Uninjured — Code: 3

45. Was Driver in the Vehicle? 1. Yes 2. No — Code: 1

47. Highway Vehicle Property Damage (est. dollar damage): $150

48. Total Number of Highway-Rail Crossing Users (include driver): 1

50. Total Number of People on Train (include passengers and crew):

51. Is a Rail Equipment Accident / Incident Report Being Filed: 1. Yes 2. No — Code: 2

53a. Special Study Block

53b. Special Study Block

54. Narrative Description

55. Typed Name and Title

56. Signature

57. Date

FORM FRA F 6180.57

* NOTE THAT ALL CASUALTIES MUST BE REPORTED ON FORM FRA F 6180.55A

Annual WBAPS 2018

WEB ACCIDENT PREDICTION SYSTEM

Accident Prediction Report for
Public at-Grade Highway-Rail Crossings

Including:

Disclaimer/Abbreviation Key
Accident Prediction List

Provided by:

Federal Railroad Administration
Office of Safety Analysis
Highway-Rail Crossing Safety & Trespass Prevention

Data Contained in this Report:

Crossing: 026507v'

Date Prepared: 12/14/2018

U.S. Department
of Transportation
Federal Railroad
Administration

USING DATA PRODUCED BY WBAPS

(Web Accident Prediction System)

1200 New Jersey Avenue, SE
Third Floor West
Washington, DC 20590

WBAPS generates reports listing public highway-rail intersections for a State, County, City or railroad ranked by predicted collisions per year. These reports include brief lists of the Inventory record and the collisions over the last 10 years along with a list of contacts for further information. These data were produced by the Federal Railroad Administration's Web Accident Prediction System (WBAPS).

WBAPS is a computer model which provides the user an analytical tool, which combined with other site-specific information, can assist in determining where scarce highway-rail grade crossing resources can best be directed. This computer model does not rank crossings in terms of most to least dangerous. Use of WBAPS data in this manner is incorrect and misleading.

WBAPS provides the same reports as PCAPS, which is FRA's PC Accident Prediction System. PCAPS was originally developed as a tool to alert law enforcement and local officials of the important need to improve safety at public highway-rail intersections within their jurisdictions. It has since become an indispensable information resource which is helping the FRA, States, railroads, Operation Lifesaver and others, to raise the awareness of the potential dangers at public highway-rail intersections. The PCAPS/WBAPS output enables State and local highway and law enforcement agencies identify public highway-rail crossing locations which may require additional or specialized attention. It is also a tool which can be used by state highway authorities and railroads to nominate particular crossings which may require physical safety improvements or enhancements.

The WBAPS accident prediction formula is based upon two independent factors (variables) which includes (1) basic data about a crossing's physical and operating characteristics and (2) five years of accident history data at the crossing. These data are obtained from the FRA's inventory and accident/incident files which are subject to keypunch and submission errors. Although every attempt is made to find and correct errors, there is still a possibility that some errors still exist. Erroneous, inaccurate and non-current data will alter WBAPS accident prediction values. While approximately 100,000 inventory file changes and updates are voluntarily provided annually by States and railroads and processed by FRA into the National Inventory File, data records for specific crossings may not be completely current. Only the intended users (States and railroads) are really knowledgeable as to how current the inventory data is for a particular State, railroad, or location.

It is important to understand the type of information produced by WBAPS and the limitations on the application of the output data. WBAPS does not state that specific crossings are the most dangerous. Rather, the WBAPS data provides an indication that conditions are such that one crossing may possibly be more hazardous than another based on the specific data that is in the program. It is only one of many tools which can be used to assist individual States, railroads and local highway authorities in determining where and how to initially focus attention for improving safety at public highway-rail intersections. WBAPS is designed to nominate crossings for further evaluation based only upon the physical and operating characteristics of specific crossings as voluntarily reported and updated by States and railroads and five years of accident history data.

PCAPS and WBAPS software are not designed to single out specific crossings without considering the many other factors which may influence accident rates or probabilities. State highway planners may or may not use PCAPS/WBAPS accident prediction model. Some States utilize their own formula or model which may include other geographic and site-specific factors. At best, PCAPS and WBAPS software and data nominates crossings for further on-the-ground review by knowledgeable highway traffic engineers and specialists. The output information is not the end or final product and the WBAPS data should not be used for non-intended purposes.

It should also be noted that there are certain characteristics or factors which are not, nor can be, included in the WBAPS database. These include sight-distance, highway congestion, bus or hazardous material traffic, local topography, and passenger exposure (train or vehicle), etc. Be aware that PCAPS/WBAPS is only one model and that other accident prediction models which may be used by States may yield different, by just as valid, results for ranking crossings for safety improvements.

Finally, it should be noted that this database is not the sole indicator of the condition of a specific public highway-rail intersection. The WBAPS output must be considered as a supplement to the information needed to undertake specific actions aimed at enhancing highway-rail crossing safety at locations across the U.S. The authority and jurisdiction to appropriate resources towards the safety improvement or elimination of specific crossings lies with the individual States.

U.S. Department
of Transportation
Federal Railroad
Administration

ABBREVIATION KEY

for use with WBAPS Reports

1200 New Jersey Avenue, SE
Third Floor West
Washington, DC 20590

The lists produced are only for public at-grade highway-rail intersections for the entity listed at the top of the page. The parameters shown are those used in the collision prediction calculation.

RANK:	Crossings are listed in order and ranked with the highest collision prediction value first.
PRED COLLS:	The accident prediction value is the probability that a collision between a train and a highway vehicle will occur at the crossing in a year.
CROSSING:	The unique sight specific identifying DOT/AAR Crossing Inventory Number.
RR:	The alphabetic abbreviation for the railroad name.
CITY:	The city in (or near) which the crossing is located.
ROAD:	The name of the road, street, or highway (if provided) where the crossing is located.
NUM OF COLLISIONS:	The number of accidents reported to FRA in each of the years indicated. Note: Most recent year is partial year (data is not for the complete calendar year) unless Accidents per Year is 'AS OF DECEMBER 31'.
DATE CHG:	The date of the latest change of the warning device category at the crossing which impacts the collision prediction calculation, e.g., a change from crossbucks to flashing lights, or flashing lights to gates. The accident prediction calculation utilizes three different formulas, on each for (1) passive devices, (2) flashing lights only, and (3) flashing lights with gates. When a date is shown, the collision history prior to the indicated year-month is not included in calculating the accident prediction value.
WD:	The type of warning device shown on the current Inventory record for the crossing where: FQ=Four Quad Gates; GT = All Other Gates; FL = Flashing lights; HS = Wigwags, Highway Signals, Bells, or Other Activated; SP = Special Protection (e.g., a flagman); SS = Stop Signs; XB = Crossbucks; OS = Other Signs or Signals; NO = No Signs or Signals.
TOT TRNS:	Number of total trains per day.
TOT TRKS:	Total number of railroad tracks between the warning devices at the crossing.
TTBL SPD:	The maximum timetable (allowable) speed for trains through the crossing.
HWY PVD:	Is the highway paved on both sides of the crossing?
HWY LNS:	The number of highway traffic lanes crossing the tracks at the crossing.
AADT:	The Average Annual Daily Traffic count for highway vehicles using the crossing.

*PUBLIC HIGHWAY-RAIL CROSSINGS RANKED BY PREDICTED ACCIDENTS PER YEAR AS OF 12/31/2017**

*Num of Collisions: Most recent year is partial year (data is not for the complete calendar year) unless Accidents per Year is 'AS OF DECEMBER 31'.

RANK	PRED COLLS.	CROSSING	RR	STATE	COUNTY	CITY	ROAD	NUM OF COLLISIONS 17*	16	15	14	13	DATE CHG	W D	TOT TRN	TOT TRK	TTBL SPD	HWY PVD	HWY LNS	AADT
1	0.047882	026507V	BNSF	CA	RIVERSIDE	RIVERSIDE	JACKSON ST	0	0	0	0	0		GT	78	2	60	YES	4	7,581
TTL:	0.047882							0	0	0	0	0								

Appendix C. CREATE Railroad Noise Model Results

Appendix

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Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: Arlington High School Modernization

RESULTS		
Noise Source	**Leq - 1-hr (dB)**	
All Sources	61	
Source 1	56	
Source 2	59	
Source 3	40	
Source 4	36	
Source 5	0	
Source 6	0	
Source 7	0	
Source 8	0	

Enter noise receiver land use category below.

LAND USE CATEGORY
Noise receiver land use category (1, 2 or 3)

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS				
Parameter	**Source 1**		**Source 2**	
Source Num.	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	700	distance (ft)	700
Noisiest Hour of	speed (mph)	43	speed (mph)	43
Activity During	trains/hour	3	trains/hour	3
Sensitive Hours	locos/train	5	length of cars (ft) / train	8400
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0

3

Source 3		Source 4		Source 5	
Commuter Diesel Locomotive	2	Commuter Rail Cars	3		
distance (ft)	700	distance (ft)	700		
speed (mph)	46	speed (mph)	46		
trains/hour	1	trains/hour	1		
locos/train	1	cars/train	6		
	0.00%	% of cars w/ wheel flats	0.00%		
Y/N	n	Y/N	n		
Y/N	n	Y/N	n		
Y/N	n	Y/N	n		
Y/N	n	Y/N	n		
number of rows		number of rows			

Appendix K Water Pipeline Safety Hazard Assessment

Appendices

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PLACEWORKS

TECHNICAL MEMORANDUM

DATE February 8, 2019

TO Daniel Rodriguez, Assistant Director
Facilities Projects

Riverside Unified School District
3070 Washington Street
Riverside, California 92504

FROM Steve Bush, P.E., Senior Engineer

SUBJECT Arlington High School Modernization
Water Pipeline Safety Hazard Assessment
RIV-24.0

1. Introduction

PlaceWorks was retained by the Riverside Unified School District to conduct a Water Pipeline Safety Hazard Assessment (WSHPA) for the Arlington High School Modernization project in the City of Riverside. The Metropolitan Water District (MWD) Upper Feeder water pipeline easement bisects the existing northern playfield area. Nine additional large volume (12-inch diameter) water pipelines are within 1,500 feet of the school site. The WPSHA evaluates potential flooding impacts to the school site and was conducted as required by California Code of Regulations (CCR), Title 5, Section 14010(h).

1.1 PROJECT LOCATION

The existing school site is located at 2951 Jackson Street in the City of Riverside, in Riverside County, California. The 45-acre existing campus is bounded by Jackson Street to the west, Lincoln Avenue to the south, Irving Street to the east, and a Burlington Northern Santa Fe (BNSF) Railway Company right-of-way to the north (Figure 1). The Riverside Unified School District (District) proposes improvements and modernizations to the existing school facilities. The 40-foot wide MWD pipeline easement bisects the project site beneath the existing baseball field and parking lot at the northern end of the existing campus.

2. Water Pipeline Safety Hazard Assessment

2.1 REGULATORY REQUIREMENTS

Under Education Code Section 17251, the California Department of Education (CDE) has authority to approve acquisition of proposed school sites. The school district must obtain CDE approval for sites to receive state funds under the state's School Facilities Program administered by the State Allocation Board. CDE standards and regulations for this process are presented in CCR, Title 5, Sections 14010,

14011, and 14012. Information on assessing safety hazard related to pipelines is discussed in Section 14010 (h):

> *The site shall not be located near an above-ground water or fuel storage tank or within 1,500 feet of the easement of an above-ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional, which may include certification from a local public utility commission.*

No high pressure natural gas pipelines or hazardous liquid pipelines were identified within 1,500 feet of the school site.[1] [2] The CDE's School Site Selection and Approval Guide also contain provisions for evaluating high-pressure water pipelines:[3]

> *To ensure the protection of students, faculty, and school property if the proposed school site is within 1,500 feet of the easement of an aboveground or underground pipeline that can pose a safety hazard, the school district should obtain the following information from the pipeline owner and operator:*

- *Pipeline alignment, size, type of pipe, depth of cover,*
- *Operating water pressures in pipelines near the proposed school site,*
- *Estimated volume of water that might be released from the pipeline should a rupture occur on the site, and*
- *Owner's assessment of the structural condition of the pipeline.*

Since the proposed project involves modernization of an existing school site, the District must certify that the project will not create any new significant safety hazards or exacerbate any existing safety hazards to students. Currently, there are existing classroom buildings that are within 400 feet of the edge of the MWD easement. According to the proposed site plan, no new classroom buildings will be located closer to the MWD easement than under current existing conditions. Therefore, this report will focus on the fact that existing safety hazards will not be exacerbated through implementation of the modernization improvements.

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[1] National Pipeline Mapping System (NPMS), 2019. High pressure natural gas and hazardous liquids pipeline map produced by the NPMS Public Viewer at www.npms.phmsa.dot.gov. Accessed on January 22, 2019.

[2] Southern California Gas Company (SCG), 2018. Information received from Sandy Bevans-Taray, Region Engineer II, SCG, to Danielle Clendening, Intern, PlaceWorks, on November 20, 2018.

[3] California Department of Education (CDE), 2000. Resources for School Facilities Planning, School Selection and Approval Guide. Prepared by School Facilities Planning Division, CDE, Sacramento, CA.

2.2 ASSESSMENT METHODOLOGY

To meet the requirements of CCR Title 5 Sections 14010 (d) and (h) and CDE's policy on pipelines, this WPSHA is designed to meet the following objectives:

» Identify all high pressure/high volume water pipelines within 1,500 feet of the proposed school site and evaluate the potential for flooding, and
» Where appropriate, identify and develop mitigation measures to reduce flooding impacts to acceptable levels.

The CDE has developed risk analysis procedures for evaluating flooding associated with releases from large diameter water pipelines, as described in CDE's Guidance Protocol for School Site Pipeline Risk Analysis.[4] A safety issue associated with large diameter water pipelines is the potential for flooding. Also, releases from underground water pipelines can cause subterranean erosion of saturated soil, leading to subsidence or formation of a sinkhole. The most likely cause of failure is a large magnitude earthquake and associated strong ground shaking.

Although no specific criteria have been established by the CDE as a threshold of significance for flooding at a school site, a water depth of 12 inches or greater is a trigger that could warrant further evaluation.[5]

2.3 PIPELINE LOCATION AND OPERATIONAL DATA

Based on plans provided from the City of Riverside, Public Utilities Department (RPU) and the MWD, there are 10 high volume (≥12 inch diameter) water pipelines within 1,500 feet of the project site, as summarized in Table 1.

Table 1 Water Pipelines

Pipeline Diameter	Pipeline Location	Material of construction	Agency
124-Inch	Upper Feeder Pipeline, MWD Easement	Welded Steel	MWD
42-Inch	Lincoln Avenue	Concrete Cylinder Pipe (CCP)	RPU
54-Inch	Jackson Street, south of Lincoln Avenue	CCP	RPU
42-Inch	Jackson Street, north of Lincoln Avenue	CCP	RPU
36-Inch	Jackson Street, north of Indiana Avenue	Cement mortar lined and coated (CML&C) steel pipe	RPU

[4] California Department of Education (CDE), 2007. Guidance Protocol for School Site Pipeline Risk Analysis, Prepared by URS Corporation. Dated February 2007.

[5] Ibid.

Table 1 Water Pipelines

Pipeline Diameter	Pipeline Location	Material of construction	Agency
12-Inch	Jackson Street, north of Diana Avenue	Asbestos cement (AC)	RPU
42-Inch	Diana Avenue	CPP	RPU
18-Inch	Indiana Avenue	CPP and Cast Iron	RPU
12-Inch	Gibson Avenue	AC and Ductile Iron	RPU
24-Inch	Victoria Avenue	CML&C steel pipe	RPU

MWD's Upper Feeder pipeline is located within a 40-foot wide easement that bisects the northern portion of the site.[6] The Upper Feeder pipeline was originally installed in 1941, and conveys untreated water from Lake Mathews, approximately 3.9 miles south of the site, to the F.E. Weymouth Water Treatment Plant in the City of La Verne. The MWD pipeline operates with an optimum pressure of 183 pounds per square inch (psi) and a maximum flow capacity of 805 cubic feet per second (cfs) in the area of the school. The section of pipe at the school site is constructed of welded steel, is cathodically protected, and is buried approximately 5 to 10 feet bgs.

MWD field staff patrol the pipeline weekly, and the pipeline is shut down, drained, and inspected every 5 to 10 years at which time minor leaks are repaired, as needed. The pipeline is equipped with an automated detection system that senses sudden changes in pressure that may be indicative of a rupture or leak. The information is relayed to the MWD control center, which activates remote closure of the isolation valves.

Additionally, the RPU was contacted to determine the status of the Riverside Canal, which is adjacent to the northern boundary of the site. The RPU responded that the portion of the Riverside Canal adjacent to site was removed and filled in 1914 and is no longer operational.[7]

2.4 WATER PIPELINE FLOODING ANALYSIS

The CDE requires that the risk of releases from high volume (≥12 inches) water pipelines be evaluated. The CDE Guidance Protocol for School Pipeline Risk Analysis provides a methodology for evaluating the potential for flooding. A probability analysis is not required.

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[6] Metropolitan Water District (MWD), 2018. MWD Response to PlaceWorks Information Request. Dated December 4, 2018.

[7] City of Riverside, 2019. City of Riverside Repose to PlaceWorks Information Request. Dated February 1, 2019.

Because eight of the identified ten water pipelines identified in Table 1 are located beneath streets, a pipeline flooding analysis was conducted for these pipelines to determine the depth and location of water flow within the street in the event of a pipeline leak or rupture. For this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. In addition, no credit was taken for the presence of storm drains along these streets.

Release impacts were calculated based on the procedures specified in the CDE manual. The release rate was determined by multiplying the pipe area by an assumed velocity of 5 feet per second (fps). Then the release rate was compared to the carrying capacity of the street, taking into account longitudinal slope, to determine if the water would be contained within the confines of the street curbing.[8] The results are provided in Table 2.

Table 2 Street Flow

Pipeline Diameter	Pipeline Location	Release Rate (cfs)	Street Width (ft)	Depth of Flow in Street (in)	Exceeds Street Carrying Capacity?
42-Inch	Lincoln Avenue	48.1	64	7.4	No
54-Inch	Jackson Street, south of Lincoln Avenue	79.5	58	8.5	Yes
42-Inch	Jackson Street, north of Lincoln Avenue	48.1	64	7.1	No
36-Inch	Jackson Street, north of Indiana Avenue	35.3	50	6.3	No
12-Inch	Jackson Street, north of Diana Avenue	3.93	32	2.9	No
42-Inch	Diana Avenue	48.1	36	9.4	Yes
18-Inch	Indiana Avenue	8.84	40	4.2	No
12-Inch	Gibson Avenue	3.93	40	3.3	No

Assuming a standard 8-inch curb for arterial streets (Lincoln Avenue and Jackson Street) and 6-inch curb for residential streets, the water released from a full-flow rupture from many of water mains would be entirely contained within the confines of the curbing and would not result in flooding at the school site. However, releases would exceed the street carrying capacity for the 54-inch water main beneath Jackson Street (south of Lincoln Avenue) and the 42-inch water main beneath Diana Avenue. The predicted worst-case depth of flow in Jackson Street was 8.5 inches for a full release of the 54-inch water line. Assuming a standard 8-inch curb for Jackson Street, released water from the 54-inch water line would exceed the carrying capacity of the street by 0.5 inch. For Diana Avenue, the worst-

[8] Jeffers & Associates, 2006. Modified Manning's Equation Solver. Version 3.0.

case depth of flow for a full release of the 42-inch water main was 9.4 inches. Assuming a standard 6-inch curb for residential streets, released water from the 42-inch water line would exceed the carrying capacity of the street by 3.4 inches.

The CDE has postulated a level of concern as a water depth of 12 inches or greater at the school site. Therefore, the calculated water depth of 0.5 inch for Jackson Street and 3.4 inches for Diana Avenue would be less than CDE's level of concern and would not pose a significant risk to occupants at the project site in the unlikely event of a water pipeline break. Additionally, Diana Avenue is approximately 1,280 north of the site, and released water exceeding the street carrying capacity would not reach the site. The 54-inch water main originates at the intersection of Jackson Street and Lincoln Avenue and is aligned to the south beneath Jackson Street. Therefore, it is located south of the school site and any releases from the water main near the school site would most likely overflow the curb and infiltrate into the soil in the residential neighborhood or agricultural fields to the south. In the unlikely event of a major break in the 54-inch water main in the vicinity of the school site, there would not be a significant amount of released water reaching the school site. Furthermore, for this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. Given that the RPU pipelines are buried approximately 3 to 5 feet bgs, only a portion of the water released from the pipeline would reach the surface.[9] In addition, no credit was taken for the existing surface topography and the presence of storm drains along the streets.

For the water pipelines located in easements or right-of-ways with no curbing, the modeling approach from the CDE guidance manual assumes that all of the released water at a maximum flow rate reaches the surface and forms a circular pool with a water depth of 12 inches. The results are provided in Table 3.

Table 3 Surface Pooling

Pipeline Diameter	Pipeline Location	Release Rate (cfs)	Impact Distance for Circular Pool (ft)	Distance from School Site (ft)	Potentially Impacts School Site?
124-inch	MWD Easement	805	554 (277 ft radius)	On-site	Yes
24-inch	Victoria Avenue	15.7	77.5 (39 ft radius)	1,460	No

The calculations show that a release from the 24-inch water main beneath Victoria Avenue would not impact the school site. However, a release from the MWD Upper Feeder pipeline would impact the school site. Using the CDE water pipeline methodology and assuming the formation of a circular pool, water from the 124-inch pipeline would extend 277 feet from the pipeline location. According to the surface pooling calculations in Table 3, the circular pool flood depth of 12 inches would extend

[9] City of Riverside, Public Utilities – Water Development (RPU). Information received from Marissa Castro, RPU, to Danielle Clendening, Intern, PlaceWorks, on December 14, 2018.

approximately 257 feet beyond the north and south easement boundaries based on the location of the pipeline along the centerline of the 40-foot wide easement. However, this analysis does not take into account site topography and flow direction at the school site, which is discussed in further detail below. For this worst-case analysis, it also was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. Given that the pipeline is buried approximately 5 to 10 feet bgs,[10] only a portion of the water released from the pipelines would reach the surface.

In the existing site configuration, the nearest classroom buildings are approximately 370 feet from the edge of the MWD easement. According to the proposed site plan, no new classroom buildings will be located closer to the MWD easement than under current existing conditions. The terrain is primarily flat in the area of the athletic fields where the MWD easement is located. However, the general topographic gradient in the vicinity of the school site is to the north. Based on the site topography, the elevation gradient is such that released water from the 124-inch water pipeline would spread primarily into playfields and parking areas surrounding the MWD easement, with the released water eventually flowing onto the railroad easement to the north.

Because this is a school modernization project, the Title 5 criterion is that the proposed project must not exacerbate existing conditions or create new safety hazards. The MWD pipeline was in place before the school's construction in 1973, and the proposed project will not exacerbate or create new safety hazards. In addition, the modernization project would not result in the construction of classroom buildings located closer to the easement and no construction will occur within the easement. Therefore, the proposed modernization project would not exacerbate or create new safety hazards with respect to the water pipelines.

[10] Metropolitan Water District (MWD), 2018. MWD Response to PlaceWorks Information Request. Dated December 4, 2018.

3. Conclusions

If a rupture or leak should occur in any of the RPU water mains within 1,500 feet of the school site, the results of the flooding analysis indicate that the released water would not result in water depths at the school site that would pose a significant risk to students and staff. However, the results of the flooding analysis indicate that the released water from the MWD water main could result in water depths of 12 inches that could extend 257 feet beyond the pipeline easement at the site. Since the proposed project involves modernization of an existing school site, the District must certify that the project will not create any new significant safety hazards or exacerbate any existing safety hazards to students.

Currently, there are existing classroom buildings that are approximately 370 feet east from the edge of the MWD easement. According to the proposed site plan, no new classroom buildings will be located closer to the MWD easement than under current existing conditions. The MWD pipeline was in place before the school's construction in 1973. The modernization project would not result in classroom buildings located closer to the easement or within the easement. Therefore, the proposed project will not exacerbate or create new safety hazards.

Even though the proposed project will not exacerbate existing conditions or create new safety hazards, it is recommended that the school's emergency response and evacuation plan address the possibility of water pipeline releases and identify potential evacuation routes. Also, contact names and numbers for the water agencies (Metropolitan Water District and City of Riverside, Public Utilities Department) should be maintained with the emergency response plan in case the school needs to report pipeline releases. A map of the pipeline locations and emergency contact information should be kept with the school's emergency response plan.

In summary, a potential break in any of the water pipelines located within 1,500 feet of the site would not result in significant flooding at the project site.

Respectfully submitted,

PlaceWorks

Steve Bush, PE
Senior Engineer

Figure 1 - Site Location and Pipeline Map

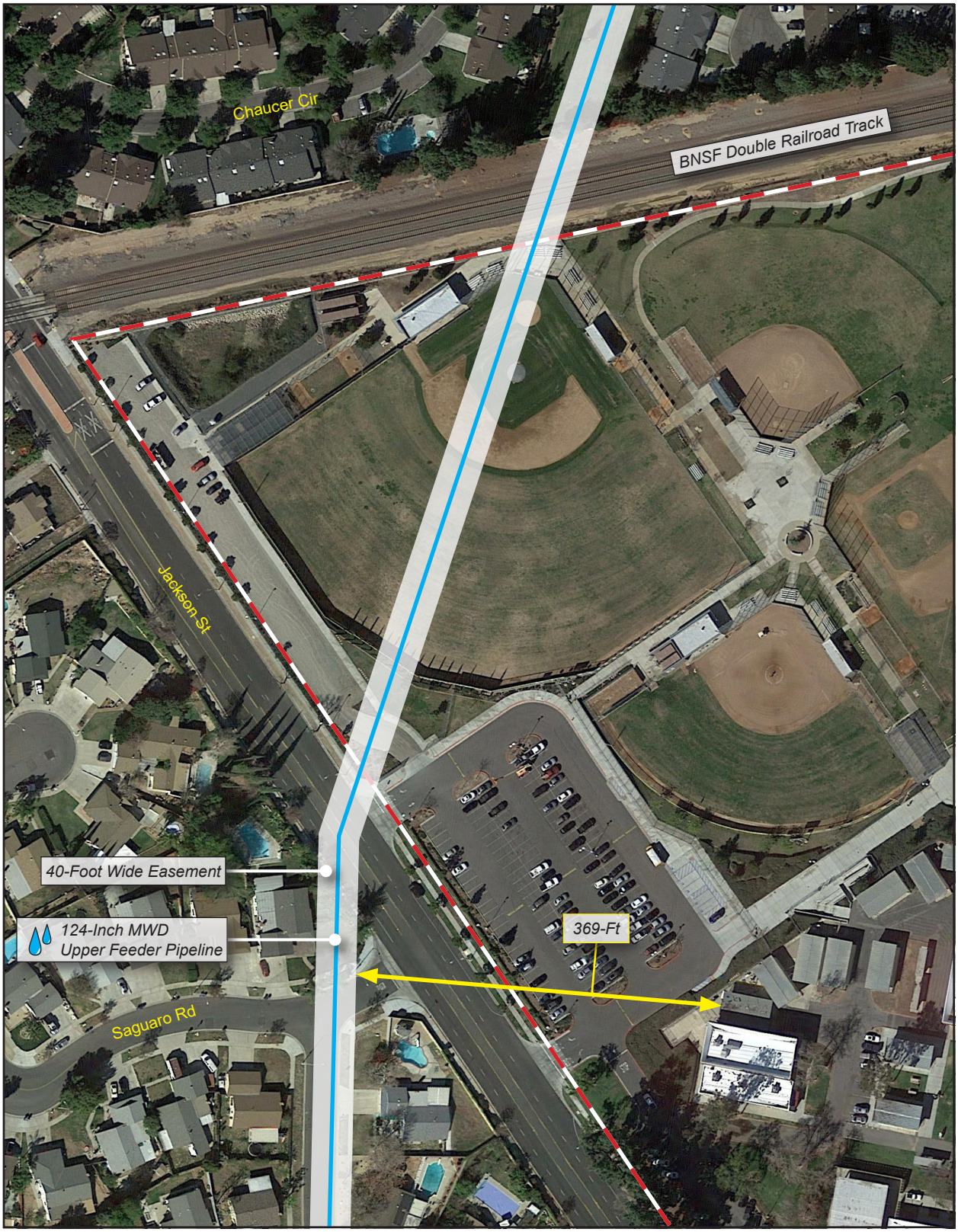
School Boundary

1,500-ft Radius

0 1,000
Scale (Feet)

Source: ESRI, 2018

Figure 2 MWD Easement



School Boundary

0 150
Scale (Feet)

Source: Google Earth Pro, 2018

Appendix A – Water Analysis

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Modified Manning's Equation Solver

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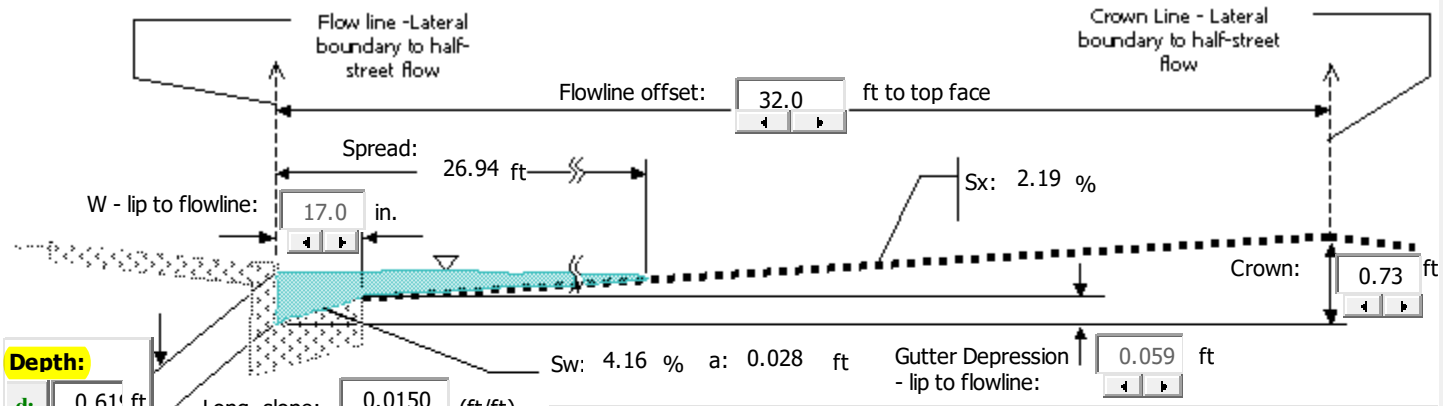
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Depth:

d: 0.61 ft

7.4 in.

Long. slope: 0.0150 (ft/ft)

N value: 0.016

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.7 % Se: 4.10 %

Length of curb opening inlet: 12.0 ft

Lt: 70.34 ft

80 % Clear Efficiency 23.2 %

Curb opening flowby: 36.93 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 8.13 ft/s

Eo: 26.03 %

Rs: 2.82 % Rf: 100.00 %

Side flow captured: 0.91 cfs Frontal captured: 4.81 cfs

Total combined CB flowby: 31.22 cfs

Street Parameters:

Q: 48.10 cfs

K: 392.7

Vel: 6.03 ft/s

Eo: 13.9 %

W/T: 0.0526

Standard Manning's:

Q: 39.74 cfs

K: 324.4

Vel: 4.98 ft/s

Rh: 0.29 ft

Area: 7.98 sf

Street Flow - Lincoln Avenue
42-Inch Water Main

Modified Manning's Equation Solver

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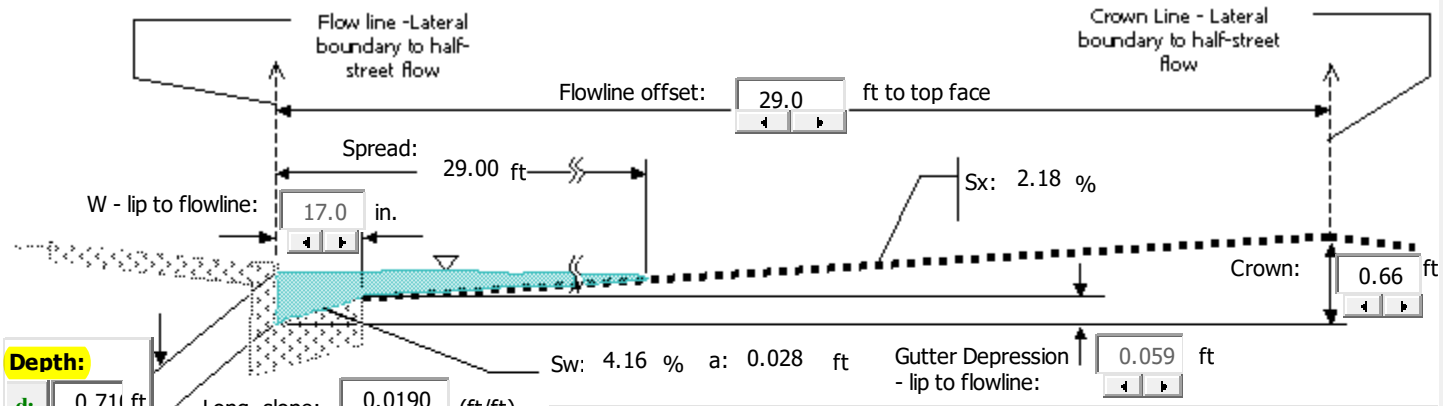

Depth:

d: 0.71(ft

8.5 in.

Long. slope: 0.0190 (ft/ft)

N value: 0.016

Street Parameters:

Q:	79.52	cfs
K:	576.9	
Vel:	7.49	ft/s
Eo:	12.0	%
W/T:	0.0489	

Standard Manning's:

Q:	68.50	cfs
K:	497.0	
Vel:	6.45	ft/s
Rh:	0.36	ft
Area:	10.62	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.8 % Se: 3.83 %

Length of curb opening inlet: 12.0 ft

Lt: 97.19 ft

80 % Clear Efficiency 17.1 %

Curb opening flowby: 65.94 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 10.15 ft/s

Eo: 21.30 %

Rs: 1.90 % Rf: 100.00 %

Side flow captured: 1.12 cfs Frontal captured: 7.02 cfs

Total combined CB flowby: 57.80 cfs

Street Flow - Jackson Street
54-Inch Water Main

Modified Manning's Equation Solver

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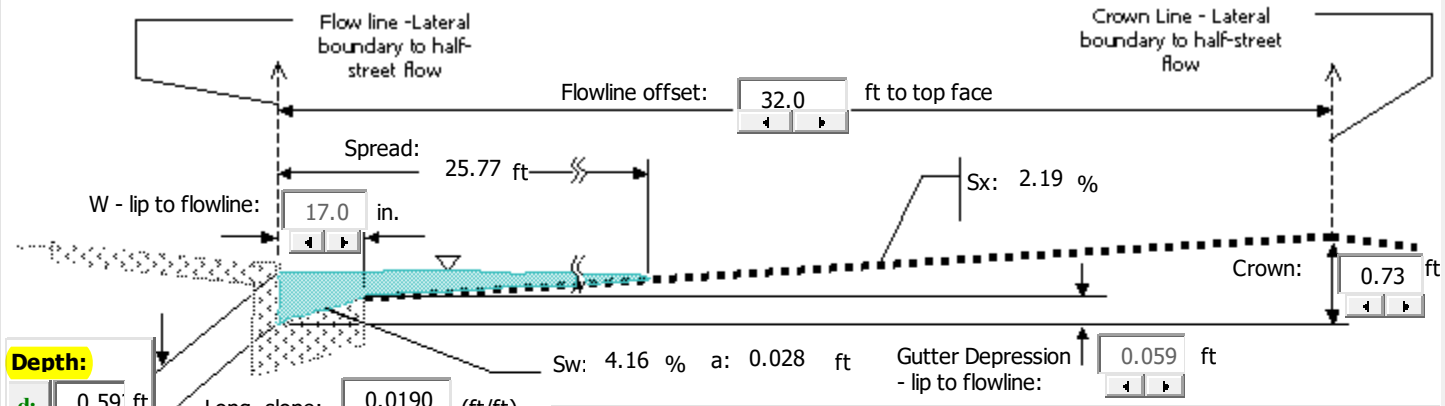
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Depth:

d: 0.59 ft

7.1 in.

Long. slope: 0.0190 (ft/ft)

N value: 0.016

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.7 % Se: 4.19 %

Length of curb opening inlet: 12.0 ft

Lt: 74.58 ft

80 % Clear Efficiency 22.0 %

Curb opening flowby: 37.53 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 8.94 ft/s

Eo: 27.20 %

Rs: 2.38 % Rf: 100.00 %

Side flow captured: 0.77 cfs Frontal captured: 5.11 cfs

Total combined CB flowby: 31.66 cfs

Street Parameters:

Q:	48.10	cfs
K:	349.0	
Vel:	6.59	ft/s
Eo:	14.5	%
W/T:	0.0550	

Standard Manning's:

Q:	39.73	cfs
K:	288.2	
Vel:	5.44	ft/s
Rh:	0.28	ft
Area:	7.30	sf

Street Flow - Jackson Street
42-Inch Water Main

Modified Manning's Equation Solver

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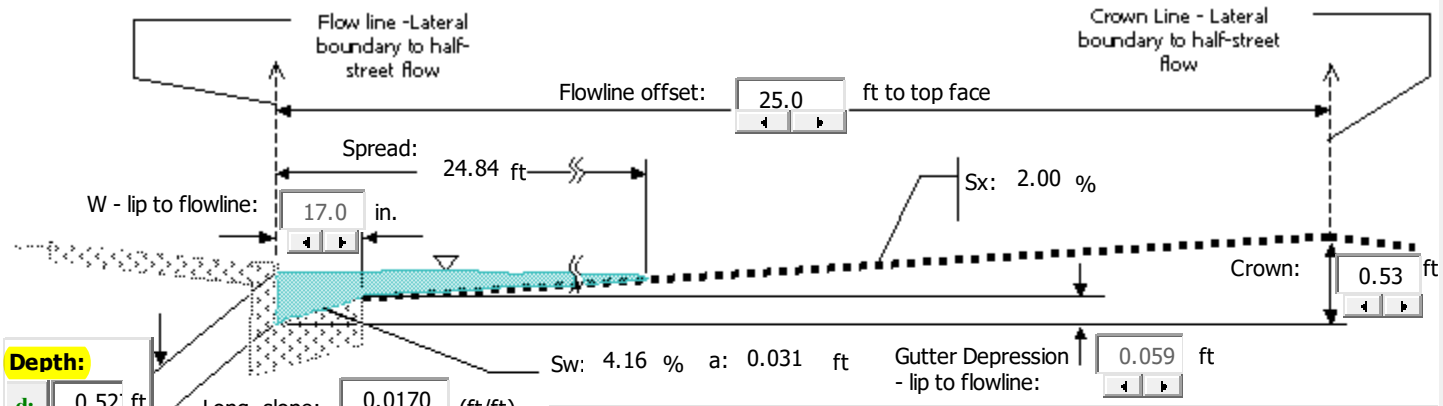

Depth:

d: 0.52 ft

6.3 in.

Long. slope: 0.0170 (ft/ft)

N value: 0.016

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 4.11 %

Length of curb opening inlet: 12.0 ft

Lt: 64.09 ft

80 % Clear Efficiency 25.3 %

Curb opening flowby: 26.39 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 7.79 ft/s

Eo: 29.78 %

Rs: 2.80 % Rf: 100.00 %

Side flow captured: 0.63 cfs Frontal captured: 3.93 cfs

Total combined CB flowby: 21.83 cfs

Street Parameters:

Q:	35.34	cfs
K:	271.0	
Vel:	5.72	ft/s
Eo:	15.2	%
W/T:	0.0570	

Standard Manning's:

Q:	29.21	cfs
K:	224.0	
Vel:	4.73	ft/s
Rh:	0.24	ft
Area:	6.18	sf

Street Flow - Jackson Street
36-Inch Water Main

Modified Manning's Equation Solver

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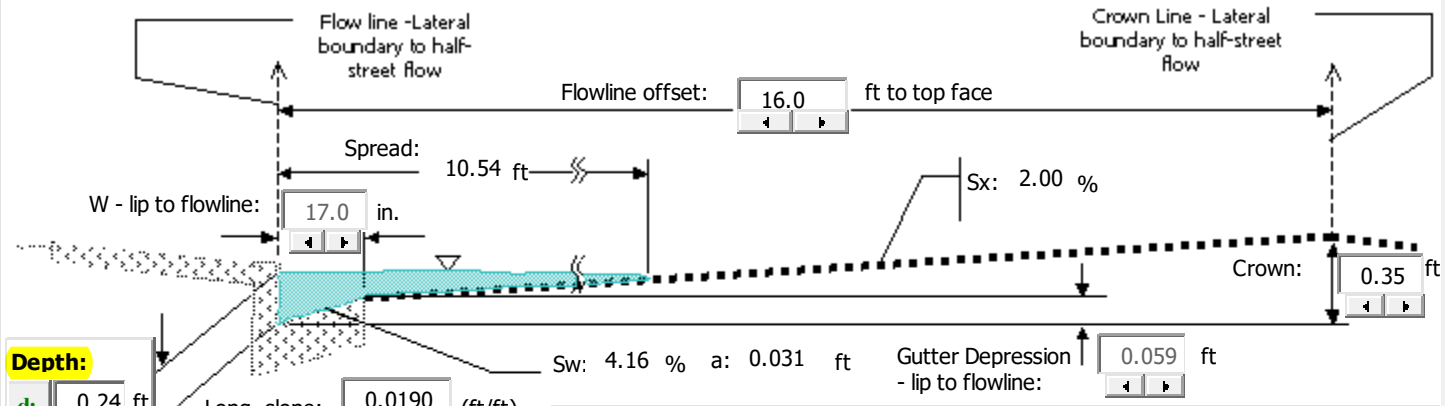
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Depth:

d: 0.24 ft

2.9 in.

Long. slope: 0.0190 (ft/ft)

N value: 0.016

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 6.85 %

Length of curb opening inlet: 12.0 ft

Lt: 19.39 ft

80 % Clear Efficiency 70.8 %

Curb opening flowby: 1.15 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 3.96 ft/s

Eo: 98.85 %

Rs: 5.39 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.57 cfs

Total combined CB flowby: 0.55 cfs

Street Parameters:

Q: 3.93 cfs

K: 28.5

Vel: 3.48 ft/s

Eo: 34.8 %

W/T: 0.1344

Standard Manning's:

Q: 3.21 cfs

K: 23.3

Vel: 2.85 ft/s

Rh: 0.10 ft

Area: 1.13 sf

Street Flow - Jackson Street
12-Inch Water Main

Modified Manning's Equation Solver

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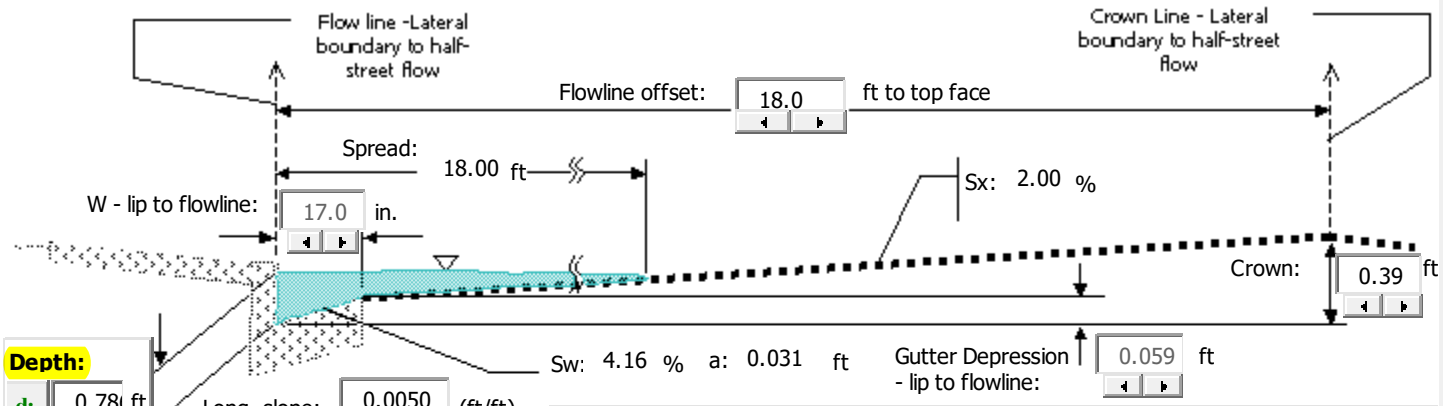

Depth:

d: 0.78(ft

9.4 in.

Long. slope: 0.0050 (ft/ft)

N value: 0.016

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 3.69 %

Length of curb opening inlet: 12.0 ft

Lt: 53.92 ft

80 % Clear Efficiency 29.7 %

Curb opening flowby: 33.80 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 5.24 ft/s

Eo: 21.75 %

Rs: 4.96 % Rf: 100.00 %

Side flow captured: 1.50 cfs Frontal captured: 3.67 cfs

Total combined CB flowby: 28.63 cfs

Street Parameters:

Q:	48.10	cfs
K:	680.2	
Vel:	4.63	ft/s
Eo:	12.1	%
W/T:	0.0787	

Standard Manning's:

Q:	45.89	cfs
K:	648.9	
Vel:	4.42	ft/s
Rh:	0.55	ft
Area:	10.38	sf

Street Flow - Diana Avenue
42-Inch Water Main

Modified Manning's Equation Solver

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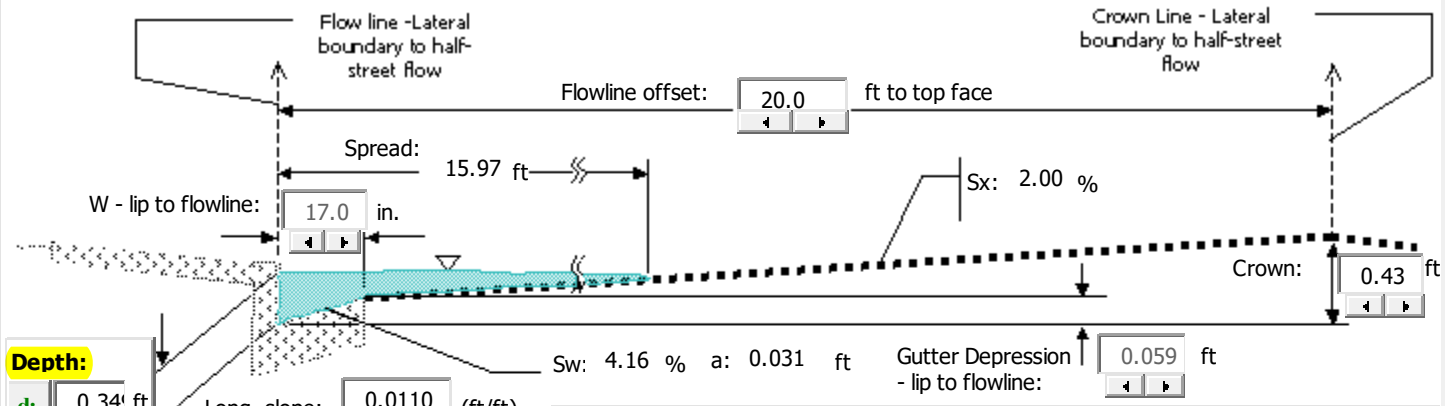
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Depth:

d: 0.34 ft

4.2 in.

Long. slope: 0.0110 (ft/ft)

N value: 0.016

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.26 %

Length of curb opening inlet: 12.0 ft

Lt: 27.11 ft

80 % Clear Efficiency 54.5 %

Curb opening flowby: 4.02 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 4.36 ft/s

Eo: 61.43 %

Rs: 6.81 % Rf: 100.00 %

Side flow captured: 0.19 cfs Frontal captured: 1.24 cfs

Total combined CB flowby: 2.60 cfs

Street Parameters:

Q:	8.84	cfs
K:	84.3	
Vel:	3.44	ft/s
Eo:	23.4	%
W/T:	0.0887	

Standard Manning's:

Q:	7.28	cfs
K:	69.5	
Vel:	2.84	ft/s
Rh:	0.16	ft
Area:	2.57	sf

Street Flow - Indiana Ave
18-Inch Water Main

Modified Manning's Equation Solver

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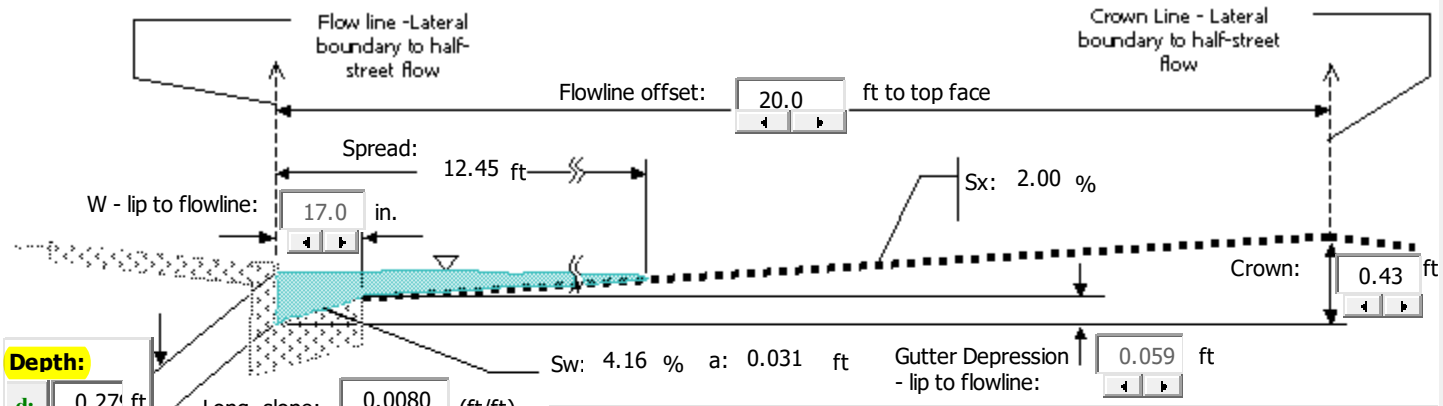
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Depth:

d: 0.27 ft

3.3 in.

Long. slope: 0.0080 (ft/ft)

N value: 0.016

Street Parameters:

Q:	3.93	cfs
K:	43.9	
Vel:	2.50	ft/s
Eo:	29.7	%
W/T:	0.1138	

Standard Manning's:

Q:	3.23	cfs
K:	36.1	
Vel:	2.06	ft/s
Rh:	0.12	ft
Area:	1.57	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 6.14 %

Length of curb opening inlet: 12.0 ft

Lt: 15.97 ft

80 % Clear Efficiency 80.9 %

Curb opening flowby: 0.75 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 2.58 ft/s

Eo: 98.75 %

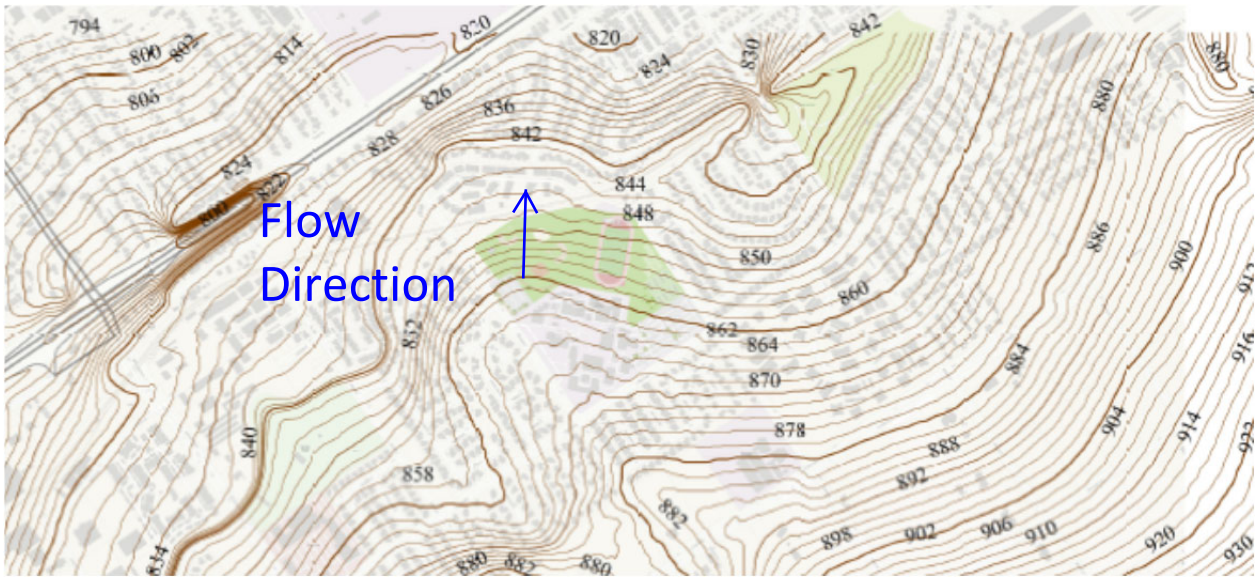
Rs: 11.04 % Rf: 100.00 %

Side flow captured: 0.04 cfs Frontal captured: 0.37 cfs

Total combined CB flowby: 0.34 cfs

Street Flow - Gibson Ave
12-Inch Water Main

Contours



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Appendix B – Agency Correspondence

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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

MWD Upper Feeder
Sta. 258+00 to 290+00
Substr. Job No. 2002-18-038

December 4, 2018

Ms. Danielle Clendening
Intern
PlaceWorks
2850 Inland Empire Boulevard, Suite B
Ontario, CA 91764

Dear Ms. Clendening:

Arlington High School – Utility Request

Thank you for your email dated November 16, 2018, and a map showing the location of your utility request within 1,500 feet radius of Arlington High School located in the city of Riverside.

As shown on the enclosed map, Metropolitan's 124- inch-inside-diameter welded steel Upper Feeder pipeline, appurtenant manhole structures and accompanying 40-foot-wide permanent easement right-of-way cross Jackson Street to the west and the Atchison, Topeka & Santa Fe Railway to the north in the vicinity of Arlington High School. Our pipeline was designed to operate with an approximate optimum pressure of 183 psi and a maximum flow capacity of 805 cfs in this area.

We are transmitting a copy of our "Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way," and prints of our Drawings B-21247, B-21248, B-21249, H-1398, and Right-of-Way Maps 1400-15, 1400-16, and 1400-17, for your information and use.

We request that our facilities and right-of-way be fully shown and identified as Metropolitan's on your project plans and that prints of the preliminary plans be submitted for our review and written approval as they pertain to our facilities. All applicable portions of the enclosed guidelines should be incorporated into your plans.

We also request that a stipulation be added to your plans and/or specifications to notify John Osornia of our Water System Operations Group, cell phone (951) 710-5570, at least two working days prior to starting any work in the vicinity of our facilities.

For any further correspondence with Metropolitan relating to this project, please make reference to the Substructures Job Number shown in the upper right-hand corner of this letter. Should you require any additional information, please contact Clay Anderson via email at Canderson@mwdh2o.com.

Very truly yours,

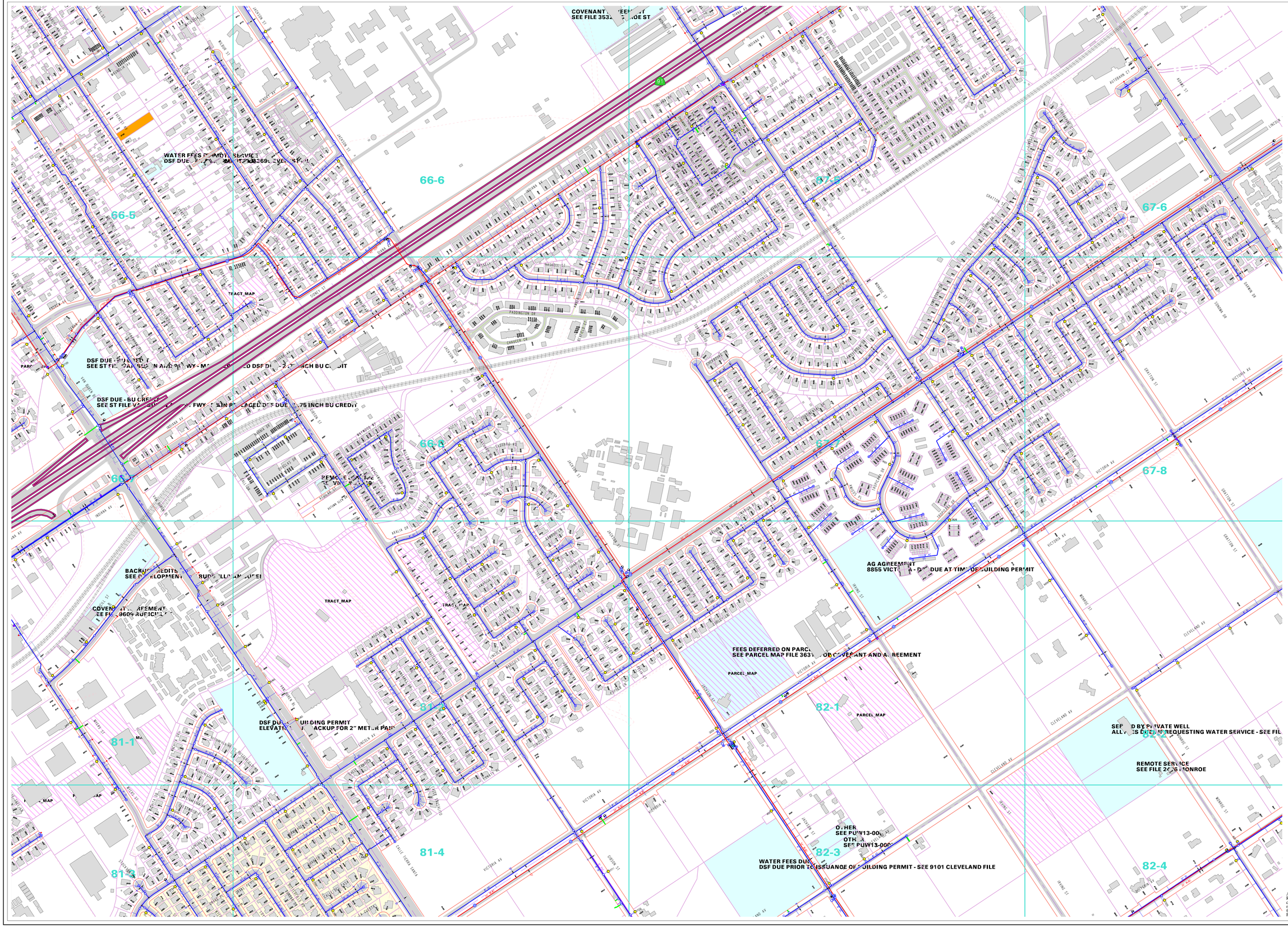
Ken Chung
Substructures Team

CA/dl
DOC#: 2002-18-038

Enclosures (9)

Upper Feeder

Sta. 258+00 to 290+00



Symbology

- Distribution Main
- Supply Main
- Transmission Main
- Facility Main
- Recycled Main
- Irrigation Main/Canal
- Abandoned Main
- Service
- Fire Service
- Landscape Service
- Remote Service
- Recycled Service
- Abandoned Service
- Casing
- Air Valve
- Booster Pump
- Well Pump
- PRV
- Check Valve
- Relief Valve
- Manhole
- DC Meter
- Fire Hydrant
- Valve Open
- Valve Closed
- EOM/BO Valve
- BO Valve
- BO/PO Valve
- PO/BO Valve
- PO
- Mat'l Change
- Reducer
- Tee/Cross

1 inch = 300 feet

December 31, 2018

Aerial photos taken February 2012. The City of Riverside makes no warranty on the accuracy or content of the data shown on this map. This map shall not be reproduced or distributed.
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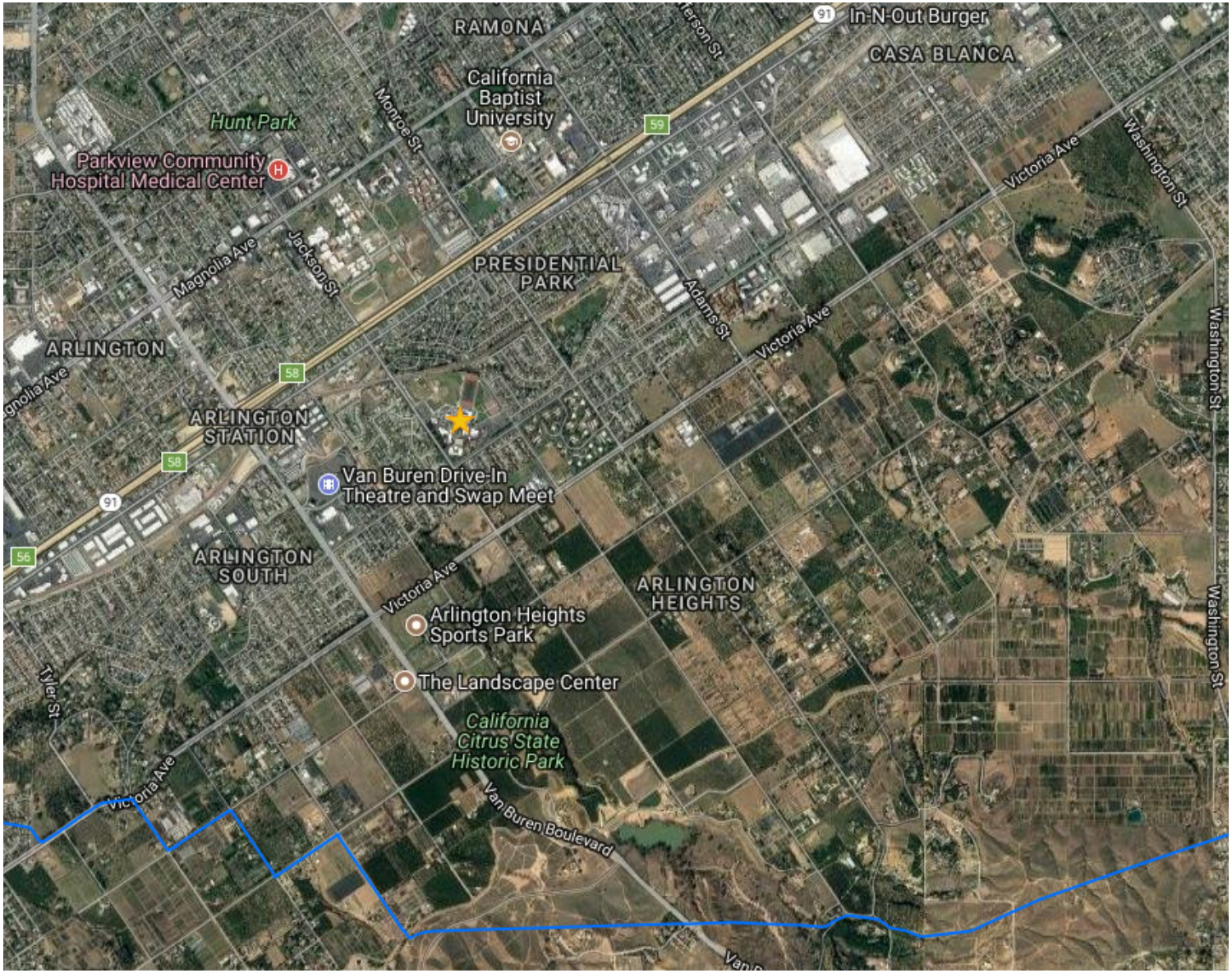
Printed by: CGROSS



Legend

- Incidents (Gas)
- Gas Transmission Pipelines
- Hazardous Liquid Pipelines

500 m
1000 ft

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms@dot.gov.

Projection: Geographic

Datum: NAD83

Map produced by the Public Viewer application at www.npms.phmsa.dot.gov

Date Printed: Sep 26, 2018

811 Know what's below. Call before you dig.

Appendix L Preliminary Site Assessment

Appendices

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Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

July 26, 2019

Ms. Gaby Adame
Facilities Analyst
Planning and Development
Riverside Unified School District
3070 Washington Street
Riverside, California 92504

ADEQUACY OF PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT, RIVERSIDE UNIFIED SCHOOL DISTRICT, ARLINGTON HIGH SCHOOL MODERNIZATION AND EXPANSION PROJECT, 2951 JACKSON STREET, RIVERSIDE, RIVERSIDE COUNTY (SITE CODE: 404961)

Dear Ms. Adame:

The Department of Toxic Substances Control (DTSC) reviewed the "Draft Preliminary Environmental Assessment Report" (PEA), prepared by Placeworks, dated June 2019, and received on June 28, 2019, for the Arlington High School Modernization area (Site). The Environmental Oversight Agreement (EOA) was executed on March 28, 2019. The PEA presents investigation results and conclusions based on a health risk screening evaluation for the Site.

According to the PEA, the 0.5-acres Site is located within the Arlington High School campus (School). The School is bordered by Jackson Street to the northwest and Lincoln Avenue to the northeast. The Site is located towards western portion of the School, east of the parking lot along Jackson Street, and south of the baseball field. The Site was historically occupied by an orchard from 1931 to 1967. From 1967 until 1975 the Site was utilized for row crops. The School was constructed around 1975 and the Site contained five portable classrooms. The portables are surrounded by landscaping and walkways. Currently, the Site is occupied by five portable classrooms and shade structure. Surrounding the School to the north, south, west and east are residential developments. To the southeast of the School is the Hawthorne Elementary School and the Sherman Indian High School is to the northwest.

Printed on Recycled Paper

Based on review of the PEA, neither a release of hazardous material nor the presence of a naturally occurring hazardous material, which would pose a threat to public health or the environment under unrestricted land use, was indicated at the Site. DTSC understands that the Riverside Unified School District intends to make the PEA available for public review and comment pursuant to Option A (Ed. Code § 17213.1, subsec. (a)(6)(A)). DTSC hereby concurs with the adequacy of the PEA pending review of public comments.

At the close of the public comment period and after the hearing, please forward a letter that includes the start and end dates of the public comment period, date of the public hearing, and all public comments received on the PEA. As such, this letter along with the PEA should be made available to the public in the information repository.

If you have any questions please contact Mr. Aslam Shareef, Project Manager, at (714) 484-5472 or by e-mail at Aslam.Shareef@dtsc.ca.gov, or me at (714) 484-5368 or by e-mail at Shahir.Haddad@dtsc.ca.gov.

Sincerely,

Shahir Haddad, P.E.
Supervising Engineer
Brownfields Restoration and School Evaluation Branch
Site Mitigation and Restoration Program

mv/as/sh

cc: Dr. Denise Clendening (via e-mail)
Placeworks
dclendening@placeworks.com

Schools Evaluation and Cleanup Team Reading File – Cypress Office

June 2019 | Preliminary Environmental Assessment Report

Arlington High School

for Riverside Unified School District

Prepared for:

Riverside Unified School District
Contact: Ana Gonzalez, Director II, Planning Development
3070 Washington Street
Riverside, CA 92504
951.788.7496

Project Number:
RIV-24.0

Prepared by:

PlaceWorks
Denise Clendening, Ph.D., Associate Principal
2850 Inland Empire Blvd, Suite B
Ontario, California 91764
909.989.4449
info@placeworks.com
www.placeworks.com

PLACEWORKS

June 28, 2019

Aslam Shareef
Project Manager
Department of Toxic Substances Control (DTSC)
5796 Cypress Avenue
Cypress, CA 90630

Subject: Draft Preliminary Environmental Assessment -Arlington High School

Dear Mr. Shareef:

Enclosed please find the Draft Preliminary Environmental Assessment Report for the 0.5-acre new construction area located at the existing Arlington High School in Riverside, California. PlaceWorks is submitting the Draft Preliminary Environmental Assessment Report on behalf of Riverside Unified School District to the Department of Toxic Substances Control as part of the ongoing assessment at the existing high school site.

The District proposes to renovate a part of the western campus and add a Biomed/Special Education Building. The District plans to seek matching state funds in the new construction of the Biomed/Special Education building, which is the focus of this report and will be constructed within the 0.5-acre project site. The project site was historically occupied by an orchard from 1931-1967 and then was used for row crops from 1967 until Arlington High School was built around 1975. Currently, the project site is occupied by approximately five portable classrooms and a shade structure.

Sincerely,

PLACEWORKS

Denise Clendening, Ph.D.
Associate Principal

Michael Watson, PG 8177
Project Geologist

Enclosures

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Executive Summary

This Preliminary Environmental Assessment (PEA) Report for the proposed modernization of Arlington High School campus in the city of Riverside, Riverside County, California, was prepared by PlaceWorks on behalf of the Riverside Unified School District (District) pursuant to the California Education Code which requires that all new school sites or existing school sites with new construction obtain a "No Further Action" (NFA) determination from the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) prior to proceeding with acquisition and/or construction of a school. The District proposes to renovate a part of the western campus and add a Biomed/Special Education Building. The District plans to seek matching state funds in the new construction of the Biomed/Special Education building, which is the focus of this report and will be constructed within the 0.5-acre project site.

The project site is located on assessor parcel number (APN) 233-250-001. The project site currently consists of approximately five portable classrooms that are part of the Arlington High School campus. The existing high school campus is adjacent to the southeast of the Riverside Freeway (SR-91). The site is bounded by Jackson Street to the southwest and Lincoln Avenue to the southeast (Figure 1). Figure 2 shows the local vicinity of the school site. Figure 3 is an aerial photograph showing current site conditions and project boundaries. Figure 4, *Aerial of Project Area*, is an aerial that shows the project site off Jackson Street where the new classroom building will be located.

The project site was historically occupied by an orchard from 1931-1967 and then was used for row crops and from 1967 until Arlington High School was built around 1975. The portables are surrounded by landscaping and walkways.

The District has decided to complete a PEA for the following reasons:

- The possibility of residual pesticides present in the soil due to historical agricultural use of the site from approximately 1931 to around 1975.
- Evaluate if there are any impacts from lead-based paint and termiticides due to placement of portable buildings within the proposed project site.

Based on information developed during the PEA using the DTSC's PEA Guidance Manual, the DTSC will then make an informed decision regarding potential risks posed by the site.

The field sampling program implemented for the investigation is summarized below:

- Soil sampling activities were conducted at the site on June 11, 2019 for the PEA.
- Thirty-six (36) discrete soil samples plus 4 duplicates were collected.

Executive Summary

- Two 2:1 composite samples, eight 3:1 composite samples, and two 4:1 composite samples plus one 4:1 composite sample duplicate samples were analyzed for organochlorine pesticides (OCPs) by EPA Method 8081A to assess for potential residual OCPs from historic agricultural operations and possible termiticides used on the structures. Half of the samples collected for OCP analysis were from 0 to 0.5 feet bgs and the other half were collected from 2 to 2.5 feet bgs.

- Four soil samples from 0 to 0.5 feet bgs were analyzed for arsenic by EPA Method 6010B to assess the historic agriculture.

- 18 soil samples plus one duplicate from 0 to 0.5 feet bgs were analyzed for lead by EPA Method 6010B near the painted structures.

The results of the field program are summarized below:

- Three OCPs were detected in the composite soil samples (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT). All concentrations detected of the OCPs were below residential screening levels adjusted for the number of samples that comprised the composite.

- Arsenic was not detected above the laboratory reporting limits in the four soil samples analyzed.

- Lead was detected in the 18 soil samples and duplicate soil sample collected at 0 to 0.5 feet bgs. Lead concentrations ranged from a minimum of 2.2 mg/kg to a maximum concentration of 7.6 mg/kg. All lead concentrations were below the DTSC screening level of 80 mg/kg.

- The human health risk screening showed that chemical concentrations would not be a risk to human health or the environment under an unrestricted residential land use scenario.

- Laboratory data obtained were validated to assure that Data Quality Objectives (DQOs) were met and the data were suitable for use in a human health and ecological screening evaluation.

Recommendations

The results of the PEA support the following conclusions and recommendations:

Based on the PEA objectives, the environmental quality goals of the District, and the results of the PEA investigation, PlaceWorks has determined that no further assessment is required for the site. Therefore, PlaceWorks recommends that the PEA be finalized. Per California Education Code Section 17213.1, Section 3, PlaceWorks concludes that further assessment of the site is not necessary and is requesting an approval of the PEA.

1. Introduction

This Preliminary Environmental Assessment (PEA) Report for the proposed modernization of Arlington High School in the City of Riverside, Riverside County, California, was prepared by PlaceWorks on behalf of the Riverside Unified School District (District) pursuant to the California Education Code which requires that all new school sites or existing school sites with new construction obtain a "No Further Action" (NFA) determination from the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) prior to proceeding with acquisition and/or construction of a school. The District proposes to renovate a part of the western campus and add a Biomed/Special Education Building. The District plans to seek matching state funds in the new construction of the Biomed/Special Education building, which is the focus of this report and will be constructed within the 0.5-acre project site.

The project site is located on assessor parcel number (APN) 233-250-001. The project site currently consists of approximately five portable classrooms that are part of the Arlington High School campus. The existing high school campus is adjacent to the southeast of the Riverside Freeway (SR-91). The site is bounded by Jackson Street to the southwest and Lincoln Avenue to the southeast (Figure 1). Figure 2 shows the local vicinity of the school site. Figure 3 is an aerial photograph showing current site conditions and project boundaries. Figure 4, *Aerial of Project Area*, is an aerial that shows the project site off Jackson Street where the new classroom building will be located.

Based on a review of historical aerial photographs and topographic maps, the project site had been utilized for agricultural purposes, as an orchard from at least 1931 to at least 1967 and then the site was used for row crops from 1967 to about 1975. Arlington High School began to occupy the site around 1975 to the present. Portables were placed on the project site in the mid-1990s.

This PEA was prepared in accordance with the guidelines of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC), as detailed in the PEA Guidance Manual.

1.1 PEA OBJECTIVES

The District has prepared this PEA pursuant to the California Education Code that requires the completion of a Phase I Environmental Site Assessment (Phase I) or PEA, for all new school sites that will receive state funding prior to proceeding with construction of a school.

The overall objectives of this PEA are to:

- Evaluate historical information for indications of the past use, storage, disposal, or release of hazardous waste/substances at the site;
- Evaluate available information for indications of naturally occurring hazardous materials at the site.

- Establish through a field sampling and analysis program the nature of hazardous wastes/substances that may be present in soil at the site, their concentration and general extent; and
- Estimate the potential threat to public health and/or the environment posed by hazardous constituents, if any, at the site using a residential land-use scenario.

Based on information developed during the PEA and the conservative human and ecological risk evaluation set forth in the DTSC's Preliminary Endangerment Assessment Guidance Manual, the DTSC will then make an informed decision regarding potential risks posed by the site.

Possible outcomes of the PEA decision include, but are not limited to, the requirement for further investigation through the Supplemental Site Investigation process if the site is found to be significantly impacted by hazardous substances release(s); the need to perform a Removal Action if localized impacts by hazardous substances release(s) are found; implementation of mitigation actions to address any potential risks; and an issuance of a "No Further Action" (NFA) finding if the site is found not to be significantly impacted and risks to human health and the environment are found to be within acceptable levels based on the conservative screening-level risk assessment.

1.2 SCOPE OF WORK

The scope of work implemented to prepare this PEA included:

- Researching available site background information regarding former and current land use;
- Implementing field and laboratory data collection and evaluation to further assess environmental conditions at the site; and
- Preparing this PEA report.

Several information sources were reviewed as part of the background research for development of this PEA report. These sources were reviewed to develop an understanding of current and past land uses and practices that may have involved the handling, use, storage, and/or disposal of hazardous substances or wastes. Information was obtained and used to develop a general site history in an attempt to identify potential sources of chemical impact, if any.

The approach utilized to perform the background research is very similar to that used in completing a Phase I under the American Society for Testing and Materials (ASTM) Practice for Environmental Site Assessments (ESAs): Phase I Assessments Process (ASTM Standard E 1527-13). Specific sources of information reviewed, and activities performed by PlaceWorks in conducting the background research included:

- Site inspections and observations of the site and surrounding area within ¼-mile (site photographs are included in Appendix A);
- Review of available aerial photographs (included in Appendix B);

- Review of current U.S. Geological Survey (USGS) 7.5-minute topographic maps (included in Appendix B);
- Evaluation of environmental database list searches (included in Appendix C);
- Review of agency files at federal, state and local regulatory agencies and offices for the site;
- Review of agency files for listed facilities within ¼-mile of the site that were identified as having a potential to have impacted the site (included in Appendix C);
- Interviews with persons knowledgeable of site history and operations; and
- Collection and review of available applicable information from the District's files.

The scope for the field and laboratory investigation is discussed in Section 6. The field sampling program implemented for the investigation is summarized below:

- Soil sampling activities were conducted at the site on June 11, 2019 for the PEA.
- Thirty-six (36) discrete soil samples plus 4 duplicates were collected.
- Two 2:1 composite samples, eight 3:1 composite samples, and two 4:1 composite samples plus one 4:1 composite sample duplicate samples were analyzed for organochlorine pesticides (OCPs) by EPA Method 8081A to assess for potential residual OCPs from historic agricultural operations and possible termiticides used on the structures. Half of the samples collected for OCP analysis were from 0 to 0.5 feet bgs and the other half were collected from 2 to 2.5 feet bgs.
- Four soil samples from 0 to 0.5 feet bgs were analyzed for arsenic by EPA Method 6010B to assess the historic agriculture.
- 18 soil samples plus one duplicate from 0 to 0.5 feet bgs were analyzed for lead by EPA Method 6010B near the painted structures.

The results of the field program are summarized below:

- Three OCPs were detected in the composite soil samples (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT). All concentrations detected of the OCPs were below residential screening levels adjusted for the number of samples that comprised the composite.
- Arsenic was not detected above the laboratory reporting limits in the four soil samples analyzed.
- Lead was detected in the 18 soil samples and duplicate soil sample collected at 0 to 0.5 feet bgs. Lead concentrations ranged from a minimum of 2.2 mg/kg to a maximum concentration of 7.6 mg/kg.

All lead concentrations were below the DTSC screening level of 80 milligrams per kilogram (mg/kg).

- The human health risk screening showed that chemical concentrations would not be a risk to human health or the environment under an unrestricted residential land use scenario.
- Laboratory data obtained were validated to assure that Data Quality Objectives (DQOs) were met and the data were suitable for use in a human health and ecological screening evaluation.

1.3 PEA REPORT FORMAT

This PEA Report is organized in general accordance with the format presented in Chapter 3 of the DTSC's PEA Guidance Manual. This PEA Report contains the following sections:

- Section 1 presents an Introduction and Summary of PEA Objectives and PEA Report Format;
- Section 2 presents a Site Description of the proposed site;
- Section 3 includes Site History and Background Information;
- Section 4 defines the Apparent Problem;
- Section 5 contains a description of the Site Environmental Setting;
- Section 6 presents a discussion of Sampling Activities and Results;
- Section 7 includes the Human Health Screening Evaluation Statement;
- Section 8 presents the Ecological Screening Evaluation Statement;
- Section 9 includes a summary of Quality Assurance Project Plan (QAPP) measures;
- Section 10 describes Health and Safety Plan (HASP) implementation;
- Section 11 summarizes variances from the proposed sampling plan;
- Section 12 presents a discussion of Applicable or Relevant Laws and Regulation Pertaining to School Sites;
- Section 13 presents Conclusions and Recommendations of the PEA; and
- Section 14 lists References cited in the document.

The appendices to this PEA Report include:

Appendix A – Site Photographs;

Appendix B – Research Documentation;

Appendix C – Environmental Database Search Report;

Appendix D – Health and Safety Plan;

Appendix E – Laboratory Reports;

Appendix F – QAPP

1. Introduction

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2. Site Description

This section describes the location and ownership of the site as well as other pertinent details required by DTSC regarding the specifics of the site description. The project site is an approximately 0.5-acre portion of the approximately 45-acre Arlington High School campus. The project site is located within Section 17 of Township 3 South, Range 5 West of the San Bernardino Base Line and Meridian.

The proposed project site currently consists of approximately four portable classrooms on the existing Arlington High School Campus's western side, a shade structure and an area where outdoor lockers had been located. Figure 3 is an aerial photograph that outlines the project site location in relation to the campus and Figure 4 is a closeup aerial of the project site. The site was used for agricultural purposes from 1931 until 1975, when the high school begins to occupy the site. The project site was used for an orchard from 1931 until 1967, and from 1967 until 1975 the project site was used for row crops. Figures 3 and 4 are aerial photographs that show the surrounding area and the boundaries of the project site.

Figure 1, *Regional Location*, provides a map depicting the regional location of the project site. Figure 2, Local Vicinity, is a map of the surrounding area. Figure 3 is an aerial photograph of the proposed project site showing the school site and proposed project site boundaries.

To the north, east, south, and west of the Arlington High School is residential developments. To the southeast of the high school campus is the Hawthorne Elementary School and to the northwest is the Sherman Indian High School. Additionally, approximately 0.37-miles northwest from the proposed project site is the 91 Freeway (Riverside Freeway). The project site itself is surrounded by educational use with baseball fields to the north, the parking lot located along Jackson Street to the west, and other classroom buildings to the south and east

2.1 DESCRIPTION AND LOCATION

2.1.1 Site Name

The project site has been identified by the District as Arlington High School. The approximately 0.5-acre project site is a portion of the 45-acre campus of Arlington High School in the northeast corner of the intersection of Jackson Street and Lincoln Avenue. The project site had been used for agricultural purposes since at least 1931 to around 1975. An orchard occupied the project from 1931 to 1967 and then the project site was used for row crops from 1967 to about 1975. Since 1975, the project site appears to have been occupied by Arlington High School.

2. Site Description

2.1.2 Site Address

The project site is located at 2951 Jackson Street, Riverside, Riverside County, California (Figure 1). Figure 2, *Local Vicinity*, provides a map depicting the general location of the project, which is identified with the Assessor's Parcel Number [APN] 233-250-001.

2.1.3 Designated Contact Person

Ana Gonzalez is the Contact Person designated by the District.

2.1.4 Mailing Address

The mailing address for the project designated by the District is:

Riverside Unified School District
3070 Washington Street
Riverside, CA 92504

2.1.5 Other Site Names

No other site names were identified for the proposed school site.

2.1.6 U.S. Environmental Protection Agency (USEPA) Identification Number

The project site does not have a USEPA identification number.

2.1.7 EnviroStor Database Number

The project site does not have an EnviroStor database number.

2.1.8 Assessor's Parcel Number(s)

The school site is located within the Assessor Parcel Number [APN] 233-250-001.

2.1.9 Site Maps and Photographs

A vicinity map depicting the project site and surrounding area is included as Figures 1 and 2, respectively. Project boundaries and current project site conditions are shown in Figures 3 and 4. Site photographs are included in Appendix A.

3. Site History and Background Information

3.1 CURRENT AND HISTORICAL LAND USES

3.1.1 Facility Ownership/Operators

Riverside Unified School District owns the project site.

3.1.2 Business Type

The project site had been utilized for agricultural purposes from at least 1931 to around 2006. From 1975 to the present, the project site has been occupied by the Arlington High School.

3.1.3 Years of Operation

Based on a review of historical aerial photographs, the project site was used for agricultural purposes from at least 1931 to around 1975. Since 1975 the project site appears to have been occupied by Arlington High School.

3.1.4 Business/Manufacturing Activities

Based on a review of historical documents, no manufacturing activities have occurred on the project site. The project site is currently occupied by portable buildings for Arlington High School.

3.2 SURROUNDING PROPERTY LAND USES

The surrounding property is either residential or industrial commercial. The adjoining land uses are as follows:

North: Railroad tracks and further north of the railroad tracks is residential development.

South: Residential development.

East: Residential development.

West: Residential development.

Section 17213 of the California Education Code and Section 21151.8 of the California Public Resources Code prohibit construction of a school upon a current or former hazardous waste disposal site or solid waste disposal site. Based on information reviewed for preparation of this PEA Report, the existing campus is not located on a current or former disposal site.

3.3 PAST USAGE OF THE SITE

Past usage of the site was assessed through a review of aerial photographs and topographic maps. Copies of the aerial photographs and topographic maps are included in Appendix B. Based on a review of aerial photographs and historical topographic maps the project site was used for an orchard from approximately 1931 to about 1967. 1967 is when the project site is used for row crops until 1975 when Arlington High School occupies the project site. The proposed project site currently consists of approximately four portable classrooms, a shade structure, and an area where lockers had been located on the existing Arlington High School Campus's western side.

3.3.1 Aerial Photographs

Aerial photographs, obtained from EDR, dated 1931, 1938, 1948, 1953, 1967, 1975, 1985, 1990, 1994, 2006, 2009, 2012, and 2016 were reviewed for the project site. Copies of the aerial photographs are included in Appendix B.

- 1931 – The project site is occupied by an orchard and the surrounding area appears to be predominately orchards and row crop agriculture. There are a few structures, northwest, west, and southwest of the project site.

- 1938 – The project site and surrounding area appear relatively unchanged in comparison to the 1931 aerial photograph.

- 1948 – The project site and surrounding area appear relatively unchanged in comparison to the 1938 aerial photograph.

- 1953 – The project site appears relatively unchanged in comparison to the 1948 aerial photograph. There are more structures present to the northeast and northwest of the project site; however, orchards and row crops are still predominate around the project site.

- 1967 – The project site appears to now be utilized for row crop agriculture. Orchards are located to the east, southeast, south, and southwest of the project site. To the north, northeast, and northwest of the project site there is now denser residential development.

- 1975 – The project site is now part of Arlington High School campus. The aerial photograph is low resolution and it does not appear that there are any structures within the project area. There is a triangular sliver northwest of the main high school campus with structures and an agricultural field. Southeast, south, and southwest of the project site there appears to be more residential development.

- 1985 – The project area appears to consist of paved walkways and landscaping including trees. There is more residential development surrounding the high school campus. The only agriculture, other than northwest the project site, is towards the south. The project site appears relatively unchanged in comparison to the 1975 aerial photograph.

- 1990 – The project site appears to be a parking lot with shade structures. The surrounding area appears relatively unchanged in comparison to the 1985 aerial photograph.

- 1994 – The project site now appears to have three portables. The surrounding area appears relatively unchanged in comparison to the 1990 aerial photograph.

- 2006 – The project site appears as it does today with portables and shade structures. In the surrounding areas there are fewer structures in the triangular area northwest of the main campus and the agricultural field appears to be gone.

- 2009 – The project site appears relatively unchanged in comparison to the 2006 aerial photograph. There is more development south of the existing campus.

- 2012 – The project site appears relatively unchanged in comparison to the 2009 aerial photograph. The northwestern portion of the campus appears to be undergoing redevelopment. The surrounding area appears relatively unchanged in comparison to the 2009 aerial photograph.

- 2016 – The project site appears relatively unchanged in comparison to the 2012 aerial photograph. The area north of the project site, that appeared to be under construction in the previous aerial photograph, now has four baseball diamonds in the northwest corner and a renovated stadium to the northeast of the project site. The surrounding area appears relatively unchanged in comparison to the 2012 aerial photograph.

3.3.2 Historical Topographic Maps

Historical topographic maps, obtained from EDR dated 1901, 1942, 1947, 1953, 1967, 1973, 1980, and 2012 were reviewed for the project site. Copies of the topographic maps are included in Appendix B.

- 1901 – The project site appears to be a vacant lot with the San Bernardino and San Diego Railroad line running north of the project site. Victoria Avenue is depicted running south of the project site and there are roads that go northwest to southeast and northeast to southwest along the project site boundaries. There appears to be sparse development north, west, east, and southeast of the project site.

- 1942 – The project site appears relatively unchanged in comparison to the 1901 topographic map. Jackson Street running northwest to southeast of the project site is now labeled. Lincoln Avenue running southwest to northeast of the project site is now labeled. There appears to be more structures north, northeast, northwest, and west of the project site indicating more development in the area.

- 1947 – Along the northeastern portion of the project site an orchard is marked. There is no indication of any structures on the project site. Northwest of the project site is highlighted in

omission tint, which reflects dense development. The surroundings in general appear to have more development.

- 1953 – Most of the project site, except part of the northwestern portion, is depicted as being an orchard. South, southwest, southeast, and parts of the northeast of the surrounding area are also depicted as being orchards.
- 1967 – Only the northeastern portion of the project site is marked as being an orchard. The rest of the project site appears to be vacant. More of the area northwest, north, and northeast are highlighted in omission tint.
- 1973 – The orchard is no longer depicted on the site. Instead, there are now six larger structures and approximately eleven smaller structures concentrated in the southern corner of the existing school site, not within the project area. There continues to be more development surrounding the project site.
- 1908 – The project site and surrounding area appear relatively unchanged in comparison to the 1973 topographic map.
- 2012 – No structures are depicted in current topographic maps, only streets are labeled, and the topography shown.

3.3.3 Sanborn Maps

Sanborn maps were searched for the property, but it is an unmapped property. A copy of the Certified Sanborn Map Report is included in Appendix B.

3.3.4 City Directory

EDR provided an EDR-City Directory of the project site and surrounding area. A copy of the EDR-City Directory is in Appendix B. City Directory data was searched for the years spanning from 1921 to 2014. The project site is listed for the year 1977, 1981, 1986, 1990, 2001, 2005, 2010, and 2014.

- 1977 the existing high school campus is listed as Arlington High School
- 1981 the existing high school campus is listed as Arlington High School and US Salinity Lab.
- 1986 the existing high school campus is listed as Air Force Jr. Reserve Officer Training Corps (ROTC), Arlington High School, Attendance Office, and Guidance.
- 1990 the existing high school campus is listed as the United Stated Government due to the ROTC.
- 2001 the existing high school campus is listed as Arlington HI ATNDNC, Arlington HI Riverside SC Arlington, Arlington HI ROTC, Arlington HI, Aruntong HI GDNCE, and Riverside SC.

- 2005 the existing high school campus is listed as the Riverside Unified School District.
- 2010 the existing high school campus is listed as the Riverside Unified School District.
- 2014 the existing high school campus is listed as Arlington Golden Pride Band Bo and the Riverside Unified School District.

No other uses were identified.

3.4 PAST USAGE OF ADJOINING PROPERTIES

Past usage of the adjoining properties was assessed through a review of aerial photographs and historical topographic maps. Copies of historical references reviewed are included in Appendix B.

Based on a review of aerial photographs and historical topographic maps, adjoining properties have been utilized for agricultural purposes from at least 1931 to about 2016. Surrounding areas of the project site have been related to Arlington High School since the 1970s. Residential development begins to appear and expand around the existing high school campus in 1967. To the north of the existing high school campus and project site is the BNSF right-of-way rail line.

3.5 HAZARDOUS SUBSTANCE/WASTE MANAGEMENT INFORMATION

3.5.1 Records Review

3.5.1.1 SITE OWNER/OPERATOR RECORDS

Site owner/operator records were not reviewed.

3.6 STATE OF CALIFORNIA DIVISION OF OIL AND GAS RECORDS

Based on a review of the California Division of Oil and Geothermal Resources (DOGGR) Well Finder website, there are no oil or gas wells within the project site or on the existing high school campus. The nearest oil well is approximately 7.89 miles to the northwest of the project site. The well is identified as an abandoned oil well advanced by Scope Industries in December 1944. The well was abandoned in January of 1945.

3.6.1 Site Inspection Results

A site visit to observe site conditions was conducted by PlaceWorks on June 11, 2019. No weather-related conditions or other conditions that would limit our ability to observe the site occurred during our site reconnaissance.

Summarized below are observations relative to specific physical features identified in the PEA Guidance Manual and site photographs are included as Appendix A.

3. Site History and Background Information

Physical Feature	Observations
Site boundaries:	The project site consists of approximately 0.5-acres of the 45-acre Arlington High School campus located at 2951 Jackson Street. Residential dwellings surround the project site in all directions.
Locations and boundaries of all onsite operations (present and past):	Based on a review of aerial photographs the project site has been used as an agricultural field for orchard and then row crops since at least 1931 to 1975. The site is no longer used for agricultural purposes. The site is currently occupied by the Arlington High School.
Foundations of former structures:	None noted by PlaceWorks. But there are currently structures on site.
Storage tanks and storage areas:	None noted by PlaceWorks
Odors:	None noted by PlaceWorks.
Pools of liquid:	None noted by PlaceWorks.
Electrical or hydraulic equipment known or likely to contain PCBs:	None noted by PlaceWorks.
Unidentified substance containers (including empty drum storage):	None noted by PlaceWorks
Stained soil and pavement, corrosion, and degradation of floors and walls:	None noted by PlaceWorks.
Drains and Sumps:	None noted by PlaceWorks.
Pits, ponds, and lagoons:	None noted by PlaceWorks.
Surface drainage pathways:	None noted by PlaceWorks.
Stressed vegetation (from other than insufficient water):	None noted by PlaceWorks.
Solid waste and wastewater:	None noted by PlaceWorks.
Wells (including dry wells, irrigation wells, injection wells):	None noted by PlaceWorks.
Septic systems:	None noted by PlaceWorks.
Overhead electrical lines:	None noted by PlaceWorks.
High-pressure gas or fuel transmission lines:	No high-pressure gas pipelines were identified as being located on the site.
Railroad tracks:	Railroad tracks were identified within 1,500 feet of the site.

3.6.2 Prior Assessments/Remediation

No prior assessments or remediation exist for this site and were not reviewed by PlaceWorks.

3.7 REGULATORY STATUS

PlaceWorks utilized the electronic database service EDR to complete an environmental records review for the project site. The database search was used to identify properties that may be listed in the referenced Agency records, located within the American Society for Testing and Materials (ASTM)-specified search radii indicated below:

Database	Approximate Search Distance	Subject Site Listed?	Number of Sites within Search Area
Federal NPL Sites	1 mile	No	0
Federal Delisted NPL Sites	0.5 mile	No	0
CERCLIS Sites	0.5 mile	No	1
CERCLIS-NFRAP Sites	0.5 mile	No	0
Federal ERNS	Site only	No	0
RCRA non-CORRACTS TSD Facilities	0.5 mile	No	0
RCRA CORRACTS Facilities	1 mile	No	0

Database	Approximate Search Distance	Subject Site Listed?	Number of Sites within Search Area
RCRA Generators	Site and Adjoining	Yes	0
Federal Institutional/Engineering Control Registry	0.5 mile	No	0
State and Tribal Equivalent NPL Sites	1 mile	No	0
State and Tribal Equivalent CERCLIS Sites	1 mile	No	0
State and Tribal Registered Storage Tanks	Site and Adjoining	No	0
State and Tribal Landfills and Solid Waste Disposal Sites	0.5 mile	No	0
State and Tribal Leaking Storage Tanks	0.5 mile	No	1
State and Tribal Institutional Controls/Engineering Control	Site only	No	0
State and Tribal Voluntary Cleanup Sites	0.5 mile	No	0
State and Tribal Brownfield Sites	0.5 mile	No	0
Orphan Site List	Site and Adjoining	No	0
HAZNET	Site only	Yes	3

A review of selected regulatory agency databases for documented environmental concerns on the project site, or in close proximity to the project site, was conducted by EDR. A copy of the radius report, dated November 14, 2018 is included in Appendix C. The existing high school campus was identified on the HAZNET database for laboratory waste generated by the chemistry labs and for asbestos containing waste removed from the school. The high school campus is also listed on the South Coast Air Quality Management District (AQMD) Facility Information Detail database (FIND), with the facility ID of 24715, as emitting pollutants between the years 2001 and 2005. The FIND database also lists the school campus as having three inactive permits, two for afterburners with direct flame (1986) and one for a natural gas generator (1990). There is also one active permit listed for an emergency electrical natural gas generator (2013). The equipment list also shows that in 2016 the school applied for a permit for a boiler.

3.7.1 NPL Sites

The National Priorities List (NPL) is a list of contaminated sites that are considered the highest priority for clean-up by the EPA.

- The project site is not listed on the NPL database.
- The database search did not identify any NPL facilities within one mile of the project site.

3.7.2 CERCLIS Sites

The Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) list identifies sites which are suspected to have contamination and require additional investigation to assess if they should be considered for inclusion on the NPL.

- The project site is not listed on the CERCLIS database.
- One CERCLIS site was identified within a half mile of the project site.

- DC Power Mercury at 9337 Douglas Drive, approximately 0.333-miles west of the project site, is listed an active Superfund Site that is not listed on the National Priority List (NPL). According to the EPA Superfund Site Information page for DC Power Mercury, liquid waste was removed, and it was concluded that no site assessment work is needed for the facility. The EPA ID is CAN000909576. Based on the facility being topographically downgradient of the project site and oversight of the EPA, this case is not expected to have impacted the project site.

3.7.3 CERCLIS-NFRAP Sites

CERCLIS-NFRAP status indicates that a site was once on the CERCLIS List but has No Further Response Actions Planned (NFRAP). Sites on the CERCLIS-NFRAP List were removed from the CERCLIS List in February 1995 because, after an initial investigation was performed, no contamination was found, contamination was removed quickly, or the contamination was not significant enough to warrant NPL status.

- The project site is not listed on the CERCLIS-NFRAP database.
- The database search did not identify any CERCLIS-NFRAP sites within a half mile of the project site.

3.7.4 Federal ERNS List

The Federal Emergency Response Notification System (ERNS) list tracks information on reported releases of oil and hazardous materials.

- The project site is not listed on the ERNS database.

3.7.5 RCRA CORRACTS Facilities

The Resource and Conservation Recovery Act (RCRA) CORRACTS Facilities list catalogues facilities that treat, store, or dispose of hazardous waste and have been associated with corrective action activity.

- The project site is not listed on the RCRA CORRACTS Facilities list.
- The database search did not identify any RCRA CORRACTS Facilities within one mile of the project site.

3.7.6 RCRA non-CORRACTS TSD Facilities

The RCRA non-CORRACTS TSD Facilities list tracks facilities which treat, store, or dispose of hazardous waste and are not associated with corrective action activity.

- The project site is not listed on the RCRA non-CORRACTS TSD Facilities list.

- The database search did not identify any RCRA non-CORRACTS TSD facilities within a half mile radius of the project site.

3.7.7 RCRA Generators

The RCRA Generators list is maintained by the USEPA to track facilities that generate hazardous waste.

- Arlington High School is listed as a RCRA small quantity generator for 2006 for ignitable hazardous waste, corrosive waste and mercury. No violations were noted, and the waste is related to the chemistry classes.

- The database search did not identify any RCRA Generators within a half mile radius of the project site.

3.7.8 State-and-tribal equivalent CERCLIS List

The State-and-tribal equivalent CERCLIS List database identifies hazardous waste sites selected for remedial action and underground storage tank (UST) properties having a reportable release and is maintained by the DTSC.

- The project site is not listed on the State-and-tribal equivalent CERCLIS List.

- The database search did not identify any facilities on the State-and-tribal equivalent CERCLIS List within a half mile radius of the project site.

3.7.9 Registered Underground Storage Tanks (USTs)

The State Water Resources Control Board's Hazardous Substance Storage Container Database maintains a list of USTs regulated by the RCRA.

- The project site is not listed on the registered UST database.

- The database search did not identify any registered UST facilities within a quarter mile radius of the project site.

3.7.10 State Landfills and Solid Waste Disposal Sites

The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills. The data comes from the Integrated Waste Management Board's Solid Waste Information System database.

- The project site is not listed on the Solid Waste Facilities/Landfill Sites database.

- The database search did not identify any Solid Waste Facilities/Landfill Sites within a half mile of the project site.

3.7.11 State Leaking Underground Storage Tanks (LUSTs)

The State Water Resources Control Board's Leaking Underground Storage Tank Information System contains an inventory of LUST Incident Reports.

- The project site is not listed on the LUST database.
- The database search identified 1 LUST facilities within a half mile radius of the project site.
    - Brookhurst Mill at 3315 Van Buren Avenue, approximately 0.481-mile west of the project site, is listed because of a leak of diesel reported on August 23, 1994. Currently the cleanup status of the case is completed case closed as of January 12, 1995. Based on the current regulatory status and the facility being located topographically downgradient from the project site, it is not expected to have had an impact.

3.7.12 Local Lists of Hazardous Waste Contaminated Sites

A record search was done on the following databases: Clandestine Drug Labs, HIST Cal-Sites Historical CalSites Database, and Toxic Pits Cleanup Act Sites.

- The subject site is not listed on the Local List of Hazardous Waste Contaminated Sites.
- The database search did not identify any Local List of Hazardous Waste Contaminated Sites within the designated search radius.

3.7.13 High Risk Historical Records

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, and dry cleaners. There were no high-risk historical records identified within a half-mile of the project site.

3.7.14 HAZNET

The California Environmental Protection Agency, Department of Toxic Substances Control maintains a list of facility and manifest data.

- The Arlington High School Campus is listed on the HAZNET database.

  - The Arlington High School campus is identified on the EDR database as a HAZNET site for laboratory waste generated by the chemistry labs and removed from the campus 2003-2004 and again 2014-2016. The campus is also listed for asbestos containing waste removed from the school in 2002.

- The database search did not identify any properties on the HAZNET database within a quarter mile radius of the project site.

3.7.15 Other Databases

The existing high school campus was listed on CHMIRS, California Hazardous Material Incident Reporting System database that is maintained by the Office of Emergency Services. An incident occurred in April 1990. No details or violations were noted.

The athletic field at Arlington High School was listed on CIWQS, California Integrated Water Quality System that is maintained by the State and Regional Water Quality Control Board to track information, manage permits, track inspections and manage violations and enforcement activities. The high school campus was listed for storm water construction in 2012 for the installation of new athletic facilities. No violations were noted.

3. Site History and Background Information

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4. Apparent Problem

There is no physical or historic evidence of any site activity that might have caused any environmental impact to the site. However, there are potential environmental issues evaluated in this PEA. The PEA identified the following potential issues at the site:

- The possibility of residual pesticides present in the soil due to historical agricultural use of the site from approximately 1931 to around 1975.
- The possibility of residual lead from lead-based paint and termiticide usage on the project site due to placement of portable buildings.

Because the site is for a proposed school, there is a potential for children who will attend the school and adult employees of the school to be exposed to chemicals that may be present in soil. Potential exposure may occur from soil ingestion, dermal exposure to soil, and inhalation of particles. The sampling that was conducted as part of this PEA was directed at addressing these potential chemicals of concern and these potential exposure pathways.

Because of the presence of the above-mentioned concerns, a PEA was initiated for the site.

4. Apparent Problem

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5. Environmental Setting

This section describes potential exposure pathways and the site geology and hydrogeology.

5.1 FACTORS RELATED TO SOIL EXPOSURE PATHWAYS

5.1.1 Site Topography

Based on a review of the USGS 7½-Minute Topographic Series, Riverside West, California Quadrangle Maps (USGS 2015), the surface elevation of the subject property is approximately 860-feet above mean sea level. The site slopes gently toward the north.

5.1.2 Site Geology and Soil Types

Based on a review of the United States Geological Survey (USGS) 7.5-minute Topographic Series, Riverside West, California Quadrangle Map (USGS 2015), the project site is located in the northern part of the Peninsular Ranges Geomorphic Province. The Peninsular Ranges Geomorphic Province extends approximately 900 miles southward from the Los Angeles Basin to Baja California, Mexico and is characterized by elongated northwest-trending mountain ranges separated by sediment-floored valleys (Yerkes et al. 1965). The most dominant structural features of the province are the northwest-trending fault zones, most of which die out, merge with, or are terminated by the steep reverse faults at the southern margin of the San Gabriel Mountains within the Transverse Ranges Geomorphic Province. The site itself sits atop late to middle Pleistocene sandy alluvial fan deposits (Morton and Cox 2001).

No active faults are known to have been mapped within a half mile radius of the project site (Leighton Consulting 2010). The project site is approximately 9.5 miles northeast of the Chino-Central Avenue Fault.

The United States Department of Agriculture Natural Resources Conservation Services mapped the soil beneath the project site and is reported in the EDR radius report included in Appendix C. The soil component is Arlington, which has surface texture classified as fine sandy loam. This soil has moderate infiltration rated and is considered a well-draining soil.

5.1.3 Naturally Occurring Asbestos

Based on a review of A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos (Department of Conservation, Division of Mines and Geology 2000) and Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California (Van Gosen and Clinkenbeard 2011), the site is not located within a ten-mile radius from an area thought to contain naturally occurring asbestos (NOA).

5.1.4 Site Accessibility

The site is accessible off of Jackson Street to the southwest and Lincoln Avenue to the southeast.

5.1.5 Proximity to Nearby Receptors

Residential properties surround the campus in all directions. The project site is located within the campus, south of the baseball diamonds, north of Jackson Street, and northeast of the administration building.

5.2 FACTORS RELATED TO WATER PATHWAYS

The following sections describe factors related to potential water pathways.

5.2.1 Groundwater Pathway and Surface Water Information

The project site is located in the Upper Santa Ana River Drainage Area. The northern and eastern boundaries of the Upper Santa Ana River Drainage area are created by San Gabriel, San Bernardino, and San Jacinto mountains. The western and southern boundaries consist of the Chino Hills and the Santa Ana Mountains. The Santa Ana River, located about three miles north of the project site, is the principal surface water drainage feature. This principal surface water drainage feature is situated in the sub-basin of the Upper Santa Ana River Valley.

Groundwater was not encountered in any of the borings on the campus to a maximum depth of 51.5 feet below ground surface (bgs) (Leighton Consulting 2010). Leighton Consulting estimated that groundwater would be encountered below the site at around 95 feet bgs. The city of Riverside GIS notes that the Arlington High School campus is not subject to liquefaction.

5.2.2 Impacted Aquifers from Site Releases

There are no known site releases.

5.3 FACTORS RELATED TO AIR PATHWAYS

The site is classified as being in climate zone 10 by the California Energy Commission. It is an area that is semi-arid with hot, dry summers and mild winters. The Western Regional Climate Center collected data from Riverside from 1893 to 2016. The mean temperature in the area ranges from a low of 48.6° Fahrenheit (°F) in the winter to a high of 79.5°F in the summer. The average annual precipitation is 10.21 inches per year.

6. Sampling Activities and Results

This section describes methods and results of the soil sampling activities conducted at the site on June 11, 2019. Figure 5 shows the sampling locations for the project area. Table 1 provides a summary of the sampling and analysis program for the PEA. The Health and Safety Plan used for the site is included in Appendix D.

- Soil sampling activities were conducted at the site on June 11, 2019 for the PEA.
- Thirty-six (36) discrete soil samples plus 4 duplicates were collected.
- Two 2:1 composite samples, eight 3:1 composite samples, and two 4:1 composite samples plus one 4:1 composite sample duplicate samples were analyzed for organochlorine pesticides (OCPs) by EPA Method 8081A to assess for potential residual OCPs from historic agricultural operations and possible termiticides used on the structures. Half of the samples collected for OCP analysis were from 0 to 0.5 feet bgs and the other half were collected from 2 to 2.5 feet bgs.
- Four soil samples from 0 to 0.5 feet bgs were analyzed for arsenic by EPA Method 6010B to assess the historic agriculture.
- 18 soil samples plus one duplicate from 0 to 0.5 feet bgs were analyzed for lead by EPA Method 6010B near the painted structures.

6.1 UTILITY CLEARANCE

Prior to commencement of field activities, Dig Alert was notified of our intent to conduct subsurface investigations at least 48 hours prior to initiation of intrusive field tasks. Dig Alert contacted all utility owners of record within the site vicinity and notified them of our intention to conduct subsurface investigations in proximity to buried utilities. All utility owners of record, or their designated agents, were expected to clearly mark the position of their utilities on the ground surface throughout the area designated for investigation.

6.2 SAMPLING PROCEDURES

Soil samples were collected following protocols described in DTSC's PEA Guidance Manual (DTSC 2015), DTSC's Interim Guidance for Sampling Agricultural Properties (Third Revision) (DTSC 2008), and DTSC's Guidance for Evaluating School Sites with Potential Soil Contamination as a result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers (DTSC 2006). The sampling program that was implemented is included in Table 1 and all sampling locations are shown on Figure 5, Sampling Locations. A Professional Geologist was on-site to direct and observe all field activities.

6.2.1 Soil Sampling Methods and Procedures

Soil sampling was conducted by hand auguring at the sample locations The inside diameter of the core barrel was 1.5 to 2.0 inches. The sample barrel was retrieved, and the sample interval was observed, logged and preserved. Soil samples were preserved by placing the soil samples in glass jars provided by the laboratory.

Observations pertaining to the soil type were described by the field geologist. Each soil sample was labeled with the sample number, sample depth, and the date and time the sample was collected. Samples were immediately placed in an ice-filled cooler and listed on a chain-of-custody form. Any observation pertaining to potential soil contamination or soil source was recorded. The chain-of-custody form is included in Appendix E.

6.3 QUALITY CONTROL SAMPLING PROCEDURES

Field quality control samples associated with the sampling program included duplicate soil samples, equipment blanks, and soil matrix spike/matrix spike duplicate (MS/MSD) samples, in accordance with the DTSC PEA Guidance Manual (DTSC 2015). Duplicate soil samples were collected and analyzed and are listed on Table 1 for soil samples.

Field duplicate samples were collected and analyzed to evaluate sampling and analytical precision. Field duplicates for soil samples were collected at a rate of approximately 10% of the samples collected. The Quality Assurance Project Plan (QAPP) is included in Appendix F.

6.4 DECONTAMINATION PROCEDURES

All equipment that came into contact with the soil was decontaminated consistently to assure the quality of samples collected. Decontamination was conducted prior to and after each use of a piece of equipment. All sampling devices used were decontaminated using the following procedures:

- Non-phosphate detergent and distilled water wash, using a brush; and
- A double deionized/distilled water rinse.

6.5 INVESTIGATIVE-DERIVED WASTE MANAGEMENT

In the process of collecting environmental samples during the field-sampling program, different types of potentially contaminated investigation-derived wastes (IDW) were generated that include the following:

- Used personal protective equipment (PPE);
- Disposable sampling equipment;
- Soil cuttings; and

- Decontamination fluids.

The EPA's National Contingency Plan requires that management of IDW comply with all applicable or relevant and appropriate requirements to the extent practicable. The sampling plan followed the Office of Emergency and Remedial Response Directive 9345.3-02 dated May 1991, which provides the guidance for the management of IDW. In addition, other legal and practical considerations that may affect the handling of IDW will be considered.

Listed below are the procedures that were followed for handling the IDW:

- Used PPE and disposable equipment were double bagged and placed in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal landfill.

- Soil cuttings were returned to their original borehole.

6.6 ANALYTICAL RESULTS

Organochlorine pesticide results in soil are summarized in Table 2. Table 3 is a summary of arsenic and lead results. Laboratory summary reports for all analytes are included in Appendix E.

6.7 DISCUSSION OF RESULTS

6.7.1 Soil Description

Descriptions of the soils encountered and collected during the investigation were recorded by a field geologist. Soils were described as loose to medium dense reddish brown silty medium sand and medium stiff brown silt with sand. No staining, unusual odors, or visual signs of contamination were observed by the field geologist.

6.7.2 Soil Results

6.7.2.1 ORGANOCHLORINE PESTICIDES

Three OCPs, 4,4,'-DDD, 4,4,'-DDE, and 4,4,'-DDT, were detected in some of the composite samples.

4,4'-DDD was detected in one sample, 4:1 composite B-3, B-7, B-8, B-13 at 0.5' bgs at a concentration of 0.0022 mg/kg and the deeper soil sample collected from the same sample location was below the laboratory reporting limit. The 4,4'-DDD concentration is below the EPA Region 9 Regional Screening Levels (RSLs) for residential exposure adjusted for the number of samples in the composite, which is 0.475 mg/kg, indicating that 4,4'-DDD is not a concern for the site (Table 2).

4,4'-DDE was detected above the laboratory reporting limits at low concentrations in all the composite samples except composite B-4, B-9, B-14 at 2.5' bgs. The maximum concentration of 4,4'-DDE was detected in the 4:1 composite B-3, B-7, B-8, B-13 at 0.5' bgs at 0.25 mg/kg. The EPA Region 9 RSL for 4,4'-DDE

6. Sampling Activities and Results

adjusted for a 4:1 composite is 0.50 mg/kg. The maximum concentration detected in a 3:1 composite for 4,4'-DDE was 0.11 mg/kg in composite B-10, B-15, B-17 at 2.5' bgs. The EPA Region 9 RSL for 4,4'-DDE adjusted for a 3:1 composite is 0.66 mg/kg. The maximum concentration of 4,4'-DDE detected in the 2:1 composite B-11, B-18 at 0.5' bgs is 0.24 mg/kg. The EPA Region 9 RSL for 4,4'-DDE adjusted for a 2:1 composite is 1.00 mg/kg. All the concentrations of 4,4'-DDE detected are below the EPA Region 9 Regional Screening Levels (RSLs) for residential exposure adjusted for the number of samples in the composite.

4,4'-DDT was detected in one 4:1 composite sample above the laboratory reporting level. 4:1 composite B-3, B-7, B-8, B-13 at 0.5' bgs had a concentration of 4,4'-DDT at 0.0062 mg/kg and the deeper soil sample taken from the same location had a concentration of 4,4'-DDT at 0.0027 mg/kg. The EPA Region 9 RSL for 4,4'-DDT adjusted for a 4:1 composite is 0.475 mg/kg. The maximum concentration of 4,4'-DDT detected in a 3:1 was in composite B-10, B-15, B-17 at 2.5' bgs at 0.0035 mg/kg. The EPA Region 9 RSL for 4,4'-DDT adjusted for a 3:1 composite is 0.63 mg/kg. 2:1 composite B-11, B-16 at 0.5' bgs had a concentration of 4,4'-DDT at 0.0039 mg/kg and the deeper soil sample taken from the same location was below the laboratory screening limit. The EPA Region 9 RSL for 4,4'-DDT adjusted for a 2:1 composite is 0.95 mg/kg. All the concentrations of 4,4'-DDT detected are below the EPA Region 9 Regional Screening Levels (RSLs) for residential exposure adjusted for the number of samples in the composite.

Table 2 is a summary of the organochlorine pesticides detected at the site and their EPA Region 9 RSLs. Appendix E contains the laboratory reports.

6.7.2.2 LEAD

Lead was detected in the 18 soil samples and one duplicate soil sample collected at 0 to 0.5 feet bgs. Lead concentrations ranged from a minimum of 2.2 mg/kg to a maximum concentration of 7.6 mg/kg. The DTSC screening level for lead is 80 mg/kg. Lead results are summarized on Table 3. Laboratory reports for lead analysis are included in Appendix E.

6.7.2.3 ARSENIC

Arsenic was not detected above the laboratory reporting limits in the four soil samples. Arsenic results are summarized in Table 3 and laboratory reports for arsenic analysis are included in Appendix E.

7. Human Health Screening Evaluation

A human health screening assessment was conducted to evaluate the potential threat to human health at the project site. The established PEA screening process was used to determine if there are levels of contamination at the site that may cause a concern about effects on human health. The purpose of the human health risk screening evaluation was to assess whether levels of contaminants in soil at the site could pose a threat to human health under conservative (health-protective) exposure assumptions. The PEA requires a residential land use scenario regardless of current use and zoning.

7.1 CONCEPTUAL SITE MODEL

The potentially complete soil exposure pathways include soil ingestion, dermal exposure to soil, and inhalation of particulates and volatile organics detected in soil and soil gas. Potentially exposed populations for the site include on-site school age children and employees based on future land use plans. In addition, consistent with DTSC guidance, future unrestricted/residential land use was considered as the most health-protective and conservative land use for the assessment and hypothetical future onsite residents were also evaluated. In order to estimate what the potential exposures may be under current and future land use plans; risk calculations were conducted using the data that were collected for this investigation.

Figure 6 is the conceptual site model for the site. The primary sources of chemicals of concern for the site are from the historic land uses discussed in Section 3. The exposure assumptions for the resident assumes that exposure will occur 24 hours per day for seven days a week for 350 days per year for 26 years. This exposure scenario is very health protective for a school site where teachers, students and staff may occupy the site for a maximum of 250 days per year for eight to nine hours per day.

7.2 CHEMICALS OF CONCERN SELECTION

The chemicals of concern (COCs) for the site that were evaluated in the PEA screening risk assessment have been identified based on-site history, sampling results, DTSC guidance and protocol. Some composite samples had levels of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT above laboratory reporting levels, but below EPA Region 9 Regional Screening Limits (Table 2). Metals were not included as COCs because all detected concentrations were not detected above laboratory reporting limits (arsenic) or below DTSC's risk management level for schools (Table 3).

Because COCs were not identified for the site, additional risk assessment calculations are not necessary.

7.3 SOIL EVALUATION FOR ORGANOCHLORINE PESTICIDES

The concentrations of the three pesticides detected do not exceed the EPA Region 9 RSLs. A summary table is provided below showing the highest reported pesticide concentration at the site and the corresponding EPA Region 9 RSL .

Carcinogenic Risk Residential Exposure Using Maximum Concentrations in Soil

Chemical	Maximum Concentration mg/kg	Number of Samples in Composite	RSL mg/kg	RSL adjusted for number of samples in composite	Conc./RSL
4,4'-DDD	0.0022	4	2.3	0.575	0.0038
4,4'-DDE	0.25	4	2	0.5	0.5
4,4'-DDT	0.011	4	1.9	0.475	0.023
Total Risk					**5.3E-07**

The estimated cancer risk for the site using the maximum detected concentration assuming a residential land use exposure scenario is 5.3E-07, below the level of concern of 1.0E-06.

Hazard Index Residential Exposure Using Maximum Concentrations in Soil

Chemical	Maximum Concentration mg/kg	Number of Samples in Composite	RSL for Noncancer Risk mg/kg	RSL adjusted for composite	Conc./RSL
4,4'-DDD	0.0022	4	1.9	0.475	0.0046
4,4'-DDE	0.25	4	23	5.75	0.043
4,4'-DDT	0.011	4	37	9.25	0.0012
Total Hazard					**0.049**

The cumulative hazard index (HI) for noncarcinogenic risk for exposure to organochlorine pesticides in soil was significantly less than 1 using the maximum concentration for a residential exposure scenario. A total HI of 1 or less indicates that there is no cause of concern for adverse noncarcinogenic health effects.

The concentrations of the pesticides at the site do not pose a significant health risk to future users of the site under the most conservative assumptions using a residential land use exposure scenario and maximum reported concentrations reported. The pesticides were reported infrequently, and the risk analysis conservatively assumes that the highest reported concentrations are located throughout the site.

7.4 UNCERTAINTY ANALYSIS

The data collected are subject to uncertainty associated with sampling and analysis. These data are presented in other parts of the PEA. In the analysis it was assumed that samples collected were representative of

7. Human Health Screening Evaluation

conditions to which various populations may be exposed. However, the collected samples may not be completely representative due to biases in sampling and to random variability of samples. In general, sampling was biased toward areas of known and suspected elevated chemical concentrations, which will lead to an overestimation of risk when these results are assumed to represent a larger area. The placement of soil borings was in part, purposely biased to detect and characterize potential hot spots of soil based on historical site use. This type of sampling approach is likely to overestimate the chemical concentrations to which a receptor would be exposed and the potential health impact to the receptors evaluated.

Samples were analyzed using California State Certified Laboratory procedures and were subjected to limited review, to obtain data suitable for decision-making. However, it should be understood that sample analysis is subject to uncertainties associated with precision, accuracy and detection of chemicals at low concentrations.

7. Human Health Screening Evaluation

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8. Ecological Screening Evaluation

8.1 SITE CHARACTERIZATION

Based on visual observations during the site visit and information provided by the District, the site is currently occupied by the Arlington High school since 1975 and had been used as an orchard from 1931 to around 1967 and then for row crops from 1967 to 1975. The area is disturbed and does not support wildlife habitats.

8.2 BIOLOGICAL CHARACTERIZATION

The site is a disturbed area that has been developed and does not support wildlife habitats.

8.3 ECOLOGICAL PATHWAY ASSESSMENT

No assessment of potential exposures to sensitive ecological receptors is necessary based on the lack of chemicals of concern for the site.

8.4 ECOLOGICAL SCREENING EVALUATION SUMMARY

An ecological screening evaluation was not conducted for the site because of the lack of wildlife habitats and because chemicals of concern were not reported for the site.

8. Ecological Screening Evaluation

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9. Quality Assurance/Quality Control (QA/QC) Implementation

The QA/QC Program was implemented in accordance with the DTSC PEA Guidance Manual (DTSC 2015). The primary quality control features of the QA/QC program include the collection and analysis of field quality control samples and the data validation. The Quality Assurance Project Plan is included as Appendix F.

Quality control samples collected in the field included duplicate samples and equipment rinseate blanks as described in Section 6. The data for these quality control samples were reviewed as part of the data validation process, along with results from laboratory quality control analyses. Data validation was performed in compliance with DTSC's PEA Guidance Manual, using protocols consistent with the USEPA National Functional Guidelines (DTSC 2015). Each sample was analyzed for the specified suite of analyses presented in Section 6. Data from each of the analyses were evaluated with respect to the quality control criteria listed below. Data for the project as a whole were evaluated in terms of completeness.

- Holding times;
- Field blanks;
- Laboratory method and calibration blanks;
- Initial and continuing calibrations;
- System monitoring compounds (surrogates - organic analyses only);
- Laboratory control samples (LCS) and LCS duplicate samples (LCSD) - as applicable;
- Matrix spikes (MS)/Matrix spike duplicates (MSD);
- Field replicates/confirmatory samples; and
- Compound identification and quantitation.

Data quality for the project is very good, and the data collected are of acceptable quality for use in the screening evaluation.

Results from the field duplicate samples indicate appropriate sample collection and handling procedures were implemented, and that laboratory analytical precision was also acceptable.

9. Quality Assurance/Quality Control (QA/QC) Implementation

Data validation qualifier flags have been added to those data that did not meet acceptance criteria as defined in School Quality Assurance Project Plans. Results of the validation indicate that all samples collected and analyzed are useful in characterizing the site and assessing the human health and ecological risks for the site. No detectable concentrations were qualified as rejected (R) or were considered to be unusable based on the validation evaluation. Data qualified as estimated (J/UJ) exhibited some bias during analysis and should be considered as an approximate measure of the respective analyte concentration. Qualified data are presented along with the data results in the analytical summary tables provided in this report.

Field activities were observed to be conducted in a manner consistent with the QA/QC procedures presented in the DTSC PEA Guidance Manual (DTSC 2015). No findings were identified that significantly affect the quality of the samples collected or the resulting data evaluation.

9.1 DATA VALIDATION

Data validation was performed for all samples submitted as part of PlaceWorks' evaluation of soil. A&R Laboratories, Inc. was the lead laboratory for the PEA and performed the required soil analyses.

Validation was performed in accordance with the general guidance provided in the USEPA Functional Guidelines for Evaluating Inorganic Analyses (USEPA 1994) and in accordance with the professional judgment of the validation team. Validation was performed to assess analytical performance in terms of the DQOs accuracy, precision, sensitivity, and completeness. Comparability and representativeness DQOs for the samples collected are addressed by the correct implementation of the procedures defined in the sampling and analysis plan.

A summary of the validation program, in terms of the DQOs listed above, is provided in the following sections. Data qualifiers assigned to results, if required, were as follows:

A. Result is estimated due to failure to meet one of the DQO criteria associated with the sample result or associated sample batch. Results reported at concentrations below standard laboratory reporting limits, but above method detection limits, were flagged "J" by the laboratory, or "B" in the case of metals. These data are validated as J/estimated because they are below the reliable quantitation limits determined by the laboratory.

U. Result is qualified as not detected at the reported value. This qualifier is used when results from blank analyses indicate that detections in associated samples may be biased high due to potential contaminant conditions in the field or laboratory.

UJ. Result is qualified as not detected at the reported value, and the value is determined to be estimated. This qualifier commonly results when quality control failures are associated with analytes that are not detected, or when detections are qualified "U" due to blank contamination combined with a "J" qualifier resulting from another QC problem.

R. Result is rejected due to severe QC failure, or due to multiple lessor QC problems that are determined to be additive.

9.2 ACCURACY

Accuracy was evaluated by assessing the results of holding times, field and laboratory blanks, initial and continuing calibrations, surrogate spike recoveries (organic analyses), LCS recoveries, MS analyses, and interference check samples (metals by inductively coupled plasma).

Frequency and control criteria for initial and continuing calibration verifications were met. The method blank data showed non-detectable levels for all constituents. MS and MSD were performed at the required frequencies. All recoveries were within acceptable limits. LCS analysis was performed at required frequencies and all recoveries were within acceptable limits. Surrogate recoveries for all samples were within acceptable control limits.

9.3 PRECISION

Precision was evaluated by assessing the results between MS and MSD analyses, LCS and LCSD analyses, between laboratory duplicate analyses. The precision DQO was generally satisfied for the samples collected during the project. Precision was evaluated as the relative percent difference (RPD) between control sample results. RPD criteria reported by the laboratory were used to assess precision. RPDs were within the appropriate control limits and precision is considered acceptable.

9.4 SENSITIVITY

Sensitivity was addressed by ensuring that the reporting limits provided by the laboratories met those as requested in the workplans and task orders provided to the laboratory. Data were qualified in cases where results were reported at concentrations below standard laboratory reporting limits, but above the method detection limits that may have been required to meet the sensitivity requirements for the project. Such results were flagged by the laboratory as either J or B qualified data. These data retain a J/estimated qualifier due to potential decreased reliability at low concentration levels.

9.5 COMPLETENESS

Completeness is an evaluation of the overall sampling program with respect to data generated that is usable versus data that may have been rejected. No data was rejected during the data validation process for this project. The completeness objectives (minimum 90 percent) for this project are therefore considered to be satisfied for all analyses.

9.6 DATA VALIDATION CHART

The following table is a summary of pertinent quality indicators that were verified during the data validation process.

9. Quality Assurance/Quality Control (QA/QC) Implementation

ACCEPTABILITY		
QUALITY INDICATOR	SOIL EPA Method 6010B Target Analyte: Arsenic	SOIL EPA Method 8081A Target Analyte: 4,4'-DDT
Completeness of Laboratory Reports (e.g., laboratory, client, and sample identifications; ELAP certification number, project name, sample matrix, sample collection, preservation, preparation, extraction, analysis dates; analytical methods; analytes; reporting units and limits; dilution factors; report page numbering system; designated title and signatures)	Y See discussion above	Y See discussion above
Reporting Limit (RL)	Y 1 mg/kg for ARL	Y 0.0020 mg/kg for ARL
Chain of Custody	Y	Y
Sample Containers and Conditions	Y	Y
Holding Time (<28 days)	Y	Y
Sample Preservation	Y	Y
Equipment Rinsate Blanks	Y	Y
Field Duplicates	Y	Y
Field QC Samples – Others	NA	NA
Surrogate Recoveries	NA	NA
Method Blanks	Y	Y
LCS % Recovery	Y	Y
MS/MSD % Recovery	See discussion above	See discussion above
MS/MSD % RPD	See discussion above	See discussion above
Laboratory Duplicates	See discussion above	See discussion above
Laboratory QC Samples – Others	NA	NA
Compound Identification	Y	Y
Compound Quantitation	Y	Y
Dilution Factors	Y	Y
Data Qualifiers	Y	Y
Confirmation of Positive Samples	NA	NA
Observations of Significance	NA	NA
Case Narrative	Y	Y
Instrument Tuning	NA	NA
Initial Calibration	Lab	Lab
Calibration Verification	Lab	Lab
Interference Check Standard	NA	NA
Others	NA	NA

NOTES:
Y = acceptable or in compliance
NA = not applicable
Lab = responsible by the Laboratory

10. HASP Implementation

PlaceWorks prepared a site-specific HASP pursuant to Health and Safety Code 1910.120. The plan addressed the following:

- Identification and description of potentially hazardous substances that may be encountered during field operations;
- PPE and clothing for site activities; and
- Measures that need to be implemented in the event of an emergency.

PlaceWorks field personnel reviewed the HASP prior to commencing fieldwork. Prior to initiation of field activities each day, a site safety briefing was conducted to identify potential physical and chemical hazards and measures to be taken in event of an emergency. All on-site personnel were required to sign the site safety briefing form.

During field activities, all personnel within the exclusion zone wore appropriate level D PPE. A copy of the HASP is contained in Appendix D.

10. HASP Implementation

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11. Field Variances

Soil sampling was conducted on the project area in general accordance with the approved work plan, PEA Guidance Manual (DTSC 2015), and Interim Guidance for Sampling Agricultural Properties (Third Revision) (DTSC 2008).

11. Field Variances

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12. Evaluations of Applicable or Relevant Laws and Regulations Pertaining to School Sites

State of California Department of Education Code Section 17213 and Public Resources Code 21151.8 prohibit the approval of a project involving the purchase of a school site or the construction of a new elementary or secondary school by a school district unless the district first determines whether the site is:

- The site of a current or former hazardous waste disposal site or solid waste disposal site and, if so, whether the wastes have been removed.
- A hazardous substance release site identified by the State Department of Health Services in a current list adopted pursuant to Section 25356 for removal or remedial action pursuant to Chapter 6.8 (commencing with Section 25300) of Division 20 of the Health and Safety Code.
- A site which contains one or more pipelines, situated underground or aboveground, which carries hazardous substance, acutely hazardous materials or hazardous wastes, unless the pipeline is a natural gas line which is used only to supply natural gas to that school or neighborhood.
- In addition, the school district must contact the local air pollution control district to identify any facilities located within ¼-mile of the proposed school site that might reasonably be anticipated to emit hazardous emissions or handle hazardous materials, substances or waste. If any facilities exist within the ¼-mile the district must be able to make a written finding that:

  a) The health risks from the facilities do not and will not constitute an actual or potential endangerment of public health to persons who attend or are employed at the proposed school; or

  b) If potential hazards exist and have been identified, corrective measures can be implemented that mitigate air emissions to levels that do not constitute an actual potential endangerment of public health to persons who would attend or be employed at the proposed school.

For this proposed school site, a records search of any hazardous waste/substance storage, treatment, or disposal activities at the site and within a ¼-mile of the site was conducted. No evidence of the site being used as a solid waste or hazardous waste disposal site was found. There was no indication that aboveground or underground pipelines are located on the school site.

12. Evaluations of Applicable or Relevant Laws and Regulations Pertaining to School Sites

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13. Conclusions and Recommendations

After reviewing and analyzing the analytical and human health screening evaluation results of this PEA, PlaceWorks concludes the following with respect to the site:

- Soil sampling activities were conducted at the site on June 11, 2019 for the PEA.
- Thirty-six (36) discrete soil samples plus 4 duplicates were collected.
- Two 2:1 composite samples, eight 3:1 composite samples, and two 4:1 composite samples plus one 4:1 composite sample duplicate samples were analyzed for organochlorine pesticides (OCPs) by EPA Method 8081A to assess for potential residual OCPs from historic agricultural operations and possible termiticides used on the structures. Half of the samples collected for OCP analysis were from 0 to 0.5 feet bgs and the other half were collected from 2 to 2.5 feet bgs.
- Four soil samples from 0 to 0.5 feet bgs were analyzed for arsenic by EPA Method 6010B to assess the historic agriculture.
- 18 soil samples plus one duplicate from 0 to 0.5 feet bgs were analyzed for lead by EPA Method 6010B near the painted structures.

.The results of the field program are summarized below:

- Three OCPs were detected in the composite soil samples (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT). All concentrations detected of the OCPs were below residential screening levels adjusted for the number of samples that comprised the composite.
- Arsenic was not detected above the laboratory reporting limits in the four soil samples analyzed.
- Lead was detected in the 18 soil samples and duplicate soil sample collected at 0 to 0.5 feet bgs. Lead concentrations ranged from a minimum of 2.2 mg/kg to a maximum concentration of 7.6 mg/kg. All lead concentrations were below the DTSC screening level of 80 mg/kg.
- The human health risk screening showed that chemical concentrations would not be a risk to human health or the environment under an unrestricted residential land use scenario.
- Laboratory data obtained were validated to assure that Data Quality Objectives (DQOs) were met and the data were suitable for use in a human health and ecological screening evaluation.

13. Conclusions and Recommendations

13.1 RECOMMENDATIONS

The results of the PEA support the following conclusions and recommendations:

Based on the PEA objectives, the environmental quality goals of the District, and the results of the PEA investigation, PlaceWorks has determined that no further assessment is required for the site. Per California Education Code Section 17213.1, Section 3, PlaceWorks concludes that no further assessment of the site is necessary and is requesting an approval of the PEA.

14. References

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14. References

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Tables

Tables

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TABLE 1
SAMPLING AND ANALYSIS PROGRAM
Arlington High School
Riverside Unified School District
Riverside California

Sample Number	Depth (feet bgs)	Date	Rationale	EPA 8081A OCPs	EPA 6010B Arsenic	EPA 6010B Lead
Soil Samples						
B-1	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-1, B-5, B-16		D
	2.5'			Composite B-1, B-5, B-16		
B-2	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-2, B-6, B-12		D
	2.5'			Composite B-2, B-6, B-12		
B-3	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-3, B-7, B-8, B-13		D
	2.5'			Composite B-3, B-7, B-8, B-13		
B-3 DUP	0.5'	6/11/2019	Duplicate	Composite B-3 DUP, B-7 DUP, B-8 DUP, B-13 DUP		
	2.5'			-		
B-4	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-4, B-9, B-14	D	D
	2.5'			Composite B-4, B-9, B-14		
B-5	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-1, B-5, B-16	D	D
	2.5'			Composite B-1, B-5, B-16		
B-6	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-2, B-6, B-12		D
	2.5'			Composite B-2, B-6, B-12		
B-7	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-3, B-7, B-8, B-13		D
	2.5'			Composite B-3, B-7, B-8, B-13		
B-7 DUP	0.5'	6/11/2019	Duplicate	Composite B-3 DUP, B-7 DUP, B-8 DUP, B-13 DUP		
	2.5'			-		
B-8	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-3, B-7, B-8, B-13		D
	2.5'			Composite B-3, B-7, B-8, B-13		
B-8 DUP	0.5'	6/11/2019	Duplicate	Composite B-3 DUP, B-7 DUP, B-8 DUP, B-13 DUP		
	2.5'			-		
B-9	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-4, B-9, B-14	D	D
	2.5'			Composite B-4, B-9, B-14		
B-10	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-10, B-15, B-17		D
	2.5'			Composite B-10, B-15, B-17		
B-11	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-11, B-18		D
	2.5'			Composite B-11, B-18		
B-12	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-2, B-6, B-12		D
	2.5'			Composite B-2, B-6, B-12		
B-13	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-3, B-7, B-8, B-13		D
	2.5'			Composite B-3, B-7, B-8, B-13		
B-13 DUP	0.5'	6/11/2019	Duplicate	Composite B-3 DUP, B-7 DUP, B-8 DUP, B-13 DUP		D DUP
	2.5'			-		
B-14	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-4, B-9, B-14	D	D
	2.5'			Composite B-4, B-9, B-14		
B-15	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-10, B-15, B-17		D
	2.5'			Composite B-10, B-15, B-17		
B-16	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-1, B-5, B-16		D
	2.5'			Composite B-1, B-5, B-16		
B-17	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-10, B-15, B-17		D
	2.5'			Composite B-10, B-15, B-17		
B-18	0.5'	6/11/2019	Historic Agriculture and Structures	Composite B-11, B-18		D
	2.5'			Composite B-11, B-18		
				12 C, 1 DUP, 1 EB	4 D, 1 EB	18 D, 1 DUP, 1 EB

Note:
OCPs = organochlorine pesticides
D=Discrete; C=Composite; DUP=Duplicate; EB=Equipment Blank

TABLE 2
SUMMARY TABLE OF ORGANOCHLORINE PESTICIDES IN SOIL
Arlington High School
Riverside Unified School District
Riverside, California

			Concentration (milligrams per kilogram [mg/kg])		
Sample Number	**Depth (feet bgs)**	**Sample Date**	**4,4´-DDD**	**4,4´-DDE**	**4,4´-DDT**
Composite B-1, B-5, B-16	0.5'	6/11/2019	<0.0020	**0.013**	<0.0020
	2.5'		<0.0020	**0.053**	<0.0020
Composite B-2, B-6, B-12	0.5'	6/11/2019	<0.0020	**0.022**	<0.0020
	2.5'		<0.0020	**0.066**	**0.0026**
Composite B-3, B-7, B-8, B-13	0.5'	6/11/2019	**0.0022**	**0.25**	**0.0062**
	2.5'		<0.0020	**0.15**	**0.0027**
Composite B-3 DUP, B-7 DUP, B-8 DUP, B-13 DUP	0.5'	6/11/2019	<0.0020	**0.14**	**0.011**
Composite B-4, B-9, B-14	0.5'	6/11/2019	<0.0020	**0.12**	<0.0020
	2.5'		<0.0020	<0.0020	<0.0020
Composite B-10, B-15, B-17	0.5'	6/11/2019	<0.0020	**0.096**	<0.0020
	2.5'		<0.0020	**0.11**	**0.0035**
Composite B-11, B-18	0.5'	6/11/2019	<0.0020	**0.24**	**0.0039**
	2.5'		<0.0020	**0.043**	<0.0020
EQUIPMENT BLANK					
			Concentration (milligram per liter [mg/L])		
EB061119					
Maximum Concentration Detected			0.0022	0.25	0.011
EPA Region 9 RSLs			2.3	2	1.9
EPA Region 9 RSLs for 2:1 Composite			1.15	1	0.95
EPA Region 9 RSLs for 3:1 Composite			0.77	0.66	0.63
EPA Region 9 RSLs for 4:1 Composite			0.575	0.50	0.475

Notes:

< - Non detect at the established method detection limit.

EPA= Environmental Protection Agency, RSL= Regional Screening Levels

Samples analyzed by EPA Method 8081A

EPA Region 9 Regional Screeening Level April 2019 Residential soil in mg/kg;

The complete laboratory analytical reports are included in Appendix E.

TABLE 3
SUMMARY TABLE OF ARSENIC AND LEAD IN SOIL
Arlington High School
Riverside Unified School District
Riverside, California

			Concentration (milligrams per kilogram [mg/kg])	
Sample Number	**Sample Depth**	**Sample Date**	**Arsenic**	**Lead**
B-1	0.5'	6/11/2019	-	5.87
B-2	0.5'	6/11/2019	-	5.4
B-3	0.5'	6/11/2019	-	3.11
B-4	0.5'	6/11/2019	<1.00	2.94
B-5	0.5'	6/11/2019	<1.00	3.9
B-6	0.5'	6/11/2019	-	2.16
B-7	0.5'	6/11/2019	-	3.81
B-8	0.5'	6/11/2019	-	7.6
B-9	0.5'	6/11/2019	<1.00	4.41
B-10	0.5'	6/11/2019	-	3.78
B-11	0.5'	6/11/2019	-	4.28
B-12	0.5'	6/11/2019	-	3.29
B-13	0.5'	6/11/2019	-	4.81
B-13 DUP	0.5'	6/11/2019	-	4.68
B-14	0.5'	6/11/2019	<1.00	3.45
B-15	0.5'	6/11/2019	-	4.62
B-16	0.5'	6/11/2019	-	3.43
B-17	0.5'	6/11/2019	-	4.1
B-18	0.5'	6/11/2019	-	4.62
EQUIPMENT BLANK				
			Concentration (milligram per liter [mg/L])	
EB061119	NA	6/11/2019	<0.0200	<0.0100
Number of Samples			4	19
Number of Detects			0	19
Maximum			<1.00	7.6
Minimum			<1.00	2.2
DTSC SLs			12	80

Notes:

< - Non detect at the established method detection limit.

DTSC= Department of Toxic Substances Control, SLs= Screening Levels

The complete laboratory analytical reports are included in Appendix E.

Figures

Figures

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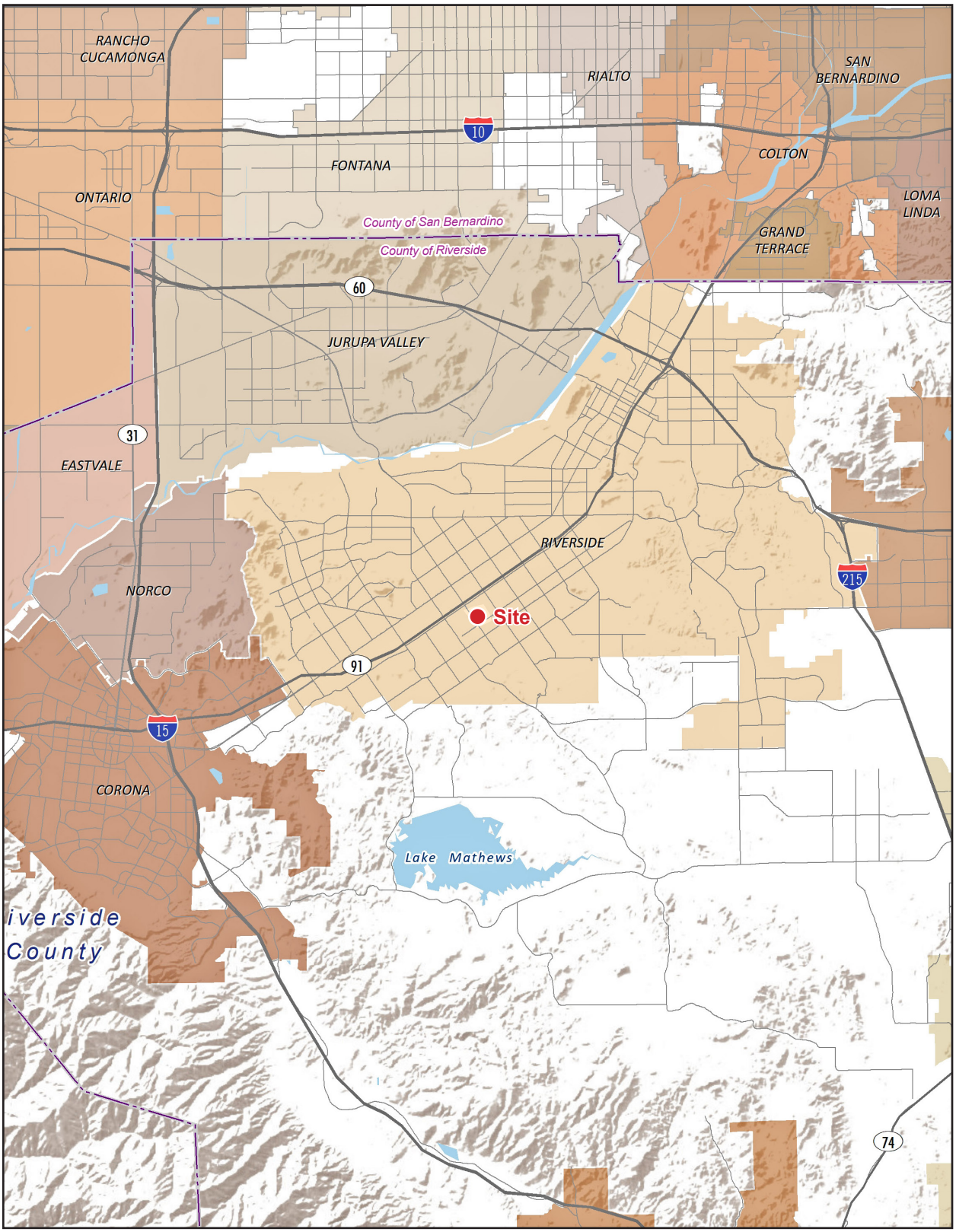
Figure 1 - Regional Location

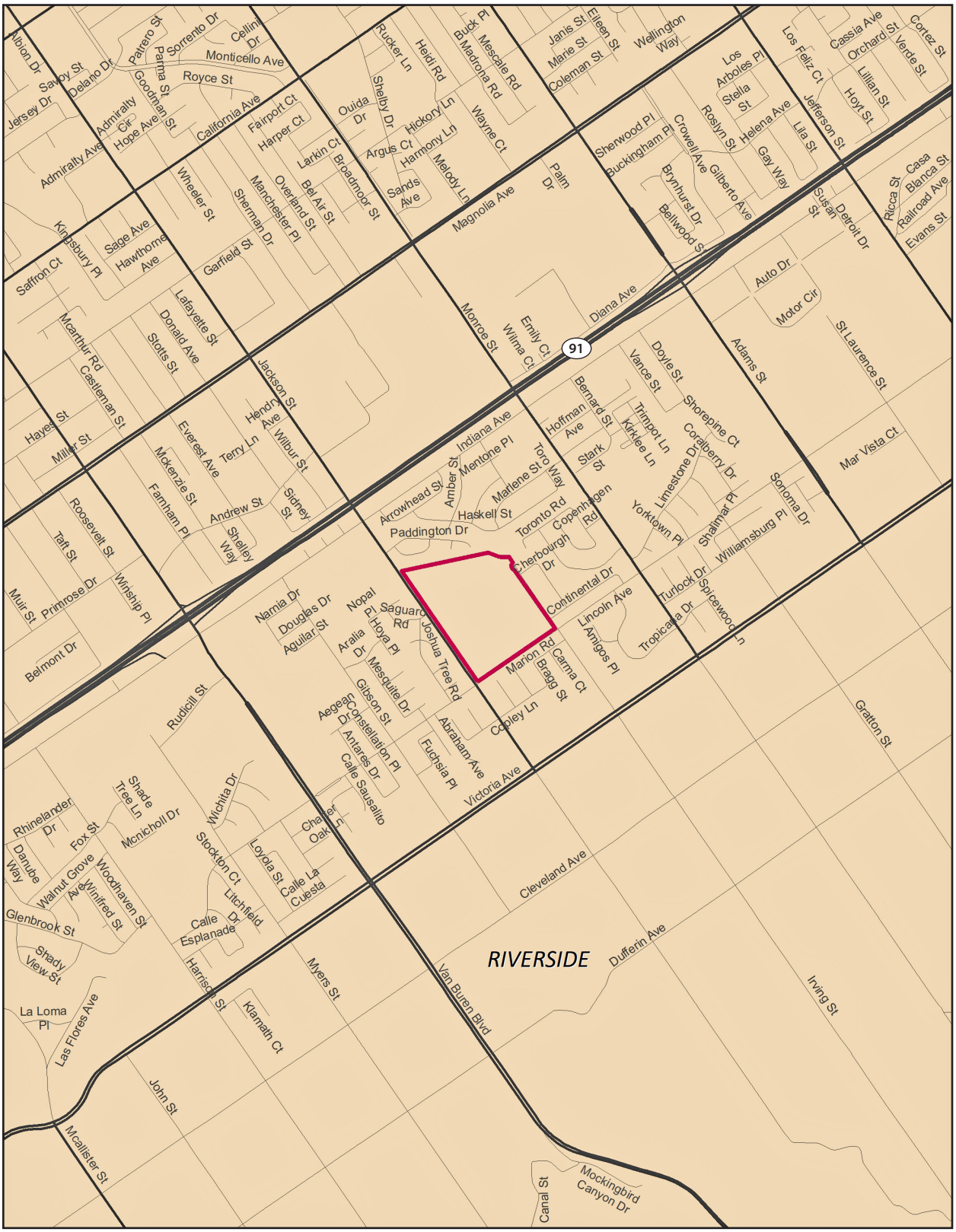


Note: Unincorporated county areas are shown in white.

0 3
Scale (Miles)

Source: ESRI, 2018

Figure 2 - Local Vicinity



School Boundary

0 2,000
Scale (Feet)

Source: ESRI, 2018

Figure 3 - Aerial Photograph

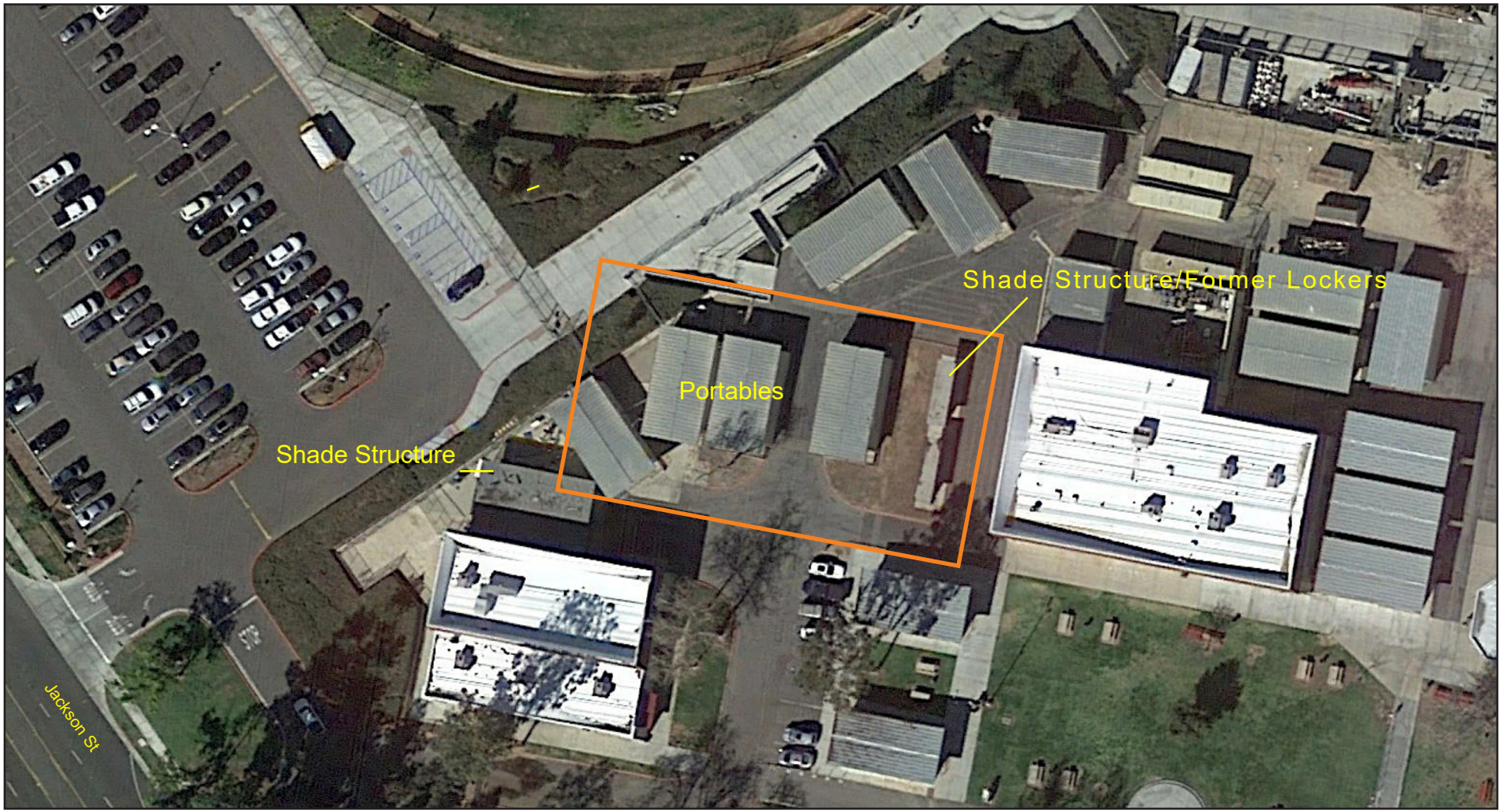
School Boundary

Project Area

Source: ESRI, 2018

0 700
Scale (Feet)

Figure 4 - Aerial of Project Area



Project Area

0 60
Scale (Feet)

Source: Google Earth Pro, 2019

Figure 5 - Sampling Locations

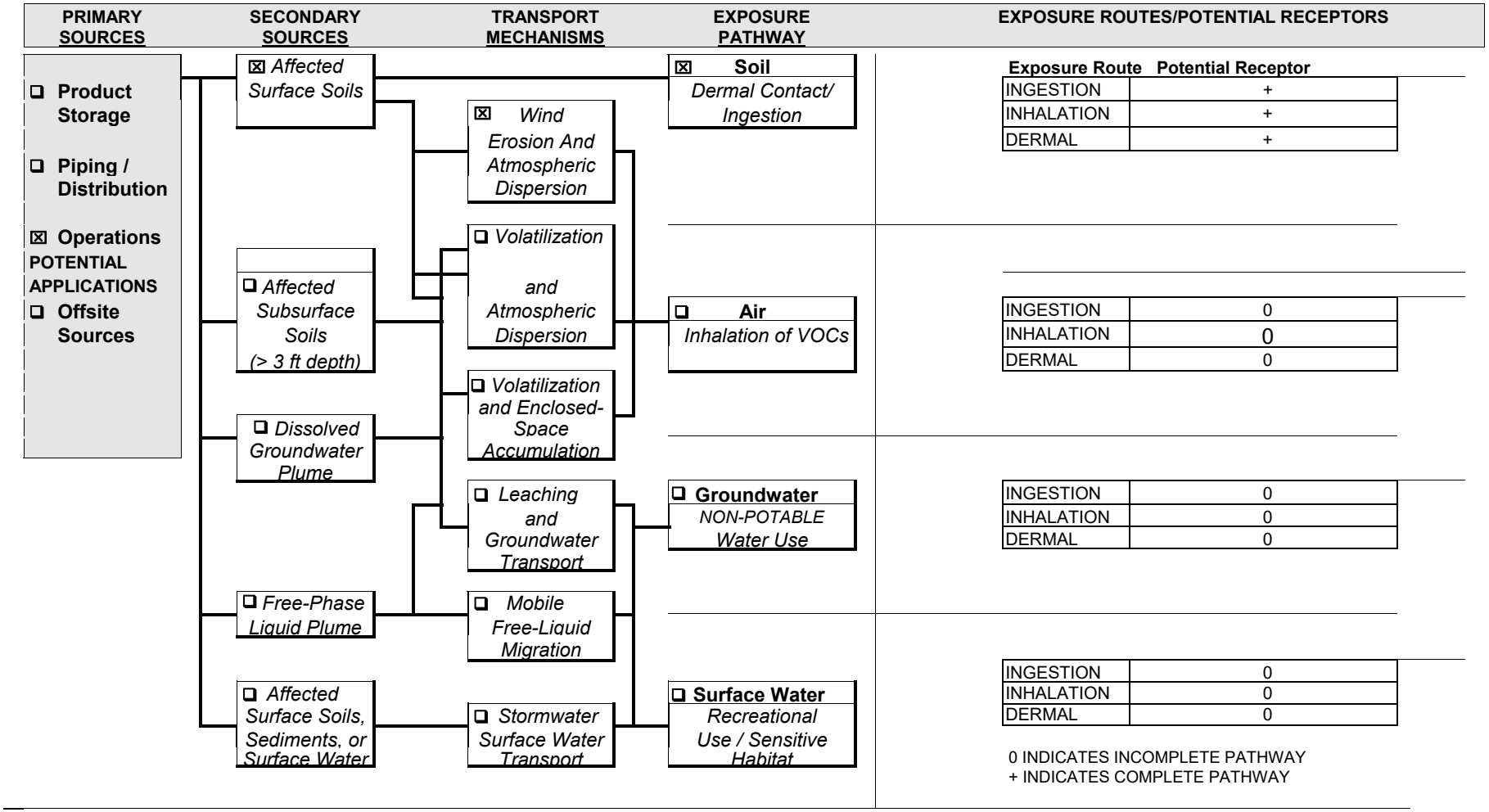
Project Area

B-1 Sampling Locations (18)

0 20
Scale (Feet)

Source: Google Earth Pro, 2018

Arlington High School
Riverside Unified School District
Riverside, California



Appendix A. Site Photographs

Appendix

This page intentionally left blank.

PLACEWORKS

SITE PHOTOGRAPHS

Client Name: Riverside Unified School District

Site Location: Arlington High School

Project No.: RIV-24.0

Photo No:	Date:
1	6/11/2019

Description:

View looking west northwest towards portable classrooms to the right and the auxiliary gym to the left.

Photo No:	Date:
2	6/11/2019

Description:

View looking north northeast towards portable classrooms and former locker structure to the right.

PLACEWORKS

SITE PHOTOGRAPHS

Client Name: Riverside Unified School District

Site Location: Arlington High School

Project No.: RIV-24.0

Photo No:	Date:
3	6/11/2019

Description:

View looking northeast at former locker structure.

Photo No:	Date:
4	6/11/2019

Description:

View looking southwest at a concession/restroom /auxiliary gym building.

Appendix B. Research Documentation

Appendix

This page intentionally left blank.

Arlington High School

2951 Jackson Street

Riverside, CA 92504

Inquiry Number: 5485212.8

November 15, 2018

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

11/15/18

Site Name:

Arlington High School
2951 Jackson Street
Riverside, CA 92504
EDR Inquiry # 5485212.8

Client Name:

PlaceWorks
3 MacArthur Place Suite 1100
Santa Ana, CA 92707
Contact: Denise Clendening

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1994	1"=500'	Acquisition Date: June 01, 1994	USGS/DOQQ
1990	1"=500'	Flight Date: August 29, 1990	USDA
1985	1"=500'	Flight Date: September 13, 1985	USDA
1975	1"=500'	Flight Date: August 01, 1975	USGS
1967	1"=500'	Flight Date: May 15, 1967	USDA
1953	1"=500'	Flight Date: September 22, 1953	USDA
1948	1"=500'	Flight Date: July 20, 1948	USGS
1938	1"=500'	Flight Date: May 30, 1938	USDA
1931	1"=500'	Flight Date: September 18, 1931	FAIR

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INQUIRY #: 5485212.8
YEAR: 2016
= 500'
N
EDR

INQUIRY #: 5485212.8
YEAR: 2012
= 500'
N
EDR

INQUIRY #: 5485212.8
YEAR: 2009
= 500'
N
EDR

INQUIRY #: 5485212.8
YEAR: 2006
= 500'
N
EDR

INQUIRY #: 5485212.8
YEAR: 1994
= 500'
N
EDR

INQUIRY #: 5485212.8
YEAR: 1990
= 500'
N
EDR

INQUIRY #: 5485212.8

YEAR: 1985

= 500'

N

EDR

INQUIRY #: 5485212.8

YEAR: 1975

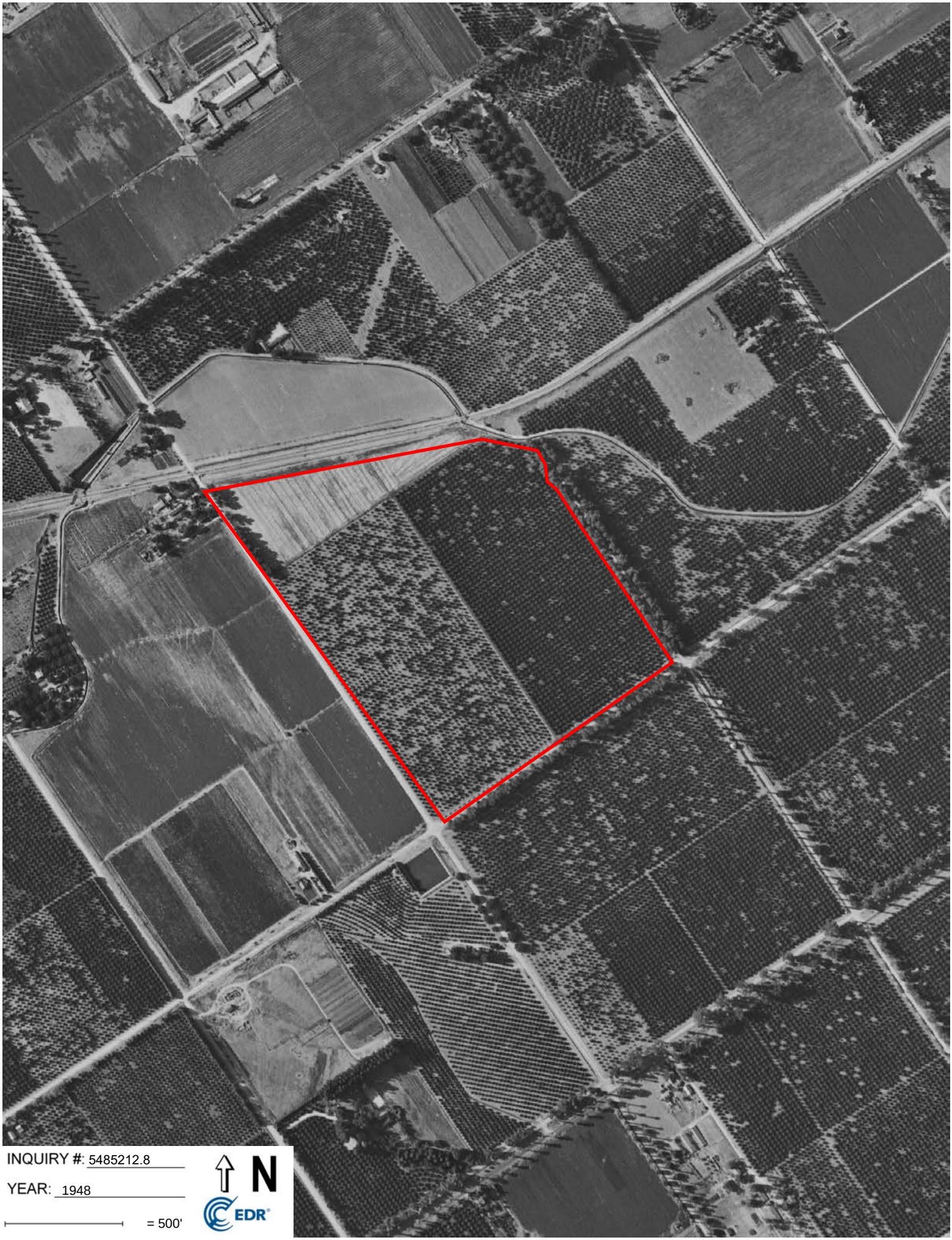
= 500'

N

EDR

INQUIRY #: 5485212.8
YEAR: 1967
= 500'
N
EDR

INQUIRY #: 5485212.8
YEAR: 1953
= 500'
N
EDR


INQUIRY #: 5485212.8
YEAR: 1948
= 500'
N
EDR

INQUIRY #: 5485212.8
YEAR: 1938
= 500'
N
EDR

INQUIRY #: 5485212.8

YEAR: 1931

= 500'

N

EDR

Arlington High School

2951 Jackson Street

Riverside, CA 92504

Inquiry Number: 5485212.4

November 14, 2018

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

11/14/18

Site Name:	Client Name:
Arlington High School	PlaceWorks
2951 Jackson Street	3 MacArthur Place Suite 1100
Riverside, CA 92504	Santa Ana, CA 92707
EDR Inquiry # 5485212.4	Contact: Denise Clendening

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by PlaceWorks were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	RIV-24.0	**Latitude:**	33.914685 33° 54' 53" North
Project:	Arlington High School	**Longitude:**	-117.428337 -117° 25' 42" West
		UTM Zone:	Zone 11 North
		UTM X Meters:	460404.36
		UTM Y Meters:	3752779.07
		Elevation:	861.02' above sea level

Maps Provided:

2012
1980
1973
1967
1953
1947
1942
1901

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

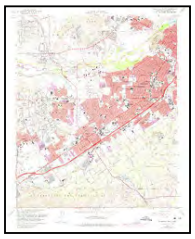
2012 Source Sheets

Riverside West
2012
7.5-minute, 24000

1980 Source Sheets

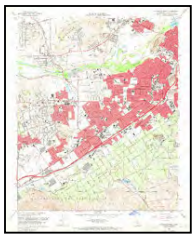
Riverside West
1980
7.5-minute, 24000
Aerial Photo Revised 1978

1973 Source Sheets



Riverside West
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1967 Source Sheets

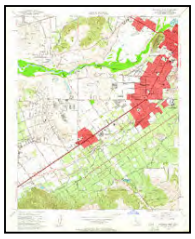


Riverside West
1967
7.5-minute, 24000
Aerial Photo Revised 1966

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1953 Source Sheets



Riverside West
1953
7.5-minute, 24000
Aerial Photo Revised 1951

1947 Source Sheets

RIVERSIDE
1947
15-minute, 50000

1942 Source Sheets

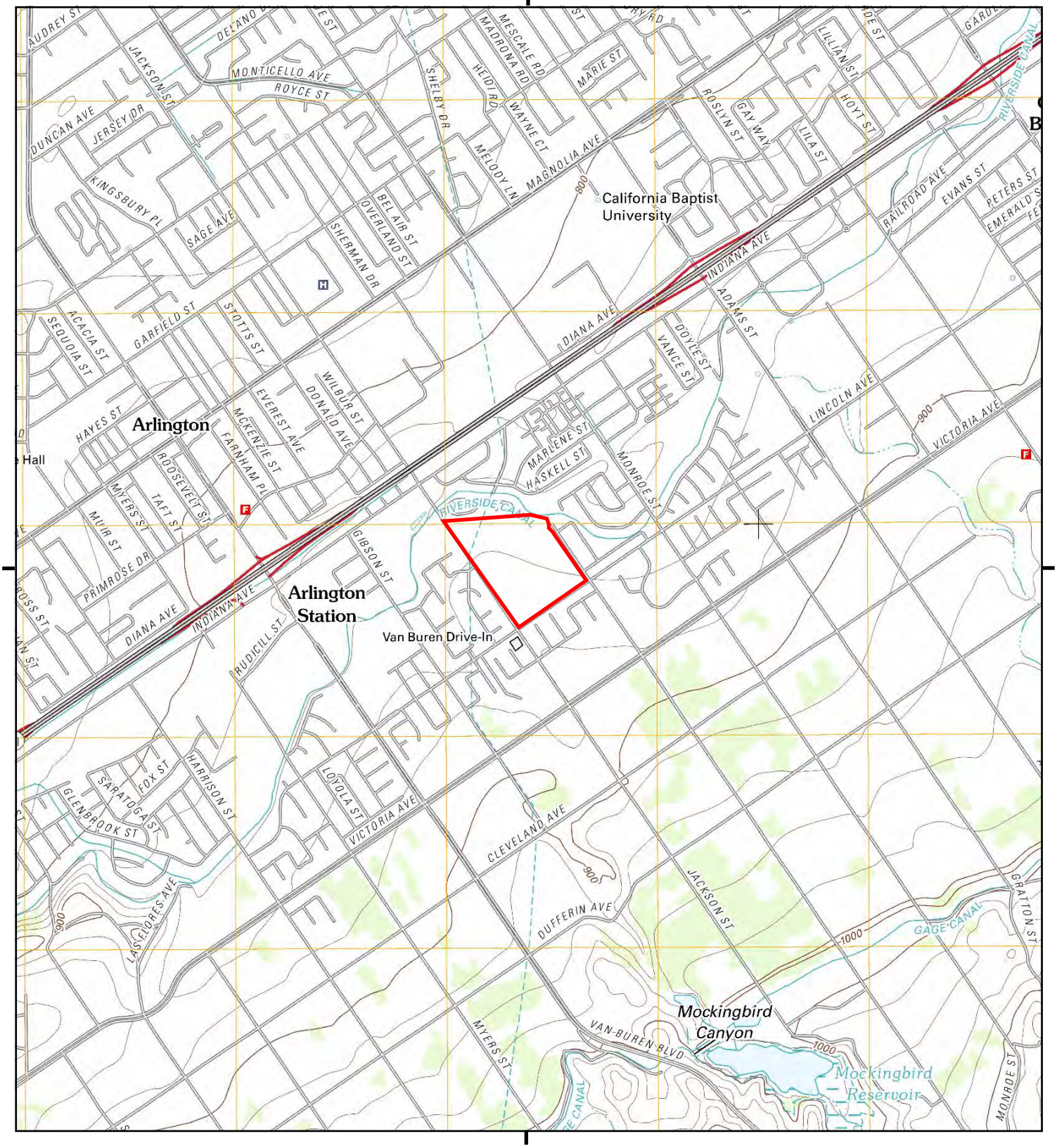
RIVERSIDE VICINITY
1942
7.5-minute, 31680

1901 Source Sheets

Riverside
1901
15-minute, 62500

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

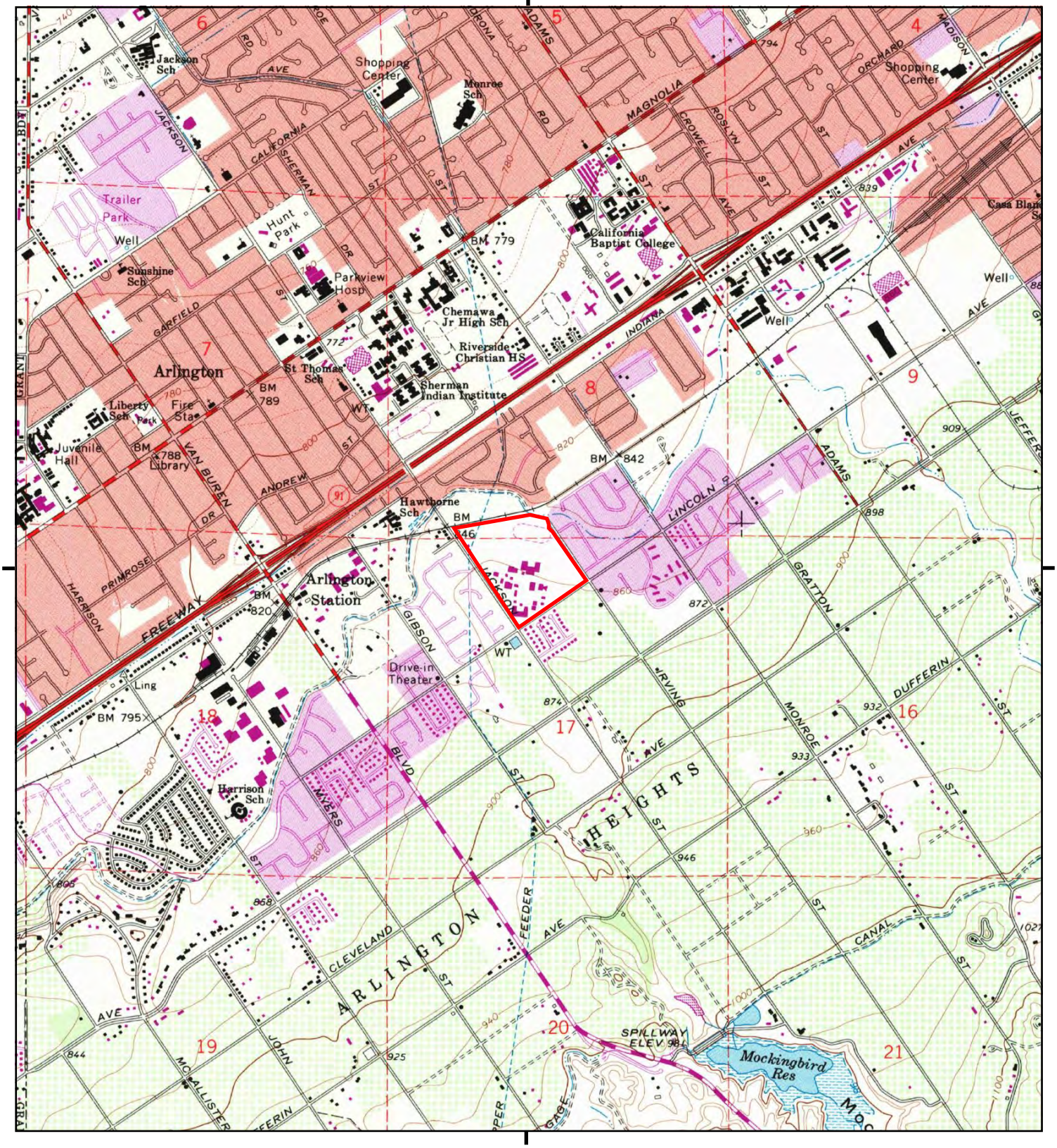
TP, Riverside West, 2012, 7.5-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Historical Topo Map

1980



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

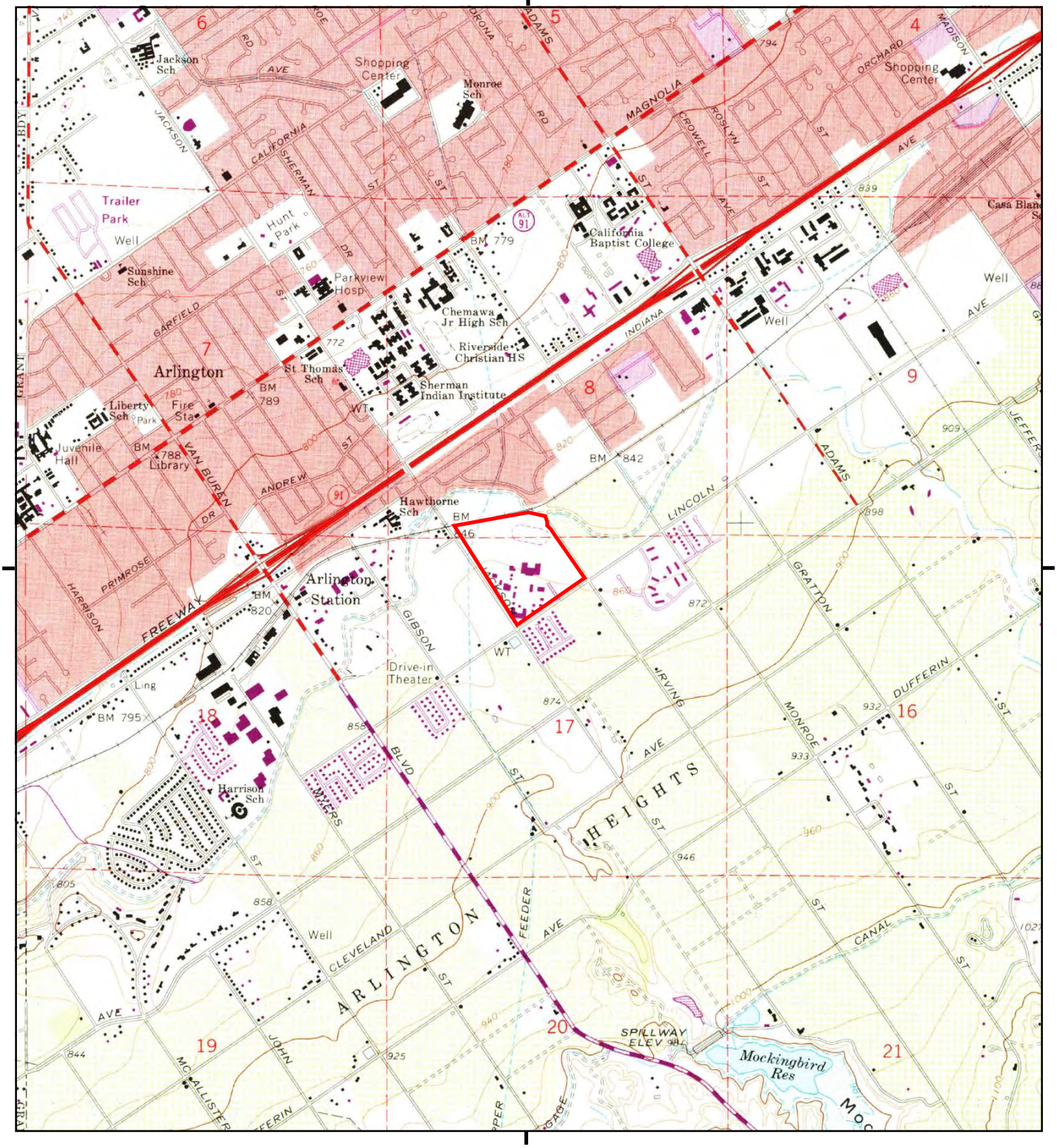
TP, Riverside West, 1980, 7.5-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Historical Topo Map

1973



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

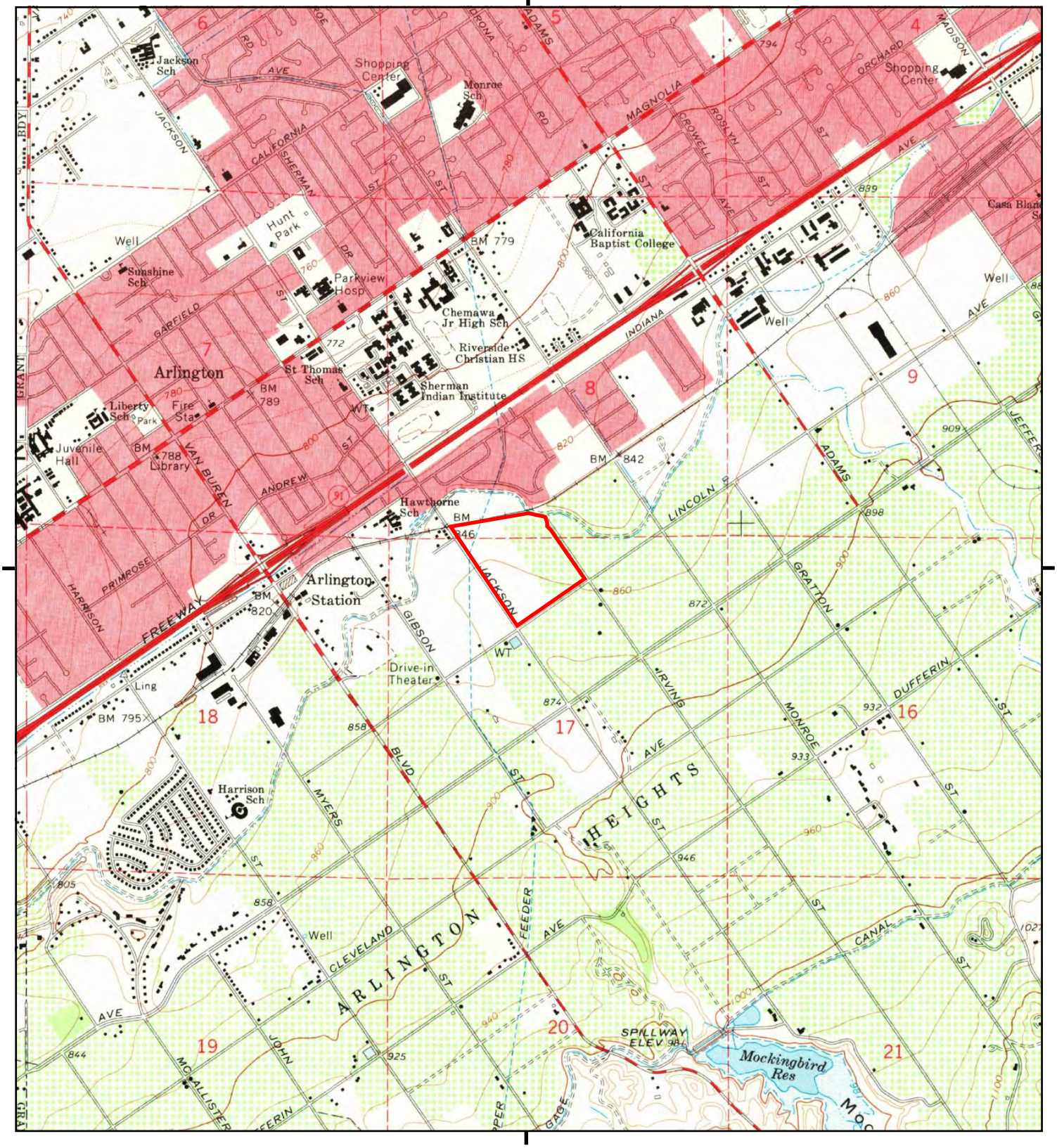
TP, Riverside West, 1973, 7.5-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Historical Topo Map

1967



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

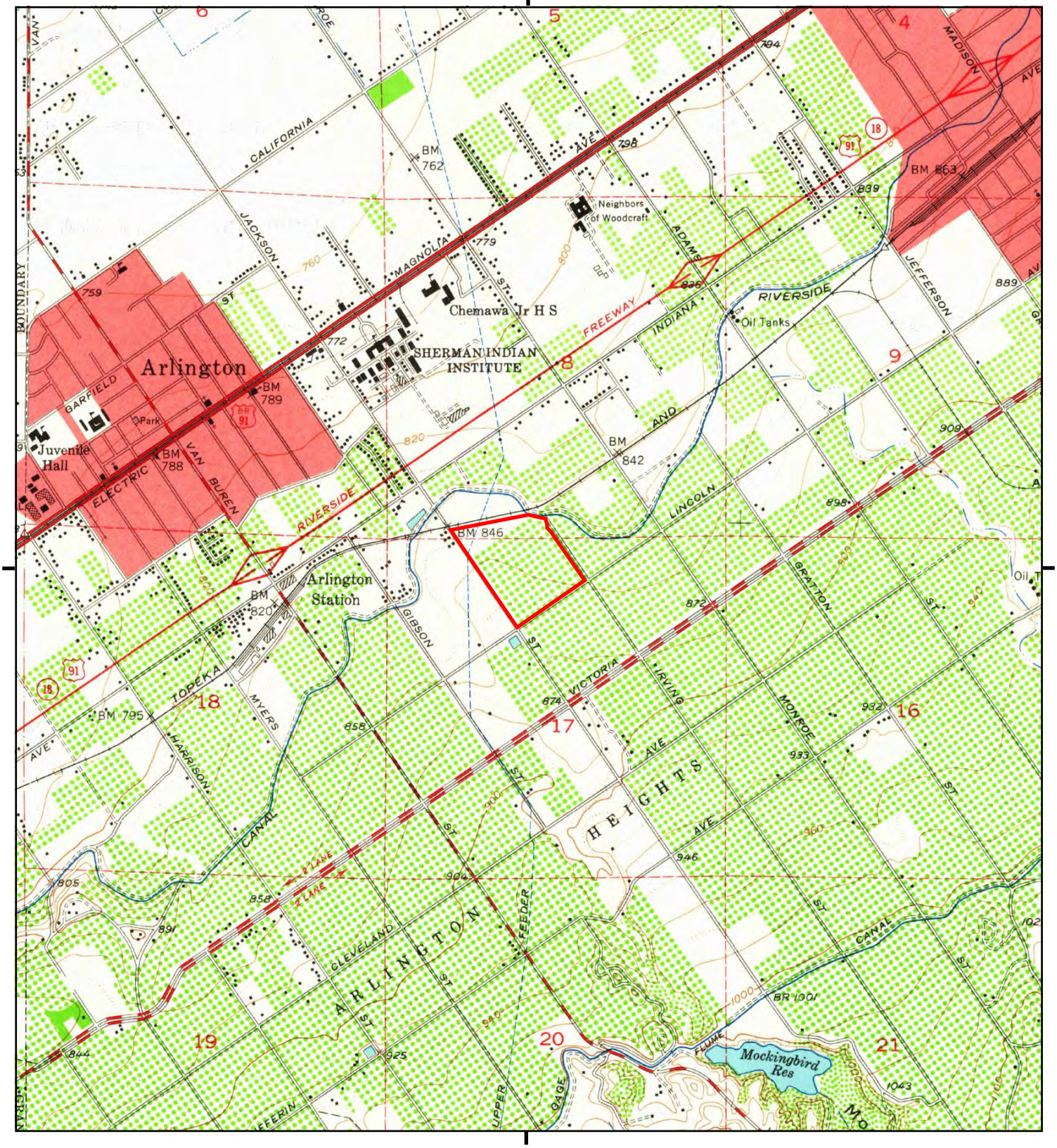
TP, Riverside West, 1967, 7.5-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Historical Topo Map

1953



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

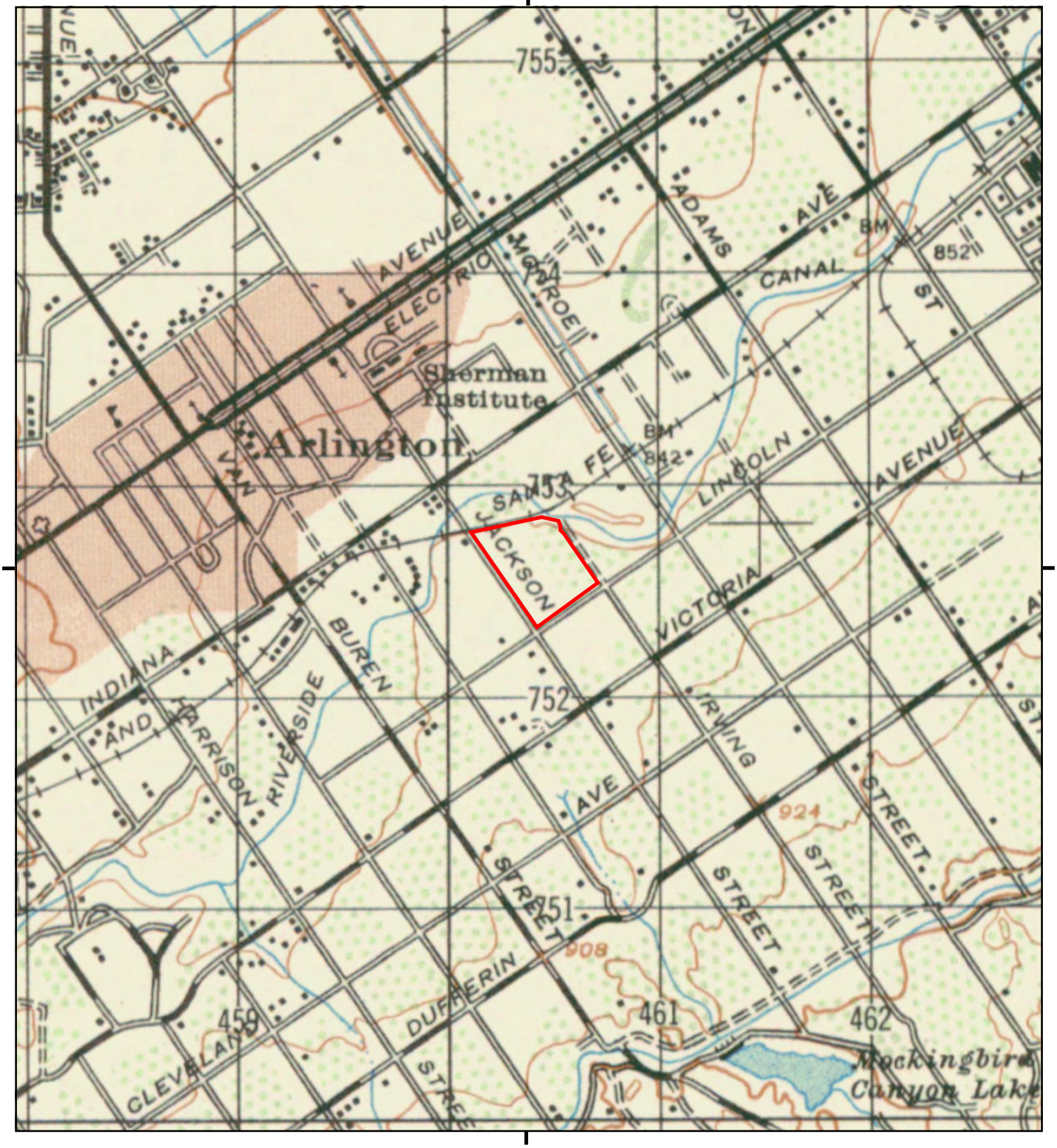
TP, Riverside West, 1953, 7.5-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Historical Topo Map

1947



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

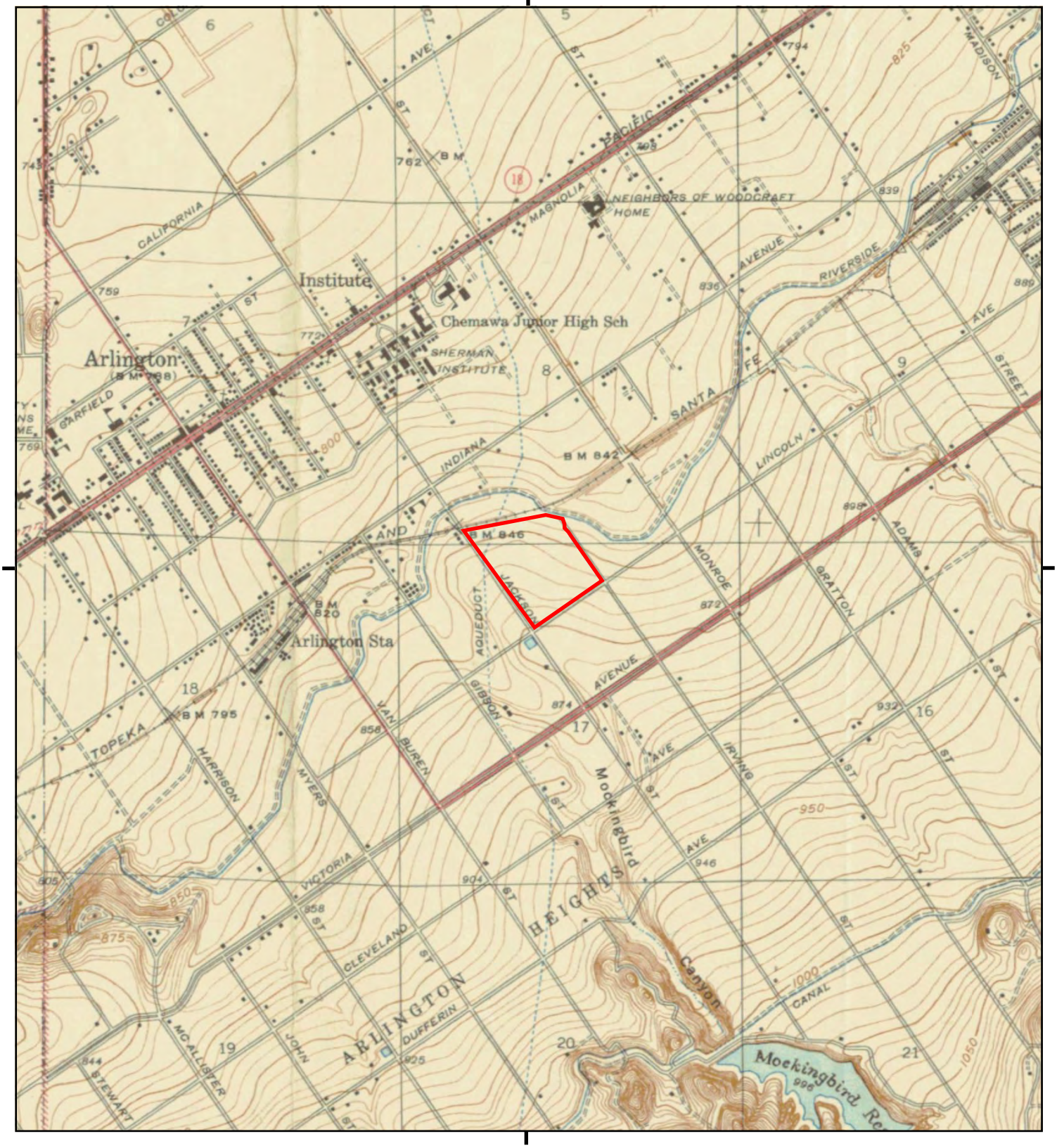
TP, RIVERSIDE, 1947, 15-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Historical Topo Map

1942



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

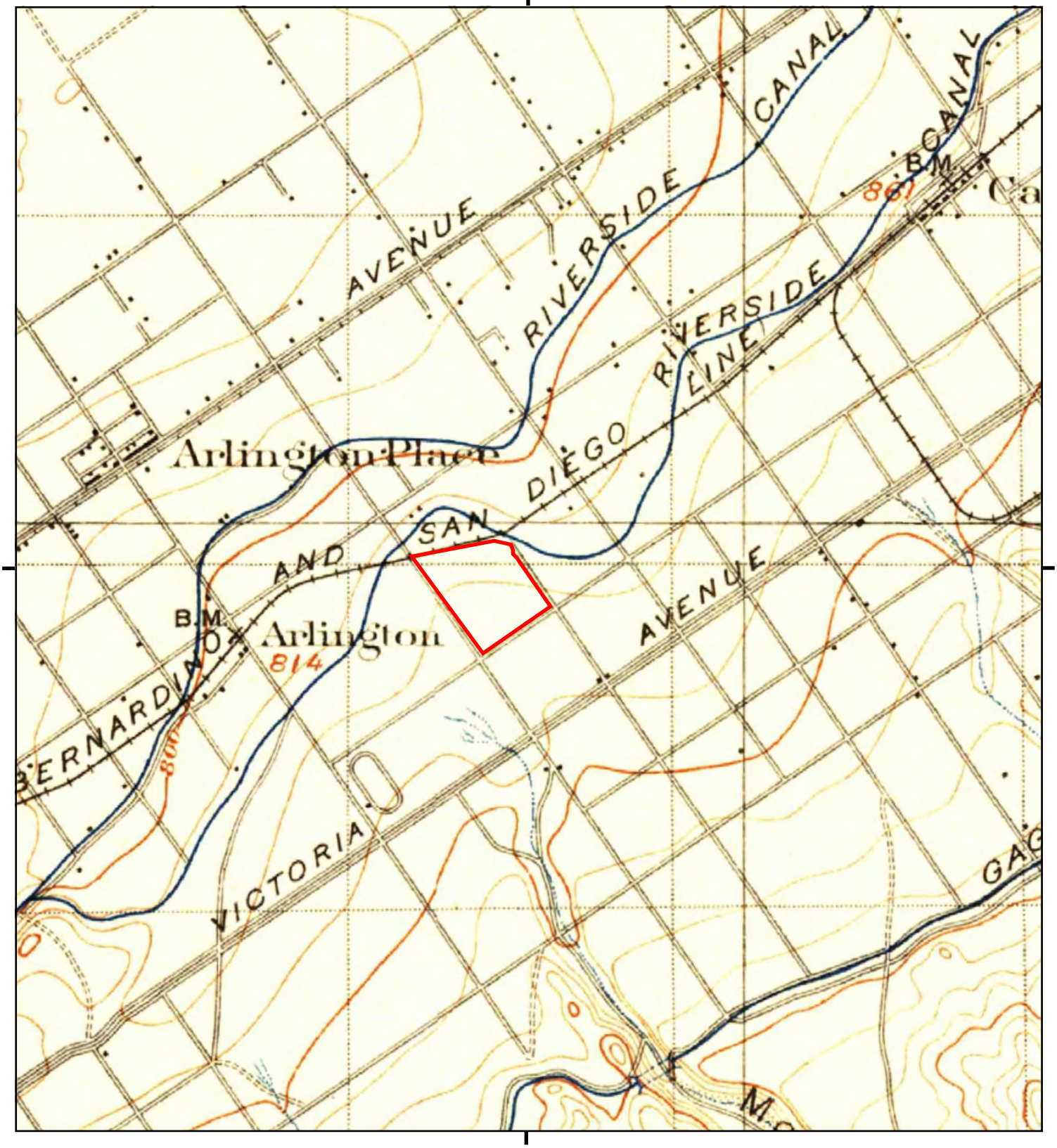
TP, RIVERSIDE VICINITY, 1942, 7.5-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Historical Topo Map

1901



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Riverside, 1901, 15-minute

SITE NAME: Arlington High School
ADDRESS: 2951 Jackson Street
Riverside, CA 92504
CLIENT: PlaceWorks

N

Arlington High School
2951 Jackson Street
Riverside, CA 92504

Inquiry Number: 5485212.5
November 15, 2018

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1921 through 2014. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2014	EDR Digital Archive	X	X	X	-
2010	EDR Digital Archive	X	X	X	-
2005	EDR Digital Archive	X	X	X	-
2002	SBC PACIFIC BELL	-	X	X	-
2001	Haines & Company, Inc.	-	X	X	-
	Haines & Company, Inc.	X	X	X	-
1996	Pacific Bell	-	X	X	-
1993	Pacific Bell	-	-	-	-
1990	Pacific Bell	-	X	X	-
	Pacific Bell	X	X	X	-
1986	Pacific Bell Yellow Pages	-	X	X	-
	Pacific Bell Yellow Pages	X	X	X	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1981	Pacific Telephone	-	X	X	-
	Pacific Telephone	X	X	X	-
1977	Pacific Telephone	-	X	X	-
	Pacific Telephone	X	X	X	-
1970	Pacific Telephone	-	-	-	-
1967	Luskey Brothers & Co.	-	-	-	-
1966	Luskey Brothers & Company Inc.	-	X	X	-
1961	Luskey Brothers & Co.	-	-	-	-
1960	Luskeys Brothers & Co., Publishers	-	X	X	-
1956	Luskey Brothers & Co.	-	-	-	-
1955	Luskeys Brothers & Co., Publishers	-	X	X	-
1951	Los Angeles Directory Co.	-	X	X	-
1946	Southern California Telephone Company	-	-	-	-
1945	Los Angeles Directory Co.	-	X	X	-
1941	Pacific Directory Co.	-	-	-	-
1939	Los Angeles Directory Co.	-	X	X	-
1936	Los Angeles Directory Co.	-	-	-	-
1931	Southern California Telephone Co.	-	-	-	-
1930	Los Angeles Directory Co.	-	-	-	-
1927	Los Angeles Directory Co.	-	-	-	-
1925	Los Angeles Directory Co.	-	-	-	-
1924	Kaasen Directory Co.	-	-	-	-
1921	Riverside Directory Co.	-	-	-	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

2951 Jackson Street
Riverside, CA 92504

FINDINGS DETAIL

Target Property research detail.

JACKSON AVE

2951 JACKSON AVE

Year	Uses	Source
1977	Arlington High School	Pacific Telephone

Jackson St

2951 Jackson St

Year	Uses	Source
2014	ARLINGTON GOLDEN PRIDE BAND BO	EDR Digital Archive
	RIVERSIDE UNIFIED SCHOOL DST	EDR Digital Archive
2010	RIVERSIDE UNIFIED SCHOOL DST	EDR Digital Archive
2005	RIVERSIDE UNIFIED SCHOOL DST	EDR Digital Archive

JACKSON ST

2951 JACKSON ST

Year	Uses	Source
2001	ARLINGTON HI ATNDNC	Haines & Company, Inc.
	ARLINGTON HI RIVRSD SC ARLINGTON	Haines & Company, Inc.
	ARLINGTON HI ROTC	Haines & Company, Inc.
	ARLINGTONHI	Haines & Company, Inc.
	ARUNGTON HI GDNCE	Haines & Company, Inc.
	RIVERSDSC	Haines & Company, Inc.
1990	UNITED STATES GOVERNMENT	Pacific Bell
1986	Air Force Jr ROTC	Pacific Bell Yellow Pages
	Arlington High School	Pacific Bell Yellow Pages
	Attendance Office	Pacific Bell Yellow Pages
	Guidance	Pacific Bell Yellow Pages
1981	Arlington High School	Pacific Telephone

FINDINGS

Year	***Uses***	***Source***
1981	U S Salinity Lab	Pacific Telephone

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

AGAVE PL

9202 AGAVE PL

Year	Uses	Source
2001	OCARTE RClarence	Haines & Company, Inc.
1996	Barker James T	Pacific Bell

BAMBOO LN

9100 BAMBOO LN

Year	Uses	Source
2002	Sen Sergio A	SBC PACIFIC BELL
2001	SERGIOASen	Haines & Company, Inc.
1996	Cunningham Larry & Romona	Pacific Bell
1990	Cunningham Larry & Romona	Pacific Bell
1986	Cunningham Larry & Romona	Pacific Bell Yellow Pages
1981	Cunningham Larry & Romona	Pacific Telephone

9109 BAMBOO LN

Year	Uses	Source
2001	HADDADAmnn	Haines & Company, Inc.
1977	Ekiund Andrea	Pacific Telephone

9110 BAMBOO LN

Year	Uses	Source
2001	NASLUCHACZRichard	Haines & Company, Inc.
1986	Lopez Anthony A	Pacific Bell Yellow Pages
1981	Lopez Anthony A	Pacific Telephone

9119 BAMBOO LN

Year	Uses	Source
2001	VOLTURNO Robert	Haines & Company, Inc.
1996	Volturno Robert J	Pacific Bell
1990	Volturno Robert J	Pacific Bell
1986	Volturno Robt J	Pacific Bell Yellow Pages
1981	Volturno Robt J	Pacific Telephone

FINDINGS

9120 BAMBOO LN

Year	Uses	Source
2002	Nieto Jennie	SBC PACIFIC BELL
2001	NIETOJ	Haines & Company, Inc.

9129 BAMBOO LN

Year	Uses	Source
2001	MERINOAnn	Haines & Company, Inc.
1986	Mahoney Esther M	Pacific Bell Yellow Pages
1981	Patrldge Lowell E	Pacific Telephone

Bamboo Ln

9130 Bamboo Ln

Year	Uses	Source
2014	PAULOS ROBERT L	EDR Digital Archive
2010	PAULOS ROBERT L	EDR Digital Archive
2005	PAULOS ROBERT L	EDR Digital Archive

BAMBOO LN

9130 BAMBOO LN

Year	Uses	Source
2001	PAULOSARobert	Haines & Company, Inc.
1986	Andrade Jesus	Pacific Bell Yellow Pages
1981	Andrade Jesus	Pacific Telephone
1977	Warren Beth	Pacific Telephone
	Warren Michael	Pacific Telephone

9139 BAMBOO LN

Year	Uses	Source
2001	FRAZIER Susan	Haines & Company, Inc.
1977	Frazier Richard A Jr	Pacific Telephone

9140 BAMBOO LN

Year	Uses	Source
2001	CROUCHCarl	Haines & Company, Inc.

FINDINGS

CASCABEL WAY

2890 CASCABEL WAY

Year	Uses	Source
2001	HARRINGTONMike	Haines & Company, Inc.
	STOCKChas	Haines & Company, Inc.
1996	Stock Chas	Pacific Bell
1990	Stock Chas	Pacific Bell
1986	Stock Chas	Pacific Bell Yellow Pages
1977	Grunwald Wm A	Pacific Telephone

2895 CASCABEL WAY

Year	Uses	Source
2001	OWILLETroy	Haines & Company, Inc.
1981	Klein Matie	Pacific Telephone
1977	Eldrldge Alan	Pacific Telephone

CORAL TREE LN

9100 CORAL TREE LN

Year	Uses	Source
2002	Mc Ardell Lance & Amy	SBC PACIFIC BELL
2001	MCARDELLAmy	Haines & Company, Inc.
	MCARDELLLance	Haines & Company, Inc.
1981	Harty Edw J	Pacific Telephone

9101 CORAL TREE LN

Year	Uses	Source
2001	TOCHTROPJohn	Haines & Company, Inc.
1986	Krupicka Sidney	Pacific Bell Yellow Pages
1981	Krupicka Sidney	Pacific Telephone

9105 CORAL TREE LN

Year	Uses	Source
2002	Vines Trevor	SBC PACIFIC BELL
2001	0 VINESTrevor	Haines & Company, Inc.
1986	Clelland Joe Lawrence	Pacific Bell Yellow Pages

FINDINGS

Coral Tree Ln

9110 Coral Tree Ln

Year	Uses	Source
2014	C R CUSTOM WROUGHT IRON DESIGN	EDR Digital Archive
2010	C R CUSTOM WROUGHT IRON DESIGN	EDR Digital Archive

CORAL TREE LN

9110 CORAL TREE LN

Year	Uses	Source
2001	CHRUSZCZ Roman	Haines & Company, Inc.
1990	Nixson Gordon	Pacific Bell
1986	Nixson Gordon	Pacific Bell Yellow Pages
1981	Nixson Gordon	Pacific Telephone

Coral Tree Ln

9111 Coral Tree Ln

Year	Uses	Source
2014	MYERS ENTERPRISES	EDR Digital Archive
2010	MYERS ENTERPRISES	EDR Digital Archive

CORAL TREE LN

9111 CORAL TREE LN

Year	Uses	Source
2001	MYERSJohn	Haines & Company, Inc.
1981	Paver Robt F	Pacific Telephone

9115 CORAL TREE LN

Year	Uses	Source
2001	BLIYa	Haines & Company, Inc.

9119 CORAL TREE LN

Year	Uses	Source
2001	DODDRichard	Haines & Company, Inc.

9129 CORAL TREE LN

Year	Uses	Source
2001	HALLGRENSIeve	Haines & Company, Inc.

FINDINGS

9139 CORAL TREE LN

Year	Uses	Source
2001	PARKERRay	Haines & Company, Inc.

9149 CORAL TREE LN

Year	Uses	Source
2001	MOROMISATOFred	Haines & Company, Inc.
1996	Doss Jerry	Pacific Bell
1990	Price T I	Pacific Bell

9150 CORAL TREE LN

Year	Uses	Source
2001	STALTERJudllh	Haines & Company, Inc.
1996	Carroll Greg & Donna	Pacific Bell
1990	Carroll Greg & Donna	Pacific Bell
1981	Krysinski Michael	Pacific Telephone

DEODAR CT

9100 DEODAR CT

Year	Uses	Source
2001	EVANSJon	Haines & Company, Inc.
1981	Bailey HO	Pacific Telephone

9109 DEODAR CT

Year	Uses	Source
2002	Fernandez Gilbert Jr	SBC PACIFIC BELL
2001	FERNANDEZGllbed Jr	Haines & Company, Inc.
	STERNARDSusan	Haines & Company, Inc.
1977	Mc Hale Susan	Pacific Telephone

9110 DEODAR CT

Year	Uses	Source
2001	BURY Ins	Haines & Company, Inc.
1981	Wasilko Michael	Pacific Telephone

9118 DEODAR CT

Year	Uses	Source
2001	SWALKERThomas	Haines & Company, Inc.

FINDINGS

9119 DEODAR CT

Year	Uses	Source
1990	Mason Micheal	Pacific Bell

9120 DEODAR CT

Year	Uses	Source
2002	Abraham Tom	SBC PACIFIC BELL
2001	ABRAHAM Tom	Haines & Company, Inc.
1996	Abraham Tom	Pacific Bell
1990	Abraham Tom	Pacific Bell
1986	Abraham Tony	Pacific Bell Yellow Pages
	Abraham Tom	Pacific Bell Yellow Pages
1981	Mendoza C M	Pacific Telephone

9129 DEODAR CT

Year	Uses	Source
2001	STERNRoss	Haines & Company, Inc.
1990	Perry A C	Pacific Bell
1986	Perry A H Sr	Pacific Bell Yellow Pages
	Perry A C	Pacific Bell Yellow Pages
1977	Starick J Ronald	Pacific Telephone

Deodar Ct

9130 Deodar Ct

Year	Uses	Source
2014	ELISA CASTRO ESQ	EDR Digital Archive
2010	ELISA CASTRO ESQ	EDR Digital Archive

DEODAR CT

9130 DEODAR CT

Year	Uses	Source
2001	OMOLINAR Davd	Haines & Company, Inc.
	HARDERJPaleck	Haines & Company, Inc.

9139 DEODAR CT

Year	Uses	Source
2001	LACR 01 XGerald	Haines & Company, Inc.
1990	Sims William & Joann	Pacific Bell
1986	Sims William & Joann	Pacific Bell Yellow Pages

FINDINGS

Year	Uses	Source
1977	Lawyer Sami J	Pacific Telephone

9140 DEODAR CT

Year	Uses	Source
2001	TUREAUD Irene	Haines & Company, Inc.

FELIX CT

2874 FELIX CT

Year	Uses	Source
2002	Hurlburt Dick & Debbie	SBC PACIFIC BELL
2001	GEBELINTimo Ihy	Haines & Company, Inc.

2877 FELIX CT

Year	Uses	Source
2001	SAWICKI Brian	Haines & Company, Inc.
1990	Cloninger Mike	Pacific Bell

2884 FELIX CT

Year	Uses	Source
2001	WEBBJohn	Haines & Company, Inc.
1990	Webb Scott & Roberta	Pacific Bell

Felix Ct

2887 Felix Ct

Year	Uses	Source
2014	MIB 2ND II NONE INC	EDR Digital Archive
	TNS GLOBAL	EDR Digital Archive
2010	TNS GLOBAL	EDR Digital Archive
	MIB 2ND II NONE INC	EDR Digital Archive

FELIX CT

2887 FELIX CT

Year	Uses	Source
2001	BENTWiliam	Haines & Company, Inc.
1990	Chansomphou Vongphet	Pacific Bell

FINDINGS

2897 FELIX CT

Year	Uses	Source
2002	Downs James A & Natalie	SBC PACIFIC BELL
2001	DOWNSJames	Haines & Company, Inc.
	0 WN 9 S Natalie	Haines & Company, Inc.
1996	Downs James A & Natalie	Pacific Bell

JACKSON

2835 JACKSON

Year	Uses	Source
2002	Glurar Marinela	SBC PACIFIC BELL

2842 JACKSON

Year	Uses	Source
2002	Duong Tarn	SBC PACIFIC BELL

2875 JACKSON

Year	Uses	Source
2002	Keen Kenneth B	SBC PACIFIC BELL

2882 JACKSON

Year	Uses	Source
2002	Martinez Nicholas F	SBC PACIFIC BELL

JACKSON ST

2832 JACKSON ST

Year	Uses	Source
2001	SING 9 Kashmir	Haines & Company, Inc.

2835 JACKSON ST

Year	Uses	Source
2001	8 G 8 URARMannela	Haines & Company, Inc.
1981	Fertig Robt	Pacific Telephone
1977	Shelton Edw D	Pacific Telephone

2842 JACKSON ST

Year	Uses	Source
2001	NGUYENTrao	Haines & Company, Inc.
1996	Duong Tam	Pacific Bell

FINDINGS

2845 JACKSON ST

Year	Uses	Source
2001	MCGEEMichael	Haines & Company, Inc.
1986	Sanders Marie	Pacific Bell Yellow Pages
1981	Suwyn Pete G	Pacific Telephone

2852 JACKSON ST

Year	Uses	Source
2001	CROFT Stephen	Haines & Company, Inc.
1990	Croft S E	Pacific Bell

2855 JACKSON ST

Year	Uses	Source
2001	0 RAUBA Frances	Haines & Company, Inc.
1986	Rauba Vincent J	Pacific Bell Yellow Pages
1981	Ru Dick Photography	Pacific Telephone
1977	Rauba Vincent J	Pacific Telephone

2862 JACKSON ST

Year	Uses	Source
2001	8 BRITTONLana	Haines & Company, Inc.

2865 JACKSON ST

Year	Uses	Source
1977	Rasmussen Joe Photography	Pacific Telephone

2872 JACKSON ST

Year	Uses	Source
2001	BILAUCAGeorge	Haines & Company, Inc.

2875 JACKSON ST

Year	Uses	Source
2001	6 KEENNonnl	Haines & Company, Inc.
1986	Ramsey Mark	Pacific Bell Yellow Pages

Jackson St

2882 Jackson St

Year	Uses	Source
2014	NOST SUSPENSION	EDR Digital Archive

FINDINGS

JACKSON ST

2882 JACKSON ST

Year	Uses	Source
2001	PALMERINArt	Haines & Company, Inc.
1990	PalmerIn Art	Pacific Bell

2885 JACKSON ST

Year	Uses	Source
2001	PALICZRrchard	Haines & Company, Inc.
1977	Palicz Richard J	Pacific Telephone

2892 JACKSON ST

Year	Uses	Source
2001	ORTEGAManuel	Haines & Company, Inc.

2895 JACKSON ST

Year	Uses	Source
2001	HOLLOWAYRichard	Haines & Company, Inc.
1981	HelphIngstine K C	Pacific Telephone
1977	HE LP LIN E HOT LIN E	Pacific Telephone

Jackson St

2975 Jackson St

Year	Uses	Source
2010	MARIANA CIOBANU MD	EDR Digital Archive

JOSHUA TREE RD

2901 JOSHUA TREE RD

Year	Uses	Source
2001	XXXX	Haines & Company, Inc.

2902 JOSHUA TREE RD

Year	Uses	Source
2001	SUBLETTE Palrick	Haines & Company, Inc.
1986	Honeycutt Jack	Pacific Bell Yellow Pages

FINDINGS

Joshua Tree Rd

2912 Joshua Tree Rd

Year	Uses	Source
2010	ROCHAS CONSTRUCTION INC	EDR Digital Archive
2005	ROCHAS CONSTRUCTION INC	EDR Digital Archive

JOSHUA TREE RD

2912 JOSHUA TREE RD

Year	Uses	Source
2001	OPANICORonald	Haines & Company, Inc.
1990	Davis Earl Leon	Pacific Bell
1981	Cook Edle	Pacific Telephone

2922 JOSHUA TREE RD

Year	Uses	Source
2002	Torres Delores	SBC PACIFIC BELL
2001	TUCKER Vardell	Haines & Company, Inc.

2932 JOSHUA TREE RD

Year	Uses	Source
2001	WALKER Cheryl	Haines & Company, Inc.
1981	Roberts John R	Pacific Telephone

2942 JOSHUA TREE RD

Year	Uses	Source
2001	FARMER Rober	Haines & Company, Inc.
1986	Choi Yo Hong	Pacific Bell Yellow Pages
	Chomotyz Gene	Pacific Bell Yellow Pages
1981	Friendy Nick	Pacific Telephone
1977	Benson Harry W	Pacific Telephone

2952 JOSHUA TREE RD

Year	Uses	Source
2001	FLEMING Paul	Haines & Company, Inc.
1977	Harrison Steve	Pacific Telephone

2962 JOSHUA TREE RD

Year	Uses	Source
2001	BRIMHALLMichael	Haines & Company, Inc.

FINDINGS

Joshua Tree Rd

2972 Joshua Tree Rd

Year	Uses	Source
2005	KLEIN VIRGIL	EDR Digital Archive
	THRIVENT FINCL FOR LUTHERANS	EDR Digital Archive

JOSHUA TREE RD

2972 JOSHUA TREE RD

Year	Uses	Source
2002	LUTHERANS	SBC PACIFIC BELL
	AID ASSOCIATION FOR	SBC PACIFIC BELL
2001	AID ASSOCIATION FOR	Haines & Company, Inc.
	LUTHERANS KLEIN VIRGIL	Haines & Company, Inc.
1996	AID ASSOCIATION FOR LUTHERANS	Pacific Bell
1990	AIDE ASSN FOR LUTHERANS	Pacific Bell
1986	Klein Virgil ins agt	Pacific Bell Yellow Pages
	Klein Virgil	Pacific Bell Yellow Pages
	Aide Assn For Lutherans	Pacific Bell Yellow Pages

2979 JOSHUA TREE RD

Year	Uses	Source
2001	NELSON Connie 00 E	Haines & Company, Inc.
1986	King Robt	Pacific Bell Yellow Pages
1981	Varela Melvin	Pacific Telephone
	Varela Melvin	Pacific Telephone

2982 JOSHUA TREE RD

Year	Uses	Source
2001	DAVISRobert 00 C	Haines & Company, Inc.
1981	Poulsen L Norman	Pacific Telephone

Joshua Tree Rd

2989 Joshua Tree Rd

Year	Uses	Source
2005	JNP TRANSPORT	EDR Digital Archive

FINDINGS

JOSHUA TREE RD

2989 JOSHUA TREE RD

Year	Uses	Source
2001	LEBOWPatnck	Haines & Company, Inc.
1990	Asztalos Julius Vmo & Julia	Pacific Bell
1986	Asztalos Julius Vmo & Julia	Pacific Bell Yellow Pages
	At Home Care Pet And Home Care	Pacific Bell Yellow Pages
1981	Ranagan Craig	Pacific Telephone

3010 JOSHUA TREE RD

Year	Uses	Source
2001	HUHNWilliam	Haines & Company, Inc.

3020 JOSHUA TREE RD

Year	Uses	Source
1981	Mortensen CL	Pacific Telephone

Joshua Tree Rd

3030 Joshua Tree Rd

Year	Uses	Source
2014	ALL AMERICAN CONSTRUCTION	EDR Digital Archive
2010	ALL AMERICAN CONSTRUCTION	EDR Digital Archive

JOSHUA TREE RD

3030 JOSHUA TREE RD

Year	Uses	Source
2001	CERCEABenlamin 00 C	Haines & Company, Inc.
	NORTHWAY David	Haines & Company, Inc.
1990	Graves Jerry D	Pacific Bell
1986	Penfield Bruce & Jan	Pacific Bell Yellow Pages

LINCOLN AVE

9118 LINCOLN AVE

Year	Uses	Source
2001	PATROL	Haines & Company, Inc.
	CASTHIGHWAY	Haines & Company, Inc.

FINDINGS

9215 LINCOLN AVE

Year	Uses	Source
1977	Chaffee Ellsworth G	Pacific Telephone
1966	Chaffee Ellsworth G Eleanor 9215 Lincoln Av Riv h rancher	Luskey Brothers & Company Inc.
1960	Chaffee EG D	Luskeys Brothers & Co., Publishers
1955	Chaffee E G	Luskeys Brothers & Co., Publishers
1951	Cox Andrew r	Los Angeles Directory Co.
1945	Vacant	Los Angeles Directory Co.
1939	Shearer F F	Los Angeles Directory Co.

RONCADOR PL

2835 RONCADOR PL

Year	Uses	Source
2002	Jones Moses	SBC PACIFIC BELL
1996	Jones Moses	Pacific Bell
1990	Jones Moses	Pacific Bell
1986	Jones Moses	Pacific Bell Yellow Pages
	Jones Irene	Pacific Bell Yellow Pages
1981	Jones Irene	Pacific Telephone
	Jones Moses	Pacific Telephone
1977	Jones Moses	Pacific Telephone
	Jones Irene	Pacific Telephone

2839 RONCADOR PL

Year	Uses	Source
2001	JONES Moseso	Haines & Company, Inc.
	JONES Irene	Haines & Company, Inc.

2840 RONCADOR PL

Year	Uses	Source
2001	JONES Ralph	Haines & Company, Inc.
1986	Jones R & Denise	Pacific Bell Yellow Pages
	Jones R L	Pacific Bell Yellow Pages
1981	Tallman R E Jones & Denise	Pacific Telephone
1977	Dunagan Willis W	Pacific Telephone

2845 RONCADOR PL

Year	Uses	Source
2001	I RISHJohn	Haines & Company, Inc.

FINDINGS

Year	Uses	Source
1990	Jones Earl H	Pacific Bell

2850 RONCADOR PL

Year	Uses	Source
2001	BACON Jetrey	Haines & Company, Inc.

2855 RONCADOR PL

Year	Uses	Source
2002	Sheehan Patrick	SBC PACIFIC BELL
2001	SHEEHAN Patrick	Haines & Company, Inc.
1996	Sheehan Patrick	Pacific Bell
1990	Sheehan Patrick	Pacific Bell
1986	Sheehan Patrick	Pacific Bell Yellow Pages
1981	Sheehan Patrick	Pacific Telephone
1977	Sheehan Patrick	Pacific Telephone

2860 RONCADOR PL

Year	Uses	Source
2002	Poullard Licea Keysha N	SBC PACIFIC BELL
2001	NOBLELaurence	Haines & Company, Inc.

2865 RONCADOR PL

Year	Uses	Source
2001	M 8 RRILLGIen	Haines & Company, Inc.
1986	Merrill Glenn R	Pacific Bell Yellow Pages
	Merrill Keith	Pacific Bell Yellow Pages
	Merrill Glenn R	Pacific Bell Yellow Pages
1981	Merrill Glenn R	Pacific Telephone
	Merrill Glenn R	Pacific Telephone
1977	Tax Corporation Of America	Pacific Telephone

2870 RONCADOR PL

Year	Uses	Source
2001	ADAMEJo Se	Haines & Company, Inc.
1996	Kelley Robt B	Pacific Bell
1990	Kelley Robt B	Pacific Bell
1986	Kelley Robt B	Pacific Bell Yellow Pages
1981	Kelley Robt B	Pacific Telephone
1977	Kelley Robt B	Pacific Telephone

FINDINGS

2875 RONCADOR PL

Year	Uses	Source
2001	ARMENDARIZRodollo	Haines & Company, Inc.
1986	Jackman Wm F Construction	Pacific Bell Yellow Pages
1977	Berry Dan	Pacific Telephone
	Gross Isabelle	Pacific Telephone
	Du Bois Isabelle	Pacific Telephone

2882 RONCADOR PL

Year	Uses	Source
2002	Diebold John E	SBC PACIFIC BELL
2001	DIEBOLDJohn E	Haines & Company, Inc.
1996	Diebold John E	Pacific Bell
	Diebold Joan & John	Pacific Bell
1990	DIebold John E	Pacific Bell
	Diebold Joan & John	Pacific Bell
1986	Diebold John E	Pacific Bell Yellow Pages
	Diebold Joan & John	Pacific Bell Yellow Pages
1981	Diebold Joan & John	Pacific Telephone
	Diebold John E	Pacific Telephone
1977	Diebold Join E	Pacific Telephone

Roncador Pl

2885 Roncador Pl

Year	Uses	Source
2014	CLASSIC CUTS HAIR	EDR Digital Archive
2010	CLASSIC CUTS HAIR	EDR Digital Archive

RONCADOR PL

2885 RONCADOR PL

Year	Uses	Source
2002	Plavajka Michael R	SBC PACIFIC BELL
2001	PLAVAJKAMichae IR	Haines & Company, Inc.
1996	Plavajka Michael R	Pacific Bell
1990	Plavaika Michael R	Pacific Bell
	Plavajka R K	Pacific Bell
1986	Plavajka Michael R	Pacific Bell Yellow Pages
	Plavajka R K	Pacific Bell Yellow Pages

Year	Uses	Source
1986	Plaxco A L	Pacific Bell Yellow Pages
	Plaxco E J	Pacific Bell Yellow Pages
	Plaxco Steven C	Pacific Bell Yellow Pages
	Player Donna & Janet	Pacific Bell Yellow Pages
1981	Plavaika Michael R	Pacific Telephone
	Plava ka R K	Pacific Telephone
1977	Plavajka Michael R	Pacific Telephone

Roncador Pl

2890 Roncador Pl

Year	Uses	Source
2005	D & E AUTO SUPPLIES INC	EDR Digital Archive

RONCADOR PL

2890 RONCADOR PL

Year	Uses	Source
2001	SADAIR James	Haines & Company, Inc.

Roncador Pl

2895 Roncador Pl

Year	Uses	Source
2005	DIRECT BOOKKEEPING	EDR Digital Archive

RONCADOR PL

2895 RONCADOR PL

Year	Uses	Source
2001	STEPHENSJohnme	Haines & Company, Inc.
1986	Gragg Frederick M	Pacific Bell Yellow Pages
	Grafstrom Steve	Pacific Bell Yellow Pages
	Grafstrom Leslie	Pacific Bell Yellow Pages
	Grafflin David M	Pacific Bell Yellow Pages
1981	Graf David A & Rhea Leilh	Pacific Telephone
1977	Hodson PS	Pacific Telephone

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
2832 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2835 JACKSON	2014, 2010, 2005, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2835 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2835 RONCADOR PL	2014, 2010, 2005, 2001, 1993, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2839 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2840 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2842 JACKSON	2014, 2010, 2005, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2842 JACKSON ST	2014, 2010, 2005, 2002, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2845 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2845 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2850 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2852 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2855 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2855 RONCADOR PL	2014, 2010, 2005, 1993, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2860 RONCADOR PL	2014, 2010, 2005, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2862 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

FINDINGS

Address Researched	Address Not Identified in Research Source
2865 JACKSON ST	2014, 2010, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2865 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2870 RONCADOR PL	2014, 2010, 2005, 2002, 1993, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2872 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2874 FELIX CT	2014, 2010, 2005, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2875 JACKSON	2014, 2010, 2005, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2875 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2875 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2877 FELIX CT	2014, 2010, 2005, 2002, 1996, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2882 JACKSON	2014, 2010, 2005, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2882 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2882 Jackson St	2010, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2882 RONCADOR PL	2014, 2010, 2005, 1993, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2884 FELIX CT	2014, 2010, 2005, 2002, 1996, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2885 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2885 RONCADOR PL	2014, 2010, 2005, 1993, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2885 Roncador Pl	2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2887 Felix Ct	2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

FINDINGS

Address Researched	Address Not Identified in Research Source
2887 FELIX CT	2014, 2010, 2005, 2002, 1996, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2890 CASCABEL WAY	2014, 2010, 2005, 2002, 1993, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2890 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2890 Roncador Pl	2014, 2010, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2892 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2895 CASCABEL WAY	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2895 JACKSON ST	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2895 RONCADOR PL	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2895 Roncador Pl	2014, 2010, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2897 FELIX CT	2014, 2010, 2005, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2901 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2902 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2912 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2912 Joshua Tree Rd	2014, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2922 JOSHUA TREE RD	2014, 2010, 2005, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2932 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2942 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2952 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

FINDINGS

Address Researched	Address Not Identified in Research Source
2962 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2972 JOSHUA TREE RD	2014, 2010, 2005, 1993, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2972 Joshua Tree Rd	2014, 2010, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2975 Jackson St	2014, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2979 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2982 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2989 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2989 Joshua Tree Rd	2014, 2010, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
3010 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
3020 JOSHUA TREE RD	2014, 2010, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
3030 JOSHUA TREE RD	2014, 2010, 2005, 2002, 1996, 1993, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
3030 Joshua Tree Rd	2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9100 BAMBOO LN	2014, 2010, 2005, 1993, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9100 CORAL TREE LN	2014, 2010, 2005, 1996, 1993, 1990, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9100 DEODAR CT	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9101 CORAL TREE LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9105 CORAL TREE LN	2014, 2010, 2005, 1996, 1993, 1990, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9109 BAMBOO LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

FINDINGS

Address Researched	Address Not Identified in Research Source
9109 DEODAR CT	2014, 2010, 2005, 1996, 1993, 1990, 1986, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9110 BAMBOO LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9110 CORAL TREE LN	2014, 2010, 2005, 2002, 1996, 1993, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9110 Coral Tree Ln	2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9110 DEODAR CT	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9111 CORAL TREE LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9111 Coral Tree Ln	2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9115 CORAL TREE LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9118 DEODAR CT	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9118 LINCOLN AVE	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9119 BAMBOO LN	2014, 2010, 2005, 2002, 1993, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9119 CORAL TREE LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9119 DEODAR CT	2014, 2010, 2005, 2002, 2001, 1996, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9120 BAMBOO LN	2014, 2010, 2005, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9120 DEODAR CT	2014, 2010, 2005, 1993, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9129 BAMBOO LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9129 CORAL TREE LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9129 DEODAR CT	2014, 2010, 2005, 2002, 1996, 1993, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

FINDINGS

Address Researched	Address Not Identified in Research Source
9130 BAMBOO LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9130 Bamboo Ln	2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9130 DEODAR CT	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9130 Deodar Ct	2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9139 BAMBOO LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9139 CORAL TREE LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9139 DEODAR CT	2014, 2010, 2005, 2002, 1996, 1993, 1981, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9140 BAMBOO LN	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9140 DEODAR CT	2014, 2010, 2005, 2002, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9149 CORAL TREE LN	2014, 2010, 2005, 2002, 1993, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9150 CORAL TREE LN	2014, 2010, 2005, 2002, 1993, 1986, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9202 AGAVE PL	2014, 2010, 2005, 2002, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
9215 LINCOLN AVE	2014, 2010, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1970, 1967, 1961, 1956, 1946, 1941, 1936, 1931, 1930, 1927, 1925, 1924, 1921

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
2951 Jackson Street	2002, 1996, 1993, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

Arlington High School

2951 Jackson Street

Riverside, CA 92504

Inquiry Number: 5485212.3

November 14, 2018

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/14/18

Site Name:	Client Name:
Arlington High School	PlaceWorks
2951 Jackson Street	3 MacArthur Place Suite 1100
Riverside, CA 92504	Santa Ana, CA 92707
EDR Inquiry # 5485212.3	Contact: Denise Clendening

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Certified Sanborn Results:

Certification # 7823-4FB4-A960

PO # RIV-24.0

Project Arlington High School

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: 7823-4FB4-A960

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- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

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Appendix C. Environmental Database Search Report

Appendix

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Arlington High School
2951 Jackson Street
Riverside, CA 92504

Inquiry Number: 5485212.2s
November 14, 2018

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	39
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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-11
Physical Setting Source Map Findings	A-13
Physical Setting Source Records Searched	PSGR-1

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

2951 JACKSON STREET
RIVERSIDE, CA 92504

COORDINATES

Latitude (North):	33.9146850 - 33˚ 54' 52.86''
Longitude (West):	117.4283370 - 117˚ 25' 42.01''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	460403.5
UTM Y (Meters):	3752585.0
Elevation:	861 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641332 RIVERSIDE WEST, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
2951 JACKSON STREET
RIVERSIDE, CA 92504

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	RIVERSIDE UNIFIED SC	2951 JACKSON STREET	EMI		TP
A2	RIVERSIDE USD	2951 JACKSON ST	HAZNET		TP
A3	ARLINGTON HIGH SCHOO	2951 JACKSON STREET	RCRA-SQG		TP
A4	RIVERSIDE USD	2951 JACKSON ST	HAZNET		TP
A5	RIVERSIDE UNIFIED SC	2951 JACKSON ST	FINDS, ECHO		TP
A6	RUSD - ARLINGTON HIG	2951 JACKSON ST	HAZNET		TP
A7	ARLINGTON HIGH SCHOO	2951 JACKSON STREET	CHMIRS, CIWQS		TP
8	DC POWER MERCURY	9337 DOUGLAS DRIVE	SEMS	Lower	1759, 0.333, West
9	BROOKHURST MILL	3315 VAN BUREN AVE	RCRA-SQG, LUST, AST, SWEEPS UST, HIST UST, CA FID...	Lower	2538, 0.481, West

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
RIVERSIDE UNIFIED SC 2951 JACKSON STREET RIVERSIDE, CA	EMI Facility Id: 24715	N/A
RIVERSIDE USD 2951 JACKSON ST RIVERSIDE, CA 92503	HAZNET GEPAID: CAC002558842	N/A
ARLINGTON HIGH SCHOO 2951 JACKSON STREET RIVER SIDE, CA 92503	RCRA-SQG EPA ID:: CAL000110074	CAL000110074
RIVERSIDE USD 2951 JACKSON ST RIVERSIDE, CA 92503	HAZNET GEPAID: CAC002550341	N/A
RIVERSIDE UNIFIED SC 2951 JACKSON ST RIVERSIDE, CA 92501	FINDS Registry ID:: 110021953670 Registry ID:: 110021328115 ECHO Registry ID: 110021953670	N/A
RUSD - ARLINGTON HIG 2951 JACKSON ST RIVERSIDE, CA 92503	HAZNET GEPAID: CAL000110074	N/A
ARLINGTON HIGH SCHOO 2951 JACKSON STREET RIVERSIDE, CA 92503	CHMIRS OES Incident Number: 010554 Date Completed: 29-APR-90 CIWQS	N/A

EXECUTIVE SUMMARY

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System
US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ..... EnviroStor Database

EXECUTIVE SUMMARY

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ..... Voluntary Cleanup Program Properties
INDIAN VCP ..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register
CERS HAZ WASTE ..... CERS HAZ WASTE

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing

HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
FUELS PROGRAM	EPA Fuels Program Registered Listing

EXECUTIVE SUMMARY

CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	ICE
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
WDR	Waste Discharge Requirements Listing
CERS	CERS
PROJECT	PROJECT (GEOTRACKER)
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
UIC GEO	UIC GEO (GEOTRACKER)
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS list

SEMS: SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the SEMS list, as provided by EDR, and dated 07/17/2018 has revealed that there is 1 SEMS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
DC POWER MERCURY Site ID: 0909576 EPA Id: CAN000909576	9337 DOUGLAS DRIVE	W 1/4 - 1/2 (0.333 mi.)	8	17

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BROOKHURST MILL Database: LUST, Date of Government Version: 09/10/2018 Database: LUST REG 8, Date of Government Version: 02/14/2005 Database: RIVERSIDE CO. LUST, Date of Government Version: 10/10/2018 Status: Completed - Case Closed Facility Status: Case Closed Facility Id: 94714 Global Id: T0606500400 Facility Status: 9 Global ID: T0606500400	***3315 VAN BUREN AVE***	***W 1/4 - 1/2 (0.481 mi.)***	***9***	***17***

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

EXECUTIVE SUMMARY

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

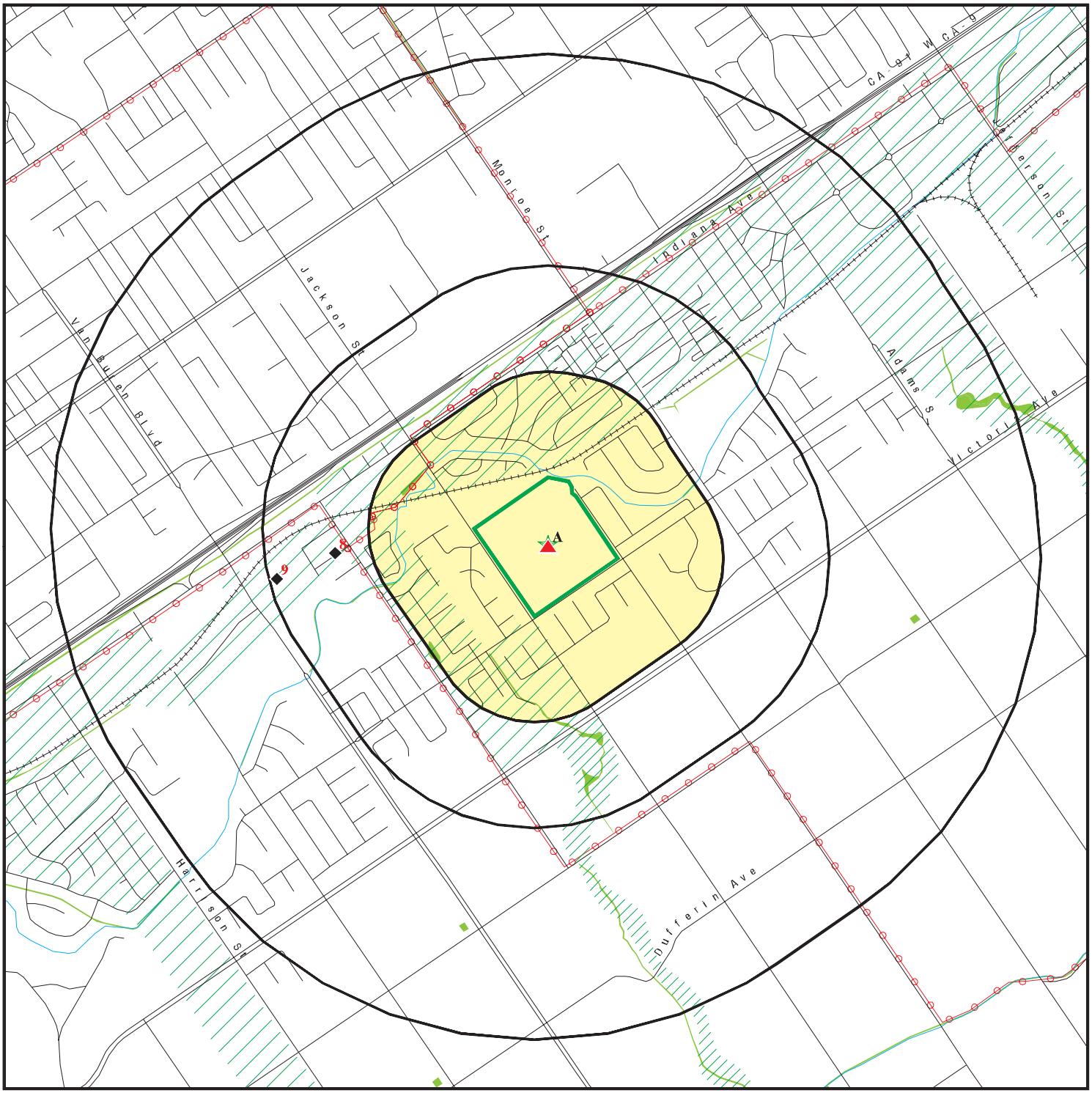
A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BROOKHURST MILL Reg Id: 083302548T	***3315 VAN BUREN AVE***	***W 1/4 - 1/2 (0.481 mi.)***	***9***	***17***

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 5485212.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Arlington High School	CLIENT: PlaceWorks
ADDRESS: 2951 Jackson Street Riverside CA 92504	CONTACT: Denise Clendening INQUIRY #: 5485212.2s
LAT/LONG: 33.914685 / 117.428337	DATE: November 14, 2018 9:21 pm

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DETAIL MAP - 5485212.2S

Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Arlington High School	CLIENT: PlaceWorks
ADDRESS: 2951 Jackson Street Riverside CA 92504	CONTACT: Denise Clendening INQUIRY #: 5485212.2s
LAT/LONG: 33.914685 / 117.428337	DATE: November 14, 2018 9:25 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	1	NR	NR	1
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250	1	0	0	NR	NR	NR	1
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	1	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001	1	0	NR	NR	NR	NR	1
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001	1	0	NR	NR	NR	NR	1
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001	1	0	NR	NR	NR	NR	1
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EMI	0.001	1	0	NR	NR	NR	NR	1
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001	3	0	NR	NR	NR	NR	3
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	1	NR	NR	1
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001	1	0	NR	NR	NR	NR	1
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		9	0	0	3	0	0	12

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 Target Property | **RIVERSIDE UNIFIED SCHOOL DISTRICT**
2951 JACKSON STREET
RIVERSIDE, CA | **EMI** | **S106838328**
N/A

Site 1 of 7 in cluster A

Actual: 861 ft.

EMI:

Year:	2001
County Code:	33
Air Basin:	SC
Facility ID:	24715
Air District Name:	SC
SIC Code:	9999
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	10
NOX - Oxides of Nitrogen Tons/Yr:	33
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	2005
County Code:	33
Air Basin:	SC
Facility ID:	24715
Air District Name:	SC
SIC Code:	8211
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.4312
Reactive Organic Gases Tons/Yr:	.60425264
Carbon Monoxide Emissions Tons/Yr:	9.9262
NOX - Oxides of Nitrogen Tons/Yr:	26.397
SOX - Oxides of Sulphur Tons/Yr:	.12855
Particulate Matter Tons/Yr:	1.6156
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.5546

A2 Target Property | **RIVERSIDE USD**
2951 JACKSON ST
RIVERSIDE, CA 92503 | **HAZNET** | **S112926160**
N/A

Site 2 of 7 in cluster A

Actual: 861 ft.

HAZNET:

envid:	S112926160
Year:	2004
GEPAID:	CAC002558842
Contact:	RHONDA RITHMIRE
Telephone:	9097887286
Mailing Name:	Not reported
Mailing Address:	3380 14TH ST
Mailing City,St,Zip:	RIVERSIDE, CA 92516
Gen County:	Not reported
TSD EPA ID:	CAD008364432
TSD County:	Not reported
Waste Category:	Laboratory waste chemicals

RIVERSIDE USD (Continued) **S112926160**

Disposal Method: Transfer Station
Tons: 0
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: S112926160
Year: 2004
GEPAID: CAC002558842
Contact: RHONDA RITHMIRE
Telephone: 9097887286
Mailing Name: Not reported
Mailing Address: 3380 14TH ST
Mailing City,St,Zip: RIVERSIDE, CA 92516
Gen County: Not reported
TSD EPA ID: CAD008364432
TSD County: Not reported
Waste Category: Laboratory waste chemicals
Disposal Method: Treatment, Tank
Tons: 0.06
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: S112926160
Year: 2003
GEPAID: CAC002558842
Contact: RHONDA RITHMIRE
Telephone: 9097887286
Mailing Name: Not reported
Mailing Address: 3380 14TH ST
Mailing City,St,Zip: RIVERSIDE, CA 92516
Gen County: Not reported
TSD EPA ID: CAD008364432
TSD County: Not reported
Waste Category: Other inorganic solid waste
Disposal Method: Transfer Station
Tons: 0.01
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: S112926160
Year: 2003
GEPAID: CAC002558842
Contact: RHONDA RITHMIRE
Telephone: 9097887286
Mailing Name: Not reported
Mailing Address: 3380 14TH ST
Mailing City,St,Zip: RIVERSIDE, CA 92516
Gen County: Not reported
TSD EPA ID: WAD991281767
TSD County: Not reported
Waste Category: Laboratory waste chemicals
Disposal Method: Treatment, Incineration
Tons: 0
Cat Decode: Not reported

RIVERSIDE USD (Continued) **S112926160**

Method Decode: Not reported
Facility County: Riverside

envid: S112926160
Year: 2003
GEPAID: CAC002558842
Contact: RHONDA RITHMIRE
Telephone: 9097887286
Mailing Name: Not reported
Mailing Address: 3380 14TH ST
Mailing City,St,Zip: RIVERSIDE, CA 92516
Gen County: Not reported
TSD EPA ID: CAD008364432
TSD County: Not reported
Waste Category: Off-specification, aged or surplus organics
Disposal Method: Treatment, Tank
Tons: 0
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
3 additional CA_HAZNET: record(s) in the EDR Site Report.

A3
Target
Property

ARLINGTON HIGH SCHOOL
2951 JACKSON STREET
RIVER SIDE, CA 92503

RCRA-SQG **1010313086**
CAL000110074

Site 3 of 7 in cluster A

Actual:
861 ft.

RCRA-SQG:
Date form received by agency: 05/05/2006
Facility name: ARLINGTON HIGH SCHOOL
Facility address: 2951 JACKSON STREET
RIVER SIDE, CA 92503
EPA ID: CAL000110074
Contact: BRIAN E CALDWELL
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: 951-788-7286
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: RIVERSIDE UNIFIED SCHOOL DISTRICT
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported

ARLINGTON HIGH SCHOOL (Continued) **1010313086**

Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: District
Owner/Operator Type: Operator
Owner/Op start date: 08/01/1973
Owner/Op end date: Not reported

Owner/operator name: RIVERSIDE UNIFIED SCHOOL DISTRICT
Owner/operator address: 3380 14TH ST. PO BOX 2800
RIVERSIDE, CA 92516
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: District
Owner/Operator Type: Owner
Owner/Op start date: 08/01/1973
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 05/05/2006
Site name: ARLINGTON HIGH SCHOOL
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS

ARLINGTON HIGH SCHOOL (Continued) **1010313086**

USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D003
. Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.

. Waste code: D009
. Waste name: MERCURY

Violation Status: No violations found

A4 Target Property | **RIVERSIDE USD**
2951 JACKSON ST
RIVERSIDE, CA 92503 | **HAZNET** | **S112921080**
N/A

Site 4 of 7 in cluster A

Actual: 861 ft.

HAZNET:

envid:	S112921080
Year:	2002
GEPAID:	CAC002550341
Contact:	ORIN WILLIAMS
Telephone:	9097887102
Mailing Name:	Not reported
Mailing Address:	3070 WASHINGTON ST
Mailing City,St,Zip:	RIVERSIDE, CA 92503
Gen County:	Not reported
TSD EPA ID:	AZC950823111
TSD County:	Not reported
Waste Category:	Asbestos containing waste
Disposal Method:	Not reported
Tons:	33.71
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Riverside

A5 Target Property | **RIVERSIDE UNIFIED SCHOOL DISTRICT**
2951 JACKSON ST
RIVERSIDE, CA 92501 | **FINDS ECHO** | **1008301290**
N/A

Site 5 of 7 in cluster A

Actual: 861 ft.

FINDS:

Registry ID: 110021953670

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and

RIVERSIDE UNIFIED SCHOOL DISTRICT (Continued) **1008301290**

corrective action activities required under RCRA.

STATE MASTER

HAZARDOUS WASTE BIENNIAL REPORTER

Registry ID: 110021328115

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN

Click this hyperlink while viewing on your computer to access
additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1008301290
Registry ID: 110021953670
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110021953670

A6 Target Property **RUSD - ARLINGTON HIGH SCHOOL** **HAZNET** **S113062443**
2951 JACKSON ST **N/A**
RIVERSIDE, CA 92503

Site 6 of 7 in cluster A

Actual: 861 ft.

HAZNET:
envid: S113062443
Year: 2016
GEPAID: CAL000110074
Contact: BRIAN CALDWELL SFTY TECHNICIAN
Telephone: 9517887135
Mailing Name: Not reported
Mailing Address: 3380 14TH ST
Mailing City,St,Zip: RIVERSIDE, CA 925013810
Gen County: Riverside
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Waste Category: Unspecified solvent mixture
Disposal Method: Fuel Blending Prior To Energy Recovery At Another Site
Tons: 0.0072
Cat Decode: Unspecified solvent mixture
Method Decode: Fuel Blending Prior To Energy Recovery At Another Site
Facility County: Riverside

envid: S113062443
Year: 2015
GEPAID: CAL000110074
Contact: BRIAN CALDWELL SFTY TECHNICIAN
Telephone: 9517887135
Mailing Name: Not reported
Mailing Address: 3380 14TH ST
Mailing City,St,Zip: RIVERSIDE, CA 925013810
Gen County: Riverside
TSD EPA ID: CAD028409019
TSD County: Los Angeles
Waste Category: Unspecified solvent mixture

RUSD - ARLINGTON HIGH SCHOOL (Continued) **S113062443**

Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0075
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Riverside

envid:	S113062443
Year:	2015
GEPAID:	CAL000110074
Contact:	BRIAN CALDWELL SFTY TECHNICIAN
Telephone:	9517887135
Mailing Name:	Not reported
Mailing Address:	3380 14TH ST
Mailing City,St,Zip:	RIVERSIDE, CA 925013810
Gen County:	Riverside
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Laboratory waste chemicals
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0075
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Riverside

envid:	S113062443
Year:	2015
GEPAID:	CAL000110074
Contact:	BRIAN CALDWELL SFTY TECHNICIAN
Telephone:	9517887135
Mailing Name:	Not reported
Mailing Address:	3380 14TH ST
Mailing City,St,Zip:	RIVERSIDE, CA 925013810
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Waste Category:	Unspecified aqueous solution
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.45
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Riverside

envid:	S113062443
Year:	2014
GEPAID:	CAL000110074
Contact:	BRIAN CALDWELL SFTY TECHNICIAN
Telephone:	9517887135
Mailing Name:	Not reported
Mailing Address:	3380 14TH ST
Mailing City,St,Zip:	RIVERSIDE, CA 925013810
Gen County:	Riverside
TSD EPA ID:	NVT330010000
TSD County:	99
Waste Category:	Unspecified oil-containing waste

RUSD - ARLINGTON HIGH SCHOOL (Continued) **S113062443**

Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.02085
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Riverside

Click this hyperlink while viewing on your computer to access
51 additional CA_HAZNET: record(s) in the EDR Site Report.

A7 Target Property **ARLINGTON HIGH SCHOOL ATHLETIC FACILITIES** **CHMIRS** **S100219781**
2951 JACKSON STREET **CIWQS** **N/A**
RIVERSIDE, CA 92503

Site 7 of 7 in cluster A

Actual: 861 ft.

CHMIRS:

OES Incident Number:	010554
OES notification:	Not reported
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**29-APR-90**
Property Use:	200
Agency Id Number:	33075
Agency Incident Number:	9005866
Time Notified:	1421
Time Completed:	1852
Surrounding Area:	400
Estimated Temperature:	78
Property Management:	C
More Than Two Substances Involved?:	N
Resp Agncy Personel # Of Decontaminated:	0
Responding Agency Personel # Of Injuries:	0
Responding Agency Personel # Of Fatalities:	0
Others Number Of Decontaminated:	0
Others Number Of Injuries:	0
Others Number Of Fatalities:	0
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	CAPT. G. CASH #14762
Report Date:	29-APR-90
Facility Telephone:	714 782-5331
Waterway Involved:	Not reported
Waterway:	Not reported
Spill Site:	Not reported
Cleanup By:	Not reported
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	88-92
Agency:	Not reported

ARLINGTON HIGH SCHOOL ATHLETIC FACILITIES (Continued) **S100219781**

Incident Date:	29-APR-90
Admin Agency:	Not reported
Amount:	Not reported
Contained:	Not reported
Site Type:	Not reported
E Date:	13-MAY-91
Substance:	Not reported
Unknown:	Not reported
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	Not reported
Number of Injuries:	Not reported
Number of Fatalities:	Not reported
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Y
Description:	Not reported

CIWQS:

Agency:	Riverside Unified School District
Agency Address:	3070 Washington Street, Riverside, CA 92504
Place/Project Type:	Construction - Other: Municipal Athletic Facilities
SIC/NAICS:	Not reported
Region:	8
Program:	CONSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	8 33C363283
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	03/22/2012
Termination Date:	03/27/2013
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.91436
Longitude:	-117.43073

8
West
1/4-1/2
0.333 mi.
1759 ft.

DC POWER MERCURY
9337 DOUGLAS DRIVE
RIVERSIDE, CA 92503

SEMS

1016170557
CAN000909576

Relative:
Lower

Actual:
831 ft.

SEMS:

Site ID:	909576
EPA ID:	CAN000909576
Cong District:	Not reported
FIPS Code:	6065
Latitude:	Not reported
Longitude:	Not reported
FF:	N
NPL:	Not on the NPL
Non NPL Status:	Removal Only Site (No Site Assessment Work Needed)

SEMS Detail:

Region:	9
Site ID:	909576
EPA ID:	CAN000909576
Site Name:	DC POWER MERCURY
NPL:	N
FF:	N
OU:	0
Action Code:	PJ
Action Name:	RP EM REM
SEQ:	1
Start Date:	2012-08-26 00:00:00
Finish Date:	8/29/2013
Qual:	C
Current Action Lead:	EPA Ovrsght

9
West
1/4-1/2
0.481 mi.
2538 ft.

BROOKHURST MILL
3315 VAN BUREN AVE
RIVERSIDE, CA 92503

RCRA-SQG
LUST
AST
SWEEPS UST
HIST UST
CA FID UST
FINDS
ECHO
EMI
HAZNET
HIST CORTESE
NPDES
WDS
CIWQS

1000333109
CAD008337750

Relative:
Lower

Actual:
825 ft.

RCRA-SQG:

Date form received by agency:	09/01/1996
Facility name:	BROOKHURST MILL
Facility address:	3315 VAN BUREN AVE RIVERSIDE, CA 92503
EPA ID:	CAD008337750
Contact:	Not reported
Contact address:	Not reported Not reported
Contact country:	US
Contact telephone:	Not reported

BROOKHURST MILL (Continued) **1000333109**

Contact email:	Not reported
EPA Region:	09
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	BROOKHURST MILL
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Historical Generators:

Date form received by agency: 04/06/1987

BROOKHURST MILL (Continued) **1000333109**

Site name: BROOKHURST MILL
Classification: Large Quantity Generator

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 03/28/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

LUST:
Lead Agency: RIVERSIDE COUNTY LOP
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500400
Global Id: T0606500400
Latitude: 33.9136059948252
Longitude: -117.439521288361
Status: Completed - Case Closed
Status Date: 01/12/1995
Case Worker: SCB
RB Case Number: 083302548T
Local Agency: RIVERSIDE COUNTY LOP
File Location: Local Agency Warehouse
Local Case Number: 94714
Potential Media Affect: Soil
Potential Contaminants of Concern: Diesel
Site History: Not reported

LUST:
Global Id: T0606500400
Contact Type: Regional Board Caseworker
Contact Name: NANCY OLSON-MARTIN
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 MAIN STREET, SUITE 500
City: RIVERSIDE
Email: nolson-martin@waterboards.ca.gov
Phone Number: Not reported

Global Id: T0606500400
Contact Type: Local Agency Caseworker
Contact Name: SHARON BOLTINGHOUSE
Organization Name: RIVERSIDE COUNTY LOP
Address: 3880 LEMON ST SUITE 200
City: RIVERSIDE
Email: sbolting@rivco.org
Phone Number: 9519558980

LUST:
Global Id: T0606500400
Action Type: ENFORCEMENT
Date: 01/11/1995
Action: File review - #RCDEH Upload Site File 1/14/2015

Global Id: T0606500400
Action Type: Other

BROOKHURST MILL (Continued) **1000333109**

Date: 08/23/1994
Action: Leak Reported

Global Id: T0606500400
Action Type: Other
Date: 08/19/1994
Action: Leak Discovery

Global Id: T0606500400
Action Type: REMEDIATION
Date: 08/19/1994
Action: Other (Use Description Field)

Global Id: T0606500400
Action Type: Other
Date: 08/19/1994
Action: Leak Stopped

Global Id: T0606500400
Action Type: ENFORCEMENT
Date: 01/12/1995
Action: Closure/No Further Action Letter - #RCDEH11295

Global Id: T0606500400
Action Type: ENFORCEMENT
Date: 11/28/1994
Action: File review

Global Id: T0606500400
Action Type: RESPONSE
Date: 12/05/1994
Action: Tank Removal Report / UST Sampling Report

Global Id: T0606500400
Action Type: REMEDIATION
Date: 09/23/1994
Action: Excavation

LUST:
Global Id: T0606500400
Status: Completed - Case Closed
Status Date: 01/12/1995

Global Id: T0606500400
Status: Open - Case Begin Date
Status Date: 08/19/1994

Global Id: T0606500400
Status: Open - Remediation
Status Date: 08/31/1994

Global Id: T0606500400
Status: Open - Site Assessment
Status Date: 08/24/1994

BROOKHURST MILL (Continued) **1000333109**

LUST REG 8:

Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Case Closed
Case Number:	083302548T
Local Case Num:	94714
Case Type:	Soil only
Substance:	Diesel
Qty Leaked:	Not reported
Abate Method:	Excavate and Dispose - remove contaminated soil and dispose in approved site
Cross Street:	INDIANA
Enf Type:	CLOS
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	Not reported
Leak Source:	UNK
Global ID:	T0606500400
How Stopped Date:	8/19/1994
Enter Date:	12/12/1994
Date Confirmation of Leak Began:	Not reported
Date Preliminary Assessment Began:	Not reported
Discover Date:	8/19/1994
Enforcement Date:	Not reported
Close Date:	1/12/1995
Date Prelim Assessment Workplan Submitted:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	12/12/1994
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.9134717
Longitude:	-117.4406165
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	1
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	MTBE Detected. Site tested for MTBE & MTBE detected
MTBE Class:	*
Staff:	NOM
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	UPPER SANTA ANA VALL
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

BROOKHURST MILL (Continued) **1000333109**

Summary: EXCAVATED TO 34' BELOW GRADE. 3 VERTICAL BORINGS DRILLED TO 40-50'.

RIVERSIDE CO. LUST:

Region:	RIVERSIDE
Facility ID:	94714
Employee:	Boltinghous-LOP
Site Closed:	Yes
Case Type:	Soil only
Facility Status:	closed/action completed
Casetype Decode:	Soil only is impacted
Fstatus Decode:	Closed/Action completed

AST:

Certified Unified Program Agencies:	Not reported
Owner:	Not reported
Total Gallons:	Not reported
CERSID:	10520509
Facility ID:	FA0014048
Business Name:	Brookhurst Mill
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAD008337750

SWEEPS UST:

Status:	Active
Comp Number:	67153
Number:	1
Board Of Equalization:	44-018505
Referral Date:	10-21-92
Action Date:	10-21-92
Created Date:	02-29-88
Owner Tank Id:	1-10000
SWRCB Tank Id:	33-000-067153-000001
Tank Status:	A
Capacity:	10000
Active Date:	10-21-92
Tank Use:	M.V. FUEL
STG:	P

BROOKHURST MILL (Continued) **1000333109**

Content: DIESEL
Number Of Tanks: 3

Status: Active
Comp Number: 67153
Number: 1
Board Of Equalization: 44-018505
Referral Date: 10-21-92
Action Date: 10-21-92
Created Date: 02-29-88
Owner Tank Id: 2-5000
SWRCB Tank Id: 33-000-067153-000002
Tank Status: A
Capacity: 5000
Active Date: 10-21-92
Tank Use: M.V. FUEL
STG: P
Content: LEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 67153
Number: 1
Board Of Equalization: 44-018505
Referral Date: 10-21-92
Action Date: 10-21-92
Created Date: 02-29-88
Owner Tank Id: 3-2000
SWRCB Tank Id: 33-000-067153-000003
Tank Status: A
Capacity: 2000
Active Date: 10-21-92
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

HIST UST:
File Number: 0001F44C
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F44C.pdf
Region: STATE
Facility ID: 00000067153
Facility Type: Other
Other Type: FEED MFG. PLANT
Contact Name: ROBERT FOGG
Telephone: 7146883511
Owner Name: BROOKHURST MILL, A CALIFORNIA
Owner Address: 3315 VAN BUREN
Owner City,St,Zip: RIVERSIDE, CA 92503
Total Tanks: 0003

Tank Num: 001
Container Num: 1-10000
Year Installed: 1958
Tank Capacity: 00010000
Tank Used for: WASTE
Type of Fuel: 4

BROOKHURST MILL (Continued) **1000333109**

Container Construction Thickness: X
Leak Detection: Visual, Stock Inventor

Tank Num: 002
Container Num: 2-5000
Year Installed: 1958
Tank Capacity: 00005000
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Container Construction Thickness: Not reported
Leak Detection: Visual, Stock Inventor

Tank Num: 003
Container Num: 3-2000
Year Installed: 1958
Tank Capacity: 00002000
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Visual, Stock Inventor

Click here for Geo Tracker PDF:

CA FID UST:
Facility ID: 33002989
Regulated By: UTNKA
Regulated ID: 00067153
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 7146883511
Mail To: Not reported
Mailing Address: 3315 VAN BUREN BLVD
Mailing Address 2: Not reported
Mailing City,St,Zip: RIVERSIDE 92503
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

FINDS:

Registry ID: 110002632731

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of

BROOKHURST MILL (Continued) **1000333109**

events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000333109
Registry ID:	110002632731
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002632731

EMI:

Year:	1987
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	723
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	16
Part. Matter 10 Micrometers and Smllr Tons/Yr:	5

Year:	1990
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	8
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2

Year:	1993
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC

BROOKHURST MILL (Continued) **1000333109**

SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	1995
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	2002
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2003
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0

BROOKHURST MILL (Continued) **1000333109**

Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2004
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.004114
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	1.5146
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.43

Year:	2006
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.0042943028914972802
Reactive Organic Gases Tons/Yr:	.003
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	1.247
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.36163

Year:	2007
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.0030111412225233363
Reactive Organic Gases Tons/Yr:	.003
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	1.247
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.36163

BROOKHURST MILL (Continued) **1000333109**

Year:	2011
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.0025045516512
Reactive Organic Gases Tons/Yr:	0.00248
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	1.5428
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.447412

Year:	2015
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.015954480759
Reactive Organic Gases Tons/Yr:	0.0159431
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.8599155
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.249375495

Year:	2016
County Code:	33
Air Basin:	SC
Facility ID:	21170
Air District Name:	SC
SIC Code:	2048
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00020991561181
Reactive Organic Gases Tons/Yr:	0.000199
Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0.76
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.2204

HAZNET:

envid:	1000333109
Year:	2015
GEPAID:	CAD008337750
Contact:	BRADLEY C. POPE
Telephone:	9516883511

BROOKHURST MILL (Continued) **1000333109**

Mailing Name:	Not reported
Mailing Address:	3315 VAN BUREN AVE
Mailing City,St,Zip:	RIVERSIDE, CA 925030000
Gen County:	Riverside
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Other organic solids
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.15
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Riverside

envid:	1000333109
Year:	2013
GEPAID:	CAD008337750
Contact:	BRADLEY C. POPE, PRESIDENT
Telephone:	9516883511
Mailing Name:	Not reported
Mailing Address:	3315 VAN BUREN AVE
Mailing City,St,Zip:	RIVERSIDE, CA 925030000
Gen County:	Riverside
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.1
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Not reported

envid:	1000333109
Year:	2012
GEPAID:	CAD008337750
Contact:	BRADLEY C. POPE, PRESIDENT
Telephone:	9516883511
Mailing Name:	Not reported
Mailing Address:	3315 VAN BUREN AVE
Mailing City,St,Zip:	RIVERSIDE, CA 925030000
Gen County:	Riverside
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.15
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Riverside

envid:	1000333109
Year:	2011
GEPAID:	CAD008337750
Contact:	BRADLEY C. POPE, PRESIDENT
Telephone:	9516883511

BROOKHURST MILL (Continued) **1000333109**

Mailing Name: Not reported
Mailing Address: 3315 VAN BUREN AVE
Mailing City,St,Zip: RIVERSIDE, CA 925030000
Gen County: Not reported
TSD EPA ID: CAT080013352
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons: 0.231
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000333109
Year: 2004
GEPAID: CAD008337750
Contact: BRADLEY C. POPE, PRESIDENT
Telephone: 9516883511
Mailing Name: Not reported
Mailing Address: 3315 VAN BUREN AVE
Mailing City,St,Zip: RIVERSIDE, CA 925030000
Gen County: Not reported
TSD EPA ID: CAD028409019
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Treatment, Tank
Tons: 0.51
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
2 additional CA_HAZNET: record(s) in the EDR Site Report.

HIST CORTESE:
Region: CORTESE
Facility County Code: 33
Reg By: LTNKA
Reg Id: 083302548T

NPDES:
Facility Status: Active
NPDES Number: CAS000001
Region: 8
Agency Number: 0
Regulatory Measure ID: 210686
Place ID: Not reported
Order Number: 97-03-DWQ
WDID: 8 33I001650
Regulatory Measure Type: Enrollee
Program Type: Industrial
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 03/27/1992
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported

BROOKHURST MILL (Continued) **1000333109**

Discharge Address:	3315 Van Buren Blvd
Discharge Name:	Brookhurst Mill Corp
Discharge City:	Riverside
Discharge State:	California
Discharge Zip:	92503
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	210686
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I001650
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/27/1992
Status:	Active
Status Date:	03/27/1992
Place Size:	6
Place Size Unit:	Acres
Contact:	Brad Pope
Contact Title:	Not reported
Contact Phone:	951-688-3511
Contact Phone Ext:	Not reported
Contact Email:	KEVIN@BROOKHURSTMILL.COM
Operator Name:	Brookhurst Mill Corp
Operator Address:	3315 Van Buren Blvd
Operator City:	Riverside
Operator State:	California
Operator Zip:	92503
Operator Contact:	Brad Pope
Operator Contact Title:	Not reported
Operator Contact Phone:	951-688-3511
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	kevin@brookhurstmill.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported

BROOKHURST MILL (Continued) **1000333109**

Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	951-688-3511
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Temescal Creek
Certifier:	Victor Solorzano
Certifier Title:	sales
Certification Date:	23-FEB-15
Primary Sic:	2048-Prepared Feed and Feed Ingredients for Animals and Fowls, Except Dogs and Cats
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	210686
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I001650
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/27/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Brookhurst Mill Corp
Discharge Address:	3315 Van Buren Blvd
Discharge City:	Riverside
Discharge State:	California
Discharge Zip:	92503
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported

BROOKHURST MILL (Continued) **1000333109**

Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported

BROOKHURST MILL (Continued) **1000333109**

Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 33I001650
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	03/27/1992
Operator Name:	Brookhurst Mill Corp
Operator Address:	3315 Van Buren Blvd
Operator City:	Riverside
Operator State:	California
Operator Zip:	92503

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	210686
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I001650
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/27/1992
Status:	Active
Status Date:	03/27/1992
Place Size:	6
Place Size Unit:	Acres
Contact:	Brad Pope
Contact Title:	Not reported
Contact Phone:	951-688-3511
Contact Phone Ext:	Not reported
Contact Email:	KEVIN@BROOKHURSTMILL.COM
Operator Name:	Brookhurst Mill Corp
Operator Address:	3315 Van Buren Blvd
Operator City:	Riverside
Operator State:	California

BROOKHURST MILL (Continued) **1000333109**

Operator Zip:	92503
Operator Contact:	Brad Pope
Operator Contact Title:	Not reported
Operator Contact Phone:	951-688-3511
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	kevin@brookhurstmill.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	951-688-3511
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Temescal Creek
Certifier:	Victor Solorzano
Certifier Title:	sales
Certification Date:	23-FEB-15
Primary Sic:	2048-Prepared Feed and Feed Ingredients for Animals and Fowls, Except Dogs and Cats
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	210686
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I001650
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/27/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported

BROOKHURST MILL (Continued) **1000333109**

Discharge Name:	Brookhurst Mill Corp
Discharge Address:	3315 Van Buren Blvd
Discharge City:	Riverside
Discharge State:	California
Discharge Zip:	92503
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported

BROOKHURST MILL (Continued) **1000333109**

Certification Date: Not reported
Primary Sic: Not reported
Secondary Sic: Not reported
Tertiary Sic: Not reported

WDS:
Facility ID: Santa Ana River 33I001650
Facility Type: Not reported
Facility Status: Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number: CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion: 8
Facility Telephone: Not reported
Facility Contact: Not reported
Agency Name: BROOKHURST MILL CORP.
Agency Address: Not reported
Agency City,St,Zip: 0
Agency Contact: Not reported
Agency Telephone: Not reported
Agency Type: Not reported
SIC Code: 0
SIC Code 2: Not reported
Primary Waste Type: Not reported
Primary Waste: Not reported
Waste Type2: Not reported
Waste2: Not reported
Primary Waste Type: Not reported
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: Not reported
POTW: Not reported
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

CIWQS:
Agency: Brookhurst Mill Corp
Agency Address: 3315 Van Buren Blvd, Riverside, CA 92503
Place/Project Type: Industrial - Prepared Feed and Feed Ingredients for Animals and Fowls, Except Dogs and Cats
SIC/NAICS: 2048
Region: 8
Program: INDSTW

BROOKHURST MILL (Continued) **1000333109**

Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 33I001650
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	03/27/1992
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.91277
Longitude:	-117.4405

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 45

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/08/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 14

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/08/2018
Number of Days to Update: 26

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/10/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 21

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 10/15/2018
Number of Days to Update: 20

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/18/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/15/2018
Number of Days to Update: 33

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 09/28/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 34

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 11/02/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 09/21/2018
Date Data Arrived at EDR: 09/21/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 49

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/21/2018
Date Data Arrived at EDR: 09/21/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 49

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Quarterly

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/28/2018
Date Data Arrived at EDR: 05/25/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 46

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/11/2018
Number of Days to Update: 29

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 10/01/2018
Number of Days to Update: 32

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing
Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/02/2018
Number of Days to Update: 27

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 73

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 51

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)
Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/08/2018
Number of Days to Update: 26

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)
Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 08/31/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/09/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/21/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/24/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 57

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/11/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/11/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/07/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/04/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/03/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/03/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/17/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 80

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/20/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/29/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 37

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/07/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 30

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 06/19/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 87

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 44

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/22/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 10/16/2018
Number of Days to Update: 21

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 08/28/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 63

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 7

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/30/2018
Date Data Arrived at EDR: 09/27/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Annually

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 06/25/2018
Date Data Arrived at EDR: 06/28/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 39

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 10/04/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 27

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 47

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/21/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/02/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 36

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 48

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/14/2018
Date Data Arrived at EDR: 08/16/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 25

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data
Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 97

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/10/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Annually

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 20

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/21/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/21/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/09/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 44

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/10/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/28/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 28

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/09/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 31

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 28

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/15/2018
Number of Days to Update: 33

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/19/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/19/2018
Number of Days to Update: 29

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/13/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data
The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)
Non-Case Information sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)
Other Oil & Gas Projects sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/02/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List
The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites
A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 10/05/2018
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 22

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 10/05/2018
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 23

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 07/01/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 08/20/2018
Number of Days to Update: 27

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 08/02/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 08/20/2018
Number of Days to Update: 14

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 05/23/2018
Date Data Arrived at EDR: 05/24/2018
Date Made Active in Reports: 07/13/2018
Number of Days to Update: 50

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/11/2018
Number of Days to Update: 21

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/29/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 44

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 09/18/2018
Number of Days to Update: 13

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/30/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 07/11/2018
Date Data Arrived at EDR: 07/17/2018
Date Made Active in Reports: 08/30/2018
Number of Days to Update: 44

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/11/2018
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 08/22/2018
Number of Days to Update: 40

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/20/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 43

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/20/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/12/2018
Number of Days to Update: 49

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/23/2018
Date Data Arrived at EDR: 08/24/2018
Date Made Active in Reports: 09/18/2018
Number of Days to Update: 25

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/08/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 08/22/2018
Number of Days to Update: 13

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/27/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 30

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

LOS ANGELES COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AOCONCERN: San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/02/2018
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 59

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/16/2018
Date Data Arrived at EDR: 07/18/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 37

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/16/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2018
Date Data Arrived at EDR: 05/01/2018
Date Made Active in Reports: 05/14/2018
Number of Days to Update: 13

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 04/17/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 63

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/16/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Semi-Annually

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Annually

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 28

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/30/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 15

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 08/31/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 19

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 07/18/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 15

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 08/02/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 34

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 08/27/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 36

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/02/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 34

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 07/13/2018
Date Data Arrived at EDR: 08/08/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/13/2018
Date Data Arrived at EDR: 08/08/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/13/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 09/12/2018
Number of Days to Update: 37

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/06/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/06/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 27

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 07/19/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 10/12/2018
Date Made Active in Reports: 10/16/2018
Number of Days to Update: 4

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 10/12/2018
Date Made Active in Reports: 11/05/2018
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 08/03/2018
Date Data Arrived at EDR: 10/02/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 30

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/23/2018
Date Data Arrived at EDR: 10/02/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 31

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List

Cupa facility list

Date of Government Version: 08/07/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 27

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 07/27/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 41

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/06/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 41

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/06/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 31

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

SAN DIEGO CO. SAM: Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 09/17/2018
Date Data Arrived at EDR: 09/18/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 15

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 17

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 42

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/17/2018
Number of Days to Update: 27

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/17/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 16

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Annually

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 09/11/2018
Number of Days to Update: 36

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 10/17/2018
Number of Days to Update: 43

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 10/18/2018
Number of Days to Update: 44

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 10/16/2018
Number of Days to Update: 21

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 10/25/2018
Number of Days to Update: 21

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 08/14/2018
Date Data Arrived at EDR: 08/16/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 8

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/25/2018
Number of Days to Update: 35

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/02/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 36

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 09/13/2018
Date Data Arrived at EDR: 09/14/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 5

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/02/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 41

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Annually

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Quarterly

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/02/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 29

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/04/2018
Number of Days to Update: 22

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 10/15/2018
Date Data Arrived at EDR: 10/19/2018
Date Made Active in Reports: 11/05/2018
Number of Days to Update: 17

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 05/10/2018
Date Data Arrived at EDR: 05/15/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 31

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/10/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 31

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 08/01/2018
Number of Days to Update: 19

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 07/01/2018
Date Data Arrived at EDR: 08/01/2018
Date Made Active in Reports: 08/31/2018
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/31/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/21/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/06/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

ARLINGTON HIGH SCHOOL
2951 JACKSON STREET
RIVERSIDE, CA 92504

TARGET PROPERTY COORDINATES

Latitude (North):	33.914685 - 33˚ 54' 52.87''
Longitude (West):	117.428337 - 117˚ 25' 42.01''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	460403.5
UTM Y (Meters):	3752585.0
Elevation:	861 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5641332 RIVERSIDE WEST, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

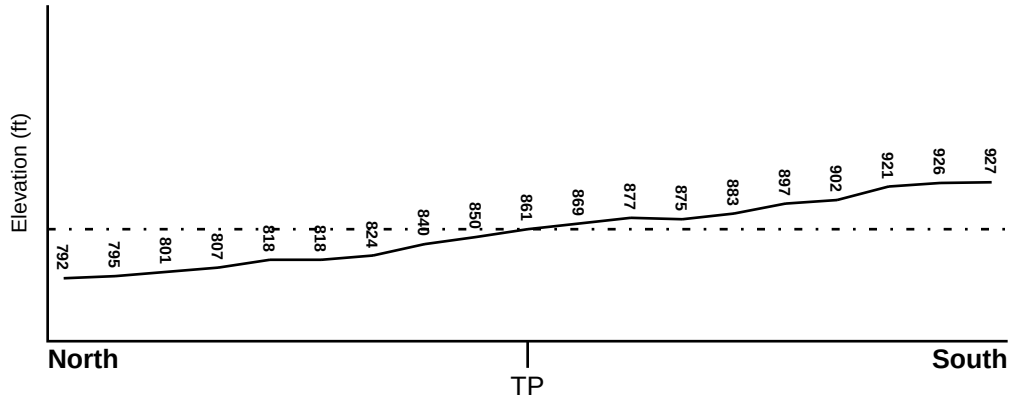
TOPOGRAPHIC INFORMATION

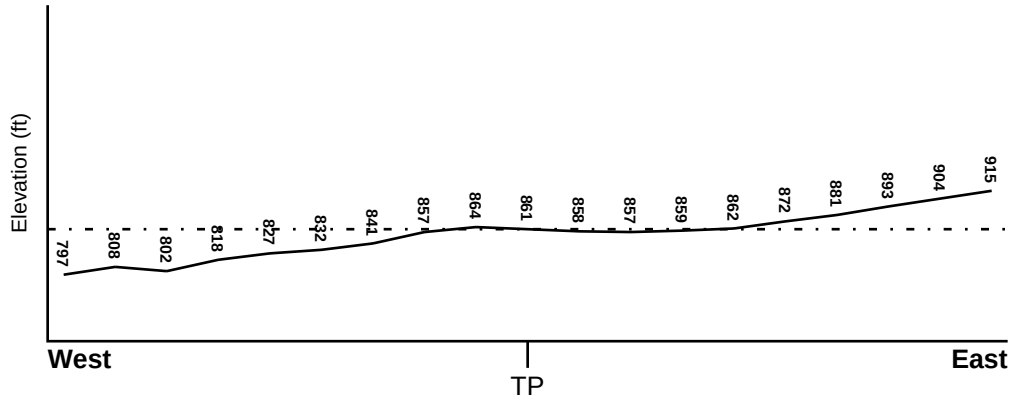
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General North

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 861 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C0720G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C0715G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
1	1/2 - 1 Mile West	SW
A3	1/2 - 1 Mile West	Not Reported
A4	1/2 - 1 Mile West	Not Reported
1G	1/2 - 1 Mile West	Not Reported
2G	1/2 - 1 Mile West	Not Reported
3G	1/2 - 1 Mile West	SW

For additional site information, refer to Physical Setting Source Map Findings.

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

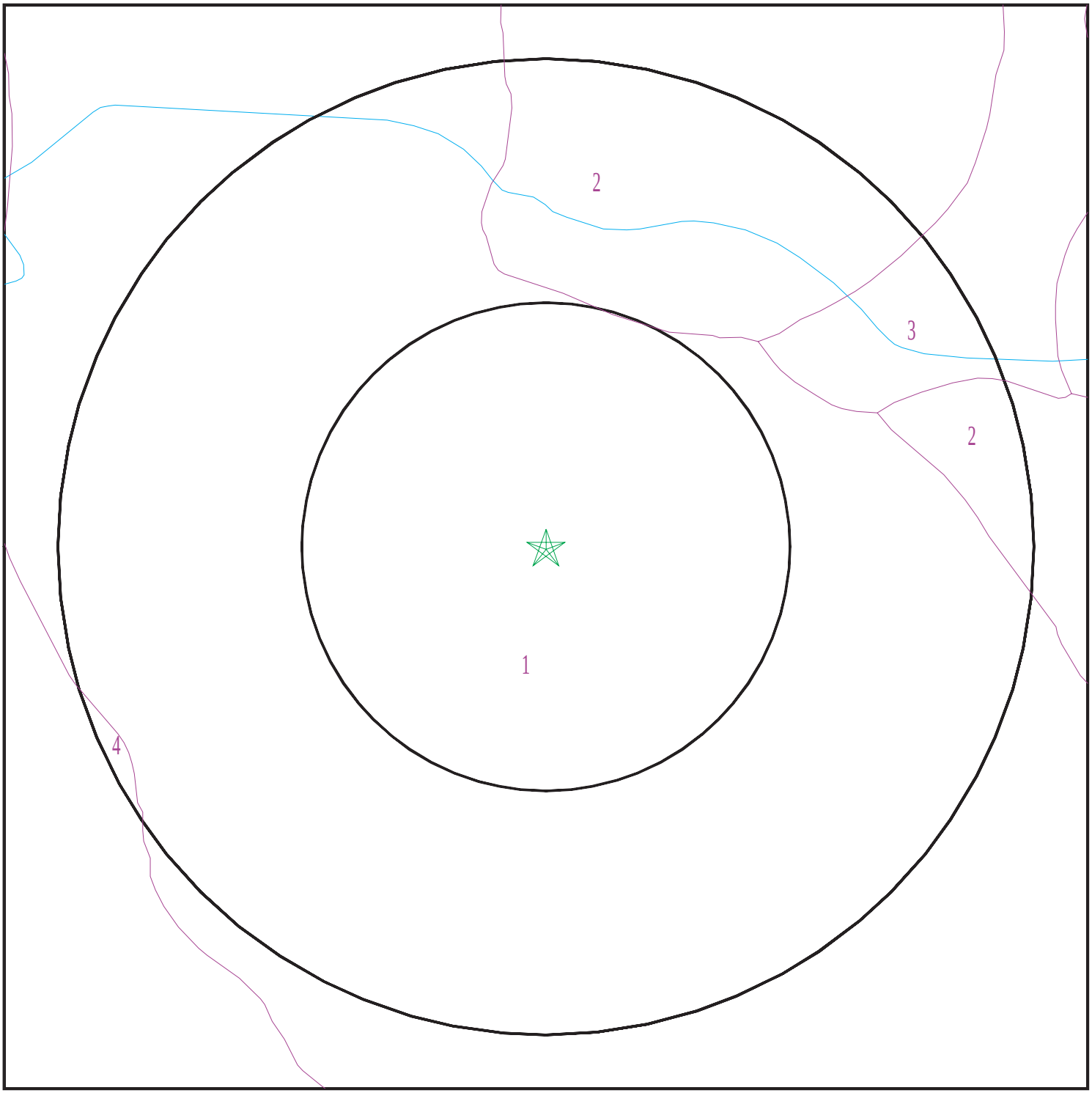
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5485212.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Arlington High School	CLIENT:	PlaceWorks
ADDRESS:	2951 Jackson Street Riverside CA 92504	CONTACT:	Denise Clendening
		INQUIRY #:	5485212.2s
LAT/LONG:	33.914685 / 117.428337	DATE:	November 14, 2018 9:26 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: ARLINGTON

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6
2	11 inches	50 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6
3	50 inches	59 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	59 inches	70 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: BUREN

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	11 inches	27 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	27 inches	37 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
4	37 inches	57 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Map ID: 3

Soil Component Name: ARLINGTON

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	11 inches	24 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6
3	24 inches	35 inches	cemented	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6
4	35 inches	46 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.6

Soil Map ID: 4

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

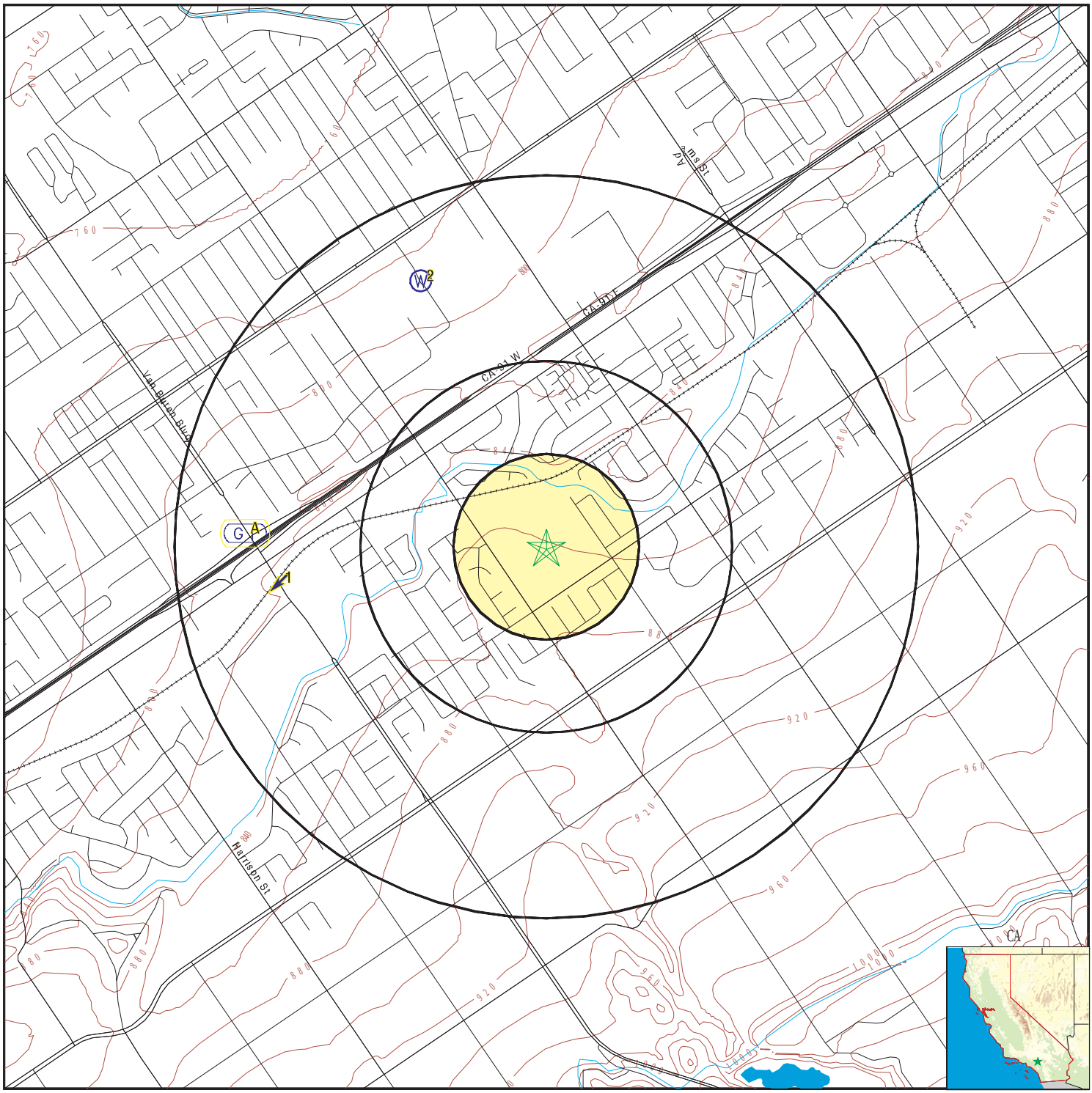
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	CADW60000003298	1/2 - 1 Mile NNW

PHYSICAL SETTING SOURCE MAP - 5485212.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

Groundwater Flow Direction
Indeterminate Groundwater Flow at Location
Groundwater Flow Varies at Location
Closest Hydrogeological Data
Oil, gas or related wells

SITE NAME: Arlington High School ADDRESS: 2951 Jackson Street Riverside CA 92504 LAT/LONG: 33.914685 / 117.428337	CLIENT: PlaceWorks CONTACT: Denise Clendening INQUIRY #: 5485212.2s DATE: November 14, 2018 9:26 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation			Database	EDR ID Number
1 **West** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083302548T SW Not Reported Not Reported 49' 11/28/1994	**AQUIFLOW**	**66440**

2
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000003298**

Objectid:	3298	Latitude:	33.925072
Longitude:	-117.434217	Site code:	339251N1174342W001
State well numbe:	03S05W08E002S	Local well name:	'Sherman High'
Well use id:	1	Well use descrip:	Observation
County id:	33	County name:	Riverside
Basin code:	'8-2.03'	Basin desc:	Riverside-Arlington
Dwr region id:	80238	Dwr region:	Southern Region Office
Site id:	CADW60000003298		

A3 **West** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083303310T Not Reported Not Reported Not Reported <40 04/05/1994	**AQUIFLOW**	**37828**
A4 **West** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083302914T Not Reported Not Reported Not Reported 30-35 05/02/1996	**AQUIFLOW**	**50808**
1G **West** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083302914T Not Reported Not Reported Not Reported 30-35 05/02/1996	**AQUIFLOW**	**50808**
2G **West** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083303310T Not Reported Not Reported Not Reported <40 04/05/1994	**AQUIFLOW**	**37828**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation			Database	EDR ID Number
3G **West** **1/2 - 1 Mile** **Lower**	Site ID:	083302548T	**AQUIFLOW**	**66440**
	Groundwater Flow:	SW		
	Shallow Water Depth:	Not Reported		
	Deep Water Depth:	Not Reported		
	Average Water Depth:	49’		
	Date:	11/28/1994		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92504	20	1

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 92504

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.500 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Appendix D. Health and Safety Plan

Appendix

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March 2019 | Health and Safety Plan

ARLINGTON HIGH SCHOOL

for Riverside Unified School District

Prepared for:

Riverside Unified School District
Contact: Daniel Rodriguez,
Assistant Director, Facilities Projects
3070 Washington Street
Riverside, CA 92504

Project Number:
RIV-24.0

Prepared by:

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PLACEWORKS

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1. Applicable Standards and Goals

1.1 GENERAL

This Health and Safety Plan (HASP) was prepared by PlaceWorks for Riverside Unified School District (the District). This HASP provides an overview of current conditions at the site and describes the safety procedures to be employed and the rationale for their selection. The HASP has been prepared to ensure proper precautions are taken to protect human health and safety while work is being performed at the site. During the development of this HASP, consideration was given to current safety standards as defined by the U.S. Environmental Protection Agency (EPA), the Occupational Health and Safety Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH). This HASP was prepared in accordance with guidelines set forth in Title 8 of the California Code of Regulations, Section 5192 (8 CCR 5192). In addition, this HASP also describes the health effects and standards for known contaminants and the procedures designed to account for the potential for exposure to unknown substances.

1.2 SCOPE AND APPLICABILITY OF THE HEALTH AND SAFETY PLAN

The purpose of this HASP is to define the requirements and designate protocols to be followed by the onsite personnel during the field activities. Site conditions, identified sources and previous work elements implemented at the site are described in the Workplan. This HASP is applicable to all employees, government employees, contractors, subcontractors, and visitors to the site. This HASP will be used to ensure that adequate site safety practices are used during sample collection activities.

All personnel working at the site must review the HASP and sign an agreement to comply with its requirements and to signify their familiarity with all aspects of the HASP before entering an exclusion zone or a contamination reduction zone. A copy of the HASP Certification is provided in Section 19. All personnel working at the site will be briefed daily by the Site Safety Officer (SSO) and will be required to become familiar with the following sections of this plan:

- Directions to Hospital - Section 17 and Page 3 (map);
- Safety Rules and Personal Hygiene - Appendix A;
- Field Standard Operating Procedures for Use and Decontamination of Personal Protective Equipment (PPE) - Appendix B;
- Heat Stress and Heat Stress Monitoring - Appendix C.

1. Applicable Standards and Goals

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Figure 1 Hospital Route Map

1. Applicable Standards and Goals

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2. Site Description

2.1 SITE IDENTIFICATION

The site has been identified by the District as Arlington High School.

2.2 SITE LOCATION

The site is located at 2951 Jackson Street, Riverside, Riverside County, California.

2.3 CURRENT AND HISTORICAL LAND USES

2.3.1 Property Ownership

The District currently owns the project site.

2.3.2 Business/Manufacturing Activities

Based on a review of historical documents, no manufacturing activities have occurred on the site. The site is occupied by the Arlington High School. The site was used for agricultural purposes prior to the construction of the school site.

2.3.3 Site Climatological Setting

The site is classified as being in climate zone 10 by the California Energy Commission. It is an area that is semi-arid with hot, dry summers and mild winters. The Western Regional Climate Center collected data from Riverside from 1893 to 2016. The mean temperature in the area ranges from a low of 48.6° Fahrenheit (°F) in the winter to a high of 79.5°F in the summer. The average annual precipitation is 10.21 inches per year.

2. Site Description

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3. Roles and Responsibilities

A number of roles are required for the safe and efficient operation of a field team. These roles include Project Director, Project Manager, PlaceWorks Health and Safety Manager, Site Manager, SSO and field personnel. A team member may take on more than one role, but the roles must be clearly assigned and must cover all positions required. The personnel assigned to the various roles and their phone numbers are listed below:

Assignment	Name	Phone Number
Project Director	Dr. Denise Clendening	(909) 989-4449
Project Manager	Dr. Denise Clendening	(909) 989-4449
Health & Safety Manager	Mike Watson	(909) 989-4449
Site Manager	Mike Watson	(909) 989-4449
Site Safety Officer	Mike Watson	(909) 989-4449
Field Personnel	Mike Watson	(909) 989-4449

The following guidelines outline assignment of responsibilities of the field team members.

3.1 PROJECT DIRECTOR

The Project Director is responsible for the overall operation of the project, including safety during field activities. Specific responsibilities include organization of all project work assignments, assigning personnel to specific duties, ensuring that the field team follows health and safety procedures approved by the PlaceWorks Health and Safety Manager, and overall quality assurance/quality control of the project.

3.2 PROJECT MANAGER

The Project Manager will be responsible for the day-to-day progress of the project and will hold review and planning meetings as necessary with all technical staff, during which the current progress, problems encountered, and future direction will be discussed.

3.3 PLACEWORKS HEALTH AND SAFETY MANAGER

The PlaceWorks Health and Safety Manager is responsible for the design and, with assistance from the Project Manager on personnel issues, implementation of the health and safety program for this project. This includes developing a site HASP, ensuring that all onsite workers have met the necessary health and safety training requirements and are knowledgeable about the work they will perform, assigning a qualified SSO to the field team, verifying compliance with all applicable safety and health requirements, and updating equipment and procedures based on new information gathered during the course of work.

3.4 SITE MANAGER

The Site Manager is responsible for the operation of the field team. Responsibilities include organization of field activities, compliance with the provisions of the site Workplan, field documentation and record keeping, quality control of field activities, and communication with the site's correspondent. The Site Manager, along with the SSO, must also ensure that subcontractors and outside observers comply with the HASP.

3.5 SITE SAFETY OFFICER

The SSO works closely with the Site Manager to enforce the provisions of the HASP during field activities. The SSO is responsible for implementing the procedures stipulated in the HASP:

- Evaluating and amending the HASP daily to remedy deficiencies and post entry briefings;
- Determining the levels of personal protection based on observations or changing field conditions;
- Controlling site entry and exit;
- Briefing the field team on the health and safety decontamination procedures required for various field activities;
- Monitoring the field team for signs of stress or exposure;
- Initiating emergency procedures, if necessary;
- Verifying that field team members have met the health and safety requirements for field activities;
- Being available to document and respond to any concerns or complaints made by personnel onsite;
- Documenting unsafe work practices or conditions;
- Documenting any accidents or incidents that result in illness or injury to personnel; and
- Issuing stop work notices if site conditions become unsafe, with conference with the Project Director and/or the PlaceWorks Health and Safety Manager.

3.6 FIELD TECHNICIANS

The field technicians are responsible for complying with the HASP, notifying the SSO of hazardous or potentially hazardous conditions, and carrying out specialized tasks during field operations. These tasks include inspecting, calibrating, maintaining, and using field equipment; performing site characterization activities; maintaining decontamination stations; preparing and decontaminating sampling equipment; collecting and preserving samples; and packaging and shipping samples according to proper chain-of-custody procedures.

3.7 FIELD TEAM SIZE

The size of the field team is determined by the nature of the field activities, the characteristics of the site, the safety hazards involved, and the prescribed levels of safety protection. The field team must be large enough to ensure onsite activities are conducted safely, but not so large as to sacrifice efficiency. PlaceWorks personnel shall be present during all phases of the field activities.

3. Roles and Responsibilities

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4. Training and Medical Monitoring Requirements

Staff and subcontractors participating in the fieldwork must have completed a 40-hour health and safety training course (8 CCR 5192(e), 29 CFR 1910.120(e)(2)) as appropriate for their particular tasks and have annual refresher training. Before personnel arrive onsite, each employer will be responsible for certifying that its employees meet the OSHA training requirements.

Each employee will be familiar with the requirements of the site safety and health plan, and will participate in site activity and safety briefings. Medical surveillance is conducted as a routine program, which meets the requirements of 8 CCR 5192 (f); the medical surveillance program is detailed in Appendix D. There will not be any special medical tests or examinations required for staff involved in this project.

All personnel will be trained to operate their respective equipment, including respiratory protection if site conditions exist where respirators are needed. Under no circumstance will untrained or unqualified personnel operate equipment.

4. Training and Medical Monitoring Requirements

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5. Description of Field Work

The following subsections describe tasks to be performed during the field activities and the hazards associated with each task. Some of the protective measures to be implemented during completion of those operations are also identified.

5.1 SOIL SAMPLING ACTIVITIES

5.1.1 Soil Sampling

Soil samples will be collected following protocols described in the Workplan and the following guidance: DTSC's *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (DTSC 2008). Soil will be collected in glass jars.

5.1.2 Sampling Methods and Procedures

Soil sampling will be conducted using a hand auger. The hand auger will be advanced to the desired depths and the barrel will be retrieved. Observations pertaining to the soil type will be recorded by a field geologist. The soil will be decanted into a pre-cleaned glass jar. Each sample will be labeled with the sample number, sample depth, and the date and time sampled. Samples will be immediately placed in an ice-filled cooler and listed on a chain-of-custody form. Any observation pertaining to potential soil contamination or soil source will be recorded.

Hazards associated with this task include dermal contact with and accidental ingestion of contaminated soil and inhalation of dusts and vapors (i.e. VOCs), noise and lifting. Some of the protective measures to be implemented during soil sampling include the use of chemical-resistant gloves to reduce the hazards associated with soil sampling. Level D PPE will be used when sampling is initiated, but will be upgraded as necessary. The use of a PID for air monitoring will be used (as necessary) primarily for the detection of VOCs and not organochlorine pesticides or metals, which are not detectable with a PID.

Previous surveys indicate that heavy equipment such as drilling or excavation equipment may produce continuous and impact noise at or above the action level of 85 dBA. All site personnel within 25 feet of operating equipment, or near an operation that creates noise levels high enough to impair conversation, shall wear hearing protective devices (either muffs or plugs). All PlaceWorks personnel are in the PlaceWorks Hearing Conservation Program and have had baseline and, where appropriate, annual audiograms. Personnel will wash their hands with soap and water prior to inserting earplugs to avoid initiating ear infections.

The following guidelines will be followed whenever lifting equipment such as portable generators, coolers filled with samples, any other objects that are of odd size or shape, or that weigh over 40 pounds.

- Get help when lifting heavy loads. Portable generators will only be lifted using a two-person lift.

5. Description of Field Work

- When moving heavy objects such as drums or containers, use a dolly or other means of assistance.
- Plan the lift. If lifting a heavy object, plan the route and where to place the object. In addition, plan communication signals to be used (i.e., "1, 2, 3, lift," etc.).
- Wear sturdy shoes in good condition that supply traction when performing lifts.
- Keep your back straight and head aligned during the lift and use your legs to lift the load – do not twist or bend from the waist. Keep the load in front of you – do not lift or carry objects from the side.
- Keeping the heavy part of the load close to your body will help maintain your balance.

6. Chemical Hazards

The presence of chemical hazards at the site has not been confirmed; however, the primary suspected potential constituents of concern associated with the site are metals and organochlorine pesticides. The list of chemicals of concern for the site will be reassessed, as more data becomes available. Brief toxicological profiles of the major constituents of concern are included in Appendix E. Chemical and physical characteristics of these compounds are presented in Table 1.

Potential exposures to these chemicals during field activities include the following:

- Dermal contact with and accidental ingestion of potentially contaminated rinsate and residue during decontamination and sampling; and
- Splash hazards during decontamination.

To protect workers from eye and skin contact, skin absorption, and accidental ingestion of airborne dust, PPE will be used as outlined in Section 8.0.

6.1 HAZARD ASSESSMENT

A literature review was conducted to find ionization potentials (IPs), exposure limits, and concentrations immediately dangerous to life and health (IDLH) for the constituents of concern in environmental media at the site. Exposure limit data are expressed as 8-hour time-weighted averages (TWAs). TWAs promulgated in OSHA regulations are referred to as permissible exposure limits (PELs). The American Conference of Governmental and Industrial Hygienists adopts values for exposure limits that are referred to as threshold limit values.

Exposure limits and the IDLH for the constituents of concern are depicted in Table 1. These data are also used to establish action levels to determine when personnel should upgrade from Level D PPE (i.e., no respiratory protection) to Level C PPE (i.e., full-face air-purifying respirator) and to select the appropriate types of outer garments, gloves, and respirator cartridges. Action levels triggering an upgrade in respiratory protection from Level D to Level C are established by examining exposure limit data and selecting compounds with the lowest PEL.

Site work will be initiated in Level D protection. If unusual odors or symptoms are noted in the field, and engineering controls cannot reduce potential hazards in the breathing zone, the level of protection will be upgraded to Level C. If an upgrade to Level B is required, field activities will stop and the site will be evacuated. If Level B is required, the project will be stopped and the current operating procedures will be assessed by the SSO, the Health and Safety Officer, and the Health and Safety Committee. If it is determined that Level B PPE is required, a subcontractor will be retained to conduct this supervised work.

6. Chemical Hazards

The potential for injuries inherent in operating heavy equipment presents additional hazards, especially because the operator may be wearing restrictive clothing. The use of heavy equipment creates the potential for contact with active utility lines. These utility lines will be located before intrusive activities are conducted and avoided.

7. Physical Hazards

Potential physical hazards associated with this project include, but are not limited to, working around heavy equipment, electrocution, slippery terrain, noise, weather conditions, and heat stress.

7.1 HEAVY EQUIPMENT

It is important that personnel be aware of all operations that are occurring at a work location as well as physical hazards, such as excavations, trenches, or open pits. Personnel will be aware of the position and movement of equipment by identified operational areas. Special precautions, with regard to layout of equipment traffic patterns associated with other vehicles and buildings, will be carefully considered before beginning field activities. Traffic barriers and/or caution barrier tape will be used to delineate the layout and assist in directing traffic flow to reduce risk of vehicle injury. Employees will be notified during daily meetings as to the established traffic patterns of heavy equipment. Whenever heavy equipment operations are conducted in a congested site area, a traffic coordinator designated by the SSO will direct movement of heavy equipment and pedestrians. For non-essential persons, pedestrian traffic will be prohibited where heavy excavation equipment is in operation. Operators will be tasked to watch for employees that might stray into the restricted entry area; site personnel will be required to wear orange safety vests in the vicinity of heavy equipment operation.

7.2 ELECTROCUTION

Electrical power lines above (overhead) and below ground will be identified at the site before to the start of any activities to prevent electrocution. Minimum safe distance will be established by the SSO in areas of overhead and underground power lines. Subcontracted utility locating services will be used as necessary to locate or confirm the presence of suspected underground utilities at drilling or boring locations.

7.3 SLIPPERY TERRAIN, SLIPS, TRIPS, AND FALLS

Slippery and uneven terrain is common and may increase the risk of injuries. Personnel shall wear the appropriate foot protection while onsite. The SSO will monitor site work surfaces for potential trip and fall hazards. Overhead hazards consist of potential contact with falling objects, rigging equipment, or other items in use at the site. Hard hats are required at all times when at the site.

7.4 NOISE

Noise levels around the equipment may exceed a comfortable range; therefore earplugs or equivalent hearing protection devices are required when equipment is operating.

7.5 HEAT STRESS

The potential for heat stress is high given the warm southern California climate and use of protective garments. Heat stress and heat stress monitoring are discussed in Appendix C.

8. Personal Protective Equipment (PPE)

It is anticipated that Level D PPE will be used, with Level C PPE available on stand-by. Level D PPE will consist of the following equipment:

- Long pants and long-sleeved or short-sleeved shirts;
- Steel-toed work boots;
- Nitrile gloves;
- Hard hats, required when heavy equipment is being used and an overhead hazard exists;
- Safety glasses; and
- Hearing protection during heavy equipment operation.

Damaged PPE will be replaced immediately. Backup equipment will be kept onsite for replacement as necessary.

At a minimum, the following PPE will be discarded and replaced daily:

- Nitrile gloves; and
- Disposable type ear plugs.

New gloves will be used to collect each sample. Procedures for using PPE are given in Appendix B.

The level of protection provided by PPE selection may be upgraded or downgraded by the SSO, in conference with the PlaceWorks Health and Safety Manager and/or the Project Director, based on changes in site conditions. When a significant change occurs, the hazards will be reassessed. Some indicators of the need for reassessment are as follows:

- A change in weather conditions;
- Encountering contaminants other than those previously identified;
- A change in ambient levels of contaminants; and
- A change in work scope that affects the degree of contact with contaminants.

Level C PPE will consist of the following equipment:

8. Personal Protective Equipment (PPE)

- Dual-canister full-face air-purifying respirator (NIOSH approved);
- Organic vapor/P100 combination cartridges;
- Tyvek or Saranex-coated coveralls;
- Steel-toed work boots;
- Double layer nitrile;
- Hard hats, required when heavy equipment is being used; and
- Safety glasses.

Particulate respirator cartridges should be changed out when the wearer has difficulty breathing through the cartridges. Chemical gas or vapor respirator cartridges will be changed out at least daily.

- Proper inspection of PPE includes several levels of inspection depending on specific articles of PPE and its frequency of use. The different levels of inspection are as follows:
- Inspection of equipment received from the factory or distributor;
- Inspection of equipment as it is issued to workers;
- Inspection after use or training;
- Periodic inspection of stored equipment; and
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment or when problems with similar equipment arise.

The primary inspection of PPE in use for activities at the site will occur before use and will be conducted by the user. This ensures that the device or article has been inspected by the user and the user is familiar with its use. The SSO will periodically review field technicians' knowledge and execution of inspection guidelines for the various types of PPE in use at the site.

9. Illumination

Nighttime work activities are not anticipated; however, if nighttime work becomes necessary, illumination at the site will be supplemented in order to ensure safe working conditions. Supplemental lighting will be provided by mobile generator powered units.

9. Illumination

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10. Standard Operating Procedures

The standards regarding Safety Rules and Personal Hygiene and Use and Decontamination of PPE are detailed in Appendices A and B, respectively.

Standard operating procedures (SOPs) for equipment will be presented in the Addendum.

10.1 DAILY SAFETY MEETINGS

The SSO will conduct a daily safety meeting to discuss any changes in safety status, safety violations and administrative actions, work assignments, or modifications of procedures with all onsite field personnel. This safety meeting will be scheduled as the first activity of each day. An alternate person may be designated to conduct the briefing at the discretion of the SSO. All personnel present will sign the Daily Attendance sheet.

10.2 DAILY DEBRIEFING MEETINGS

At the end of each workday at the site, the SSO will discuss with the Site Manager or the Project Director, daily progress, technical problems, administrative resolution of disciplinary actions, and monitoring and analytical findings.

In the event that an emergency occurs or other accident that requires immediate attention, and additional safety meeting may be conducted. Non-routine meetings will address any site changes that have safety implications, which must be immediately addressed before work can continue.

10.3 ADMINISTRATIVE ACTION

Observed violations of safety procedures can result in immediate removal of the violator from the site. The Project Director will take administrative action on each violation. In the event of a violation, the nature of the violation, the past record of the violator, and any extenuating circumstances will be reviewed. The SSO and Health and Safety Officer will provide a recommendation to the Project Director regarding administrative actions such as retraining and reassignment, change in clearance status, or permanent dismissal from the site.

10. Standard Operating Procedures

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11. Confined Spaces

No confined space entry is anticipated at the site. A confined space protocol will be developed for Agency review and approval should conditions at the site change.

11. Confined Spaces

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12. Noise Monitoring

Noise may be monitored using a sound level meter (General Radio model 1565B) in areas where heavy equipment is being utilized. Hearing protection devices (HPDs) will be available onsite at all times. Use of HPDs will be required whenever the noise level equals or exceeds 85 dBA; in general, they will be used whenever equipment is operated. Field technicians will be informed on the proper use, maintenance and storage of HPDs. Engineering controls will be utilized as necessary to ensure that noise levels generated by work do not impact residences adjacent to the site.

12. Noise Monitoring

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13. Description of Site Work Zones

The various work zones may be established at the site before commencing any field activities.

Exclusion Zone

All workers who enter the contaminated work area will wear the correct level of protection. The number of workers in this zone will be kept at a minimum.

Contamination Reduction Zone (CRZ)

Decontamination areas for field personnel and heavy equipment will be designated in the CRZ adjacent to the exclusion zone.

Support Zones

The administrative and break areas shall be located in the support zone outside the CRZ and the overall work zone. The support zone will be located upwind from the overall work zone as permitted by site meteorological conditions.

The work areas and site shall be cleared and secured at the end of each workday.

13. Description of Site Work Zones

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14. Decontamination

Decontamination of PPE will take place in the decontamination area identified onsite. Before starting field activities, a decontamination station will be set with one bucket or tub containing a clean water and soap mixture and another bucket or tub containing clean water. All workers and PPE will be decontaminated to prevent the spread of potentially hazardous substances. All workers will wash their hands, arms, and face after removing PPE and before leaving the site. The volume and concentration of the decontamination fluid will be sufficiently low to allow disposal at the site. The water (and water with detergent) will be poured onto the ground or into a storm drain. Disposable items will be placed in trash bags for disposal along with other wastes removed from the property. Support vehicles are to be left, to the extent practical, outside the exclusion area so that decontamination will not be necessary. Decontamination procedures are outlined in Appendix B.

14. Decontamination

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15. Emergency Supplies

15.1 FIRE EXTINGUISHERS

A fire extinguisher will be available onsite during field activities. Field technicians will be informed on the proper use of fire extinguishers.

15.2 SPILL CONTROL EQUIPMENT

Accidental spills will be contained with sandbags or commercially available absorbent materials especially designed for spill containment or cleanup.

15. Emergency Supplies

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16. Emergency Contact Information

Emergency response shall be addressed according to the requirements of T8 CCR 5192. If it is determined that the emergency could threaten human health or the environment, the incident will be reported to the proper agencies:

Police/Fire	**911**
Department of Toxic Substances Control	(714) 484-5300
5796 Corporate Avenue	
Cypress, California 90630	
Fax: (714) 484-5302	
Department of Health Services	(916) 445-4171
714/744 P Street	
Sacramento, California 95814	
The closest hospital is:	(951) 688-2211
Parkview Community Hospital Medical Center Emergency Room	
3865 Jackson Street	
Riverside, California 92503	

16. Emergency Contact Information

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17. Directions to the Hospital

Directions (See Figure 1): Take Lincoln Avenue to Jackson Street, turn right at the 1st cross street onto Jackson Street, and drive 2 minutes to the destination. Distance is 1.5 miles and estimated travel time is 6 minutes.

17. Directions to the Hospital

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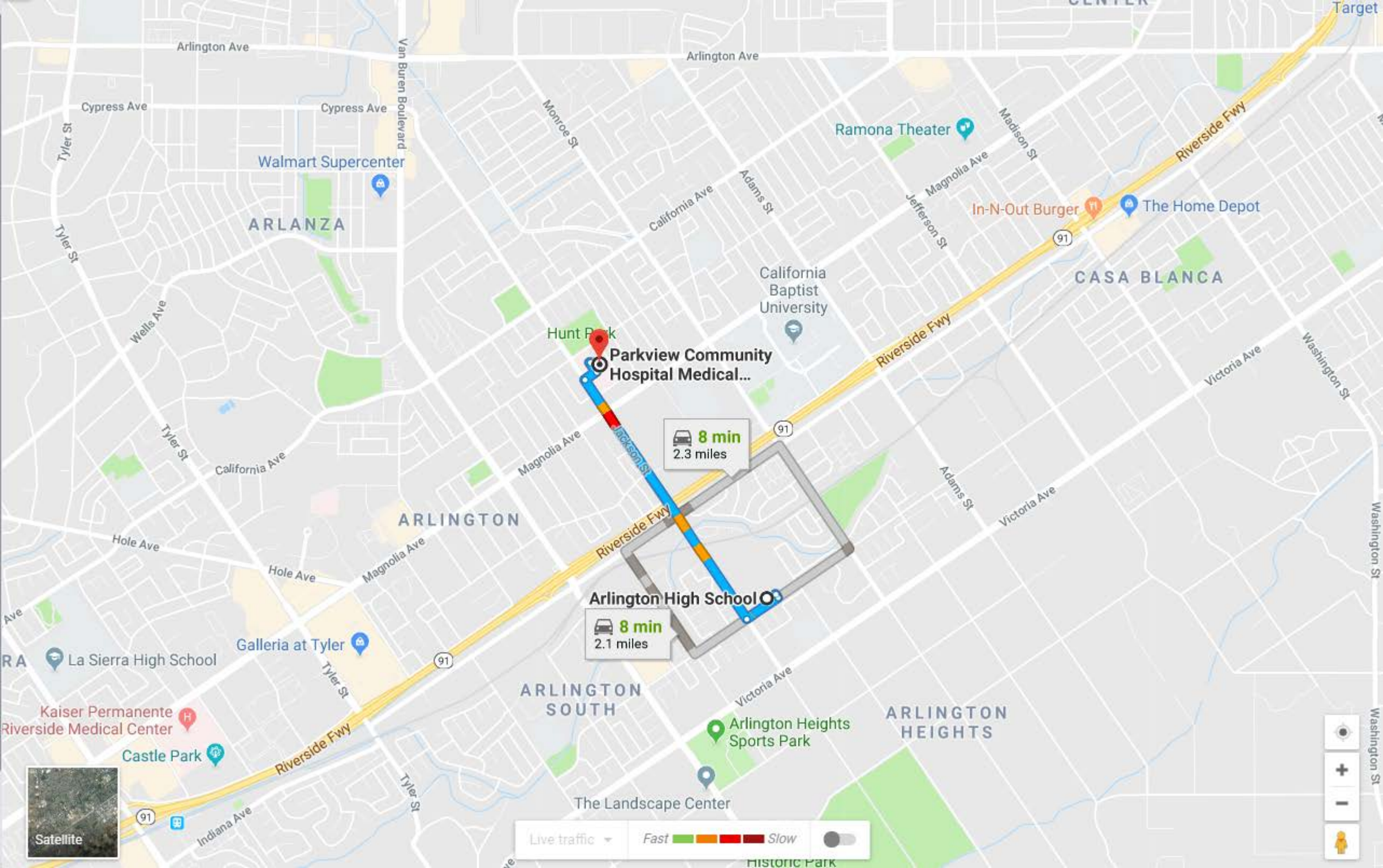
Parkview Community Hospital Medical...
8 min
2.3 miles
Arlington High School
8 min
2.1 miles
Arlington Ave
Cypress Ave
Van Buren Boulevard
Tyler St
Walmart Supercenter
ARLANZA
Monroe St
California Ave
Adams St
Ramona Theater
Madison St
Magnolia Ave
Jefferson St
In-N-Out Burger
The Home Depot
Riverside Fwy
91
CASA BLANCA
California Baptist University
Hunt Park
Wells Ave
Jackson St
Victoria Ave
Washington St
ARLINGTON
Hole Ave
Galleria at Tyler
La Sierra High School
Kaiser Permanente Riverside Medical Center
Castle Park
ARLINGTON SOUTH
Arlington Heights Sports Park
ARLINGTON HEIGHTS
The Landscape Center
Indiana Ave
Historic Park
Target
Satellite
Live traffic
Fast
Slow

18. Authorized Changes to the Health and Safety Plan

Changes to the HASP are to be documented by completing a Modification of Site Health and Safety Plan form. This completed form must be signed by the Site Safety Officer, the Health and Safety Manager, and the Project Director. A copy of each completed form is to be included with each copy of the HASP and made a part of the project files.

18. Authorized Changes to the Health and Safety Plan

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19. Certification

This HASP has been reviewed and approved by the PlaceWorks Health and Safety Manager. The plan satisfies the requirements of the Occupational Safety and Health Act 1910.120 as implemented by the Health and Safety Committee for hazardous waste site activities.

All PlaceWorks site personnel have read the HASP and are familiar with its provisions.

NAME	SIGNATURE	DATE

19. Certification

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TABLE 1
OCCUPATIONAL HEALTH GUIDELINES AND TOXICOLOGICAL INFORMATION
Arlington High School
2951 Jackson Street
Riverside, California

Contaminant	OSHA PEL (ppm)	STEL (ppm)	NIOSH REL (ppm)	IDLH (ppm)	Ionization Potential (eV)	Routes of Exposure	Known or Suspected Carcinogen	Symptoms	1997 NIOSH Page Reference
Arsenic	0.010 mg/m^3	n/a	2 mg/m^3 (15-minute period)	5 mg/m^3	n/a	Inh, Ing, Absorption, Contact	Yes	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin	20
Dichlorodiphenyltrichloroethane (DDT)	1 mg/m^3 (skin)	n/a	0.5 mg/m^3	500 mg/m^3	n/a	Inh, Ing, Absorption, Contact	Yes	Irritation to eyes and skin, paresthesia of the tongue, lips, and face, tremor, apprehension, dizziness, confusion, malaise, headache, fatigue, convulsions, paresis of hands, vomiting, potentional occupational carcinogen	88
Aldrin	0.25 mg/m^3 (skin)	n/a	0.25 mg/m^3 (skin)	25 mg/m^3	n/a	Inh, Ing, Absorption, Contact	Yes	Headache, dizziness, nausea, vomiting, malaise, myoclonic jerks of limbs, clonic, tonic convulsions, coma, hematuria, azotemia, potentional occupational carcinogen	8
Toxaphene	0.5 mg/m^3 (skin)	n/a	n/a	200 mg/m^3	n/a	Inh, Ing, Absorption, Contact	Yes	Nausea, confusion, agitation, tremor, convulsions, unconsciousness; dry, red skin; potentional occupational carcinogen	58
Dieldrin	0.25 mg/m^3 (skin)	n/a	0.25 mg/m^3 (skin)	50 mg/m^3	n/a	Inh, Ing, Absorption, Contact	Yes	Headache, dizziness, nausea, vomiting, malaise, sweat, myoclonic limb jerks, clonic, tonic convulsions; coma, potentional occupational carcinogen, in animals: liver, kidney damage	104

ppm - parts per million
mg/m^3 - milligrams per cubic meter
n/a - not applicable

Appendices

Appendix

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Appendix A

Safety Rules and Personal Hygiene

1. Remove all facial hair that interferes with a satisfactory fit of respiratory protective equipment.
2. Do not wear contact lenses while wearing full-face respirators.
3. Do not take prescribed drugs unless specifically approved by a physician. Notify the SSO that prescription medication is being taken.
4. In the work zone, do not eat, drink, smoke, chew gum or tobacco, or engage in any other practice that increases the probability of hand-to-mouth transfer or ingestion of material.
5. Wash hands and face thoroughly after leaving the work area and before eating, drinking, or any other activities.
6. Thoroughly wash entire body as soon as possible after removing Level C protective garments.
7. Whenever possible, avoid contact with contaminated or suspected contaminated surfaces.

Appendix B

Field Standard Operating Procedures for Use and Decontamination of Personal Protective Equipment

1. Park vehicles outside the site boundaries.

2. During the pre-work safety meeting, the SSO will provide the following information:
   A. a description of the site and known problem areas
   B. the level of protection required
   C. emergency medical information
   D. the locations of the first aid kit and fire extinguisher

3. Use the nearest lavatory.

4. Lay out and check safety gear.

5. Check and don Level D PPE.

6. For work in Level C PPE, put on safety gear in the following order:
   A. Coveralls
   B. Steel-toed work boots
   C. Connect suit and boots with tape
   D. Outer booties, if used
   E. Air purifying respirators (APRs), if required

7. For work in Level C PPE, put on APRs as follows:
   A. Inspect.
      (1) Inspect before each use to ensure that they have been cleaned adequately.
      (2) Check material conditions for signs of pliability, deterioration, or distortion.
      (3) Examine cartridges and ensure that they are the correct type for the intended use, that the expiration date has not passed, and that they have not been opened or used previously.
      (4) Check face shields for cracks or fogginess.
   B. Loosen all harness strap adjustments.
   C. Place chin in chin cup and draw back evenly on strap adjustments - the two bottom straps first, then the two top straps, and the center top strap last.
   D. Check that the respirator is centered evenly on the face and that the straps are not uncomfortably tight.

E. Check for leaks or proper facial seals.

(1) To conduct a negative-pressure test, close the inlet part with the palm of the hand so it does not pass air, and gently inhale for about 10 seconds. Any inward rush of air indicates a poor fit. Note that a leaking facepiece may be drawn tightly to the face to form a good seal, giving a false indication of adequate fit.

(2) To conduct a positive-pressure test, gently exhale while covering the exhalation valve to ensure that a positive pressure can be built up. Failure to build a positive pressure indicates a poor fit.

8. Put on the rest of the gear in the following order:
   A. Raise hood
   B. Hard hat, if necessary
   C. Surgical gloves
   D. Outer gloves
   E. Connect gloves and suit with tape

9. Select a buddy to act as a safety backup.

10. Check your buddy's equipment and have your buddy check yours for rips, tears, or malfunctions. Pay special attention to respirators, making sure that seals are good and that cartridges are securely in place.

11. If any equipment or gear gets damaged or if your suit tears badly, GO BACK.

12. If you experience physical discomfort, breathing difficulties, light-headedness, dizziness, or other abnormalities, GO BACK.

13. When you return, have your buddy check for external accumulation of contamination and remove it. Also check gear for damage.

14. Decontamination will be performed in steps as follows (as appropriate for the PPE being utilized):

    Step 1 - Segregated Equipment Drop: Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, clipboards, etc.) in different containers with plastic liners. Each may be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination. This equipment may be reused if properly decontaminated.

    Equipment: various sizes of containers
    plastic drop cloths

Step 2 - Boot Cover and Outer Glove Wash and Rinse: (Optional - will be used at the Site Safety Officer's discretion.)

Equipment: spray bottle/container with nozzle
two wash basins or tubs
scrub brush
water
Liqui-nox nonphosphate soap solution (1%)

Step 3 - Tape Removal: Remove tape around boots and gloves, and deposit in container with plastic liner. Remove boot covers, then outer gloves, and place them in the container.

Equipment: container (30-50 gallons)
plastic liners
folding chairs

Step 4 - Safety Boot Wash and Rinse: (Optional - will be used at discretion of field team members.)

Equipment: two wash basins or tubs
scrub brush
water
Liqui-nox solution (1%)

Step 5 - Protective Coverall Removal: With the assistance of a helper, remove protective coverall. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
folding chairs
plastic liners

Step 6 - Respirator Removal: Remove facepiece. Avoid touching face with gloves. If work is completed for the day, discard cartridges in lined container, and wash and rinse respirator.

Equipment: container (30-50 gallons)
plastic liners

Step 7 - Inner Glove Removal: Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

15. Respirators will be cleaned daily by hand washing with MSA cleaner-sanitizer solution followed by a thorough rinse and air drying. NEVER ALLOW A RESPIRATOR TO DRY WITH THE STRAPS PLACED FORWARD ACROSS THE FACESHIELD BECAUSE THIS MAY CAUSE CHANGES IN THE FACE-TO-RESPIRATOR SEAL SURFACE. The specific procedures to be employed are as follows:

A. Remove all cartridges (canisters) and filters plus gaskets and seals not

permanently affixed to their seats.

B. Loosen harness adjustment straps.
C. Remove exhalation valve cover.
D. Remove inhalation and exhalation valves.
E. Remove protective faceshield cover.
F. Wash facepiece in MSA cleaner/sanitizer powder mixed with warm water, preferably at a temperature of 120 F. Wash components separately from facepiece. Heavy soil may be removed from the facepiece surface using a medium-soft handbrush.
G. Remove all parts from the wash solution, and rinse twice in clean, warm water.
H. Air dry all parts in a designated clean area.
I. Pat facepieces, valves, and seats to remove any remaining soap residue, water, or other foreign material with a clean, damp, lint-free cloth.
J. Reassemble respirator.
K. Place respirator in a plastic bag and the respirator box or otherwise store the respirator to prevent exposure to dust, moisture, sunlight, damaging chemicals, extreme temperatures, and impact.

16. Investigation-derived waste material will be handled as follows:
    A. Used PPE and disposable equipment will be double bagged and placed in a municipal refuse dumpster on site. These wastes are not considered hazardous and can be sent to a municipal landfill. Any PPE and disposable equipment that is to be disposed of which can still be reused will be rendered inoperable before disposal in the refuse dumpster.
    B. Wash and rinse waters from personal and equipment decontamination will be poured onto the ground or into a storm drain.
    C. Soil cuttings generated during the subsurface sampling will be placed back into the soil borings from which the samples were obtained. Any remaining soil cuttings will be spread around the sampling location.

Appendix C

Heat Stress and Heat Stress Monitoring

Heat is one of the most common (and potentially serious) illnesses at hazardous waste sites where PPE is worn; therefore, regular monitoring and other preventive precautions are vital. Shelter from the sun will be provided during rest periods. Below is a list of the signs and symptoms of heat stress. Initial work schedules will be approximately 90 minutes of work followed by 15 minutes of rest. Work intervals will be adjusted to shorter periods based on the assessment of the SSO. Monitoring for heat stress will be conducted by visual observation by the individual team members.

Signs and Symptoms of Heat Stress

- **Heat rash** may result from continuous exposure to heat or humid air.

- **Heat cramps** are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:
  - muscle spasms
  - pain in the hands, feet, and abdomen

- **Heat exhaustion** occurs from increased stress on various body organs, including inadequate blood circulation caused by cardiovascular insufficiency or dehydration. Signs and symptoms include:
  - pale, cool, moist skin
  - heavy sweating
  - dizziness
  - nausea
  - fainting

- **Heat stroke** is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms include:
  - red, hot, usually dry skin
  - lack of or reduced perspiration
  - nausea
  - dizziness and confusion
  - strong, rapid pulse
  - coma

First-aid remedies for heat stress and heat stroke includes removing the worker to a cool place, providing cool water or a commercial sport drink, loosen tight clothing, and call for an ambulance if victim vomits or starts to loose consciousness.

Appendix D

Medical Monitoring Program

The workers most likely to be exposed to contaminated materials at the site are sampling and inspection personnel. These personnel are included in this Medical Monitoring Program.

The purposes of the Medical Monitoring Program are to identify any illness or problem that would put an employee at an unusual risk from exposures; to ensure that each employee can use negative-pressure respirators safely and withstand heat or cold stress; and to establish and maintain a medical data base for employees to monitor any abnormalities that may be related to work exposure and that could increase injury risk for the employee or others in the performance of job functions. The Medical Monitoring Program includes:

- A baseline physical examination;
- A medical determination of fitness of duty, including work restrictions after any job-related injury or illness or non job-related absence lasting more than three working days;
- The review of each site-specific Health and Safety Plan and potential exposure list to determine the need for specific biological and medical monitoring; and
- Annual and exit physical examinations with attention given to specific exposures or symptoms.

Baseline Physical Examination

A Baseline Physical Examination will be performed on each employee engaged in hazardous waste activities. The purposes of this examination are to identify any illness or problem that would put an employee at unusual risk from certain exposures; to certify the safe use of negative-pressure respirators (OSHA Safety and Health Standard 29 CFR 1910.134); and to develop a database for the assessment of exposure-related events detected through periodic medical monitoring. Variable data, such as age, sex, race, smoking, prior employment, and exposure history, that may have a bearing on the occurrence of subsequent events after employment begins will be gathered.

The content of the Baseline Physical Examination will include:

- Medical, occupational, and fertility histories;
- A physical examination, stressing neurological, cardiopulmonary, musculoskeletal, and skin systems;
- An electrocardiogram;
- PA and lateral chest x-rays;
- A pulmonary function test (FEV1, FVC, FEV 25-75);
- An audiogram;

- A multi-chemistry blood panel, including kidney and liver function tests, CBC with
- differential, and urinalysis;
- Tests deemed necessary by symptoms or exposure history;
- A red blood cell cholinesterase; and
- Physical parameters, including blood pressure and visual acuity testing.

Annual Physical Examination
An examination and updated occupational history will be performed on an annual basis during the anniversary month of the baseline physical examination. The Annual Physical Examination serves to identify and prevent illness caused by cumulative exposure to toxic substances.

The Annual Physical Examination will include:

- A personal work history (based on specific project histories);
- A physical examination, stressing neurological, cardiopulmonary, musculoskeletal, and skin systems;
- Pulmonary function test (FEV1, FVC, FEV 25-75);
- A multi-chemistry blood panel, including kidney and liver function test;
- An audiogram;
- Tests deemed necessary by symptoms or exposure history; and
- An optional wellness profile.

Return to Work Examination
Any job-related illness or injury will be followed by a medical examination to determine fitness for duty or possible job restrictions based on the physical findings of the medical examiner. A similar examination will be performed following three missed workdays caused by a non job-related illness or injury requiring medical intervention.

Exit Physical Examination
The content of the Exit Physical Examination will include:

- a personal work history (based on specific project histories);
- medical, exposure, and fertility histories;
- a physical examination, stressing neurological, cardiopulmonary, musculoskeletal, and skin systems;
- a pulmonary function test (FEV1, FVC, FEV 25-75);
- an electrocardiogram;
- PA and lateral chest x-rays;
- an audiogram;
- a multi-chemistry blood panel, including kidney and liver function tests, CBC with differential, and urinalysis;
- tests deemed necessary by symptoms or exposure history;
- a red blood cell cholinesterase; and
- physical parameters, including blood pressure and visual acuity testing.

Appendix E

Properties of Materials and Toxicological Profiles

Chromium (Cr III and Cr VI)

The permissible exposure limit (PEL) for chrome is 0.5 mg/m^3, which is also the recommended exposure limit (REL) established by the National Institute for Occupational Safety and Health (NIOSH). The Immediately Dangerous to Life or Health (IDLH) concentration for this substance is 25 mg/m^3.

The appearance and odor of this substance varies depending on the type of chrome compound. Symptoms of exposure to chrome may include irritation of the skin and eyes. If splashed in the eyes, irrigate immediately. For dermal exposure, wash with soap and water immediately. If swallowed, immediately seek medical attention. If victim stops breathing after exposure to vapors, begin artificial respiration.

Arsenic

The PEL for arsenic is 0.010 $mg/m^{3.}$ NIOSH has established an REL, based on a 15-minute exposure period, of 2 mg/m^3. The IDLH concentration for this substance is 5 mg/m^3.

The appearance and odor of arsenic varies depending upon the specific organic arsenic compound. Routes of exposure include inhalation, ingestion, and contact. The skin, respiratory system, kidneys, central nervous system (CNS), liver, GI tract, and reproductive system are all target organs or chronic exposure.

Lead

The PEL for lead is 0.050 mg/m^3. NIOSH has established an REL of 0.100 mg/m3. The IDLH concentration for this substance is 100 mg/m^3.

A heavy, ductile, soft, gray solid, lead is also known as lead metal and plumbum. A person can be exposed to lead contamination by inhalation, ingestion, or contact. The target organs for lead include eyes, GI tract, CNS, blood, and gingival tissue.

Symptoms of lead exposure include weakness, lassitude, insomnia; facial pallor; pal eye, anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; ankle or wrist paralysis, encephalopathy; kidney disease; irritated eyes; and hypotension. If eye contact occurs, the eyes should be washed immediately with large amounts of water. For dermal contact, remove any penetrated clothing and immediately flush the contaminated skin with soap and water. If this chemical is inhaled in large quantities, move to fresh air at once. Perform mouth-to-mouth resuscitation if breathing has stopped. Keep the person warm and resting. For any of the above or if the chemical has been swallowed, seek medical attention promptly.

Dichlorodiphenyltrichloroethane (DDT)

The PEL for DDT is 1 mg/m^3. NIOSH has established an REL of 0.5 mg/m^3. The IDLH concentration for this substance is 500 mg/m^3.

Routes of exposure include inhalation, ingestion, absorption, and contact. Symptoms of exposure to DDT include irritation to eyes and skin, paresthesia of the tongue, lips, and face, tremor, apprehension, dizziness, confusion, malaise, headache, fatigue, convulsions, and vomiting. If eye contact occurs, the eyes should be washed immediately with large amounts of water. For dermal contact, remove any penetrated clothing and immediately flush the contaminated skin with soap and water. If this chemical is inhaled in large quantities, move to fresh air at once. Perform mouth-to-mouth resuscitation if breathing has stopped. Keep the person warm and resting. For any of the above or if the chemical has been swallowed, seek medical attention promptly.

Aldrin

The PEL for aldrin is 0.25 mg/m^3. NIOSH has established an REL of 0.25 mg/m^3. The IDLH concentration for this substance is 25 mg/m^3.

Routes of exposure include inhalation, ingestion, absorption, and contact. Symptoms of exposure to aldrin include headache, dizziness, nausea, vomiting, malaise, and coma. If eye contact occurs, the eyes should be washed immediately with large amounts of water. For dermal contact, remove any penetrated clothing and immediately flush the contaminated skin with soap and water. If this chemical is inhaled in large quantities, move to fresh air at once. Perform mouth-to-mouth resuscitation if breathing has stopped. Keep the person warm and resting. For any of the above or if the chemical has been swallowed, seek medical attention promptly.

Toxaphene

The PEL for toxaphene is 0.5 mg/m^3. The IDLH concentration for this substance is 200 mg/m^3.

Routes of exposure include inhalation, ingestion, absorption, and contact. Symptoms of exposure to toxaphene include nausea, confusion, agitation, temor, convulsions, dry, red skin, and unconsciousness. If eye contact occurs, the eyes should be washed immediately with large amounts of water. For dermal contact, remove any penetrated clothing and immediately flush the contaminated skin with soap and water. If this chemical is inhaled in large quantities, move to fresh air at once. Perform mouth-to-mouth resuscitation if breathing has stopped. Keep the person warm and resting. For any of the above or if the chemical has been swallowed, seek medical attention promptly.

Dieldrin

The PEL for dieldrin is 0.25 mg/m^3. NIOSH has established an REL of 0.25 mg/m3. The IDLH concentration for this substance is 50 mg/m^3.

Routes of exposure include inhalation, ingestion, absorption, and contact. Symptoms of exposure to dieldrin include headache, dizziness, nausea, vomiting, sweat, and coma. If eye contact occurs, the eyes should be washed immediately with large amounts of water. For dermal contact, remove any penetrated clothing and immediately flush the contaminated skin with soap and water. If this chemical is inhaled in large quantities, move to fresh air at once. Perform mouth-to-mouth resuscitation if breathing has stopped. Keep the person warm and resting. For any of the above or if the chemical has been swallowed, seek medical attention promptly.

Appendix F

Site Safety Officer Responsibilities

An SSO will be designated. The responsibilities of the SSO will include the following:

- briefing personnel on the hazards at the site, the standard operating procedures to be employed, and emergency procedures;
- conducting onsite health monitoring;
- coordinating access control and site security, including responsibility for protection of third parties, such as visitors or the surrounding community;
- monitoring work practices and decontamination to ensure that required procedures are being followed;
- being available to document and respond to any concerns or complaints made by onsite personnel;
- documenting unsafe work practices or conditions;
- documenting any accidents or incidents that result in illness or injury to personnel; and
- evaluating and amending the HASP daily to remedy deficiencies and post entry briefings.

Appendix G

Authorized Changes to HASP

Insert the following changes and replace affected pages

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

_____ _____
Site Safety Officer Date

_____ _____
Project Director Date

References

U.S. Department of Health and Human Services, 1997. NIOSH Pocket Guide to Chemical Hazards. Washington, DC.

Appendix E. Laboratory Reports

Appendix

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A & R Laboratories, Inc.

1650 S. GROVE AVE., SUITE C
ONTARIO, CA 91761
951-779-0310 FAX 951-779-0344
www.arlaboratories.com office@arlaboratories.com

FDA#	2030513
LA City#	10261
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CASE NARRATIVE

Authorized Signature Name / Title (print)	Ken Zheng, President
Signature / Date	Ken Zheng — Ken Zheng, President 06/17/2019 13:44:18
Laboratory Job No. (Certificate of Analysis No.)	1906-00096
Project Name / No.	ARLINGTON HIGH SCHOOL, RIVERSIDE, CA RIV-24.0
Dates Sampled (from/to)	06/11/19 To 06/11/19
Dates Received (from/to)	06/11/19 To 06/11/19
Dates Reported (from/to)	06/17/19 To 6/17/2019
Chains of Custody Received	Yes

Comments:

Subcontracting

Organic Analyses

No analyses sub-contracted

Inorganic Analyses

No analyses sub-contracted

Sample Condition(s)

All samples intact

Positive Results (Organic Compounds)

Sample	Analyte	Result	Qual	Units	RL
COMPOSITE: B-4, B-9, B-14@0.!	4,4'-DDE	**0.12**		mg/Kg	0.0020
COMPOSITE: B-3, B-7, B-8, B-13	4,4'-DDE	**0.25**		mg/Kg	0.020
COMPOSITE: B-3 DUP, B-7 DUP,	4,4'-DDE	**0.14**		mg/Kg	0.010
COMPOSITE: B-3, B-7, B-8, B-13	4,4'-DDE	**0.15**		mg/Kg	0.020
COMPOSITE: B-11, B-18@0.5'	4,4'-DDE	**0.24**		mg/Kg	0.020
COMPOSITE: B-11, B-18@2.5'	4,4'-DDE	**0.043**		mg/Kg	0.0020
COMPOSITE: B-2, B-6, B-12@2.!	4,4'-DDE	**0.066**		mg/Kg	0.0020
COMPOSITE: B-1, B-5, B-16@0.!	4,4'-DDE	**0.013**		mg/Kg	0.0020
COMPOSITE: B-10, B-15, B-17@	4,4'-DDE	**0.096**		mg/Kg	0.0020
COMPOSITE: B-10, B-15, B-17@	4,4'-DDT	**0.0035**		mg/Kg	0.0020
COMPOSITE: B-3, B-7, B-8, B-13	4,4'-DDD	**0.0022**		mg/Kg	0.0020
COMPOSITE: B-3, B-7, B-8, B-13	4,4'-DDT	**0.0062**		mg/Kg	0.0020
COMPOSITE: B-3 DUP, B-7 DUP,	4,4'-DDT	**0.011**		mg/Kg	0.0020
COMPOSITE: B-3, B-7, B-8, B-13	4,4'-DDT	**0.0027**		mg/Kg	0.0020
COMPOSITE: B-11, B-18@0.5'	4,4'-DDT	**0.0039**		mg/Kg	0.0020
COMPOSITE: B-2, B-6, B-12@0.!	4,4'-DDE	**0.022**		mg/Kg	0.0020
COMPOSITE: B-2, B-6, B-12@2.!	4,4'-DDT	**0.0026**		mg/Kg	0.0020
COMPOSITE: B-1, B-5, B-16@2.!	4,4'-DDE	**0.053**		mg/Kg	0.0020
COMPOSITE: B-10, B-15, B-17@	4,4'-DDE	**0.11**		mg/Kg	0.010

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CERTIFICATE OF ANALYSIS

1906-00096

PLACEWORKS
DENISE CLENDENING
2850 INLAND EMPIRE BLVD.
SUITE B
ONTARIO, CA 91764

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 001 **B-13@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**4.81**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 002 **B-13 DUP@0.5'**					Date & Time Sampled:		06/11/19 @	7:17
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**4.68**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 003 **B-18@0.5'**					Date & Time Sampled:		06/11/19 @	7:43
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**4.62**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 004 **B-14@0.5'**					Date & Time Sampled:		06/11/19 @	8:05
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Arsenic	<1.00		mg/Kg	EPA 6010B	1.0	1.00	06/12/19	TLB
Lead	**3.45**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 005 **B-17@0.5'**					Date & Time Sampled:		06/11/19 @	7:49
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**4.10**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 006 **B-9@0.5'**					Date & Time Sampled:		06/11/19 @	8:30
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Arsenic	<1.00		mg/Kg	EPA 6010B	1.0	1.00	06/12/19	TLB

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Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 006 **B-9@0.5'**					Date & Time Sampled:		06/11/19 @	8:30
Sample Matrix: **Soil**								
.....continued								
Lead	**4.41**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 007 **B-6@0.5'**					Date & Time Sampled:		06/11/19 @	8:42
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**2.16**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 008 **B-8@0.5'**					Date & Time Sampled:		06/11/19 @	8:47
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**7.60**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 009 **B-4@0.5'**					Date & Time Sampled:		06/11/19 @	9:15
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Arsenic	<1.00		mg/Kg	EPA 6010B	1.0	1.00	06/12/19	TLB
Lead	**2.94**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 010 **B-3@0.5'**					Date & Time Sampled:		06/11/19 @	9:31
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**3.11**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 011 **B-7@0.5'**					Date & Time Sampled:		06/11/19 @	9:44
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**3.81**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB

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Date Received	06/11/19
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Permit Number	
Customer P.O.	RIV-24.0

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 012 **B-11@0.5'**					Date & Time Sampled:		06/11/19 @ 9:52	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**4.28**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 013 **B-12@0.5'**					Date & Time Sampled:		06/11/19 @ 10:11	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**3.29**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 014 **B-2@0.5'**					Date & Time Sampled:		06/11/19 @ 10:30	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**5.40**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 015 **B-15@0.5'**					Date & Time Sampled:		06/11/19 @ 10:38	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**4.62**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 016 **B-16@0.5'**					Date & Time Sampled:		06/11/19 @ 10:58	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**3.43**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 017 **B-1@0.5'**					Date & Time Sampled:		06/11/19 @ 10:47	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**5.87**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB

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Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 018 **B-5@0.5'**					Date & Time Sampled:		06/11/19 @ 11:24	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Arsenic	<1.00		mg/Kg	EPA 6010B	1.0	1.00	06/12/19	TLB
Lead	**3.90**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 019 **B-10@0.5'**					Date & Time Sampled:		06/11/19 @ 11:32	
Sample Matrix: **Soil**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3050B	1.0		06/12/19	TLB
Lead	**3.78**		mg/Kg	EPA 6010B	1.0	0.500	06/12/19	TLB
Sample: 020 **EB061119**					Date & Time Sampled:		06/11/19 @ 11:45	
Sample Matrix: **Aqueous**								
[Metals]								
Metals Acid Digestion	Complete			EPA 3010A	1.0		06/12/19	TLB
Arsenic	<0.0200		mg/L	EPA 200.7	1.0	0.0200	06/12/19	TLB
Lead	<0.0100		mg/L	EPA 200.7	1.0	0.0100	06/12/19	TLB
[Pesticides]								
Sep Funnel LLE	Complete			EPA 3510C	1.0		06/13/19	AL
Aldrin	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
alpha-BHC	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
beta-BHC	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
delta-BHC	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
gamma-BHC	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
Chlordane	<0.50		µg/L	EPA 8081A	1.0	0.50	06/13/19	AL
4,4'-DDD	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
4,4'-DDE	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
4,4'-DDT	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
Dieldrin	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
Endosulfan I	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
Endosulfan II	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
Endosulfan Sulfate	<0.10		µg/L	EPA 8081A	1.0	0.10	06/13/19	AL
Endrin	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL

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Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 020 **EB061119**					Date & Time Sampled:		06/11/19 @ 11:45	
Sample Matrix: **Aqueous**								
.....continued								
Endrin Aldehyde	<0.10		µg/L	EPA 8081A	1.0	0.10	06/13/19	AL
Endrin Ketone	<0.50		µg/L	EPA 8081A	1.0	0.50	06/13/19	AL
Heptachlor	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
Heptachlor Epoxide	<0.050		µg/L	EPA 8081A	1.0	0.050	06/13/19	AL
Methoxychlor	<0.50		µg/L	EPA 8081A	1.0	0.50	06/13/19	AL
Toxaphene	<0.50		µg/L	EPA 8081A	1.0	0.50	06/13/19	AL
[Surrogates]								
Tetrachloro-m-xylene	95		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Decachlorobiphenyl	91		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Sample: 021 **COMPOSITE: B-4, B-9, B-14@0.5'**					Date & Time Sampled:		06/11/19 @ 7:16	
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDE	**0.12**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL

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Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 021 **COMPOSITE: B-4, B-9, B-14@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL
[Surrogates]								
Tetrachloro-m-xylene	99		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Decachlorobiphenyl	105		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 022 **COMPOSITE: B-4, B-9, B-14@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDE	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL

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1906-00096

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DENISE CLENDENING
2850 INLAND EMPIRE BLVD.
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ONTARIO, CA 91764

Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 022 **COMPOSITE: B-4, B-9, B-14@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
[Surrogates]								
Tetrachloro-m-xylene	96		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Decachlorobiphenyl	102		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 023 **COMPOSITE: B-3, B-7, B-8, B-13@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
4,4'-DDD	**0.0022**		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
4,4'-DDE	**0.25**		mg/Kg	EPA 8081A	10.0	0.020	06/13/19	AL
4,4'-DDT	**0.0062**		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/13/19	AL
[Surrogates]								
Tetrachloro-m-xylene		D	%REC	EPA 8081A/8082		50-150	06/13/19	AL
Decachlorobiphenyl	130		%REC	EPA 8081A/8082		50-150	06/13/19	AL

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1906-00096

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Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 024 **COMPOSITE: B-3 DUP, B-7 DUP, B-8 DUP, B-13 DUP@0.5'**					Date & Time Sampled:		06/11/19 @ 7:16	
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
4,4'-DDE	**0.14**		mg/Kg	EPA 8081A	5.0	0.010	06/13/19	AL
4,4'-DDT	**0.011**		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/13/19	AL
[Surrogates]								
Tetrachloro-m-xylene	115		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Decachlorobiphenyl	104		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Sample: 025 **COMPOSITE: B-3, B-7, B-8, B-13@2.5'**					Date & Time Sampled:		06/11/19 @ 7:16	
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL

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Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 025 **COMPOSITE: B-3, B-7, B-8, B-13@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
4,4'-DDE	**0.15**		mg/Kg	EPA 8081A	10.0	0.020	06/13/19	AL
4,4'-DDT	**0.0027**		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/13/19	AL
[Surrogates]								
Tetrachloro-m-xylene		D	%REC	EPA 8081A/8082		50-150	06/13/19	AL
Decachlorobiphenyl	135		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Sample: 026 **COMPOSITE: B-11, B-18@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL

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Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 026 **COMPOSITE: B-11, B-18@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
4,4'-DDE	**0.24**		mg/Kg	EPA 8081A	10.0	0.020	06/13/19	AL
4,4'-DDT	**0.0039**		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/13/19	AL
[Surrogates]								
Tetrachloro-m-xylene	128		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Decachlorobiphenyl	123		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Sample: 027 **COMPOSITE: B-11, B-18@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL

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Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 027 **COMPOSITE: B-11, B-18@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
4,4'-DDE	**0.043**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL
[Surrogates]								
Tetrachloro-m-xylene	101		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Decachlorobiphenyl	102		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 028 **COMPOSITE: B-2, B-6, B-12@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDE	**0.022**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL

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1906-00096

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ONTARIO, CA 91764

Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 028 **COMPOSITE: B-2, B-6, B-12@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL
[Surrogates]								
Tetrachloro-m-xylene	134		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Decachlorobiphenyl	111		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 029 **COMPOSITE: B-2, B-6, B-12@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDE	**0.066**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	**0.0026**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL

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Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 029 **COMPOSITE: B-2, B-6, B-12@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL
[Surrogates]								
Tetrachloro-m-xylene	124		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Decachlorobiphenyl	94		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 030 **COMPOSITE: B-1, B-5, B-16@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDE	**0.013**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL

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Date Reported	06/17/19
Date Received	06/11/19
Invoice No.	85962
Cust #	P135
Permit Number	
Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 030 **COMPOSITE: B-1, B-5, B-16@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL
[Surrogates]								
Tetrachloro-m-xylene	98		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Decachlorobiphenyl	94		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 031 **COMPOSITE: B-1, B-5, B-16@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDE	**0.053**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL

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Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 031 **COMPOSITE: B-1, B-5, B-16@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL
[Surrogates]								
Tetrachloro-m-xylene	127		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Decachlorobiphenyl	95		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 032 **COMPOSITE: B-10, B-15, B-17@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDE	**0.096**		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
4,4'-DDT	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/12/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/12/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/12/19	AL
[Surrogates]								
Tetrachloro-m-xylene	126		%REC	EPA 8081A/8082		50-150	06/12/19	AL

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Customer P.O.	RIV-24.0

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Analysis	Result	Qual	Units	Method	DF	RL	Date	Tech
Sample: 032 **COMPOSITE: B-10, B-15, B-17@0.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
.....continued								
Decachlorobiphenyl	96		%REC	EPA 8081A/8082		50-150	06/12/19	AL
Sample: 033 **COMPOSITE: B-10, B-15, B-17@2.5'**					Date & Time Sampled:		06/11/19 @	7:16
Sample Matrix: **Soil**								
[Pesticides]								
Ultrasonic Extraction	Complete			EPA 3550	1.0		06/12/19	AL
Aldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
alpha-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
beta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
delta-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
gamma-BHC	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Chlordane	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
4,4'-DDD	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
4,4'-DDE	**0.11**		mg/Kg	EPA 8081A	5.0	0.010	06/13/19	AL
4,4'-DDT	**0.0035**		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Dieldrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan I	<0.00020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan II	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endosulfan Sulfate	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin Aldehyde	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Endrin ketone	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Heptachlor Epoxide	<0.0020		mg/Kg	EPA 8081A	1.0	0.0020	06/13/19	AL
Methoxychlor	<0.010		mg/Kg	EPA 8081A	1.0	0.010	06/13/19	AL
Toxaphene	<0.050		mg/Kg	EPA 8081A	1.0	0.050	06/13/19	AL
[Surrogates]								
Tetrachloro-m-xylene	116		%REC	EPA 8081A/8082		50-150	06/13/19	AL
Decachlorobiphenyl	110		%REC	EPA 8081A/8082		50-150	06/13/19	AL

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Respectfully Submitted: Ken Zheng

Ken Zheng - Lab Director

QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL.
B1 = BOD dilution water is over specifications . The reported result may be biased high.
D = Surrogate recoveries are not calculated due to sample dilution.
E = Estimated value; Value exceeds calibration level of instrument.
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Matrix Interference.
J = Analyte concentration detected between RL and MDL.
Q = One or more quality control criteria did not meet specifications. See Comments for further explanation.
S = Customer provided specification limit exceeded.

ABBREVIATIONS

DF = Dilution Factor
RL = Reporting Limit, Adjusted by DF
MDL = Method Detection Limit, Adjusted by DF
Qual = Qualifier
Tech = Technician

As regulatory limits change frequently, A & R Laboratories advises the recipient of this report to confirm such limits with the appropriate federal, state, or local authorities before acting in reliance on the regulatory limits provided.

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

The data and information on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered upon condition that it is not to be reproduced, wholly or in part, for advertising or other purposes without approval from the laboratory.
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QUALITY CONTROL DATA REPORT

1906-00096

PLACEWORKS
ONTARIO, CA 91764

Date Reported	**06/17/2019**
Date Received	**06/11/2019**
Date Sampled	**06/11/2019**
Invoice No.	**85962**
Customer #	**P135**
Customer P.O.	**RIV-24.0**

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Method # EPA 200.7
QC Reference # 82330 **Date Analyzed:** 6/12/2019 **Technician:** TLB
Samples 020

Results	LCS %REC	LCS %DUP	LCS %RPD	SPIKE %REC	SPIKE %DUP	SPIKE %RPD	Control Ranges LCS %REC	LCS %RPD	SPIKE %RPD
Arsenic	101	99	2.0	100	100	0.2	85 - 115	0 - 15	0 - 15
Cadmium	99	98	0.8	94	94	0.0	85 - 115	0 - 15	0 - 15
Lead	99	98	1.4	100	100	0.2	85 - 115	0 - 15	0 - 15

Method # EPA 6010B
QC Reference # 82323 **Date Analyzed:** 6/12/2019 **Technician:** TLB
Samples 001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019

Results	LCS %REC	LCS %DUP	LCS %RPD	SPIKE %REC	SPIKE %DUP	SPIKE %RPD	Control Ranges LCS %REC	LCS %RPD	SPIKE %RPD
Arsenic	93	93	0.4	104	104	0.1	75 - 125	0 - 20	0 - 20
Lead	84	85	1.3	104	104	0.4	75 - 125	0 - 20	0 - 20

Method # EPA 8081A
QC Reference # 82365 **Date Analyzed:** 6/12/2019 **Technician:** AL
Samples 021 022 027 028 029 030 031 032

Results	LCS %REC	SPIKE %REC	SPIKE %DUP	SPIKE %RPD	Control Ranges LCS %REC	SPIKE %RPD
4,4'-DDT	84	72	70	2	50 - 130	0 - 30
Aldrin	97	99	101	2	50 - 140	0 - 30
Dieldrin	103	107	107	0.3	70 - 130	0 - 30
Endrin	86	69	70	1	70 - 150	0 - 30
gamma-BHC	74	71	80	9	50 - 150	0 - 30
Heptachlor	86	71	87	16	50 - 150	0 - 30

QC Reference # 82441 **Date Analyzed:** 6/13/2019 **Technician:** AL
Samples 023 024 025 026 033

Results	LCS %REC	Control Ranges LCS %REC
4,4'-DDT	85	50 - 130
Aldrin	96	50 - 140
Dieldrin	101	70 - 130
Endrin	60	70 - 150
gamma-BHC	71	50 - 150
Heptachlor	70	50 - 150

QC Reference # 82443 **Date Analyzed:** 6/13/2019 **Technician:** AL
Samples 020

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QUALITY CONTROL DATA REPORT

PLACEWORKS **1906-00096**

Date Reported	**06/17/2019**
Date Received	**06/11/2019**
Date Sampled	**06/11/2019**

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

Method # EPA 8081A

QC Reference # 82443 **Date Analyzed:** 6/13/2019 **Technician:** AL

Samples 020

Results	LCS %REC	SPIKE %REC	SPIKE %DUP	SPIKE %RPD	Control Ranges LCS %REC	Control Ranges SPIKE %RPD
4,4'-DDT	76	76	65	11	50 - 130	0 - 30
Aldrin	101	102	104	2	50 - 140	0 - 30
Dieldrin	109	107	115	39	70 - 130	0 - 30
Endrin	76	60	65	5	70 - 150	0 - 30
gamma-BHC	74	75	76	1	50 - 150	0 - 30
Heptachlor	82	69	83	14	50 - 150	0 - 30

Method # EPA 8081A/8082

QC Reference # 82365 **Date Analyzed:** 6/12/2019 **Technician:** AL

Samples 021 022 027 028 029 030 031 032

Results	BLKSRR%REC	Control Ranges BLKSRR%REC
Decachlorobiphenyl	83	50 - 150
Tetrachloro-m-xylene	79	50 - 150

QC Reference # 82441 **Date Analyzed:** 6/13/2019 **Technician:** AL

Samples 023 024 025 026 033

Results	BLKSRR%REC	Control Ranges BLKSRR%REC
Decachlorobiphenyl	83	50 - 150
Tetrachloro-m-xylene	78	50 - 150

QC Reference # 82443 **Date Analyzed:** 6/13/2019 **Technician:** AL

Samples 020

Results	BLKSRR%REC	Control Ranges BLKSRR%REC
Decachlorobiphenyl	89	50 - 150
Tetrachloro-m-xylene	81	50 - 150

No method blank results were above reporting limit

Respectfully Submitted: Ken Zheng

Ken Zheng - President

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.

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QUALITY CONTROL DATA REPORT

1906-00096

PLACEWORKS

Date Reported	**06/17/2019**
Date Received	**06/11/2019**
Date Sampled	**06/11/2019**

Project: ARLINGTON HIGH SCHOOL, RIVERSIDE, CA

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E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1906-96

Client Name: PLACEWORKS
E-mail: DCLEMENTS@PLACEWORKS.COM
Address: 2850 INLAND EMPIRE BL SUITE B ONTARIO CA 91764
Report Attention: Denise
Phone #: 909 989 4449
Fax: #:
Sampled By: M. Wilson & D. Clements
Project No./ Name: RIV-240
Project Site: ARLINGTON HIGH SCHOOL RIVERSIDE CA

☒ Chilled
☒ Intact
☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☒ Normal

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	Total Lead	Total Arsenic				Hold	Remarks (C=composite, X=discrete)
1	B-13@0.5'	6/11/19	0716	Soil	ice	1 glass jar					C					X	X					See B-3@0.5'
2	B-13 DUP@0.5'		0717								C					X						see B-3 DUP@0.5'
	B-13@2.5'		0733								C											see B-3@2.5'
	B-13 DUP@2.5'		0734																		X	
3	B-18@0.5'		0743								C					X						~~see B-16@0.5'~~
	B-18@2.5'		0750								C											~~see B-16@2.5'~~
4	B-14@0.5'		0805								C					X	X					See B-4@0.5'
5	B-17@0.5'		0749								C					X						see B-10@0.5'
	B-17@2.5'		0810								C											see B-10@2.5'
	B-14@2.5'		0811								C											see B-4@2.5'
6	B-9@0.5'		0830								C					X	X					see B-4@0.5'
	B-9@2.5'		0836								C											see B-4@2.5'
7	B-6@0.5'		0842								C					X						see B-2@0.5'
8	B-8@0.5'		0847								C					X						see B-3@0.5'
	B-8 DUP@0.5'		0847								C											see B-3 DUP@0.5'

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[signature]	PLACEWORKS	6/11/19	1410	[signature]		6/11/19	14:10
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

*collected per Mike 6/12

Matrix Codes: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SD=Solid Waste, SL=Sludge, SS=Soil/Sediment, AR=Air, PP=Pure Product

Preservative Code: IC=Ice, HC=HCl, HN=HNO_3, SH=NaOH, ST=$Na_2S_2O_3$, HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag, G=Glass Container, ST= Steel Tube, B= Brass Tube, P=Plastic Bottle, V=VOA Vial, E= EnCore

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E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1906-96

Client Name: PLACEWORKS
E-mail: DCLENDENING@PLACEWORKS.COM
Address: 2350 INLAND EMPIRE BL SUITE B ONTARIO CA 91764
Report Attention: Denise
Phone #: 909 989 4449
Fax. #:
Sampled By: M. Watson & D. Clendening
Project No./ Name: RW-24.0
Project Site: ARLINGTON HIGH SCHOOL RIVERSIDE CA

☒ Chilled
☒ Intact
☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☒ Normal

Analyses Requested: EPA8260B (VOCs & Oxygenates); EPA8260B(BTEX & Oxygenates); LUFT / 8015 (Gasoline); LUFT / 8015 (Diesel); EPA8081A (Organochlorine Pesticides); EPA 8082 (PCBs); EPA 8015M (Carbon Chain C4-C40); EPA 6010B/7000 (CAM 17 Metals); Micro: Plate Cnt., Coliform, E-Coli; Gold B Lead; Gold B Arsenic; HOLD

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	Gold B Lead	Gold B Arsenic				HOLD	Remarks
	B-8@2.5'	6/11/19	0854	Soil	Ice	1 glass jar					C											
	B-8Dup@2.5'		0854																		X	
	B-6@2.5'		0901								C											See B-2@2.5'
9	B-4@0.5'		0915								C					X	X				(21)	B-4, B-9, B-14 @0.5'
	B-4@2.5'		0920								C										(22)	B-4, B-9, B-14 @2.5'
10	B-3@0.5'		0931								C					X					(23)	B-3, B-7, B-8, B-13 @0.5'
	B-3Dup@0.5'		0931								C										(24)	B-3Dup, B-7Dup, B-8Dup, B-13Dup @0.5'
	B-3@2.5'		0937								C										(25)	B-3, B-7, B-8, B-13 @2.5'
	B-3Dup@2.5'		0937																		X	
11	B-7@0.5'		0944								C					X						See B-3@0.5'
	B-7Dup@0.5'		0945								C											See B-3Dup@0.5'
12	B-11@0.5'		0952								C					X					(26)	B-11, B-18 @0.5'
	B-11@2.5'		0955								C										(27)	B-11, B-18 @2.5'
	B-7@2.5'		1001								C											See B-3@2.5'
	B-7Dup@2.5'		1002																		X	

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
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Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water; GW=Ground Water; WW=Waste Water; SD=Solid Waste; SL=Sludge; SS=Soil/Sediment; AR=Air; PP=Pure Product

Preservative Code: IC=Ice; HC=HCl; HN=HNO_3; SH=NaOH; ST=$Na_2S_2O_3$; HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag; G=Glass Container; ST= Steel Tube; B= Brass Tube; P=Plastic Bottle; V=VOA Vial; E= EnCore

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E-mail: office@arlaboratories.com

CHAIN OF CUSTODY

A & R Work Order #: 1906-96

Client Name: PLACEWORKS
E-mail: DCLENDENING@PLACEWORKS.COM
Address: 2850 INLAND EMPIRE BL SUITE B ONTARIO CA 91764
Report Attention: Denise
Phone #: 9099894499
Fax #:
Sampled By: M. Watson & D. Clendening
Project No./ Name: RIV-24.0
Project Site: ARLINGTON HIGH SCHOOL RIVERSIDE, CA

☒ Chilled ☒ Intact ☐ Seal

Turn Around Time Requested: ☐ Rush 8 12 24 48 Hours ☒ Normal

Analyses Requested

Lab # (Lab use)	Client Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No., type* & size of container	EPA8260B (VOCs & Oxygenates)	EPA8260B(BTEX & Oxygenates)	LUFT / 8015 (Gasoline)	LUFT / 8015 (Diesel)	EPA8081A (Organochlorine Pesticides)	EPA 8082 (PCBs)	EPA 8015M (Carbon Chain C4-C40)	EPA 6010B/7000 (CAM 17 Metals)	Micro: Plate Cnt., Coliform, E-Coli	6010B Lead	6010B Arsenic				Hold	Remarks
13	B-12@0.5'	6/11/19	1011	Soil	ice	1 glass jar					C					X						See B-2@0.5'
	B-12@2.5'		1020								C											See B-2@2.5'
14	B-2@0.5'		1030								C					X					28	B-2, B-6, B-12 @0.5'
	B-2@2.5'		1039								C										29	B-2, B-6, B-12 @2.5'
15	B-15@0.5'		1038								C					X						See B-10@0.5'
	B-15@2.5'		1044								C											See B-10@2.5'
16	B-16@0.5'		1058								C					X						See B-1@0.5'
	B-16@2.5'		1102								C											See B-1@2.5'
17	B-1@0.5'		1047								C					X					30	B-1, B-5, B-16 @0.5'
	B-1@2.5'		1106								C										31	B-1, B-5, B-16 @2.5'
18	B-5@0.5		1124								C					X	X					See B-1@0.5'
	B-5@2.5		1127								C											See B-1@2.5'
19	B-10@0.5'		1132								C					X					32	B-10, B-15, B-17 @0.5'
	B-10@2.5'		1140								C										33	B-10, B-15, B-17 @2.5'
20	EB061119		1145	aqueous	HNO3 ice	1 amber 1 plastic					X					X	X					

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	PLACEWORKS	6/11/19	14:10	[signature]		6/11	14:10
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SD=Solid Waste, SL=Sludge, SS=Soil/Sediment, AR=Air, PP=Pure Product

Preservative Code: IC=Ice, HC=HCl, HN=HNO_3, SH=NaOH, ST=$Na_2S_2O_3$, HS=H_2SO_4

* Sample Container Types: T=Tedlar Air Bag, G=Glass Container, ST= Steel Tube, B= Brass Tube, P=Plastic Bottle, V=VOA Vial, E= EnCore

ARL

Sample Acceptance Checklist

CLIENT: Placeworks WORK ORDER NUMBER: 1906-00096

Temperature:(Criteria:0.0ºC-6.0ºC)

Sample Temp.(w/CF) ºC(w/CF) 2.1°c

☐ Sample(s) outside temprature criteria: PM contacted by :

☐ Sample(s) outside temprature criteria, but received on ice/chilled on same day of sampling.

☐ Sample(s) received at ambient temprature; placed on ice for transport by courier.

Ambient Temprature ☐ Air ☐ Filter

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present and Not Intact	✓ Not Present
Sample(s)	☐ Present and Intact	☐ Present and Not Intact	✓ Not Present

Sample Condition:	Yes	No	N/A
Was a COC received	✓		
Were sample IDs present?	✓		
Were sampling dates & times present?	✓		
Was a relingquished signature present?	✓		
Were the tests required clearly indicated?	✓		
Were all samples sealed in plastic bags?		✓	
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were correct containers used for the tests required?	✓		
Was a sufficient amount of samples sent for tests indicated?	✓		
Was there headspace in VOA vials?			✓
Were the containers labeled with correct preservatives?	✓		

Explanations/Comments:

Notification:

For discrepancies, how was the Project Manager notified? Verbal

Verbal: PM Initials: _____ Data/Time: _____

Email: Send to: _____ Data/Time: _____

Project Manager's response:

Completed By: [signature] Date: 6.11.19

A R Laboratories
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PH: 951-779-0310 Fax: 951-779-0344
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Appendix F. QAPP

Appendix

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March 2019 | Quality Assurance Project Plan

ARLINGTON HIGH SCHOOL

for Riverside Unified School District

Prepared for:

Riverside Unified School District
Contact: Daniel Rodriguez,
Assistant Director, Facilities Projects
3070 Washington Street
Riverside, CA 92504

Project Number:
RIV-24.0

Prepared by:

PlaceWorks
Contact: Denise Clendening, Ph.D., Associate Principal
2850 Inland Empire Boulevard, Suite B
Ontario, California 91764
909.989.4449
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www.placeworks.com

PLACEWORKS

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1. Introduction

This Quality Assurance Project Plan (QAPP) has been prepared by PlaceWorks on behalf of Riverside Unified School District (District) to address quality assurance (QA) and quality control (QC) policies associated with the collection of environmental data at the Arlington High School Site (site), in Riverside, California. This QAPP presents the plan for sampling and analysis as part of the investigation. U.S. Environmental Protection Agency (USEPA) policy requires a QAPP for all environmental data collection projects mandated or supported by the USEPA through regulations or other formalized means (USEPA 1998a). The purpose of this QAPP is to identify the methods to be employed to establish technical accuracy, precision, and validity of data that is generated at the site.

This QAPP contains general and specific details regarding field sampling, laboratory, and analytical procedures that apply to investigation activities. It provides field and laboratory personnel with instructions regarding activities to be performed before, during, and after field investigations. These instructions will insure data collected for use in project decisions will be of the type and quality required to meet the data quality objectives (DQOs) for the project.

Guidelines followed in the preparation of this QAPP are described in EPA Requirements for Quality Assurance Plans for Environmental Data Operations, External Review Draft Final, EPA QA/R-5 (USEPA 1998a) and EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5 (USEPA 1998b). Other documents that have been referenced in this plan include, Guidance for the Data Quality Objectives Process, EPA QA/G-4 (USEPA 1994a) and Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (USEPA SW-846, Third Edition, 1996).

1.1 PROJECT HISTORY AND OBJECTIVES

The project site is approximately 0.5 acres at the existing Arlington High School Campus located at 2951 Jackson Street, Riverside, California. The project site is located within Section 17 of Township 3 South, Range 5 West of the San Bernardino Base Line and Meridian.

Past usage of the site was assessed through an interview, historical aerial photographs, topographic maps and databases. Copies of historical information reviewed are included in Appendix A. Based on a review of historical information; the subject site was developed for agricultural purposes from at least 1931 to 1975. After 1975 the site is occupied by Arlington High School.

1. Introduction

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2. Project Description

This section presents information concerning the proposed sampling activities, selected analytical parameters, data quality objectives, and the resulting project decisions.

2.1 ANALYTICAL SCOPE

The planned sampling effort includes the sampling and analysis of shallow soils for a list of potential hazardous substances. Soil samples will be collected on the project area in accordance with the protocols detailed in the DTSC's PEA Guidance Manual (DTSC 1999).

The appropriate analyses selected for this field program, and the rationale for selection of these parameters, will be further provided in the Workplan. A&R Laboratories, Inc. (ARL), located in Ontario, California, will perform testing of soil samples.

2.2 DATA USE

Decisions to be made based upon the planned sampling and analysis effort will be determined by the data compiled from the sampling and analysis program. It is intended that data collected through implementation of this QAPP will satisfy federal, state, and local data quality requirements. These data may be used to characterize the nature and extent of contamination, support risk assessment, support the evaluation of corrective/remedial action, and/or assist in determination of additional actions.

The presence of environmental contaminants will be determined by the extent of valid detectable concentrations of the constituents discussed above. If the data associated with any detections of chemicals of potential concern (COPCs) are confirmed, the data will be used to assess risk using accepted methods for determining potential carcinogenic and non-carcinogenic exposures. If results from the risk screening evaluations indicate no risks of exposure with respect to the use of the property, then the District will use the data to support No Further Action consent from DTSC, and the proposed development may continue without modification. If the evaluation indicates unacceptable risks of exposure, then the data can be used by District for further consideration of action.

2. Site Description

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3. Project Organization

This section provides a description of the organizational structure and responsibilities of the individual positions for this project. This description defines the lines of communication and identifies key personnel assigned to various activities for the project.

3.1 RIVERSIDE UNIFIED SCHOOL DISTRICT

Mr. Daniel Rodriquez is the designated contact person for the District. Mr. Rodriquez will be responsible for the directional decisions, as well as budget control, and for work conducted at the school site. Mr. Rodriquez, or designee, may perform document review of related work plans, reports, and drawings for activities associated with this project.

3.2 PLACEWORKS

The investigation contractor has responsibility for assigned phases of investigation and reporting. Together the management team (Project Manager and Field Manager) will be responsible for the technical planning and implementation of the work. The QA staff has responsibility for effective planning, verification and management of QA activities associated with the assigned project.

Dr. Denise Clendening is the PlaceWorks Project Manager and will serve as the primary contact with the DTSC and the District. Her responsibilities include strategy development, budget control, document control, project management, risk assessment and document review.

Mr. Michael Watson of PlaceWorks is a Professional Geologist in the State of California. Mr. Watson's responsibilities include field activities and preparation of required reports and data validation including quality assurance/quality control.

3.3 LABORATORY

The primary offsite laboratory is anticipated to be ARL in Ontario, California. ARL will perform analytical testing for soil samples collected for this investigation. The laboratory's project manager will report to the PlaceWorks Field Manager on all aspects of the sample analysis. In addition, the PlaceWorks QA Manager will be advised of any matters related to data quality during the course of the investigation.

3. Project Organization

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4. Data Quality Objectives

DQOs have been specified for each data collection activity. The project work will be conducted and documented so that the data collected are of sufficient quality for their intended use (USEPA 1998). DQOs specify the data type, quality, quantity, and uses needed to make decisions, and are the basis for designing data collection activities. The DQOs have been used to design the data collection activities that will be presented in the Workplan. The DQOs for the project are discussed in the following sections.

4.1 DATA QUALITY OBJECTIVES

The project DQOs developed specifically for the planned sampling and analysis program have been determined based on USEPA's seven-step DQO process (USEPA 1994a). The Project Manager will evaluate the DQOs to determine if the quantitative and qualitative needs of the sampling and analysis program have been met. The project definition associated with each step of the DQO process can be summarized as follows:

State the problem: The purpose of the sampling program is to determine if the proposed site is acceptable for the development of a new educational facility. Although the proposed development of the site will result in asphalt or concrete surfacing over the majority of the site, exposed soils will exist in landscaped areas where students could come into contact. Previous investigations have not performed a complete evaluation of potential contamination based on historical use of the property.

Identify the Decision: The data obtained from the sampling and testing activities will be used to evaluate if releases of hazardous substances from historical uses have occurred at the site. The investigative results will be further evaluated to determine to what extent any contamination identified will result in risk of exposure. The results will be compiled and used to assess the relative threat associated with any contamination identified, through a baseline risk assessment. Based on the calculation of human health and ecological risks for the site, the suitability of the property for its intended development will be determined.

Identify Inputs to the Decision: Inputs to the decision will include results of analytical testing of soil gas samples, and shallow soils from selected locations on the site. Each of these matrices will be tested for the specified analytes discussed in Section II.

Define the Study Boundaries: The boundaries of the field sampling and analysis program will be the perimeter of the site as discussed above and detailed in the Workplan.

Develop a Decision Rule: Decisions will be based upon laboratory results for the target constituents presented in Tables 1 through 3 for each respective matrix tested. If no valid detectable concentrations of target compounds are reported for the given samples, then a decision will be made that the site is fully characterized with respect to the compounds tested and no further sampling will be required as part of this

investigation. If target constituents are detected in the samples tested, then the data will be compiled for use in calculating the human health and ecological risk of exposure. The results of the risk evaluation will be used by the District to support a No Further Action consent from DTSC, if the data indicate risk is acceptable.

Specify Limits on Decision Error: The results of all analytical testing will be subjected to data validation specified in Section 7.3. Data are determined to be valid if the specified DQOs for precision, accuracy, representativeness, comparability and completeness are achieved. The results of any detected target constituents will be considered in evaluating the need for additional sampling of soil gas and/or site soil, and assessing the necessity for reducing any risks posed by the potential contamination.

Optimize the Design: The field sampling program has been designed to provide the type and quantity of data needed to satisfy each of the aforementioned objectives. A separate Workplan provides the specifications for the data collection activities, including the numbers of samples, respective locations, and sampling techniques. The quality of the data will be assessed through the procedures further described in this QAPP.

4.2 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY AND COMPLETENESS

The basis for assessing the elements of data quality is discussed in the following subsections. In the absence of laboratory specific precision and accuracy limits, the QC limits listed in this section must be met.

4.2.1 Precision

Precision measures the reproducibility of repetitive measurements. It is strictly defined as the degree of mutual agreement among independent measurements as the result of repeated application of the sample process under similar conditions.

Analytical precision is a measurement of the variability associated with duplicate or replicate analyses of the same sample in the laboratory. Precision is assessed by analysis of the results between laboratory quality control sample pairs. These include laboratory control sample (LCS) and LCS duplicates, matrix spike (MS) and MS duplicates (MSD), or sample duplicates. If the recoveries of analytes in the specified control samples pairs are comparable within established control limits, then precision criteria are satisfied.

Total precision is a measurement of the variability associated with the entire sampling and analytical process. It is determined by analysis of duplicate (two) or replicate (more than two) field samples, and measures variability introduced by both the laboratory and field operations. Field duplicate samples are analyzed to assess combined field and analytical precision.

Duplicate results are assessed using the relative percent difference (RPD) between duplicate measurements. If the RPD for laboratory quality control samples exceeds 30 percent, data will be qualified as described in the applicable validation procedure. If the RPD between primary and duplicate field samples exceeds 100 percent for soil or soil gas, data will be qualified as described in the applicable validation procedure.

The RPD is calculated as the difference between the two sample results (absolute value) divided by the average of the two sample results. The equation can be expressed as follows:

$$\%RPD = 200 \times ((x2-x1) / (x2+x1))$$

4.2.2 Accuracy

Accuracy is a statistical measurement of correctness of a measured value, and includes components of random error (variability due to imprecision) and systematic error. It reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value of a known concentration, spike, or standard.

Accuracy of laboratory analyses will be assessed by LCS recoveries, surrogate standard recoveries, MS spike recoveries, and initial and continuing calibrations of instruments. Laboratory accuracy is expressed as the percent recovery (%R). Accuracy limits are statistically generated by the laboratory or required by specified USEPA methods. If the percent recovery is determined to be outside of acceptance criteria, data will be qualified as described in the applicable validation procedure. The calculation of percent recovery is provided below:

$$\% R = 100 \times (Xs-X)/T$$

where Xs is the measured value of the spiked sample, X is the measured value of the unspiked sample, and T is the true value of the spike solution added.

Accuracy is also assessed by the analysis of laboratory and field blanks. Assessment of blank results provides information regarding potential bias imparted to analytical results from measurement systems and/or field conditions. Field accuracy will be assessed through the analysis of field equipment blanks. Analysis of field blanks documents bias associated with the sampling process, field contamination, sample preservation, and sample handling. The DQO for field equipment and trip blanks is that all values are less than the reporting limit for each target constituent. If contamination is reported in the field equipment or trip blanks, data will be qualified as described in the applicable validation procedure.

4.2.3 Representativeness

Representativeness is the degree to which data accurately and precisely represent selected characteristics of the media sampled. Representativeness of data collection is addressed by careful preparation of sampling and analysis programs. This QAPP addresses representativeness by specifying sufficient and proper numbers and locations of samples; incorporating appropriate sampling methodologies; specifying proper sample collection techniques and decontamination procedures; selecting appropriate laboratory methods to prepare and analyze soil and soil gas; and establishing proper field and laboratory QA/QC procedures.

4.2.4 Completeness

Completeness is the measure of valid data obtained compared to the amount that was expected under ideal conditions. The number of valid results divided by the number of possible results, expressed as a percentage,

4. Data Quality Objectives

determines the completeness of the data set. The objective for completeness is to obtain at least 90 percent of the planned data to support evaluation and assessment efforts. Specifically, for background samples, a completeness requirement of 100 percent is mandated. The formula for calculation of completeness is presented, as follows:

$$\% \text{ Completeness} = 100 \times \frac{\text{number of valid results}}{\text{number of expected results}}$$

4.2.5 Comparability

Comparability is an expression of confidence with which one data set can be compared to another. The objective of comparability is to ensure that data developed during the investigation are comparable with data previously collected (i.e., methods of analysis are comparable), and that the methods used adequately address applicable criteria or standards established by the USEPA and California Department of Health Services (CADHS). This QAPP addresses comparability by specifying laboratory methods that are consistent with the current standards of practice as approved by the USEPA and CADHS. Field methods will be discussed in the Workplan.

5. Quality Control Elements

This section presents QC requirements relevant to analysis of environmental samples that will be followed during all project analytical activities. The purpose of the QC program is to produce data of known quality that satisfy the project objectives and that meet or exceed the requirements of the standard methods of analysis. This program provides a mechanism for ongoing control and evaluation of data quality measurements through the use of QC materials.

5.1 QUALITY CONTROL ELEMENTS

The chemical data to be collected for this effort will be used to determine that the extent of contamination is properly evaluated. As such, it is critical that the chemical data is documented to be of the highest confidence and quality. Consequently, strict QA/QC procedures will be adhered to. These procedures include:

- Adherence to protocols for field sampling and decontamination procedures;
- Collection and laboratory analysis of appropriate field and equipment blanks to monitor for contamination of samples in the field or the laboratory;
- Collection and laboratory analysis of site specific matrix spike, matrix spike duplicate, and blind duplicate samples to evaluate precision and accuracy; and
- Attainment of completeness goals.

5.1.1 Equipment Decontamination

Non-dedicated equipment will be decontaminated before and after each sample is collected. The equipment will be washed in a non-phosphate detergent and potable water, rinsed in potable water, and then double rinsed in distilled water. A description of the specific methodologies to be followed to maximize proper decontamination of non-dedicated sampling equipment is provided in the Workplan.

5.1.2 Standards

Standards used for calibration or to prepare samples will be certified by National Institute of Standards and Technology (NIST), USEPA, or other equivalent source. The standards will be current. The expiration date will be established by the manufacturer, or based on chemical stability, the possibility of contamination, and environmental and storage conditions. Standards will be labeled with expiration dates, and will reference primary standard sources if applicable. Expired standards will be discarded.

5. Quality Control Elements

5.1.3 Supplies

All supplies will be inspected prior to their use in the field or laboratory. The descriptions for sample collection and analysis contained in the methods will be used as a guideline for establishing the acceptance criteria for supplies. A current inventory and appropriate storage system for these materials will assure their integrity prior to use.

5.1.4 Holding Time Compliance

Sample preparation and analysis will be completed within the required method holding times (Table 1). Holding time begins at the time of sample collection. If holding times are exceeded, and the analyses are performed, the associated results will be qualified as described in the applicable validation procedure. The following definitions of extraction and analysis compliance are used to assess holding times:

- Preparation or extraction completion - completion of the sample preparation process as described in the applicable method, prior to any necessary extract cleanup.
- Analysis completion - completion of all analytical runs, including dilutions, second-column confirmations, and any required re-analyses.

5.1.5 Preventative Maintenance

The Field Manager for PlaceWorks is responsible for documenting the maintenance of all field equipment prescribed in the manufacturer's specifications. Scheduled maintenance will be performed by trained personnel. Procedures specific to the calibration, use and maintenance of field equipment are presented in the Workplan. The analytical laboratory is responsible for all analytical equipment calibration and maintenance as described in their laboratory QA Plan. Subcontractors are responsible for maintenance of all equipment needed to carry out subcontracted duties

5.2 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) SAMPLES

The purpose of this QA/QC program is to produce data of known quality that satisfy the project objectives and that meet or exceed the requirements of the standard methods of analysis. This program provides a mechanism for ongoing control and evaluation of data quality measurements through the use of QC materials. Quality assurance and quality control samples will be collected as part of the overall QA/QC program.

5.2.1 Laboratory Reagent Blanks

A laboratory reagent blank is de-ionized, distilled water that is extracted by the laboratory and analyzed as a sample. Analysis of the reagent blank indicates potential sources of contamination from laboratory procedures (e.g., contaminated reagents, improperly cleaned laboratory equipment, or persistent contamination due to presence of certain compounds in the ambient laboratory air). A reagent blank will be analyzed at least once each day for each method utilized by the laboratory for that day.

5.2.2 Field Equipment Blanks

A field equipment blank is a sample that is prepared in the field by pouring de-ionized, distilled water into cleaned sampling equipment. The water is then collected and analyzed as a sample. Field equipment blanks are typically blind (given a fictitious name so that the laboratory will not recognize it as a blank). The field equipment blank gives an indication of contamination from field procedures (e.g., improperly cleaned sampling equipment, cross-contamination). Field equipment blanks will be collected at a minimum frequency of at least one per day when non-dedicated equipment is utilized. The field equipment blanks should be analyzed using the same analyses requested for the associated primary samples collected.

5.2.3 Trip Blanks

The primary purpose of trip blanks is to detect potential additional sources of contamination that could potentially influence contaminant values reported in field samples, both quantitatively and qualitatively. Trip blanks serve as a mechanism of control for sample bottle preparation, blank water quality and sample handling. They are generally submitted to the laboratory for analysis of VOCs. If VOCs are detected with the PID at or above 1 part per million, trip blanks will included as part of the sampling program.

5.2.4 Matrix Spike Samples

Matrix spikes are performed by the analytical laboratory to evaluate the efficiency of the sample extraction and analysis procedures, and are necessary because matrix interference (interferences from non-target compound in the sample matrix, water or soil) may have a widely varying impact on the accuracy and precision of the extraction analysis. The matrix spike is prepared by the addition of known quantities of target compounds to a sample. The sample is extracted and analyzed. The results of the analysis are compared with the known additions and a matrix spike recovery is calculated giving an evaluation of the accuracy of the extraction and analysis procedures. Matrix spike recoveries are reviewed to check that they are within acceptable range. However, the acceptable ranges vary widely with both sample matrix and analytical method. Matrix spikes and matrix spike duplicates will be analyzed by the laboratory at a frequency of at least one per twenty, or 5 percent of the primary field samples. Typically, matrix spikes are performed in duplicate in order to evaluate the precision of the procedures as well as the accuracy. Precision objectives (represented by agreement between matrix spike and matrix spike duplicate recoveries) and accuracy objectives (represented by matrix spike recovery results) are based on statistically generated limits established annually by the analytical laboratory. It is important to note that these objectives are to be viewed as goals, not as criteria. If matrix bias is suspected, the associated data will be qualified and the direction of the bias indicated in the data validation report.

5.2.5 Field Duplicate Samples

Field duplicate samples will be collected and analyzed to evaluate sampling and analytical precision. Field duplicates are collected and analyzed in the same manner as the primary samples. Agreement between duplicate sample results will indicate good sampling and analytical precision. Specific locations will be designated for collection of field duplicates prior to the start of field activities. Field duplicates will be collected at a frequency of 10 percent of the primary samples collected. The duplicate sample will be

5. Quality Control Elements

analyzed for all laboratory analyses requested for the primary sample collected. The precision goal for field duplicates analyses will be plus or minus 50 percent relative percent difference for aqueous samples and plus or minus 100 percent relative percent difference for soil, or air samples. Results for samples exceeding these goals will be qualified as estimated. Professional judgement will be used to determine if all samples in the associated batch will be qualified as well.

5.2.6 Performance Evaluation Samples

Double blind performance evaluation (PE) samples may be submitted to the analytical laboratory during any site investigation. These samples may be of water or soil matrix, and are used to assess the accuracy of analytical procedures employed for a given sample set. PE samples will be used if questionable data quality is suspected as determined during laboratory audits or data validation.

If used, double blind PE samples will be prepared by Environmental Resources Standards, or similar supplier, in similar sample containers as the project field samples and shipped from the field to the laboratory for analysis.

Double blind PE samples will be prepared using NIST and/or A2LA certified standards. The project-specific PE samples will contain known concentrations of the analytes of interest. Laboratory results will be evaluated against the original Certificates of Analyses for precision and accuracy. PE samples may be submitted for analysis as part of the laboratory pre-qualification process, or as part of a given sampling event. Results will be reported to the laboratory and presented with associated field sample results

6. Sampling Procedures

The defensibility of data is dependent on the use of well defined, accepted sampling procedures. This section describes the sampling and handling procedures that will be followed for each sampling event.

6.1 SAMPLING PROCEDURES

Collection of high integrity environmental samples is important to the quality of chemical data to be generated. To this end, detailed field procedures have been developed to guide sample collections during each phase of the field investigation. These procedures are contained in the Workplan.

6.1.1 Sample Containers, Preservation and Holding Times

Table 1 lists the required sample containers, preservatives, and recommended maximum holding times for samples. Sample containers provided by the laboratory will be new, and purchased commercially from I-Chem, Eagle Pitcher, or other equivalent validated sources.

6.1.2 Sample Handling and Storage

In the field, each sample container will be marked with the sampling location number, and date and time of sample collection. All sample containers will be wiped with paper towels and securely packed, in a cooler on ice, in preparation for delivery to the laboratory.

Upon receipt of the samples, the laboratory will immediately notify the Field Manager if conditions or problems are identified which require immediate resolution. Such conditions include container breakage, missing or improper chain-of-custody, exceeded holding times, improper preservation, missing or illegible sample labeling, or temperature excursions.

6.1.3 Sample Custody

For each sample that is submitted to the laboratory for analysis, an entry will be made on a chain-of-custody form supplied by the laboratory. The information to be recorded includes the sampling date and time, sample identification number, matrix type, requested analyses and methods, preservatives, and the sampler's name. Sampling team members will maintain custody of the samples until they are relinquished to laboratory personnel or a professional courier service. The chain-of-custody form will accompany the samples from the time of collection until received by the laboratory. Each party in possession of the samples (except the professional courier service) will sign the chain-of-custody form signifying receipt.

The chain-of-custody form will be placed in a plastic bag and shipped with samples inside the cooler. After the samples, ice, and chain-of-custody forms are packed in the coolers, the cooler will be appropriately sealed before it is relinquished to the courier. A copy of the original completed form will be provided by the

6. Sampling Procedures

laboratory along with the report of results. Upon receipt, the laboratory will inspect the condition of the sample containers and report the information on chain-of-custody or similar form.

7. Analytical Procedures

The analytical methods used for this project are primarily USEPA approved methods and are listed in Tables 1 through 3. Specific analytical method procedures are detailed in the laboratory QA Plan and standard operating procedures (SOPs) of the selected laboratory. These documents may be reviewed by PlaceWorks quality assurance staff during laboratory audits to ensure that project specifications are met. Laboratory audits are discussed in Section 9.2.

7.1 INTERNAL STANDARDS

Internal standards are measured amounts of method-specified compounds added after preparation, or extraction, of a sample. Internal standards are added to samples, controls, and blanks in accordance with method requirements to identify column injection losses, purging losses, or viscosity effects.

Acceptance limits for internal standard recoveries are set forth in the applicable method. If the internal standard recovery falls outside of acceptance criteria, the instrument will be checked for malfunction and reanalysis of the sample will be performed after any problems are resolved.

7.2 RETENTION TIME WINDOWS

Retention time windows will be established as described in SW-846 Method 8000A for applicable analyses of organic compounds. Retention time windows are used for qualitative identification of analytes and are calculated based on multiple, replicated analyses of a respective standard.

Retention times will be checked on a daily basis. Acceptance criteria for retention time windows are established in the referenced method. If the retention time falls outside the respective window, actions will be taken to correct the problem. The instrument must be re-calibrated after any retention time window failure and the affected samples must be reanalyzed.

7.3 METHOD DETECTION LIMITS

The method detection limit (MDL) is the minimum concentration of an analyte, or compound, that can be measured and reported with 99 percent confidence that the concentration is greater than zero. MDLs are established for each method, matrix and analyte, and for each instrument used to analyze project samples. MDLs are derived using the procedures described in 40CFR 136 Appendix B (USEPA 1990a). USEPA requires that MDLs be established on an annual basis. MDLs must be less than applicable reporting limits for each target analyte presented in Tables 2 and 3.

7.4 INSTRUMENT CALIBRATION

Analytical instruments will be calibrated in accordance with the procedures specified in the applicable method. All analytes that are reported shall be present in the initial and continuing calibrations, and these calibrations must meet the acceptance criteria specified in the reference method. Records of standard preparation and instrument calibration will be maintained. Records shall unambiguously trace the preparation of standards and their use in calibration and quantitation of sample results. Calibration records will be traceable to standard materials as described in Section 5.2.

At the onset of analysis, instrument calibrations will be checked using all of the analytes of interest. This applies equally to multi-response analytes. At a minimum, calibration criteria will satisfy method requirements. Analyte concentrations can be determined with either calibration curves or response factors, as defined in the method. Guidance provided in SW-846 should be considered to determine appropriate evaluation procedures.

8. Data Reporting

This section presents reporting requirements relevant to the data produced during all project analytical activities.

8.1 FIELD DATA

Data measured by field instruments will be recorded in field notebooks, laptops, and/or on required field forms. Units of measure for field analyses are identified on the field forms. The field data will be reviewed by the Project or Field Manager to evaluate completeness of the field records and appropriateness of the field methods employed. All field records will be retained in the project files.

8.2 LABORATORY DATA

Analytical data will contain the necessary sample results and quality control data to evaluate the data quality objectives defined for the project. Documentation requirements for laboratory data are defined in USEPA Region IX Laboratory Documentation Requirements for Data Validation (USEPA 1990b). The laboratory reports will be consistent with USEPA Level III documentation and include the following data and summary forms:

- Narrative, cross-reference, chain-of-custody, and method references;
- Analytical results;
- Surrogate recoveries (as applicable);
- Calibration summary;
- Blank results;
- Laboratory control sample recoveries;
- Duplicate sample results or duplicate spike recoveries;
- Sample spike recoveries;
- Instrument tuning summary;
- Associated raw data; and
- Magnetic tape or equivalent upon request.

8. Data Reporting

Data validation criteria are derived from the USEPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (USEPA 1994b and 1994c). The Functional Guidelines provide specific data validation criteria that can be applied to data generated for this investigation.

The laboratory data will be reviewed for compliance with the applicable method and the quality of the data reported. The following summarizes the areas of data validation.

- Holding Times;
- Calibrations;
- Blanks;
- Laboratory Control Samples;
- Matrix Spike/Matrix Spike Duplicates;
- Surrogates/Internal Standards (as applicable);
- Field Quality Control Samples; and
- Compound Identification and Quantification.

The application of data validation criteria is a function of project-specific DQOs. The QA/QC Manager will determine if the data quality objectives for the analytical data have been met. Results of the data validation review will be documented and summarized in the investigation.

8.3 PROCEDURES FOR DATA VALIDATION

Procedures for performing data validation for the types of analyses to be performed for this investigation are documented in the National Functional Guidelines. Data validation will be documented in a manner consistent with the functional guidelines. The results of the data validation will be included in a Data Validation Memorandum. This documentation will be maintained by PlaceWorks in the project files.

8.3.1 Data Qualifiers

The data validation procedures were designed to review each data set and identify biases inherent to the data and determine its usefulness. Data validation flags are applied to those sample results that fall outside of specified tolerance limits, and, therefore, did not meet the program's quality assurance objectives described in Section 3.2. Data validation flags to be used for this project are defined in the National Functional Guidelines. Data validation flags will indicate if results are considered quantitative, estimated, or rejected. Only rejected data are considered unusable for decision-making purposes; however, other qualified data may require further verification.

8.3.2 Project Data Management

Data management is the process of organizing, maintaining, and applying a variety of data to provide a useful and coherent view of the site conditions. Data collected for this investigation include sample collection data, field measurement data, onsite laboratory analytical data, and offsite laboratory analytical data. The data management resources include staff to review and maintain project data, a computerized data management system, and a documentation filing system. The project database management system has the capability to maintain the relationship between sampling locations, samples collected, and filed and laboratory analytical results.

8. Data Reporting

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9. Performance and System Audits

Audit programs are established and directed by PlaceWorks quality assurance staff to ensure that field and laboratory activities are performed in compliance with project controlling documents. This section describes responsibilities, requirements and methods for scheduling, conducting and documenting audits of field and laboratory activities.

9.1 FIELD AUDITS

Field audits focus on appropriateness of personnel assignments and expertise, availability of field equipment, adherence to project controlling documents for sample collection and identification, sample handling and transport, use of QA samples, chain of custody procedures, equipment decontamination and documentation. Field audits are not required, but may be performed in the event significant discrepancies are identified that warrant evaluation of field practices.

9.2 LABORATORY AUDITS

Laboratory audits include reviews of sample handling procedures, internal sample tracking, SOPs, analytical data documentation, QA/QC protocols, and data reporting. Any selected mobile or offsite laboratory will be licensed by the State of California as a certified testing laboratory. If no previous audit has been conducted by PlaceWorks, a scheduled audit will be conducted by the quality assurance staff during the course of this project to ensure the integrity of sample handling and processing by the laboratory.

9.3 DATA AUDITS

Data audits will be performed on analytical results received from the laboratories. These audits will be accomplished through the process of data validation as described in Section 8.3, or may involve a more detailed review of laboratory analytical results. Data audits require the laboratory to submit complete raw data files to PlaceWorks for validation. PlaceWorks chemists will perform a review of the data consistent with the level of effort described in the National Functional Guidelines (USEPA 1994 b and c). This level of validation consists of a detailed review of sample data, including verification of data calculations for calibration and quality control samples to assess if these data are consistent with method requirements. Upon request, the laboratory will make available all supporting documentation in a timely fashion.

9.4 REPORTS TO MANAGEMENT AND RESPONSIBILITIES

Upon completion of any audit, the auditor will submit to the Project Manager and Field Manager a report or memorandum describing any problems or deficiencies identified during the audit. It is the responsibility of the Project Manager to determine if the deviations will result in any adverse effect on the project conclusions. If it is determined that corrective action is necessary, procedures outlined in Section 9.5 will be followed.

9.5 CORRECTIVE ACTION

Corrective actions will be initiated whenever data quality indicators suggest that DQOs have not been met. Corrective actions will begin with identifying the source of the problem. Potential problem sources include failure to adhere to method procedures, improper data reduction, equipment malfunctions, or systemic contamination. The first level of responsibility for identifying the problems and initiating corrective action lies with the analyst/field personnel. The second level of responsibility lies with any person reviewing the data. Corrective actions may include more intensive staff training, equipment repair followed by a more intensive preventive maintenance program, or removal of the source of systemic contamination. Once resolved, the corrective action procedure will be fully documented, and if DQOs were not met, the samples in question must be recollected and/or reanalyzed utilizing a properly functioning system (USEPA 1998).

10. References

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10. References

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Table 1
Sample Containers, Preservatives, and Holding Times
Arlington High School
2951 Jackson Street
Riverside Unified School District
Riverside, California

Analyte	Method	Container	Preservative	Holding Time
SOIL ANALYSES				
Organochlorine Pesticides	EPA 8081A	4 oz glass or sleeve	4°C	14 days to extraction, 40 days to analysis
Lead	EPA 6010B	4 oz glass or sleeve	4°C	
Arsenic	EPA 6010B	4 oz glass or sleeve	4°C	180 days
SOIL GAS ANALYSES				
Volatile Organic Compounds	EPA 8260B	2-250ml glass syringes	n/a	30 minutes

Notes:

The laboratory will freeze all samples after extraction and all archived samples immediately.

No deterioration of frozen samples is expected during the time period required to complete the investigation.

Table 2
List of Method Compounds and Reporting Limits
Soil and Blank Sample Analysis
Arlington High School
2951 Jackson Street
Riverside Unified School District
Riverside, California

Title 22 Metals			
Method	Compound	Soil Reporting Limit mg/kg	Water Reporting Limit mg/l
EPA 6010B	Arsenic	1.00	0.0100
Organochlorine Pesticides			
Method	Compound	Soil Reporting Limit mg/kg	Water Reporting Limit ug/l
EPA 8081A	Aldrin	0.0010	0.040
	alpha-BHC	0.0010	0.030
	beta-BHC	0.0010	0.060
	delta-BHC	0.0010	0.090
	gamma-BHC	0.0010	0.040
	Chlordane	0.010	0.50
	4,4'-DDD	0.0020	0.050
	4,4'-DDE	0.0020	0.050
	4,4'-DDT	0.0020	0.050
	Dieldrin	0.0020	0.020
	Endosulfan I	0.0010	0.050
	Endosulfan II	0.0020	0.040
	Endosulfan Sulfate	0.0020	0.10
	Endrin	0.0020	0.050
	Endrin Aldehyde	0.0020	0.10
	Endrin Ketone	0.100	0.50
	Heptachlor	0.0010	0.030
	Heptachlor Epoxide	0.0010	0.080
	Methoxychlor	0.010	0.040
	Toxaphene	0.020	0.50

Table 3
Laboratory Quality Control Limits
Arlington High School
2951 Jackson Street
Riverside Unified School District
Riverside, California

Title 22 Metals						
Method	**Compound**	**RL** mg/kg	**MDL** mg/kg	**LCS % Rec.**	**MS/MSD % Rec.**	**MS/MSD RPD**
EPA 6010B	Arsenic	1.00	0.243	70-130	70-130	0-25
Volatile Organic Compounds						
Method	**Compound**	**RL mg/kg**	**MDL mg/kg**	**LCS % Rec.**	**MS/MSD % Rec.**	**MS/MSD RPD**
EPA 8081A	Aldrin	0.0010	0.00090	70-130	70-130	0-25
	alpha-BHC	0.0010	0.00060	70-130	70-130	0-25
	beta-BHC	0.0010	0.00030	70-130	70-130	0-25
	delta-BHC	0.0010	0.00040	70-130	70-130	0-25
	gamma-BHC	0.0010	0.00050	70-130	70-130	0-25
	Chlordane	0.010	0.0087	70-130	70-130	0-25
	4,4'-DDD	0.0020	0.0011	70-130	70-130	0-25
	4,4'-DDE	0.0020	0.00090	70-130	70-130	0-25
	4,4'-DDT	0.0020	0.00090	70-130	70-130	0-25
	Dieldrin	0.0020	0.0015	70-130	70-130	0-25
	Endosulfan I	0.0010	0.00070	70-130	70-130	0-25
	Endosulfan II	0.0020	0.0011	70-130	70-130	0-25
	Endosulfan Sulfate	0.0020	0.00090	70-130	70-130	0-25
	Endrin	0.0020	0.0014	70-130	70-130	0-25
	Endrin Aldehyde	0.0020	0.00090	70-130	70-130	0-25
	Endrin Ketone	0.100	0.0021	70-130	70-130	0-25
	Heptachlor	0.0010	0.00070	70-130	70-130	0-25
	Heptachlor Epoxide	0.0010	0.00050	70-130	70-130	0-25
	Methoxychlor	0.010	0.00090	70-130	70-130	0-25
	Toxaphene	0.020	0.0110	70-130	70-130	0-25

Notes:
Blank cells denote analytes which are not part of the normally spiked compounds.

RL	Reporting Limit
MDL	Method Detection Limit
LCS	Laboratory Control Sample
MS/MSD	Matrix Spikes/Matrix Spike Duplicates
RPD	Relative Percent Difference

Appendix M Preliminary Hydrology Study

Appendices

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Preliminary Hydrology Study

Arlington High School

Report Prepared on:

February 24, 2011

Report Prepared by:

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Introduction

Arlington High School is located on the north corner of Jackson Street and Lincoln Avenue, in the City of Riverside. The school site exists today as a developed property, bounded by a railroad on the north and single family residential tracts on the east, south and west. It is comprised of existing buildings & portables, pool, visitor & student/teacher parking lots, tennis, basketball and handball courts, natural turf football field with dirt running track, and a number of grass fields for baseball, softball and soccer. There is a 6.7 acre triangular portion on the north edge of the property, which remains an undeveloped dirt open space. Within the open space are two existing out buildings. The entire site is approximately 45.8 acres.

Proposed Site Improvements

Riverside Unified School District is proposing to make athletic field upgrades to the current site. Those upgrades will include a new synthetic football and track running surface, new stadium bleachers, new Varsity and Jr. Varsity natural turf Baseball and Softball fields. Natural turf open space will also be provided for soccer as well. Further improvements will include a new parking lot fronting Jackson Street, two new concession/restroom buildings, new basketball courts, 4 new tennis courts, new sidewalks and an access road bisecting the existing campus and the new fields.

Pre-Developed Hydrology

The existing site is a developed bi-level graded site with the existing athletic fields generally sloping to the north with the storm water runoff exiting the site via two inlet structures, which connect directly to the existing 42” and 36” Toronto Road Storm Drain (City of Riverside Plan No. D-554). A portion of the aforementioned dirt open space has runoff that exits the site at natural low points that occur along the north property line, at which point the runoff travels easterly and enters an existing storm drain inlet structure. The remainder of the main campus conveys runoff in the following manners: The existing parking lots surface drain to their respective fronting streets. The interior of the main campus is split into two portions, which collect runoff in underground piping which then outlet at the surface in two places. The first of which outlets thru an existing ramp wall, just west of the existing pool and runs its course northerly in a small open channel, ultimately entering one of the existing inlet structures. The second location outlets at the surface thru a headwall south of the existing handball courts. It runs its course easterly thru small open channels, at the north edge of the existing tennis courts, to the gutter of Irving Street. The perimeter of the campus generally surface drains to the nearest adjacent streets or parking lots. All the above drainage courses ultimately enter the Toronto Road Storm Drain.

The total Pre-Developed Q's are 41.6 cfs 10-year and 71.2 cfs 100-year.

Post-Developed Hydrology

The purpose of this preliminary drainage study is to show that the developed conditions will have mitigated any increase in storm water runoff, and will have treated the discharged water per Riverside County standards. The proposed grading design and storm drain systems will convey the entire newly developed site's drainage toward two detention basins. One located between the Varsity Baseball and Jr. Varsity Softball fields and the other located at the northern most corner of the site. The basins will each have an outlet pipe raised above the basin floor situated high enough to capture and retain the 2-year storm. These outlets will release the excess storm water to the existing 42" and 36" Toronto Road Storm Drain, as they did before development.

The site basins will be designed to achieve 2 goals: treat the storm water runoff from a 2-year storm, and detain the volumes of the post-developed 10-year storm events and release them at a rate that is lower than the pre-developed condition.

The total Post-Developed Q's are 44.5 cfs 10-year and 73.1 cfs 100-year.