DRAFT AMENDED ENVIRONMENTAL ASSESSMENT
FOR THE
TORRES MARTINEZ INDIAN HEALTH CLINIC REPLACEMENT PROJECT - VOLUME II

April 2019

Prepared for:
Indian Health Service
California Area Office

Prepared by:
BRG Consulting, Inc.

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A Geotechnical Investigation

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GEOTECHNICAL INVESTIGATION
PROPOSED HEALTH CLINIC
TORRES MARTINEZ
INDIAN TRIBAL COMPLEX
MARTINEZ ROAD – VALERIE JEAN AREA
RIVERSIDE COUNTY, CALIFORNIA

-Prepared By-

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December 7, 2015

Project No. 544-15270
15-11-488

Riverside – San Bernardino County Indian Health, Inc.
11980 Mr. Vernon Avenue
Grand Terrace, California 92313

Subject: Geotechnical Investigation

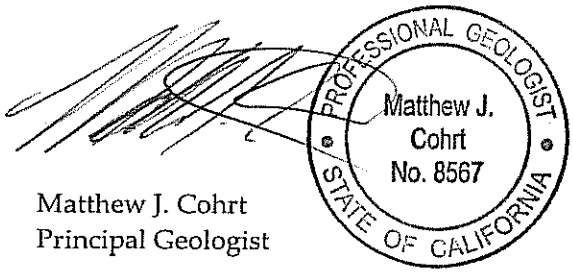
Project: Proposed Health Clinic
Torres Martinez Indian Tribal Complex
Martinez Road – Valerie Jean Area
Riverside County, California

Sladden Engineering is pleased to present the results of our geotechnical investigation performed for the proposed health clinic to be constructed on the Torres Martinez Indian Tribal Complex in the Valerie Jean area of Riverside County, California. Our services were completed in accordance with our proposal for geotechnical engineering services dated April 2, 2015 and your authorization to proceed with the work. The purpose of our investigation was to explore the subsurface conditions at the site in order to provide recommendations for foundation design and site preparation. Evaluation of environmental issues and hazardous wastes was not included within the scope of services provided.

The opinions, recommendations and design criteria presented in this report are based on our field exploration program, laboratory testing and engineering analyses. Based on the results of our investigation, it is our professional opinion that the proposed project should be feasible from a geotechnical perspective provided that the recommendations presented in this report are implemented into design and carried out through construction.

We appreciate the opportunity to provide service to you on this project. If you have any questions regarding this report, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING



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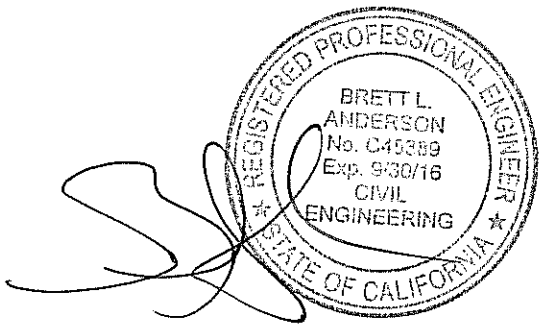

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INTRODUCTION

This report presents the results of the geotechnical investigation performed by Sladden Engineering (Sladden) for the proposed health clinic to be constructed within the Torres Martinez Indian Tribal Complex in the Valerie Jean area of Riverside, California. The site is located at approximately 33.5634 degrees north latitude and 116.1554 degrees west longitude. The approximate location of the site is indicated on the Site Location Map (Figure 1).

Our investigation was conducted in order to evaluate the engineering properties of the subsurface materials, to evaluate their *in-situ* characteristics, and to provide engineering recommendations and design criteria for site preparation, foundation design and the design of various site improvements. This study also includes a review of published and unpublished geotechnical and geological literature regarding seismicity at and near the subject site.

PROJECT DESCRIPTION

Based on the preliminary discussions, it is our understanding that the proposed project will consist of constructing a health clinic building on the project site. Sladden anticipates that the proposed project will also likely include concrete flatwork and various associated site improvements. For our analyses, we expect that the proposed building will consist of a relatively lightweight wood-frame structure supported on conventional shallow spread footings with a slab-on-grade or post-tensioned slab/foundation system designed to mitigate potential seismic settlements.

We anticipate that grading will be limited to minor cuts and fills in order to accomplish the desired pad elevation and provide adequate gradients for site drainage. Upon completion of precise grading plans, Sladden should be retained in order to ensure that the recommendations presented within in this report are incorporated into the design of the proposed project.

Structural foundation loads were not available at the time of this report. Based on our experience with relatively lightweight structures, we expect that isolated column loads will be less than 20 kips and continuous wall loads will be less than 2.0 kips per linear foot. If these assumed loads vary significantly from the actual loads, we should be consulted to verify the applicability of the recommendations provided.

SCOPE OF SERVICES

The purpose of our investigation was to determine specific engineering characteristics of the surface and near surface soil in order to develop foundation design criteria and recommendations for site preparation. Exploration of the site was achieved by drilling seven (7) exploratory boreholes to depths of between approximately 5 and 50 feet below the existing ground surface (bgs). Specifically, our site characterization consisted of the following tasks:

- Site reconnaissance to assess the existing surface conditions on and adjacent to the site.
- Advancing seven (7) exploratory boreholes to depths between approximately 5 and 50 feet bgs in order to characterize the subsurface soil conditions. Representative samples of the soil and bedrock were classified in the field and retained for laboratory testing and engineering analyses.
- Performing laboratory testing on selected samples to evaluate their engineering characteristics.
- Reviewing geologic literature and discussing geologic hazards.
- Performing engineering analyses to develop recommendations for foundation design and site preparation.
- The preparation of this report summarizing our work at the site.

SITE CONDITIONS

The site is formally identified as APN: 751-210-008 and occupies approximately 17.53 acres. At the time of our investigation, the site was partially developed and occupied by various facility structures and paved parking areas. The area of the proposed new health clinic was undeveloped and cover in scattered trees. The proposed new building area is bounded by existing facility structures to the south, agricultural property to the west, undeveloped land and scattered structures to the north, and Martinez Road to the east.

Based on our review of the USGS (2012), the site is situated at an approximate elevation of 130 feet below mean sea level (MSL).

No natural ponding of water or surface seeps were observed at or near the site during our investigation conducted on October 22, 2015. Site drainage appears to be controlled via sheet flow and surface infiltration..

GEOLOGIC SETTING

The project site is located within the Colorado Desert Physiographic Province (also referred to as the Salton Trough) that is characterized as a northwest-southeast trending structural depression extending from the Gulf of California to the Banning Pass. The Salton Trough is dominated by several northwest trending faults, most notably the San Andreas Fault system. The Salton Trough is bounded by the Santa Rosa – San Jacinto Mountains on the southwest, the San Bernardino Mountains on the north, the Little San Bernardino – Chocolate – Orocopia Mountains on the east, and extends through the Imperial Valley into the Gulf of California on the south.

A relatively thick sequence (20,000 feet) of sediment has been deposited in the Coachella Valley portion of the Salton Trough from Miocene to present times. These sediments are predominately terrestrial in nature with some lacustrian (lake) and minor marine deposits. The major contributor of these sediments has been the Colorado River. The mountains surrounding the Coachella Valley are composed primarily of Precambrian metamorphic and Mesozoic "granitic" rock.

The Salton Trough is an internally draining area with no readily available outlet to Gulf of California and with portions well below sea level (-253' msl). The region is intermittently blocked from the Gulf of California by the damming effects of the Colorado River delta (current elevation +30'msl). Between about 300AD and 1600 AD (to 1700 ?) the Salton Trough has been inundated by the River's water, forming ancient Lake Cahuilla (max. elevation +58' msl). Since that time the floor of the Trough has been repeatedly flooded with other "fresh" water lakes (1849, 1861, and 1891), the most recent and historically long lived being the current Salton Sea (1905). The sole outlet for these waters is evaporation, leaving behind vast amounts of terrestrial sediment materials and evaporate minerals.

The site has been mapped by Rogers (1965) to be immediately underlain by Quaternary age alluvial material (Qal). The regional geologic setting for the site vicinity is presented on the Regional Geologic Map (Figure 2).

SUBSURFACE CONDITIONS

The subsurface conditions at the site were investigated by drilling seven (7) exploratory boreholes to depths between approximately 5 and 50 feet bgs in order to explore the subsurface soil conditions. The approximate locations of the boreholes are illustrated on the Borehole Location Photograph (Figure 3). The boreholes were advanced using a truck-mounted Mobile B-61 drill rig equipped with 8-inch outside diameter (O.D.) hollow stem augers. A representative of Sladden was on-site to log the materials encountered and retrieve samples for laboratory testing and engineering analysis.

During our field investigation, fill/disturbed soil consisting of sandy silt (ML) was encountered to depths between approximately 1 and 2 feet bgs. The fill materials appeared grayish brown in in-situ color, moist, and exhibited characteristic indicative of low plasticity soil. Underlying the fill soil and extending to maximum depths explored, silty sand (SM) and sandy silt (ML) soil types were encountered. The materials appeared grayish brown in in-situ color, moist to wet and fine-grained (low plasticity).

The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and tests of the field samples. The final logs are included in Appendix A of this report. The stratification lines represent the approximate boundaries between soil types although the transitions may be gradual or variable across the site.

Groundwater was encountered at a depth of approximately 37 feet bgs during our field investigation conducted on October 22, 2015. As such, it is our opinion that groundwater should not be a factor during construction of the proposed project.

SEISMICITY AND FAULTING

The southwestern United States is a tectonically active and structurally complex region, dominated by northwest trending dextral faults. The faults of the region are often part of complex fault systems, composed of numerous subparallel faults which splay or step from main fault traces. Strong seismic shaking could be produced by any of these faults during the design life of the proposed project.

We consider the most significant geologic hazard to the project to be the potential for moderate to strong seismic shaking that is likely to occur during the design life of the project. The proposed project is located in the highly seismic Southern California region within the influence of several fault systems that are considered to be active or potentially active. An active fault is defined by the State of California as a "sufficiently active and well defined fault" that has exhibited surface displacement within the Holocene epoch (about the last 11,000 years). A potentially active fault is defined by the State as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago).

As previously stated, the site has been subjected to strong seismic shaking related to active faults that traverse through the region. Some of the more significant seismic events near the subject site within recent times include: M6.0 North Palm Springs (1986), M6.1 Joshua Tree (1992), M7.3 Landers (1992), M6.2 Big Bear (1992), M7.1 Hector Mine (1999) and M7.2 Baja California (2010).

Table 1 lists the closest known potentially active faults that was generated in part using the EQFAULT computer program (Blake, 2000), as modified using the fault parameters from The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al, 2003). This table does not identify the probability of reactivation or the on-site effects from earthquakes occurring on any of the other faults in the region.

TABLE 1
CLOSEST KNOWN ACTIVE FAULTS

Fault Name	Distance (Km)	Maximum Event
San Andreas – Coachella	11.9	*7.2
San Andreas – Southern	11.9	*7.2
San Jacinto – Anza	26.8	7.2
San Jacinto – Coyote Creek	31.3	6.8
Burnt Mountain	47.1	6.5
Eureka Peak	47.9	6.4
Brawley Seismic Zone	48.0	6.4
San Andreas – San Bernardino	49.9	7.5

*8.2 for multiple segment rupture

2013 CBC SEISMIC DESIGN PARAMETERS

Sladden has reviewed the 2013 California Building Code (CBC) and summarized the current seismic design parameters for the proposed structures. The seismic design category for a structure may be determined in accordance with Section 1613 of the 2013 CBC or ASCE7. According to the 2013 CBC, Site Class C may be used to estimate design seismic loading for the proposed structures. The 2013 CBC Seismic Design Parameters are summarized below. The project Design Map Reports are included within Appendix C.

Risk Category (Table 1.5-1): I/II/III
Site Class (Table 1613.3.2): D
S_S (Figure 1613.3.1): 1.500g
S_1 (Figure 1613.3.1): 0.635g
F_a (Table 1613.3.3(1)): 1.0
F_v (Table 1613.5.3(2)): 1.5
S_{MS} (Equation 16-37 {F_a X S_S}): 1.500g
S_{M1} (Equation 16-38 {F_v X S_1}): 0.953g
S_{DS} (Equation 16-39 {2/3 X S_{MS}}): 1.000g
S_{D1} (Equation 16-40 {2/3 X S_{M1}}): 0.635g
Seismic Design Category: D

GEOLOGIC HAZARDS

The subject site is located in an active seismic zone and will likely experience strong seismic shaking during the design life of the proposed project. In general, the intensity of ground shaking will depend on several factors including: the distance to the earthquake focus, the earthquake magnitude, the response characteristics of the underlying materials, and the quality and type of construction. Geologic hazards and their relationship to the site are discussed below.

I. Surface Rupture. Surface rupture is expected to occur along preexisting, known active fault traces. However, surface rupture could potentially splay or step from known active faults or rupture along unidentified traces. Based on our review of Rogers (1965), Jennings (1994), and RCPR (2015), known active faults are not mapped on the site. In addition, no signs of active surface faulting were observed during our review of non-stereo digitized photographs of the site and site vicinity (Google, 2015; Terra Server 2002). Finally, no signs of active surface fault rupture or secondary seismic effects (lateral spreading, lurching etc.) were identified on-site during our field investigation. Therefore, it is our opinion that risks associated with primary surface ground rupture should be considered "low".

II. Ground Shaking. The site has been subjected to past ground shaking by faults that traverse through the region. Strong seismic shaking from nearby active faults is expected to produce strong seismic shaking during the design life of the proposed project. A probabilistic approach was employed to the estimate the peak ground acceleration (a_{max}) that could be experienced at the site. Based on the USGS Interactive Deaggregation (USGS, 2008) and shear wave velocity (Vs30) of 300 m/s (USGS, 2015a), the site could be subjected to ground motions on the order of 0.47g (USGS, 2015b). The peak ground acceleration at the site is judged to have a 475 year return period and a 10 percent chance of exceedence in 50 years.

III. Liquefaction. Liquefaction is the process in which loose, saturated granular soil loses strength as a result of cyclic loading. The strength loss is a result of a decrease in granular sand volume and a positive increase in pore pressures. Generally, liquefaction can occur if all of the following conditions apply: liquefaction-susceptible soil, groundwater within a depth of 50 feet or less, and strong seismic shaking.

According to the County of Riverside, the site is situated within a "High" liquefaction potential zone (RCPR, 2015). Based on our experience in the project vicinity, risks associated with liquefaction and liquefaction related hazards should be considered in design.

We have performed seismic settlement calculations utilizing a magnitude of 6.85 (USGS, 2008) and peak ground acceleration of 0.554g. Historic high and anticipated high groundwater depths were determined to be approximately 15 feet bgs. The seismic settlement calculations are included within Appendix D. Calculations indicate potential total seismic settlements of up to 3.8 inches. The potential seismically related differential settlements are expected to be less than 2 inches. Based upon the general uniformity of the soil and groundwater conditions underlying the site, we expect the maximum differential settlement to occur over a horizontal distance of approximately 100 feet. Accordingly, risks associated with seismic settlement should be considered in the design of the proposed residence.

IV. Tsunamis and Seiches. Because the site is situated at an inland location, and is not immediately adjacent to any impounded bodies of water, risk associated with tsunamis and seiches is considered negligible.

V. Slope Failure, Land Sliding, Rock Falls. No signs of slope instability in the form of landslides, rock falls, earthflows or slumps were observed at or near the subject site. Based on our field observations of the site vicinity, risks associated with slope instability should be considered "low".

VI. Expansive Soil. Generally, the near surface soil consists of silty sand (SM). Based on the results of our laboratory testing (EI=24), the materials underlying the site are considered to have a "low" expansion potential and the risk of structural damage caused by volumetric changes in the subgrade soil is considered "negligible".

VII. Settlement. Settlement resulting from the anticipated foundation loads should be tolerable provided that the recommendations included in this report are considered in foundation design and construction. The estimated ultimate settlement is calculated to be less that approximately one inch when using the recommended bearing values. As a practical matter, differential settlement between footings can be assumed as one-half of the total settlement.

VIII. Subsidence. The site is situated within a susceptible subsidence zone (RCPR, 2015). Land subsidence can occur in valleys where aquifer systems have been subjected to extensive groundwater pumping, such that groundwater pumping exceeds groundwater recharge. Generally, pore water reduction can result in a rearrangement of skeletal grains and could result in elastic (recoverable) or inelastic (unrecoverable) deformation of an aquifer system.

Recent published literature indicates that the Upper Coachella Valley region between 1996 and 2005 has been subjected to groundwater withdrawal related subsidence (USGS, 2007). Although recent investigations have documented significant subsidence within the Coachella Valley (USGS, 2007), no fissures or other surficial evidence of subsidence were observed at the subject site. With the exception of isolated tension zones typically manifested on the ground surface as fissures and/or ground cracks, subsidence related to groundwater depletion is generally areal in nature with limited differential settlement over short distances such as across individual building pads.

Locally, no fissures or other surficial evidence of subsidence were observed at or near the subject site.

IX. Debris Flows. Debris flows are viscous flows consisting of poorly sorted mixtures of sediment and water and are generally initiated on slopes steeper than approximately six horizontal to one vertical (6H:1V)(Boggs, 2001). Because the building area is located on elevated topography risks associated with debris flows should be considered remote.

X. Flooding and Erosion. No signs of flooding or erosion were observed during our field investigation conducted on October 22, 2015. However, risks associated with flooding and erosion should be evaluated and mitigated by the project design Civil Engineer.

CONCLUSIONS

Based on the results of our investigation, it is our professional opinion that the project should be feasible from a geotechnical perspective provided that the recommendations presented in this report are incorporated into design and carried out through construction. The main geotechnical concerns in the construction of the proposed project are the presence of artificial fill and loose and potentially compressible near surface native soil along with the potential for liquefaction related seismic settlements.

Because of the presence of loose and potentially compressible condition of some of the near surface native soil, remedial grading including over-excavation and re-compaction is recommended for the proposed future building and foundation areas. We recommend that remedial grading within the proposed building areas include over-excavation and re-compaction of the artificial fill soil as well as the primary foundation bearing soil. Specific recommendations for site preparation are presented in the Earthwork and Grading section of this report.

Groundwater was encountered within our bores at approximately 37 feet below the existing ground surface in the vicinity of the site. Based upon the depth to groundwater, the potential for liquefaction and the related surficial effects of liquefaction impacting the site are considered high. In order to mitigate potential liquefaction related seismic settlements, the proposed structure should be supported upon unitized conventional shallow spread footings and reinforced slab-on-grade system or post-tensioned slab/foundation system.

Caving did occur to varying degrees within each of our exploratory bores and the surface soil may be susceptible to caving within deeper excavations. All excavations should be constructed in accordance with the normal CALOSHA excavation criteria. On the basis of our observations of the materials encountered, we anticipate that the subsoil will conform to that described by CALOSHA as Type C. Soil conditions should be verified in the field by a "Competent person" employed by the Contractor.

The following recommendations present more detailed design criteria that have been developed on the basis of our field and laboratory investigation.

EARTHWORK AND GRADING

Earthwork including excavation, backfill and preparation of the subgrade soil, should be performed in accordance with the geotechnical recommendations presented in this report and portions of the local regulatory requirements, as applicable. All earthwork should be performed under the observation and testing of a qualified soil engineer. The following geotechnical engineering recommendations for the proposed project are based on observations from the field investigation program, laboratory testing and geotechnical engineering analysis.

a. Stripping. Areas to be graded should be cleared of any existing, vegetation, associated root systems, and debris. All areas scheduled to receive fill should be cleared of any oversized or unsuitable material that should be removed off site. Voids left by obstructions should be properly backfilled in accordance with the compaction recommendations of this report.

b. Preparation of the Building Areas. In order to provide firm and uniform foundation bearing conditions, we recommend over-excavation and recompaction of the surface soil throughout the building area. The primary foundation bearing soil should be removed to a minimum depth of at least 3 feet below existing grade or 3 feet below the bottom of the footings, whichever is deeper. Remedial grading should extend laterally, a minimum of five feet beyond the building perimeter. The exposed surface should then be scarified, moisture conditioned to within two percent of optimum moisture content, and compacted to at least 90 percent relative compaction. Testing of the native soil within the excavation bottoms should be performed during grading to verify adequacy. Once cleaned of unsuitable material, the previously removed soil may be used as engineered fill soil.

c. Compaction. Soil to be used as engineered fill should be free of organic material, debris, and other deleterious substances, and should not contain irreducible matter greater than 12 inches in maximum dimension. All fill materials should be placed in thin lifts, not exceeding six inches in their loose state. If import fill is required, the material should be of a low to non-expansive nature and should meet the following criteria:

Plastic Index	Less than 12
Liquid Limit	Less than 35
Percent Soil Passing #200 Sieve	Between 15% and 35%
Maximum Aggregate Size	3 inches

The subgrade and all fill material should be compacted with acceptable compaction equipment, to at least 90 percent relative compaction. The bottom of the exposed subgrade should be observed by a representative of Sladden Engineering prior to fill placement. Compaction testing should be performed on all lifts in order to ensure proper placement of the fill materials. Table 2 provides a summary of the excavation and compaction recommendations.

Table 2
SUMMARY OF RECOMMENDATIONS

*Remedial Grading	Over-excavation and re-compaction within the building envelope and extending laterally for 5 feet beyond the building limits and to a minimum of 3 feet below existing grade or 3 feet below the bottom of the footings, whichever is deeper.
Native / Import Engineered Fill	Place in thin lifts not exceeding 6 inches in a loose condition, compact to a minimum of 90 percent relative compaction within 2 percent of the optimum moisture content.
Asphalt Concrete	Compact the top 12 inches to at least 95 percent compaction within 2 percent of optimum moisture content.

*Actual depth may vary and should be determined by a representative of Sladden Engineering in the field during construction.

d. Shrinkage and Subsidence. Volumetric shrinkage of the material that is excavated and replaced as controlled compacted fill should be anticipated. We estimate that this shrinkage should be between 15 and 20 percent. Subsidence of the surfaces that are scarified and compacted should be between 1 and 2 tenths of a foot. This will vary depending upon the type of equipment used, the moisture content of the soil at the time of grading and the actual degree of compaction attained.

CONVENTIONAL SHALLOW SPREAD FOOTINGS

Conventional shallow spread footings may be utilized for building support provided that the calculated seismic settlements are adequately mitigated in design. All footings should be founded upon properly compacted engineered fill soil and should have a minimum embedment depth of 12 inches measured from the lowest adjacent finished grade. Continuous and isolated footings should have minimum widths of 12 inches and 24 inches, respectively. Continuous and isolated footings may be designed using allowable (net) bearing pressures of 1800 and 2000 pounds per square foot (psf), respectively. The allowable bearing pressures apply to combined dead and sustained live loads.

The allowable bearing pressure may be increased by one-third when considering transient live loads, including seismic and wind forces. All footings should be reinforced in accordance with the project structural engineer's recommendations.

Lateral load resistance for shallow spread footings and/or post-tensioned slabs will be developed by passive soil pressure against the sides of the footings below grade and by friction acting at the base of the concrete footings and slabs bearing on compacted fill. An allowable passive pressure of 250 psf per foot of depth may be used for design purposes. An allowable coefficient of friction 0.40 may be used for dead and sustained live loads to compute the frictional resistance of footings placed directly on compacted fill. Under seismic and wind loading conditions, the passive pressure and frictional resistance may be increased by one-third.

All footing excavations should be observed by a representative of Sladden Engineering to verify adequate embedment depths prior to the placement of forms, reinforcement or concrete. The excavations should be trimmed neat, level and square. All loose, disturbed, sloughed or moisture-softened soil and/or any construction debris should be removed prior to concrete placement.

SLABS-ON-GRADE

In order to reduce the risk of cracking and settlement, concrete slabs-on-grade must be placed on properly compacted fill as outlined in the previous sections. The slab subgrades should remain near optimum moisture content and should not be permitted to dry. Prior to placing concrete, all slab subgrades should be firm and unyielding. Disturbed soil should be removed and then replaced and compacted to a minimum of 90 percent relative compaction.

Slab thickness and reinforcement should be determined by the structural engineer. We recommend a minimum slab thickness of 5.0 inches and minimum slab reinforcement of #4 bars at 24 inches on center due to the potential seismic settlements and the proximity to the San Andreas Fault system. All slab reinforcement should be properly supported to ensure that reinforcement is placed at slab mid-height.

Slabs with moisture sensitive surfaces should be underlain with a moisture vapor retarder consisting of a polyvinyl chloride membrane such as 10-mil Visqueen, or equivalent. All laps within the membrane should be sealed and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, consideration should be given to placing a 1-inch thick leveling course of sand across the pad surface prior to placement of the membrane.

POST-TENSIONED SLABS

Post-tensioned slabs may be used for the proposed structure in order to mitigate potential liquefaction related differential settlements. We have evaluated the on-site soil for construction of post-tensioned foundation systems in general accordance with design specifications of the Post Tensioning Institute. Post-tensioned slabs should be designed to be rigid and capable of spanning areas of non-uniform support and meet the following criteria:

1. Bearing Capacity = 1500 psf
2. Potential Liquefaction Induced Differential Settlement = 2.0 inches (over a horizontal distance of 100 feet)
3. Coefficient of Friction = 0.40

CORROSION SERIES

The soluble sulfate concentrations of the surface soil was determined to be 2200 parts per million (ppm). The soil is considered to have a "severe" corrosive potential with respect to concrete. The use of Type V cement and special sulfate resistant concrete mixes may be necessary. However, the soluble sulfate concentration should be reevaluated after the grading and compaction work is completed. Soluble sulfate content of the surface soil should be reevaluated after grading and appropriate concrete mix designs should be established based upon post-grading test results.

The pH levels of the surface soil was determined to be 8.1. Based on soluble chloride concentration testing (1800 ppm) the soil is considered to have a "very severe" corrosive potential with respect to normal grade steel. The minimum resistivity of the surface soil was found to be 210 ohm-cm that suggests the site soil is considered to have a "very severe" corrosive potential with respect to ferrous metal installations. A corrosion expert should be consulted regarding appropriate corrosion protection measures.

UTILITY TRENCH BACKFILL

All utility trench backfill should be compacted to a minimum relative compaction of 90 percent. Trench backfill materials should be placed in lifts no greater than six inches in their loose state, moisture conditioned (or air-dried) as necessary to achieve near optimum moisture conditions, and then mechanically compacted in place to a minimum relative compaction of 90 percent. A representative of the project soil engineer should test the backfill to verify adequate compaction.

EXTERIOR CONCRETE FLATWORK

To minimize cracking of concrete flatwork, the subgrade soil below concrete flatwork areas should first be compacted to a minimum relative compaction of 90 percent. A representative of the project geotechnical consultant should observe and verify the density and moisture content of the soil prior to concrete placement.

DRAINAGE

All final grades should be provided with positive gradients away from foundations to provide rapid removal of surface water runoff to an adequate discharge point. No water should be allowed to be pond on or immediately adjacent to foundation elements. In order to reduce water infiltration into the subgrade soil, surface water should be directed away from building foundations to an adequate discharge point. Subgrade drainage should be evaluated upon completion of the precise grading plans and in the field during grading.

LIMITATIONS

The findings and recommendations presented in this report are based upon an interpolation of the soil conditions between the exploratory boring locations and extrapolation of these conditions throughout the proposed building area. Should conditions encountered during grading appear different than those indicated in this report, this office should be notified.

The use of this report by other parties or for other projects is not authorized. The recommendations of this report are contingent upon monitoring of the grading operation by a representative of Sladden Engineering. All recommendations are considered to be tentative pending our review of the grading operation and additional testing, if indicated. If others are employed to perform any soil testing, this office should be notified prior to such testing in order to coordinate any required site visits by our representative and to assure indemnification of Sladden Engineering.

We recommend that a pre-job conference be held on the site prior to the initiation of site grading. The purpose of this meeting will be to assure a complete understanding of the recommendations presented in this report as they apply to the actual grading performed.

ADDITIONAL SERVICES

Once completed, final project plans and specifications should be reviewed by use prior to construction to confirm that the full intent of the recommendations presented herein have been applied to design and construction. Following review of plans and specifications, observation should be performed by the Soil Engineer during construction to document that foundation elements are founded on/or penetrate into the recommended soil, and that suitable backfill soil is placed upon competent materials and properly compacted at the recommended moisture content.

Tests and observations should be performed during grading by the Soil Engineer or his representative in order to verify that the grading is being performed in accordance with the project specifications. Field density testing shall be performed in accordance with acceptable ASTM test methods. The minimum acceptable degree of compaction should be 90 percent for subgrade soil and 95 percent for Class II aggregate base as obtained by the ASTM Test Method D1557. Where testing indicates insufficient density, additional compactive effort shall be applied until retesting indicates satisfactory compaction.

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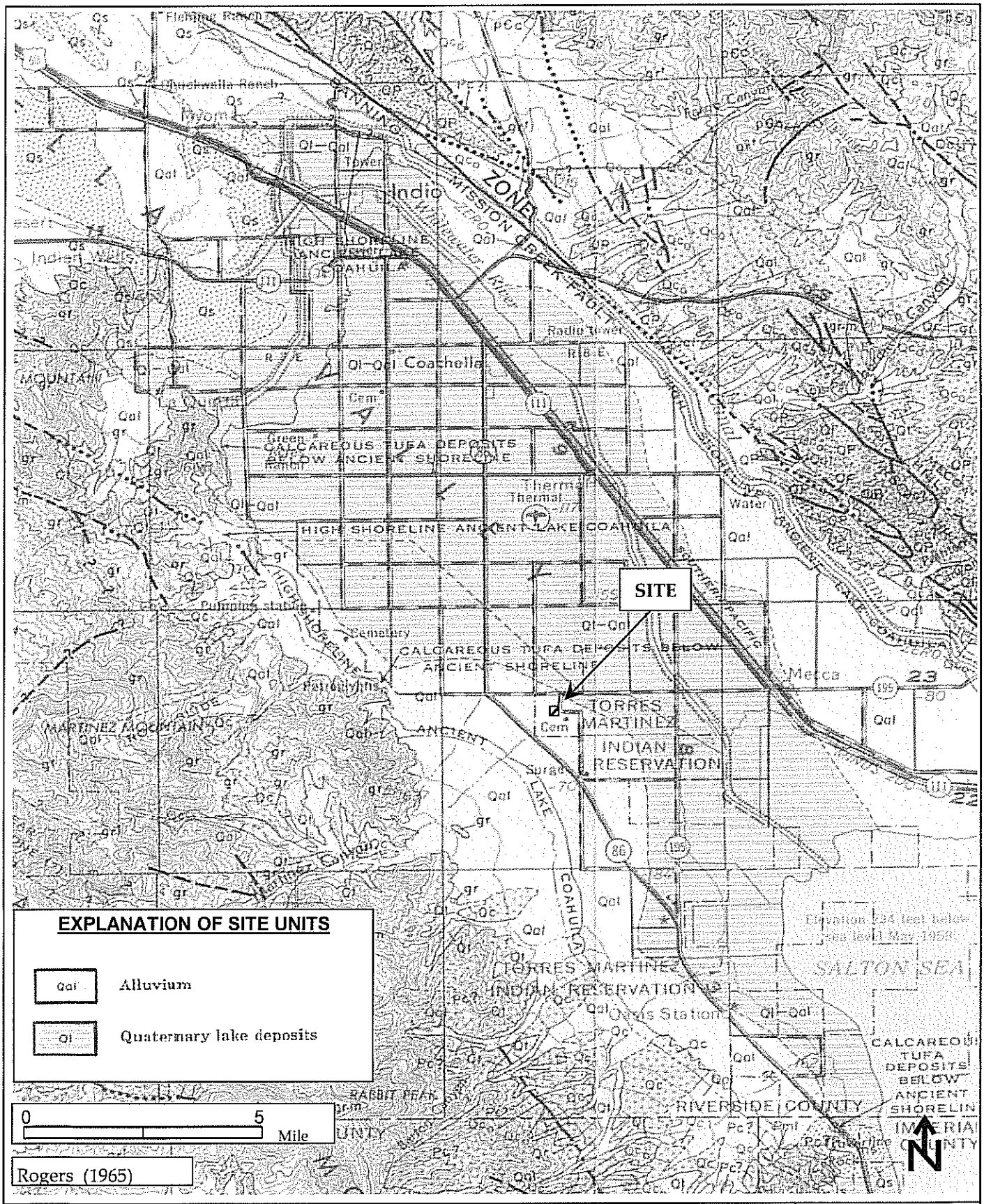
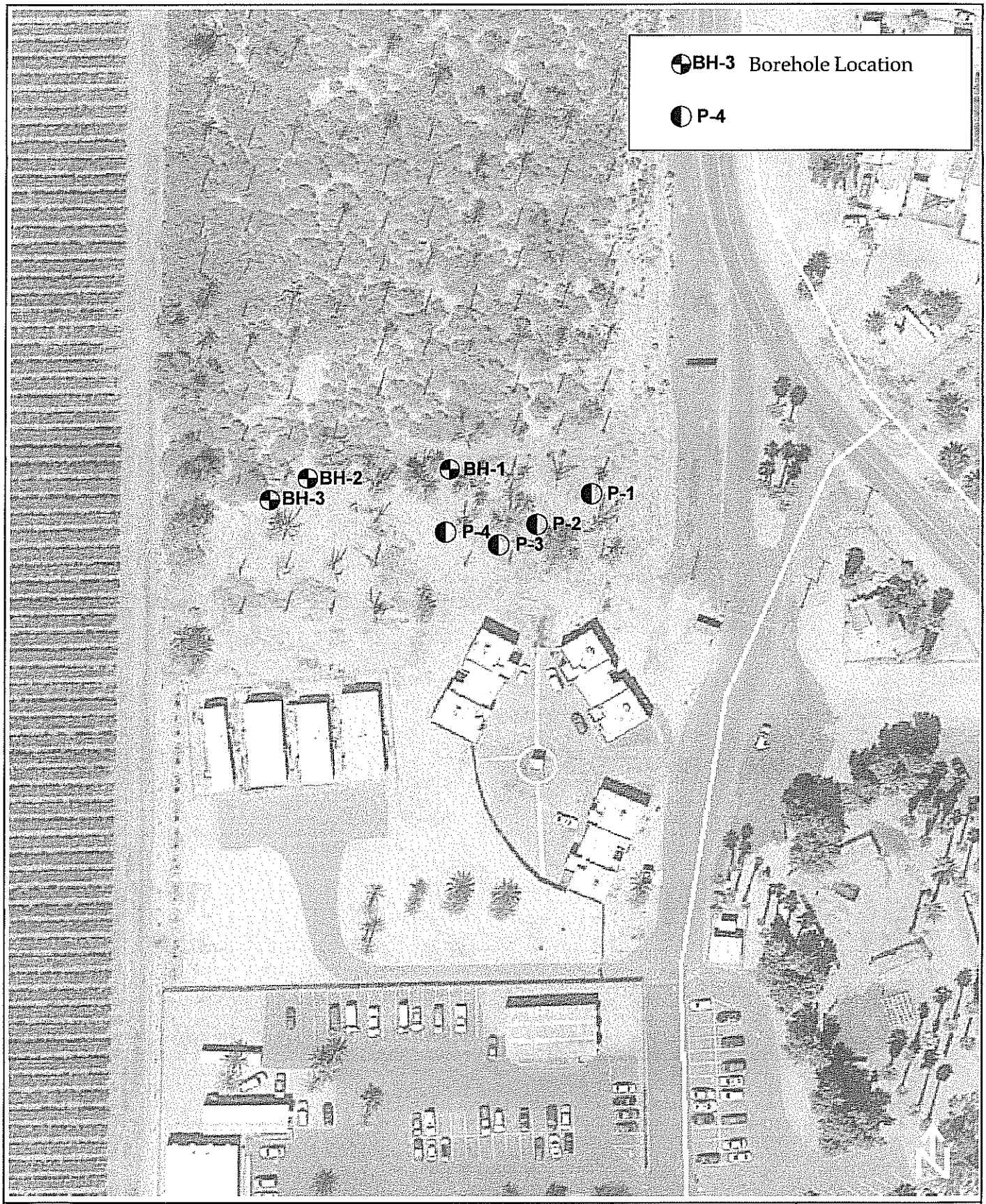
FIGURES

SITE LOCATION MAP
REGIONAL GEOLOGIC MAP
BOREHOLE LOCATION PHOTOGRAPH

	SITE LOCATION MAP		FIGURE
Sladden Engineering	Project Number:	544-15270	1
	Report Number:	15-11-488	
	Date:	December 7, 2015	



Sladden Engineering	REGIONAL GEOLOGIC MAP	FIGURE 2
	Project Number: 544-15270	
	Report Number: 15-11-488	
	Date: December 7, 2015	



Sladden Engineering	BOREHOLE LOCATION PHOTOGRAPH		FIGURE
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	Date:	December 7, 2015	

APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

For our field investigation seven (7) exploratory bores were excavated utilizing a truck mounted hollow stem auger rig (Mobile B-61). Continuous logs of the materials encountered were made by a representative of Sladden Engineering. Materials encountered in the boreholes were classified in accordance with the Unified Soil Classification System which is presented in this appendix.

Representative undisturbed samples were obtained within our borings by driving a thin-walled steel penetration sampler (California split spoon sampler) or a Standard Penetration Test (SPT) sampler with a 140 pound automatic-trip hammer dropping approximately 30 inches (ASTM D1586). The number of blows required to drive the samplers 18 inches was recorded in 6-inch increments and blowcounts are indicated on the boring logs.

The California samplers are 3.0 inches in diameter, carrying brass sample rings having inner diameters of 2.5 inches. The standard penetration samplers are 2.0 inches in diameter with an inner diameter of 1.5 inches. Undisturbed samples were removed from the sampler and placed in moisture sealed containers in order to preserve the natural soil moisture content. Bulk samples were obtained from the excavation spoils and samples were then transported to our laboratory for further observations and testing.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			TYPICAL NAMES	
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN No.200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN No.4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY-GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN No.4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN No.200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & 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, CLEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS: LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS 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

EXPLANATION OF BORE LOG SYMBOLS


California Split-spoon Sample


Unrecovered Sample


Standard Penetration Test Sample


Groundwater depth

Note: The stratification lines on the borelogs represent the approximate boundaries between the soil types; the transitions may be gradual.

SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	10/22/2015
Elevation:	-130 Ft (MSL)	Boring No:	BH-1

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							0		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Fill/Disturbed).
	6/7/10	1	24	49.6	4.4	95.7	2		Sandy Silt (ML); grayish brown, moist, stiff, low plasticity, micaceous (Qal/Ql).
	4/6/9			91.4	12.0	84.9	4		
							6		Sandy Silt (ML); grayish brown, moist, stiff, low plasticity, micaceous (Qal/Ql).
	3/3/4			56.1	11.8		8		
							10		Sandy Silt (ML); grayish brown, moist, medium stiff, low plasticity (Qal/Ql).
	6/6/9			55.5	9.0	106.8	12		
							14		Sandy Silt (ML); grayish brown, moist, stiff, low plasticity (Qal/Ql).
	3/5/5			43.4	9.5		16		
							18		Silty Sand (SM); grayish brown, moist, loose, fine-grained with trace clay and rootlets (Qal/Ql).
	9/17/20			63.1	5.4	106.2	20		
							22		Sandy Silt (ML); grayish brown, slightly moist, very stiff, micaceous (Qal/Ql).
	5/6/6			55.5	10.7		24		
							26		Sandy Silt (ML); grayish brown, moist, stiff, low plasticity with trace clay, micaceous, with carbonate webbing (Qal/Qal).
	11/13/13			34.2	24.9	97.6	28		
							30		Silty Sand (SM); grayish brown, very moist to wet, medium dense, fine-grained (Qal/Ql).
	5/5/5			32.3	22.8		32		
							34		Silty Sand (SM); grayish brown, very moist to wet, loose, fine-grained (Qal/Ql).
	13/14/14			27.3	16.8	108.5	36		
							38		Silty Sand (SM); grayish brown, very moist to wet, medium dense, fine-grained (Qal/Ql).
							40		
							42		Bore Caved at ~47 Feet bgs. No Bedrock Encountered. Groundwater Encountered at ~37.0 Feet bgs.
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED HEALTH CLINIC
TORRES MARTINEZ TRIBAL COMPLEX, THERMAL, CA

Project No: 544-15270
Report No: 15-11-488

SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	10/22/2015
Elevation:	-130 Ft (MSL)	Boring No:	BH-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							0		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Fill/Disturbed).
	5/6/7			83.0	6.0		5		Sandy Silt (ML); grayish brown, moist, stiff, low plasticity (Qal/Ql).
	7/11/14			65.6	5.8	90.9	10		Sandy Silt (ML); grayish brown, moist, very stiff, low plasticity (Qal/Ql).
	5/9/10			55.9	4.1		15		Sandy Silt (ML); grayish brown, moist, very stiff, low plasticity (Qal/Ql).
	9/19/20			56.3	4.1	110.0	20		Sandy Silt (ML); grayish brown, moist, very stiff, low plasticity with rootlets (Qal/Ql).
							22		Terminated at ~21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.

Completion Notes:

PROPOSED HEALTH CLINIC
TORRES MARTINEZ TRIBAL COMPLEX, THERMAL, CA

Project No:	544-15270	Page	2
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SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	10/22/2015
Elevation:	-130 Ft (MSL)	Boring No:	BH-3

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							0		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Fill/Disturbed).
							2		
							4		
	4/4/4			80.8	12.6	82.3	6		Sandy Silt (ML); grayish brown, moist, medium stiff, low plasticity (Qal/Ql).
							8		
	3/3/5			60.4	10.7		10		Sandy Silt (ML); grayish brown, moist, medium stiff, low plasticity (Qal/Ql).
							12		
							14		
	5/8/12			78.2	15.0	101.5	16		Sandy Silt (ML); grayish brown, moist, stiff, low plasticity (Qal/Ql).
							18		
							20		
	6/9/9			45.5	8.7		22		Silty Sand (SM); grayish brown, moist, medium dense, fine-grained (Qal/Ql).
							24		Terminated at -21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED HEALTH CLINIC
TORRES MARTINEZ TRIBAL COMPLEX, THERMAL, CA

Project No:	544-15270	Page	3
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SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	10/22/2015
Elevation:	-130 Ft (MSL)	Boring No:	P-1

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							0		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Fill/Disturbed).
							2		
							4		Sandy Silt (ML); grayish brown, moist, low plasticity, (Qal/Ql).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED HEALTH CLINIC
TORRES MARTINEZ TRIBAL COMPLEX, THERMAL, CA

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SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	10/22/2015
Elevation:	-130 Ft (MSL)	Boring No:	P-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							2		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Fill/Disturbed).
							4		Sandy Silt (ML); grayish brown, moist, low plasticity, (Qal/Ql).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED HEALTH CLINIC
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SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	10/22/2015
Elevation:	-130 Ft (MSL)	Boring No:	P-3

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							0		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Fill/Disturbed).
							2		
							4		Sandy Silt (ML); grayish brown, moist, low plasticity, (Qal/Ql).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED HEALTH CLINIC
TORRES MARTINEZ TRIBAL COMPLEX, THERMAL, CA

Project No: 544-15270
Report No: 15-11-488

SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	10/22/2015
Elevation:	-130 Ft (MSL)	Boring No:	P-4

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							0		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Fill/Disturbed).
							2		
							4		Sandy Silt (ML); grayish brown, moist, low plasticity, micaceous (Qal/Ql).
							6		Terminated at ~5.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							8		
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED HEALTH CLINIC
TORRES MARTINEZ TRIBAL COMPLEX, THERMAL, CA

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APPENDIX B

LABORATORY TESTING

APPENDIX B

LABORATORY TESTING

Representative bulk and relatively undisturbed soil samples were obtained in the field and returned to our laboratory for additional observations and testing. Laboratory testing was generally performed in two phases. The first phase consisted of testing in order to determine the compaction of the existing natural soil and the general engineering classifications of the soils underlying the site. This testing was performed in order to estimate the engineering characteristics of the soil and to serve as a basis for selecting samples for the second phase of testing. The second phase consisted of soil mechanics testing. This testing including consolidation, shear strength and expansion testing was performed in order to provide a means of developing specific design recommendations based on the mechanical properties of the soil.

CLASSIFICATION AND COMPACTION TESTING

Unit Weight and Moisture Content Determinations: Each undisturbed sample was weighed and measured in order to determine its unit weight. A small portion of each sample was then subjected to testing in order to determine its moisture content. This was used in order to determine the dry density of the soil in its natural condition. The results of this testing are shown on the Boring Logs.

Maximum Density-Optimum Moisture Determinations: Representative soil types were selected for maximum density determinations. This testing was performed in accordance with the ASTM Standard D1557-91, Test Method A. The results of this testing are presented graphically in this appendix. The maximum densities are compared to the field densities of the soil in order to determine the existing relative compaction to the soil.

Classification Testing: Soil samples were selected for classification testing. This testing consists of mechanical grain size analyses. This provides information for developing classifications for the soil in accordance with the Unified Soil Classification System which is presented in the preceding appendix. This classification system categorizes the soil into groups having similar engineering characteristics. The results of this testing is very useful in detecting variations in the soil and in selecting samples for further testing.

SOIL MECHANIC'S TESTING

Expansion Testing: One (1) bulk sample was selected for Expansion testing. Expansion testing was performed in accordance with the UBC Standard 18-2. This testing consists of remolding 4-inch diameter by 1-inch thick test specimens to a moisture content and dry density corresponding to approximately 50 percent saturation. The samples are subjected to a surcharge of 144 pounds per square foot and allowed to reach equilibrium. At that point the specimens are inundated with distilled water. The linear expansion is then measured until complete.

Direct Shear Testing: One (1) bulk sample was selected for Direct Shear testing. This test measures the shear strength of the soil under various normal pressures and is used to develop parameters for foundation design and lateral design. Tests were performed using a recompacted test specimen that was saturated prior to tests. Tests were performed using a strain controlled test apparatus with normal pressures ranging from 800 to 2300 pounds per square foot. Testing was performed in accordance with ASTM Test Method D-3080.

Consolidation: Two (2) relatively undisturbed samples were selected for consolidation testing. For this test, a one-inch thick test specimen was subjected to vertical loads varying from 575 psf to 11520 psf applied progressively. The consolidation at each load increment was recorded prior to placement of each subsequent load. Testing was performed in accordance with ASTM Test Method D-2435.

Corrosion Series Testing: The soluble sulfate concentrations of the surface soil were determined in accordance with California Test Method Number (CA) 417. The Ph and Minimum Resistivity were determined in accordance with CA 643. The soluble chloride concentrations were determined in accordance with CA 422.

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Expansion Index

ASTM D 4829

Job Number: 544-15270

November 16, 2015

Job Name: Torres Martinez Indian Tribal Complex

Lab ID Number: LN6-15590

Sample ID: BH-1 Bulk 1 @ 0-5'

Soil Description: Dark Brown Sandy Silt (ML)

Wt of Soil + Ring:	543.0
Weight of Ring:	190.6
Wt of Wet Soil:	352.4
Percent Moisture:	12.7%
Sample Height, in	0.95
Wet Density, pcf:	112.4
Dry Denstiy, pcf:	99.7

% Saturation:	49.7

Expansion **Rack # 4**

Date/Time	11/11/2015	2:55 PM
Initial Reading	0.0000	
Final Reading	0.0237	

Expansion Index **24**

(Final - Initial) x 1000

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Maximum Density/Optimum Moisture

ASTM D698/D1557

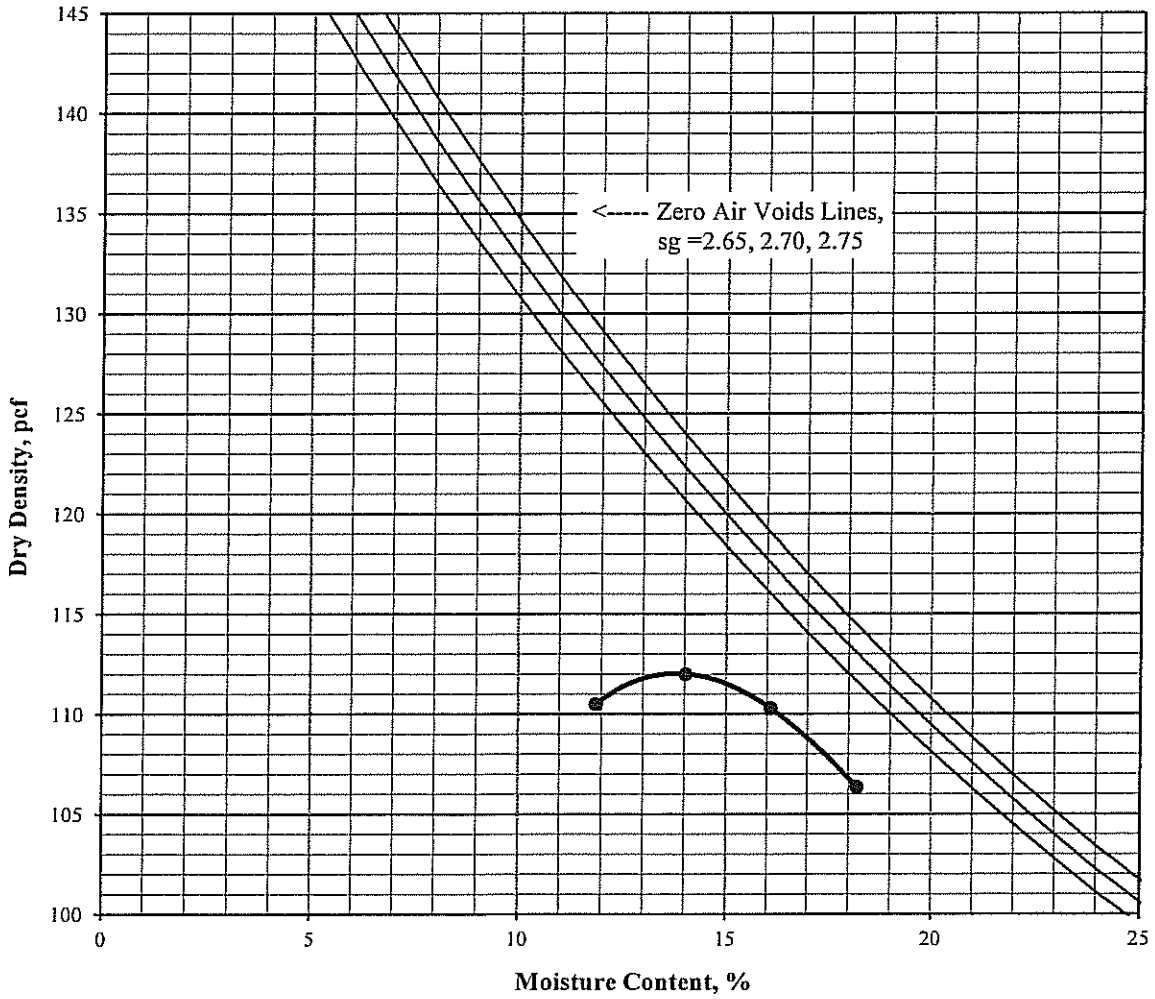
Project Number: 544-15270
Project Name: Torres Martinez Indian Tribal Complex
Lab ID Number: LN6-15590
Sample Location: BH-1 Bulk 1 @ 0-5'
Description: Dark Brown Sandy Silt (ML)

November 16, 2015

ASTM D-1557 A
Rammer Type: Machine

Maximum Density: **112 pcf**
Optimum Moisture: **14.5%**

Sieve Size	% Retained
3/4"	
3/8"	
#4	0.0



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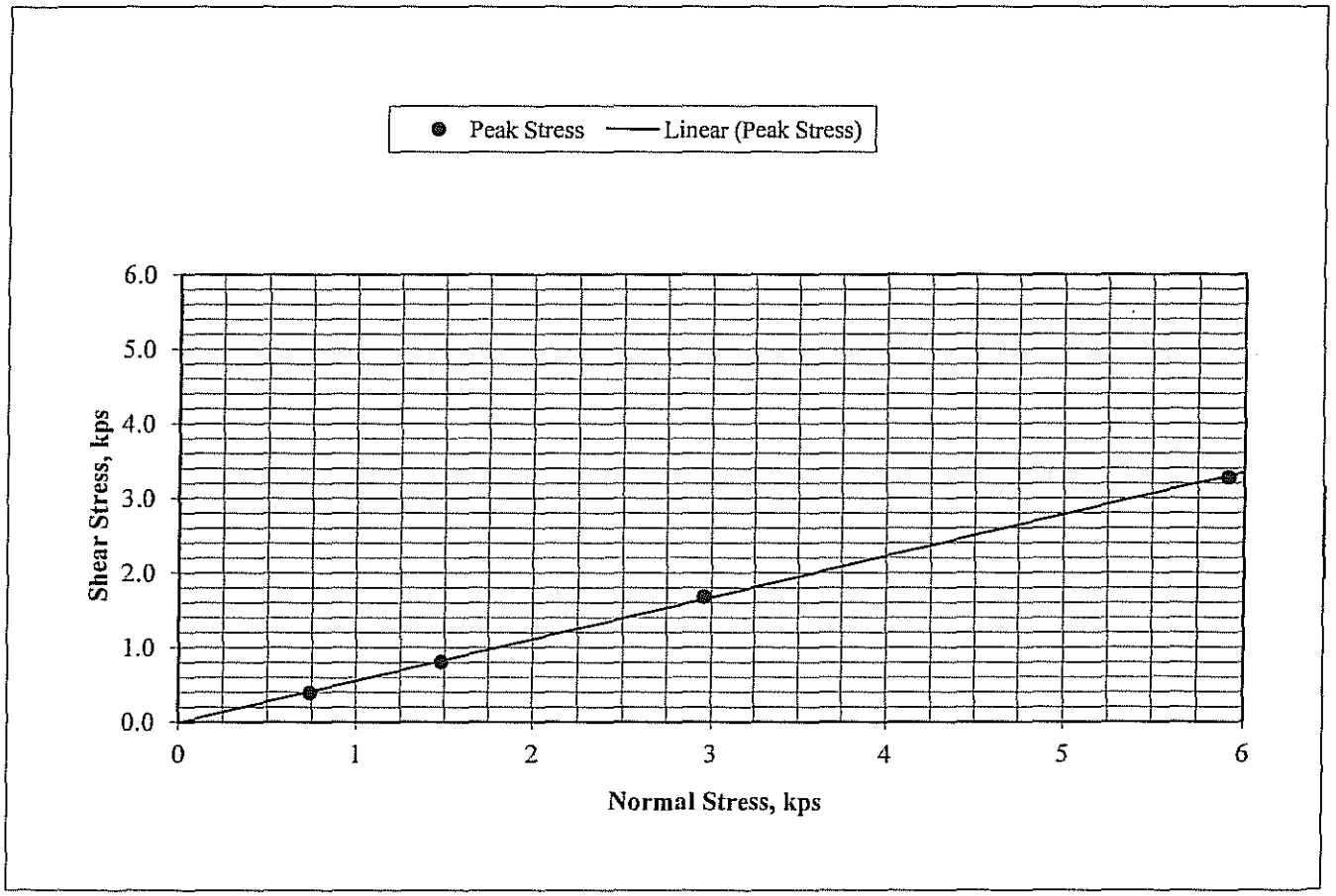
Direct Shear ASTM D 3080-04
(modified for unconsolidated condition)

Job Number:	544-15270		November 16, 2015
Job Name	Torres Martinez Indian Tribal Complex		Initial Dry Density: 100.5 pcf
Lab ID No.	LN6-15590		Initial Mosture Content: 14.5 %
Sample ID	BH-1 Bulk 1 @ 0-5'		Peak Friction Angle (Ø): 29°
Classification	Dark Brown Sandy Silt (ML)		Cohesion (c): -10 psf
Sample Type	Remolded @ 90% of Maximum Density		

Test Results	1	2	3	4	Average
Moisture Content, %	25.3	25.3	25.3	25.3	25.3
Saturation, %	100.7	100.7	100.7	100.7	100.7
Normal Stress, kps	0.739	1.479	2.958	5.916	
Peak Stress, kps	0.393	0.808	1.682	3.278	



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Gradation

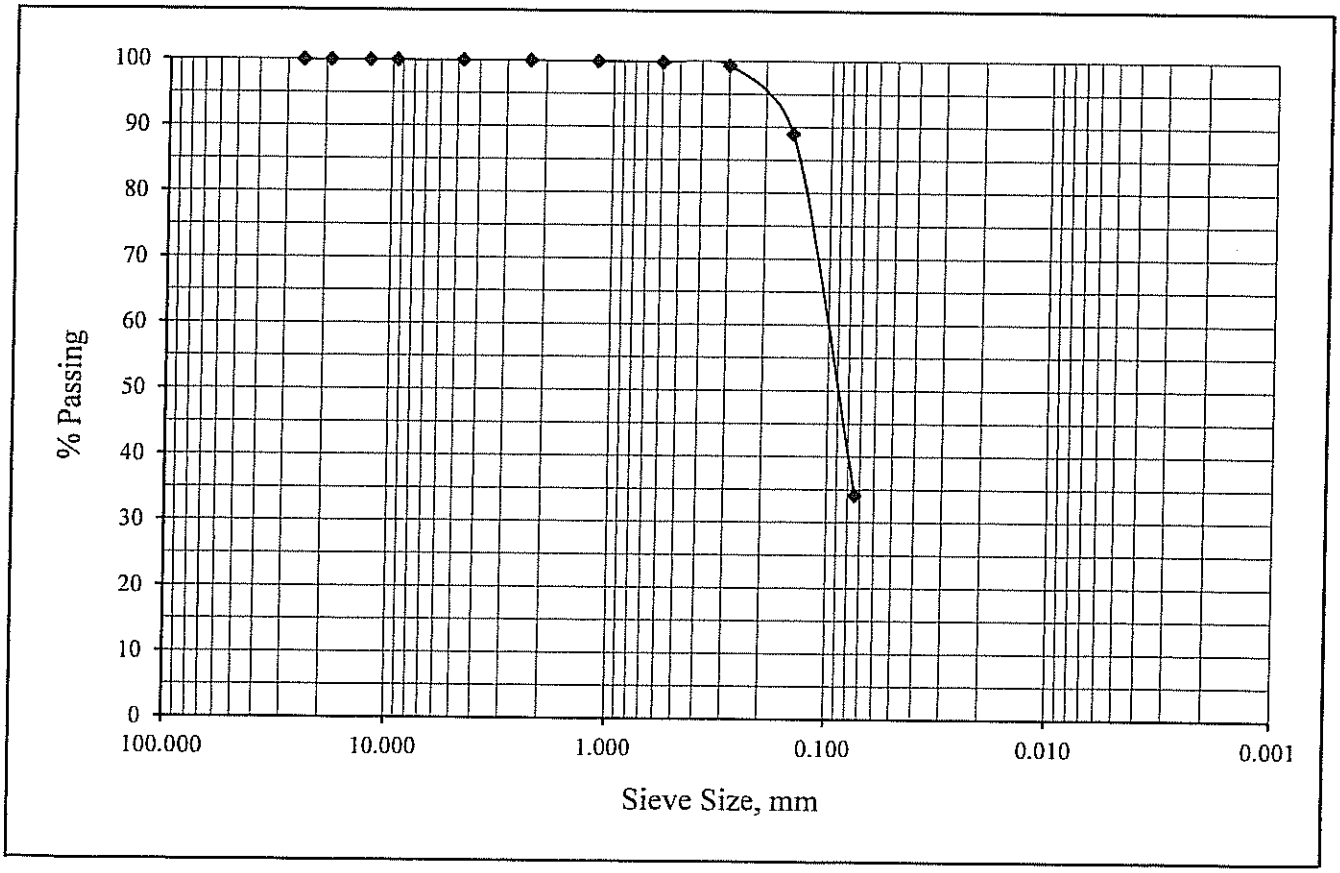
ASTM C117 & C136

Project Number: 544-15270
Project Name: Torres Martinez Indian Tribal Complex
Lab ID Number: LN6-15590
Sample ID: BH-1 R-8 @ 35'

November 16, 2015

Soil Classification: SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	100.0
#8	2.36	100.0
#16	1.18	99.9
#30	0.60	99.9
#50	0.30	99.3
#100	0.15	89.0
#200	0.074	34.2



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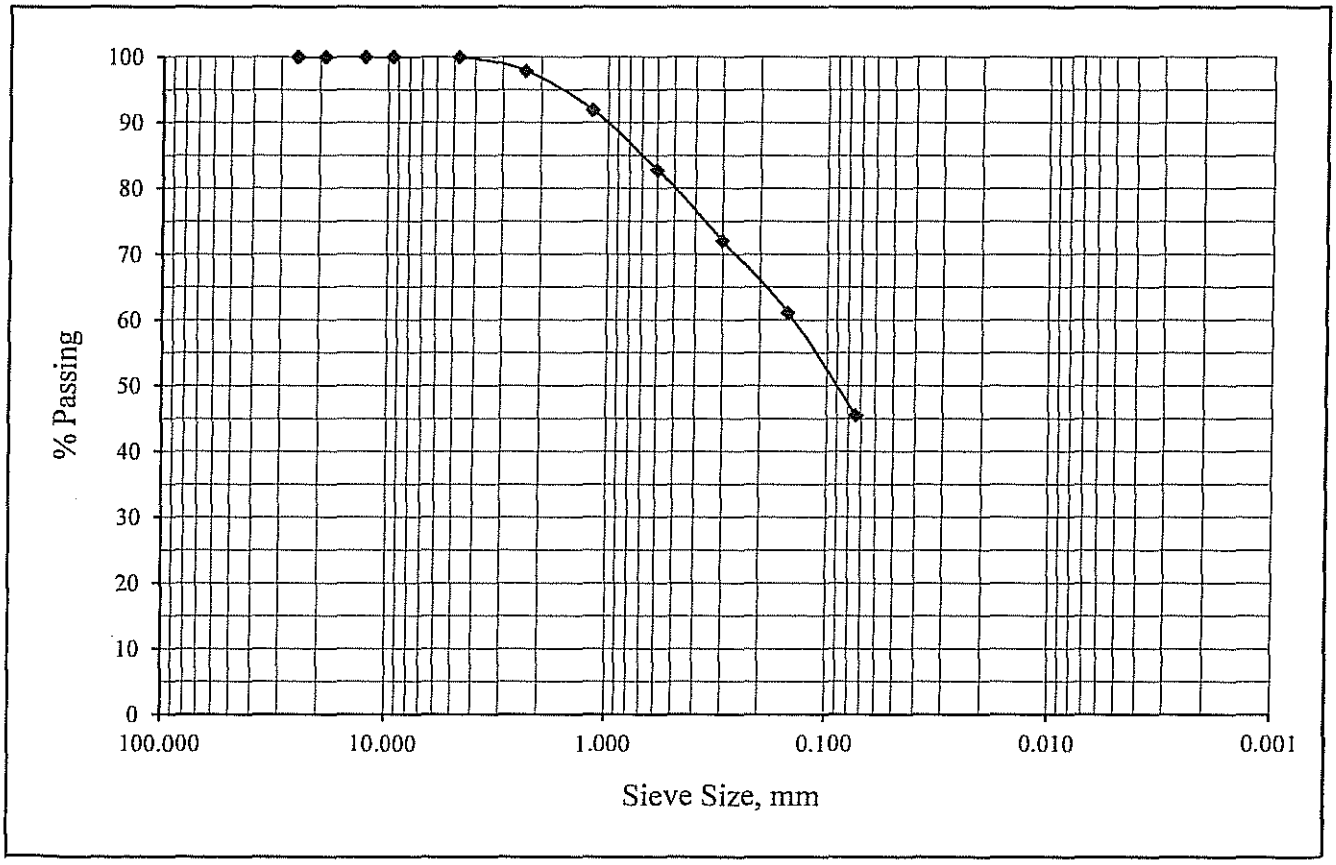
Gradation

ASTM C117 & C136

Project Number: 544-15270 November 16, 2015
Project Name: Torres Martinez Indian Tribal Complex
Lab ID Number: LN6-15590
Sample ID: BH-3 S-4 @ 20' Soil Classification: SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	100.0
#8	2.36	97.9
#16	1.18	91.9
#30	0.60	82.8
#50	0.30	72.0
#100	0.15	61.1
#200	0.074	45.5



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One Dimensional Consolidation

ASTM D2435 & D5333

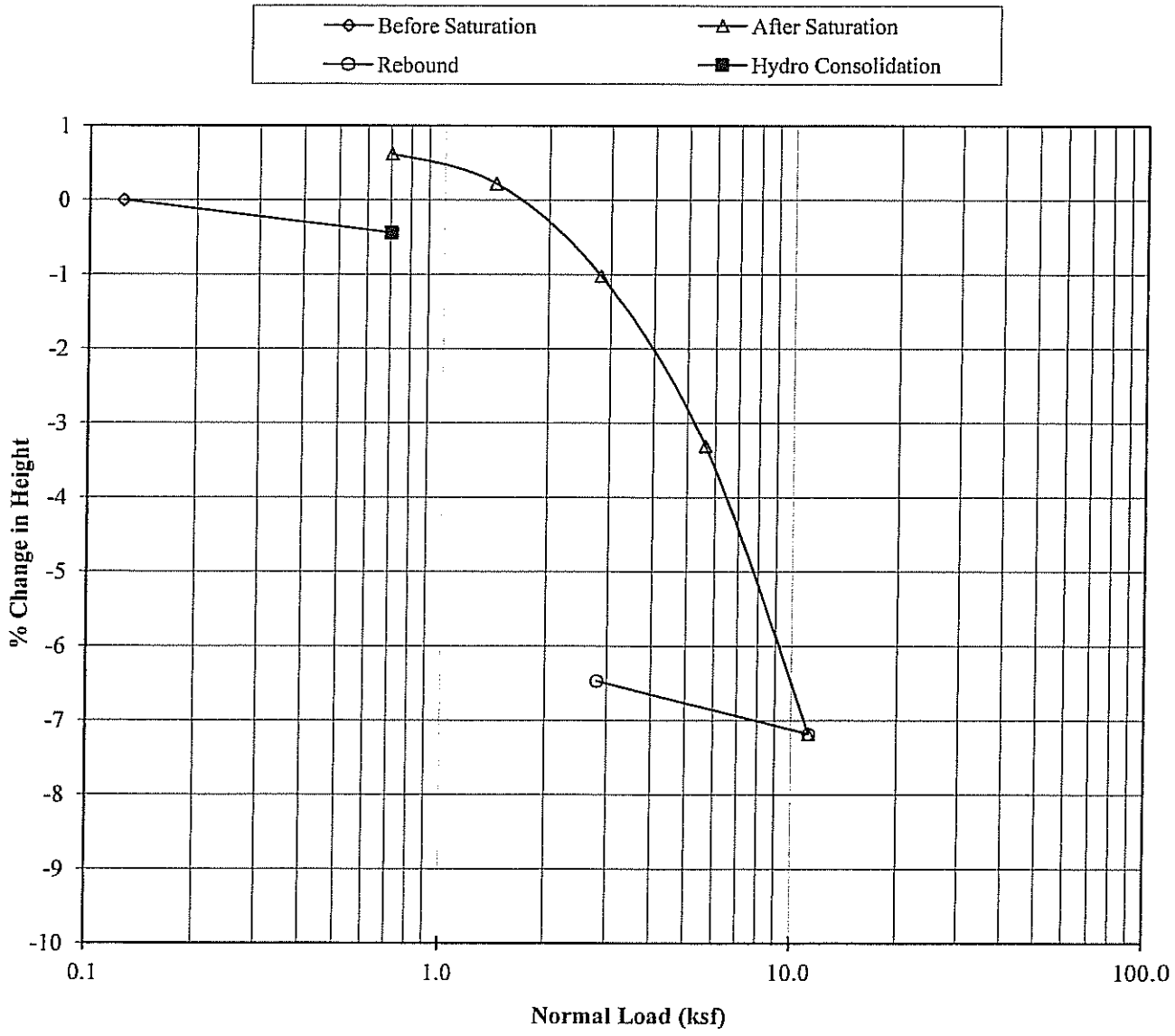
Job Number: 544-15270
Job Name: Torres Martinez Indian Tribal Complex

November 16, 2015

Lab ID Number: LN6-15590
Sample ID: BH-1 R-2 @ 5'
Soil Description: Gray Brown Silt (ML)

Initial Dry Density, pcf:	84.9
Initial Moisture, %:	12.0
Initial Void Ratio:	0.964
Specific Gravity:	2.67

% Change in Height vs Normal Presssure Diagram



Sladden Engineering

450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863

One Dimensional Consolidation

ASTM D2435 & D5333

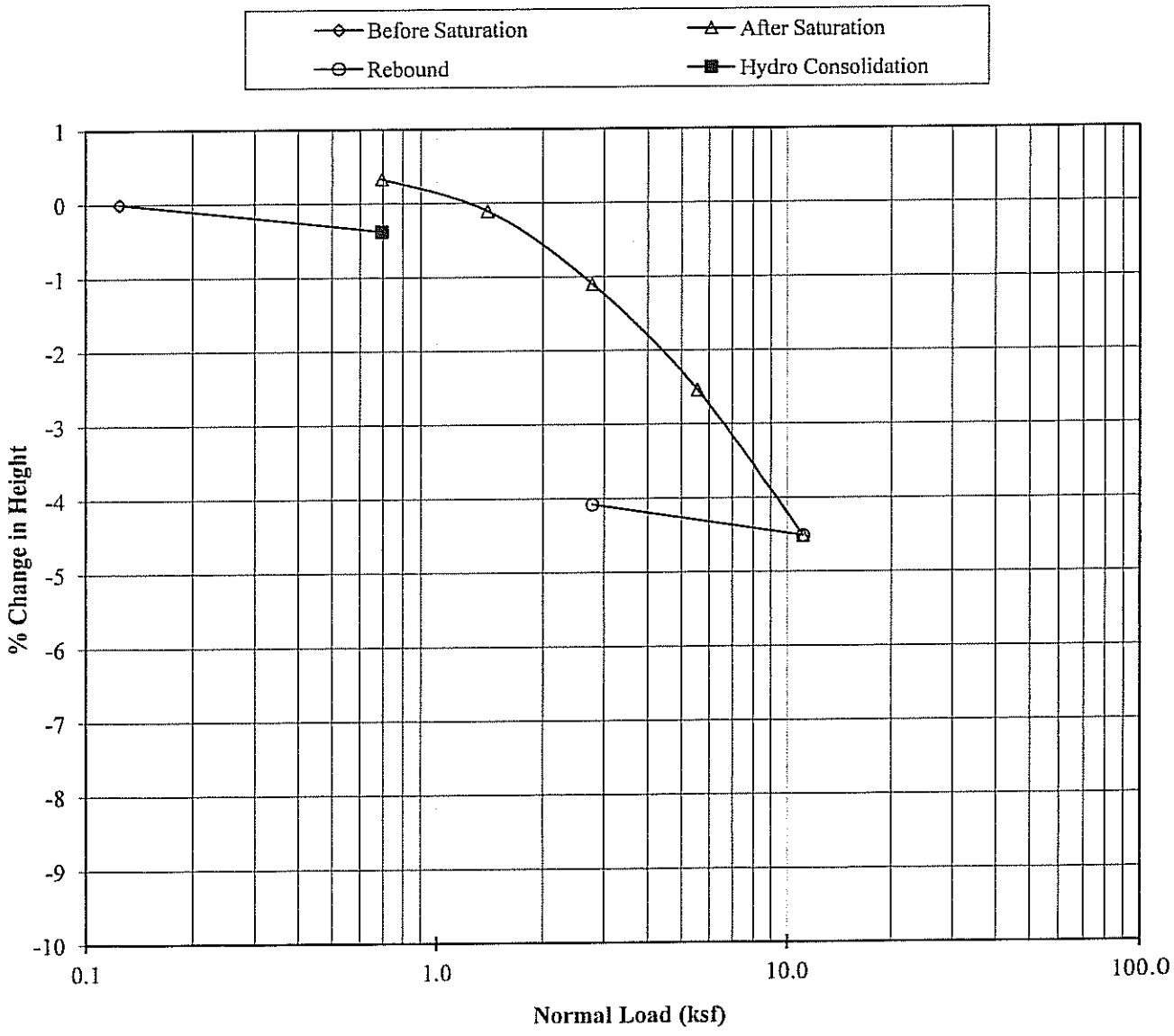
November 16, 2015

Job Number: 544-15270
Job Name: Torres Martinez Indian Tribal Complex

Lab ID Number: LN6-15590
Sample ID: BH-2 R-2 @ 10'
Soil Description: Gray Brown Sandy Silt (ML)

Initial Dry Density, pcf:	98.6
Initial Moisture, %:	5.8
Initial Void Ratio:	0.691
Specific Gravity:	2.67

% Change in Height vs Normal Presssure Diagram



Sladden Engineering

6782 Stanton Ave., Suite C, Buena Park, CA 90621 (714) 523-0952 Fax (714) 523-1369
45090 Golf Center Pkwy, Suite F, Indio, CA 92201 (760) 863-0713 Fax (760) 863-0847
450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863

Date: November 16, 2015

Account No.: 544-15270

Customer: Riverside-San Bernardino County Indian Health, Inc

Location: Torres Martinez Indian Tribal Complex, Thermal

Analytical Report

Corrosion Series

	pH per CA 643	Soluble Sulfates per CA 417 ppm	Soluble Chloride per CA 422 ppm	Min. Resistivity per CA 643 ohm-cm
BH-1 @ 0-5'	8.1	2200	1800	210

APPENDIX C

2013 SEISMIC DESIGN MAP AND REPORT
VS30 GRADIENT MAP
PSH DEAGGREGATION OUPUT

USGS Design Maps Summary Report

User–Specified Input

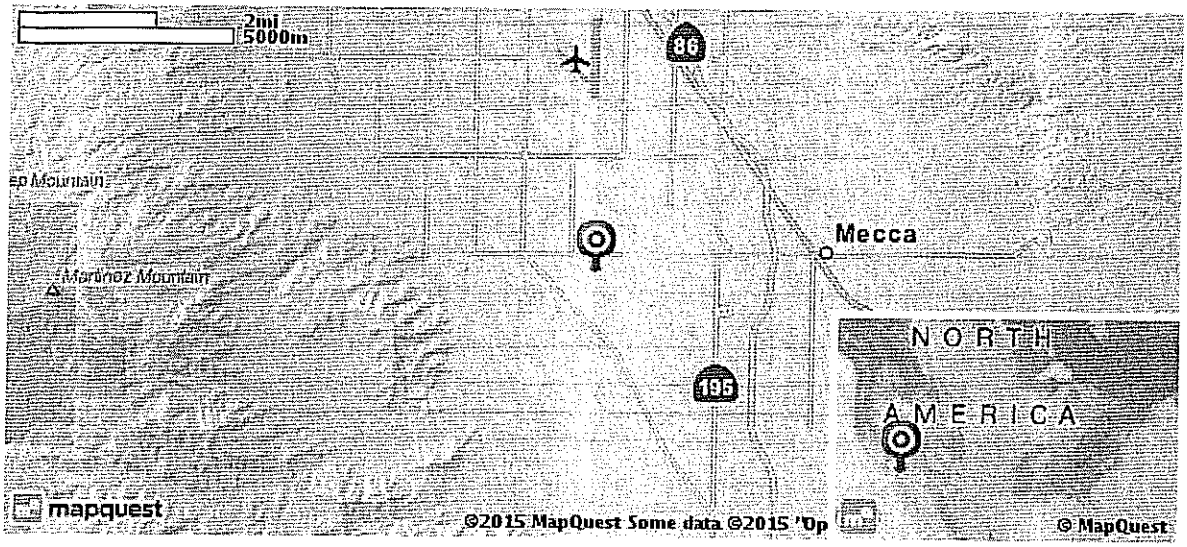
Report Title Torres Martinez
Mon November 16, 2015 22:52:59 UTC

Building Code Reference Document ASCE 7-10 Standard
(which utilizes USGS hazard data available in 2008)

Site Coordinates 33.56345°N, 116.1554°W

Site Soil Classification Site Class D – "Stiff Soil"

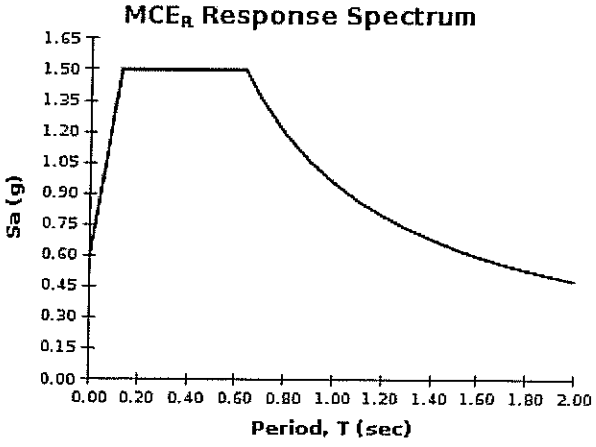
Risk Category I/II/III

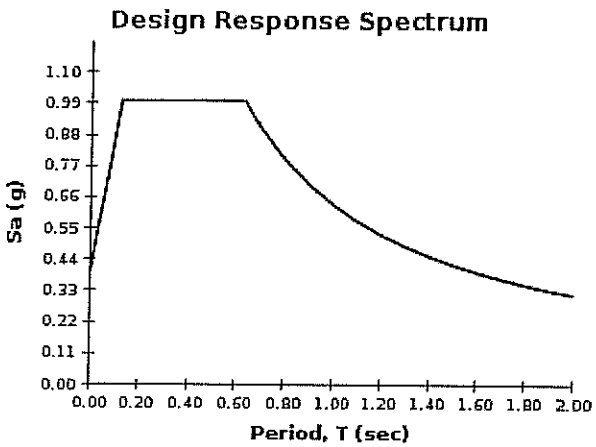


USGS–Provided Output

S_S =	1.500 g	S_{MS} =	1.500 g	S_{DS} =	1.000 g
S_1 =	0.635 g	S_{M1} =	0.953 g	S_{D1} =	0.635 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (33.56345°N, 116.1554°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] $S_1 = 0.635$ 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	$\overline{v}_S$	$\overline{N}$ or $\overline{N}_{ch}$	$\overline{s}_u$
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 $w \geq 40\%$, and • Undrained shear strength $\overline{s}_u$ < 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 = 0.635 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): $S_{M1} = F_v S_1 = 1.500 \times 0.635 = 0.953$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

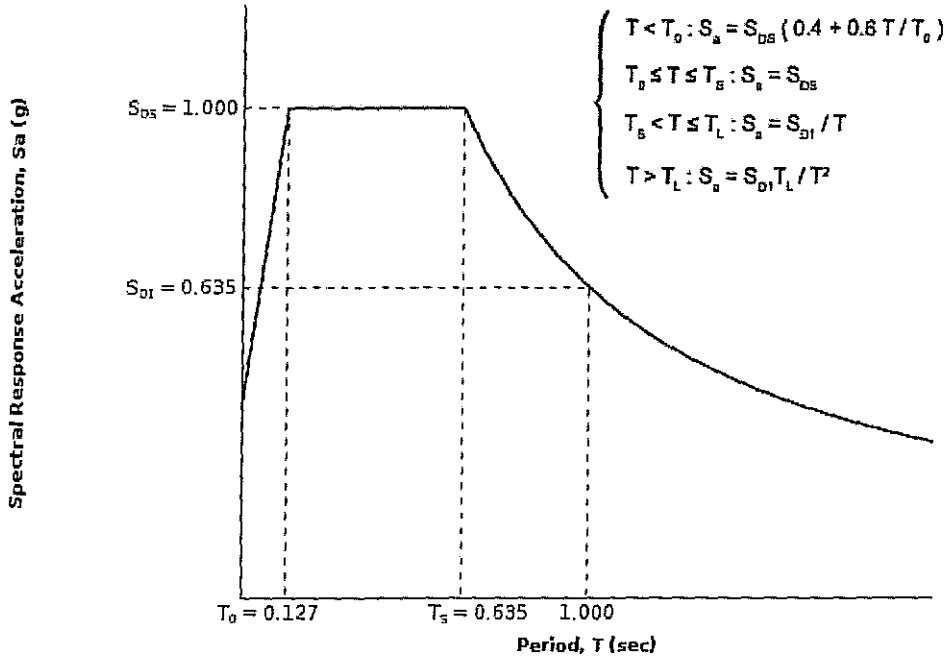
Equation (11.4-3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.500 = 1.000$ g

Equation (11.4-4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.953 = 0.635$ g

Section 11.4.5 — Design Response Spectrum

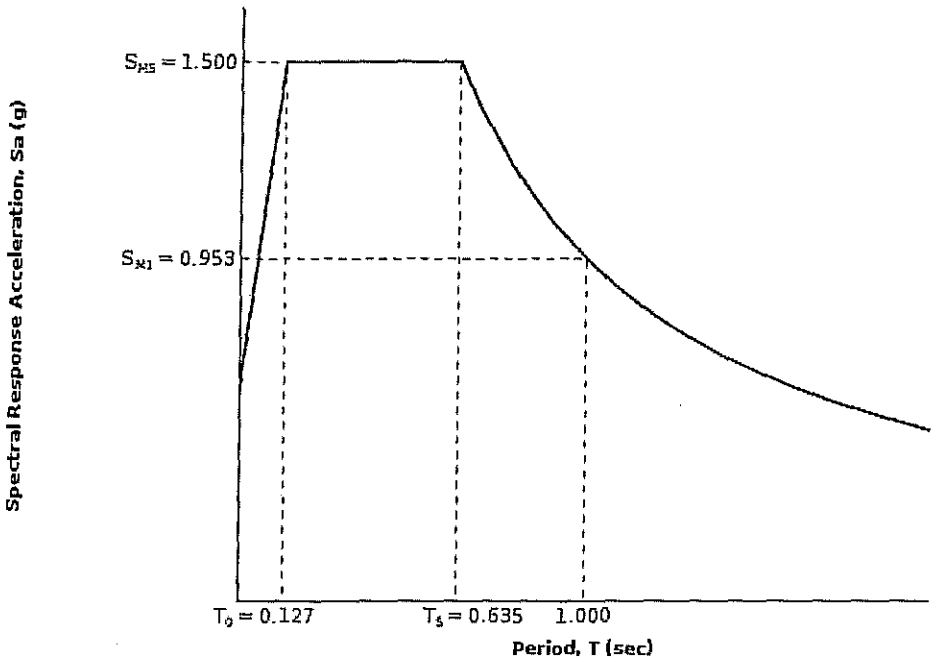
From Figure 22-12 [3] $T_L = 8$ seconds

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 = 0.554

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.554 = 0.554$ 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 = 0.554 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} = 1.052

From Figure 22-18 [6] C_{R1} = 1.018

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} = 0.635 g, Seismic Design Category = D

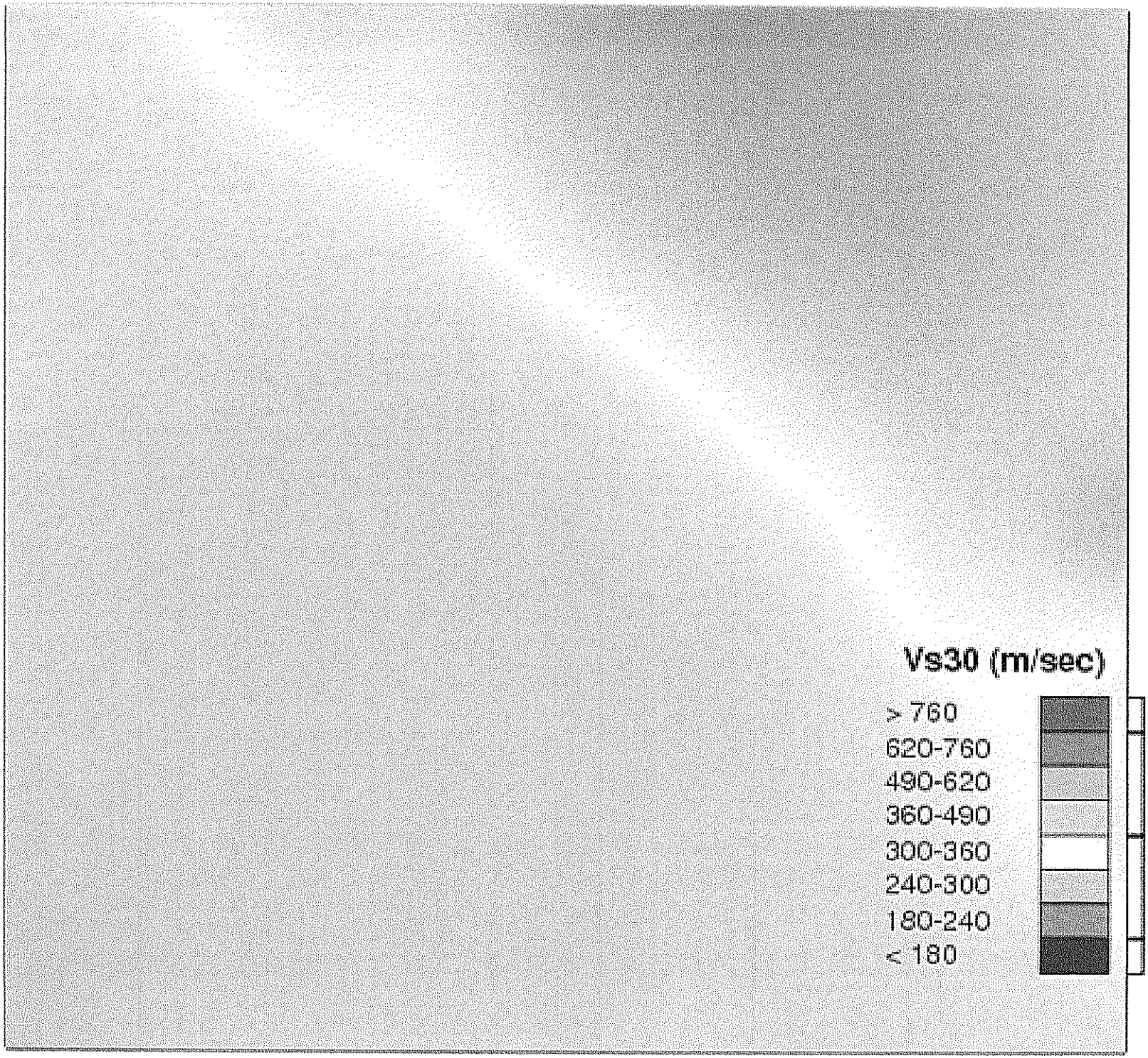
Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

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*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf


Vs30 (m/sec)
> 760
620-760
490-620
360-490
300-360
240-300
180-240
< 180
B
C
D
E

-116.187500 33.579166 334
-116.179169 33.579166 311
-116.170830 33.579166 284
-116.162498 33.579166 277
-116.154167 33.579166 236
-116.145836 33.579166 212
-116.137497 33.579166 205
-116.129166 33.579166 214
-116.120834 33.579166 235
-116.187500 33.570835 344
-116.179169 33.570835 334
-116.170830 33.570835 324
-116.162498 33.570835 308
-116.154167 33.570835 273
-116.145836 33.570835 241
-116.137497 33.570835 223
-116.129166 33.570835 221
-116.120834 33.570835 236
-116.187500 33.562500 347
-116.179169 33.562500 353
-116.170830 33.562500 357
-116.162498 33.562500 352
-116.154167 33.562500 328
-116.145836 33.562500 296
-116.137497 33.562500 261
-116.129166 33.562500 243
-116.120834 33.562500 249
-116.187500 33.554165 378
-116.179169 33.554165 368
-116.170830 33.554165 361
-116.162498 33.554165 368
-116.154167 33.554165 361
-116.145836 33.554165 337
-116.137497 33.554165 310
-116.129166 33.554165 271
-116.120834 33.554165 244
-116.187500 33.545834 403
-116.179169 33.545834 386
-116.170830 33.545834 366
-116.162498 33.545834 356
-116.154167 33.545834 364
-116.145836 33.545834 360
-116.137497 33.545834 337
-116.129166 33.545834 306
-116.120834 33.545834 304
-116.187500 33.537498 435
-116.179169 33.537498 405
-116.170830 33.537498 384
-116.162498 33.537498 365
-116.154167 33.537498 360
-116.145836 33.537498 355
-116.137497 33.537498 348

-116.129166 33.537498 322
-116.120834 33.537498 293
-116.187500 33.529167 463
-116.179169 33.529167 422
-116.170830 33.529167 394
-116.162498 33.529167 374
-116.154167 33.529167 369
-116.145836 33.529167 353
-116.137497 33.529167 354
-116.129166 33.529167 344
-116.120834 33.529167 332

PSH Deaggregation on NEHRP D soil

Torres_Martinez 116.155° W, 33.563 N.

Peak Horiz. Ground Accel.>=0.4729 g

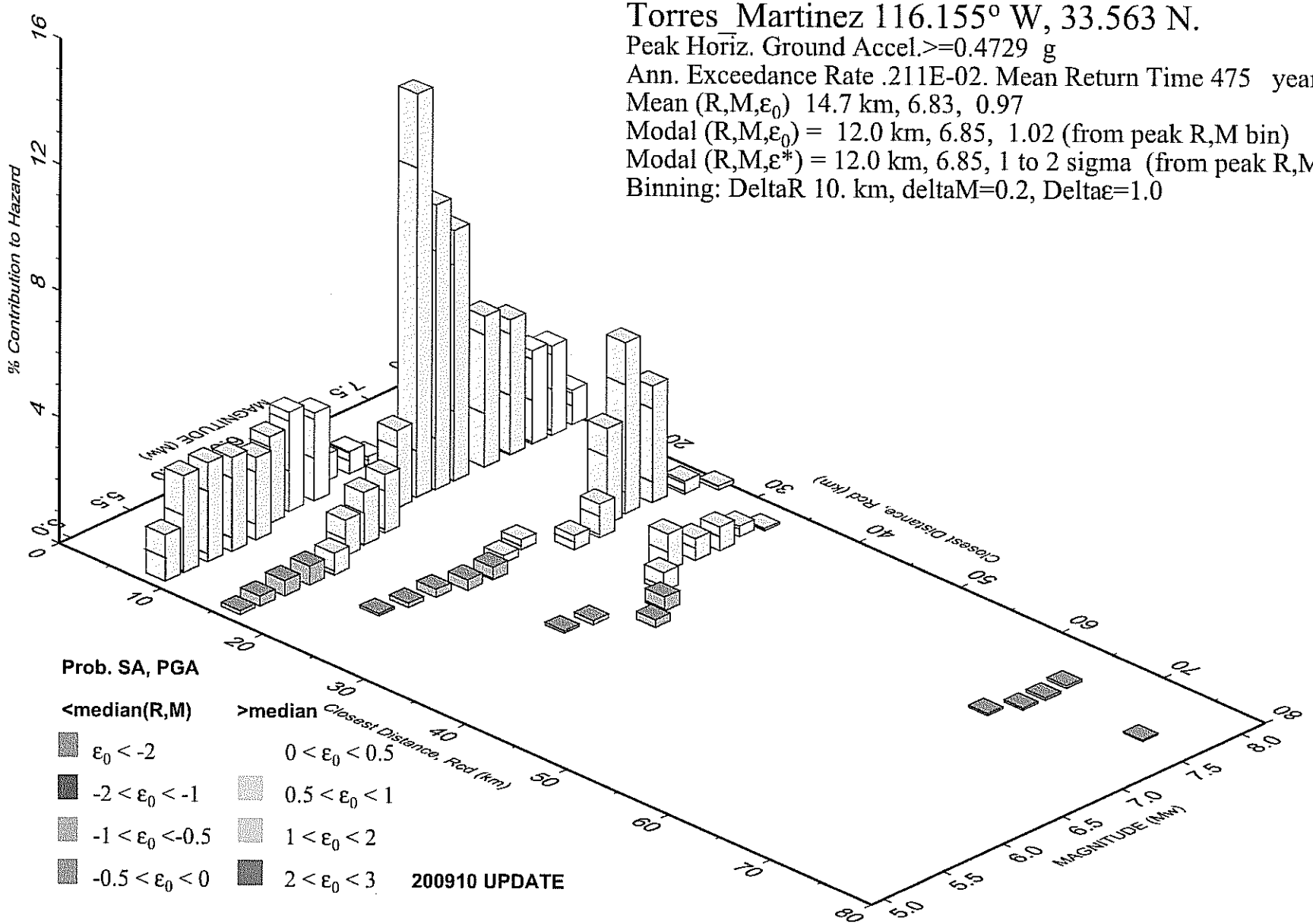
Ann. Exceedance Rate .211E-02. Mean Return Time 475 years

Mean (R,M,ε_0) 14.7 km, 6.83, 0.97

Modal (R,M,ε_0) = 12.0 km, 6.85, 1.02 (from peak R,M bin)

Modal (R,M,ε^*) = 12.0 km, 6.85, 1 to 2 sigma (from peak R,M,ε bin)

Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0



GMT 2015 Nov 16 23:16:39 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on soil with average vs= 300. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted

*** Deaggregation of Seismic Hazard at One Period of Spectral Accel. ***
*** Data from U.S.G.S. National Seismic Hazards Mapping Project, 2008 version ***
PSHA Deaggregation. %contributions. site: Torres_Martinez long: 116.155 W., lat: 33.563 N.
Vs30(m/s)= 300.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 475 yrs. Exceedance PGA =0.4729 g. Weight * Computed_Rate_Ex 0.211E-02
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00418
#This deaggregation corresponds to Mean Hazard w/all GMPEs

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
8.5	5.05	1.461	0.729	0.732	0.000	0.000	0.000	0.000
15.9	5.05	0.116	0.116	0.000	0.000	0.000	0.000	0.000
8.5	5.20	3.068	1.250	1.764	0.054	0.000	0.000	0.000
16.0	5.21	0.324	0.324	0.000	0.000	0.000	0.000	0.000
8.5	5.40	3.144	0.908	1.988	0.247	0.000	0.000	0.000
16.1	5.40	0.473	0.467	0.006	0.000	0.000	0.000	0.000
8.6	5.60	2.970	0.653	1.899	0.419	0.000	0.000	0.000
16.2	5.60	0.605	0.559	0.046	0.000	0.000	0.000	0.000
23.0	5.61	0.078	0.078	0.000	0.000	0.000	0.000	0.000
8.6	5.80	2.617	0.464	1.665	0.489	0.000	0.000	0.000
16.3	5.80	0.679	0.562	0.117	0.000	0.000	0.000	0.000
23.6	5.81	0.138	0.138	0.000	0.000	0.000	0.000	0.000
7.5	6.01	2.754	0.326	1.573	0.855	0.000	0.000	0.000
14.9	6.02	1.136	0.613	0.522	0.000	0.000	0.000	0.000
23.9	6.01	0.252	0.246	0.005	0.000	0.000	0.000	0.000
7.1	6.20	3.137	0.287	1.565	1.284	0.001	0.000	0.000
14.5	6.20	1.654	0.649	0.984	0.021	0.000	0.000	0.000
24.7	6.21	0.320	0.301	0.018	0.000	0.000	0.000	0.000
34.1	6.21	0.062	0.062	0.000	0.000	0.000	0.000	0.000

0.000	0.000					
7.3	6.40	2.794	0.213	1.229	1.319	0.034
0.000	0.000					
14.3	6.40	1.844	0.524	1.215	0.105	0.000
0.000	0.000					
24.8	6.41	0.401	0.343	0.058	0.000	0.000
0.000	0.000					
34.7	6.41	0.127	0.127	0.000	0.000	0.000
0.000	0.000					
5.7	6.60	0.836	0.055	0.320	0.434	0.027
0.000	0.000					
12.3	6.67	2.480	0.551	1.724	0.205	0.000
0.000	0.000					
23.5	6.61	0.228	0.179	0.049	0.000	0.000
0.000	0.000					
38.1	6.63	0.247	0.242	0.005	0.000	0.000
0.000	0.000					
6.1	6.80	0.705	0.044	0.259	0.370	0.033
0.000	0.000					
12.0	6.85	12.763	2.341	8.953	1.469	0.000
0.000	0.000					
22.9	6.80	0.304	0.182	0.122	0.000	0.000
0.000	0.000					
36.8	6.83	0.435	0.376	0.059	0.000	0.000
0.000	0.000					
6.2	6.95	0.281	0.017	0.099	0.151	0.015
0.000	0.000					
12.1	7.00	9.009	1.444	5.935	1.630	0.000
0.000	0.000					
25.6	7.02	0.454	0.210	0.240	0.004	0.000
0.000	0.000					
34.6	7.00	0.584	0.432	0.152	0.000	0.000
0.000	0.000					
12.1	7.16	7.925	1.090	4.638	2.197	0.000
0.000	0.000					
25.5	7.24	1.055	0.396	0.573	0.086	0.000
0.000	0.000					
32.5	7.21	1.146	0.569	0.577	0.000	0.000
0.000	0.000					
64.3	7.19	0.054	0.054	0.000	0.000	0.000
0.000	0.000					
12.2	7.41	4.769	0.578	2.505	1.686	0.000
0.000	0.000					
24.4	7.39	3.015	0.883	1.909	0.222	0.000
0.000	0.000					
32.8	7.42	0.681	0.294	0.387	0.000	0.000
0.000	0.000					
65.5	7.39	0.053	0.053	0.001	0.000	0.000
0.000	0.000					
12.2	7.63	4.281	0.451	1.947	1.829	0.055
0.000	0.000					
24.3	7.56	5.418	1.329	3.397	0.692	0.000

0.000	0.000					
33.0	7.61	0.757	0.312	0.432	0.013	0.000
0.000	0.000					
65.5	7.57	0.072	0.063	0.009	0.000	0.000
0.000	0.000					
74.9	7.59	0.051	0.051	0.000	0.000	0.000
0.000	0.000					
12.1	7.82	2.951	0.274	1.291	1.328	0.059
0.000	0.000					
24.4	7.78	3.697	0.719	2.315	0.663	0.000
0.000	0.000					
32.5	7.82	0.332	0.103	0.209	0.020	0.000
0.000	0.000					
65.3	7.77	0.083	0.066	0.018	0.000	0.000
0.000	0.000					
12.1	7.98	2.823	0.264	1.093	1.315	0.151
0.000	0.000					
25.1	7.99	0.393	0.071	0.250	0.072	0.000
0.000	0.000					
33.1	7.98	0.069	0.018	0.045	0.005	0.000
0.000	0.000					
12.0	8.17	1.087	0.085	0.414	0.541	0.047
0.000	0.000					
26.4	8.17	0.126	0.018	0.072	0.036	0.000
0.000	0.000					

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 100.0
Mean src-site R= 14.7 km; M= 6.83; eps0= 0.97. Mean calculated for all sources.
Modal src-site R= 12.0 km; M= 6.85; eps0= 1.02 from peak (R,M) bin
MODE R*= 12.0km; M*= 6.85; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 8.953

Principal sources (faults, subduction, random seismicity having > 3% contribution)

Source Category: (mean values).	% contr.	R(km)	M	epsilon0
California A-faults	64.71	16.3	7.29	0.91
CA Compr. crustal gridded	32.72	10.5	5.90	1.06

Individual fault hazard details if its contribution to mean hazard > 2%:

Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
San Jacinto;A+C aPriori	4.33	23.9	7.50	1.15	-146.7
S. S.Andr.;CO aPriori	6.53	12.0	6.97	0.91	44.4
S. S.Andr.;BG+CO aPriori	2.54	12.0	7.36	0.65	44.7

S. San Andreas;CO MoBal 22.83 12.0 6.94 0.93
44.4
S. San Andreas Unsegmented A-flt 3.26 14.0 7.72 0.56
36.2
#*********End of deaggregation corresponding to Mean Hazard w/all
GMPEs *********#

PSHA Deaggregation. %contributions. site: Torres_Martinez long:
116.155 W., lat: 33.563 N.
Vs30(m/s)= 300.0 (some WUS atten. models use Site Class not
Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 475 yrs. Exceedance PGA =0.4729 g. Weight *
Computed_Rate_Ex 0.908E-03
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00311
#This deaggregation corresponds to Boore-Atkinson 2008
DIST(KM) MAG(MW) ALL_EPS EPSILON>2 1<EPS<2 0<EPS<1 -1<EPS<0 -2
<EPS<-1 EPS<-2
8.3 5.05 0.131 0.131 0.000 0.000 0.000
0.000 0.000
8.4 5.20 0.329 0.318 0.011 0.000 0.000
0.000 0.000
8.4 5.40 0.402 0.350 0.051 0.000 0.000
0.000 0.000
15.9 5.41 0.035 0.035 0.000 0.000 0.000
0.000 0.000
8.5 5.60 0.452 0.351 0.101 0.000 0.000
0.000 0.000
16.2 5.61 0.080 0.080 0.000 0.000 0.000
0.000 0.000
8.5 5.80 0.475 0.324 0.151 0.000 0.000
0.000 0.000
16.4 5.80 0.127 0.127 0.000 0.000 0.000
0.000 0.000
24.0 5.81 0.037 0.037 0.000 0.000 0.000
0.000 0.000
7.4 6.01 0.619 0.288 0.330 0.000 0.000
0.000 0.000
15.0 6.02 0.251 0.244 0.007 0.000 0.000
0.000 0.000
24.3 6.01 0.089 0.089 0.000 0.000 0.000
0.000 0.000
7.0 6.20 0.769 0.281 0.488 0.000 0.000
0.000 0.000
14.9 6.20 0.408 0.372 0.035 0.000 0.000
0.000 0.000
25.0 6.21 0.133 0.133 0.000 0.000 0.000
0.000 0.000
34.4 6.21 0.042 0.042 0.000 0.000 0.000
0.000 0.000
7.2 6.40 0.699 0.211 0.488 0.000 0.000
0.000 0.000

14.6	6.40	0.490	0.387	0.102	0.000	0.000
0.000	0.000					
25.1	6.41	0.177	0.177	0.000	0.000	0.000
0.000	0.000					
35.1	6.41	0.089	0.089	0.000	0.000	0.000
0.000	0.000					
45.3	6.43	0.028	0.028	0.000	0.000	0.000
0.000	0.000					
5.7	6.60	0.204	0.055	0.148	0.002	0.000
0.000	0.000					
12.3	6.67	1.198	0.276	0.824	0.098	0.000
0.000	0.000					
23.7	6.61	0.148	0.134	0.015	0.000	0.000
0.000	0.000					
38.3	6.64	0.239	0.233	0.005	0.000	0.000
0.000	0.000					
44.9	6.59	0.037	0.037	0.000	0.000	0.000
0.000	0.000					
6.1	6.80	0.182	0.044	0.135	0.003	0.000
0.000	0.000					
12.0	6.85	6.407	1.003	4.658	0.746	0.000
0.000	0.000					
23.3	6.80	0.202	0.152	0.050	0.000	0.000
0.000	0.000					
36.9	6.83	0.408	0.351	0.057	0.000	0.000
0.000	0.000					
44.7	6.79	0.049	0.049	0.000	0.000	0.000
0.000	0.000					
64.7	6.80	0.022	0.022	0.000	0.000	0.000
0.000	0.000					
6.2	6.95	0.073	0.017	0.055	0.001	0.000
0.000	0.000					
12.1	7.00	4.392	0.634	2.955	0.803	0.000
0.000	0.000					
25.7	7.02	0.354	0.153	0.197	0.004	0.000
0.000	0.000					
34.9	7.00	0.489	0.351	0.138	0.000	0.000
0.000	0.000					
45.7	7.00	0.031	0.031	0.000	0.000	0.000
0.000	0.000					
12.1	7.16	3.767	0.464	2.245	1.058	0.000
0.000	0.000					
25.6	7.24	0.740	0.207	0.448	0.086	0.000
0.000	0.000					
32.6	7.21	0.977	0.441	0.537	0.000	0.000
0.000	0.000					
44.3	7.20	0.030	0.030	0.000	0.000	0.000
0.000	0.000					
64.3	7.19	0.054	0.054	0.000	0.000	0.000
0.000	0.000					
73.4	7.22	0.036	0.036	0.000	0.000	0.000
0.000	0.000					

12.2	7.42	2.354	0.248	1.236	0.870	0.000
0.000	0.000					
24.4	7.39	1.927	0.508	1.208	0.211	0.000
0.000	0.000					
32.9	7.42	0.512	0.194	0.318	0.000	0.000
0.000	0.000					
44.0	7.41	0.031	0.026	0.005	0.000	0.000
0.000	0.000					
65.5	7.39	0.052	0.051	0.001	0.000	0.000
0.000	0.000					
72.8	7.39	0.025	0.025	0.000	0.000	0.000
0.000	0.000					
12.2	7.64	1.852	0.185	0.901	0.766	0.000
0.000	0.000					
24.3	7.56	3.369	0.664	2.155	0.550	0.000
0.000	0.000					
33.0	7.61	0.566	0.189	0.364	0.013	0.000
0.000	0.000					
65.5	7.57	0.068	0.059	0.009	0.000	0.000
0.000	0.000					
74.9	7.58	0.048	0.048	0.000	0.000	0.000
0.000	0.000					
12.1	7.80	1.096	0.089	0.492	0.509	0.005
0.000	0.000					
24.5	7.77	2.293	0.368	1.488	0.438	0.000
0.000	0.000					
32.5	7.82	0.225	0.054	0.152	0.020	0.000
0.000	0.000					
65.3	7.76	0.075	0.057	0.018	0.000	0.000
0.000	0.000					
12.1	7.97	1.561	0.117	0.655	0.751	0.038
0.000	0.000					
25.1	7.99	0.221	0.031	0.147	0.043	0.000
0.000	0.000					
33.2	7.98	0.045	0.009	0.030	0.005	0.000
0.000	0.000					
75.5	7.99	0.035	0.028	0.007	0.000	0.000
0.000	0.000					
12.0	8.17	0.502	0.034	0.201	0.250	0.016
0.000	0.000					
26.4	8.16	0.077	0.009	0.046	0.022	0.000
0.000	0.000					

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 43.1
Mean src-site R= 17.3 km; M= 7.10; eps0= 1.00. Mean calculated for all sources.
Modal src-site R= 12.0 km; M= 6.85; eps0= 0.96 from peak (R,M) bin
MODE R*= 12.0km; M*= 6.85; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 4.658

Principal sources (faults, subduction, random seismicity having > 3% contribution)

Source Category:	% contr.	R(km)	M	epsilon0
(mean values).				
California A-faults	34.86	17.8	7.29	0.91
CA Compr. crustal gridded	6.70	11.8	6.08	1.33

Individual fault hazard details if its contribution to mean hazard > 2%:

Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
San Jacinto;A+C aPriori	2.75	23.9	7.49	1.05	-146.7
S. S.Andr.;CO aPriori	3.21	12.0	6.97	0.86	44.4
S. S.Andr.;BG+CO aPriori	1.19	12.0	7.36	0.63	44.7
S. San Andreas;CO MoBal	11.28	12.0	6.94	0.88	44.4
S. San Andreas Unsegmented A-flt	1.65	14.9	7.70	0.61	36.2

#*********End of deaggregation corresponding to Boore-Atkinson 2008 *********#

PSHA Deaggregation. %contributions. site: Torres_Martinez long: 116.155 W., lat: 33.563 N.
Vs30(m/s)= 300.0 (some WUS atten. models use Site Class not Vs30).
NSHMP 2007-08 See USGS OFR 2008-1128. dM=0.2 below
Return period: 475 yrs. Exceedance PGA =0.4729 g. Weight * Computed_Rate_Ex 0.236E-03
#Pr[at least one eq with median motion>=PGA in 50 yrs]=0.00052
#This deaggregation corresponds to Campbell-Bozorgnia 2008

DIST(KM)	MAG(MW)	ALL_EPS	EPSILON>2	1<EPS<2	0<EPS<1	-1<EPS<0	-2<EPS<-1	EPS<-2
8.4	5.05	0.328	0.280	0.048	0.000	0.000	0.000	0.000
15.3	5.05	0.006	0.006	0.000	0.000	0.000	0.000	0.000
8.5	5.20	0.787	0.595	0.192	0.000	0.000	0.000	0.000
15.6	5.22	0.037	0.037	0.000	0.000	0.000	0.000	0.000
8.5	5.40	0.940	0.613	0.327	0.000	0.000	0.000	0.000
15.9	5.41	0.100	0.100	0.000	0.000	0.000	0.000	0.000
8.6	5.60	0.917	0.516	0.401	0.000	0.000	0.000	0.000
16.1	5.60	0.150	0.150	0.000	0.000	0.000	0.000	0.000
22.6	5.61	0.013	0.013	0.000	0.000	0.000	0.000	0.000

0.000	0.000					
8.6	5.80	0.763	0.393	0.370	0.000	0.000
0.000	0.000					
16.2	5.80	0.159	0.159	0.000	0.000	0.000
0.000	0.000					
23.1	5.81	0.023	0.023	0.000	0.000	0.000
0.000	0.000					
7.5	6.01	0.750	0.301	0.449	0.000	0.000
0.000	0.000					
14.7	6.02	0.264	0.247	0.017	0.000	0.000
0.000	0.000					
23.3	6.01	0.041	0.041	0.000	0.000	0.000
0.000	0.000					
7.1	6.20	0.857	0.281	0.576	0.000	0.000
0.000	0.000					
14.3	6.20	0.385	0.334	0.051	0.000	0.000
0.000	0.000					
24.3	6.21	0.052	0.052	0.000	0.000	0.000
0.000	0.000					
7.3	6.40	0.796	0.211	0.576	0.009	0.000
0.000	0.000					
14.0	6.40	0.435	0.326	0.109	0.000	0.000
0.000	0.000					
24.6	6.41	0.067	0.067	0.000	0.000	0.000
0.000	0.000					
33.7	6.41	0.010	0.010	0.000	0.000	0.000
0.000	0.000					
5.7	6.60	0.281	0.055	0.209	0.017	0.000
0.000	0.000					
12.8	6.63	0.188	0.140	0.048	0.000	0.000
0.000	0.000					
23.4	6.60	0.033	0.033	0.000	0.000	0.000
0.000	0.000					
6.0	6.80	0.221	0.044	0.164	0.013	0.000
0.000	0.000					
12.2	6.85	0.568	0.449	0.120	0.000	0.000
0.000	0.000					
22.3	6.80	0.036	0.036	0.000	0.000	0.000
0.000	0.000					
33.6	6.81	0.006	0.006	0.000	0.000	0.000
0.000	0.000					
6.1	6.95	0.086	0.017	0.064	0.005	0.000
0.000	0.000					
12.5	7.00	0.459	0.292	0.167	0.000	0.000
0.000	0.000					
24.6	7.00	0.017	0.017	0.000	0.000	0.000
0.000	0.000					
32.6	6.99	0.007	0.007	0.000	0.000	0.000
0.000	0.000					
12.3	7.16	0.411	0.218	0.193	0.000	0.000
0.000	0.000					
25.7	7.24	0.036	0.035	0.000	0.000	0.000

0.000 0.000
32.6 7.21 0.009 0.009 0.000 0.000 0.000
0.000 0.000
12.4 7.42 0.255 0.134 0.121 0.000 0.000
0.000 0.000
24.0 7.40 0.059 0.057 0.002 0.000 0.000
0.000 0.000
33.7 7.41 0.008 0.008 0.000 0.000 0.000
0.000 0.000
12.5 7.64 0.185 0.097 0.088 0.000 0.000
0.000 0.000
24.3 7.55 0.091 0.090 0.001 0.000 0.000
0.000 0.000
33.5 7.57 0.007 0.007 0.000 0.000 0.000
0.000 0.000
12.0 7.80 0.094 0.050 0.044 0.000 0.000
0.000 0.000
24.3 7.77 0.061 0.061 0.000 0.000 0.000
0.000 0.000
12.0 7.97 0.140 0.076 0.064 0.000 0.000
0.000 0.000
25.5 7.96 0.009 0.008 0.000 0.000 0.000
0.000 0.000
12.0 8.21 0.025 0.016 0.009 0.000 0.000
0.000 0.000

Summary statistics for above PSHA PGA deaggregation, R=distance, e=epsilon:
Contribution from this GMPE(%): 11.2
Mean src-site R= 10.7 km; M= 6.20; eps0= 1.28. Mean calculated for all sources.
Modal src-site R= 8.5 km; M= 5.40; eps0= 1.23 from peak (R,M) bin
MODE R*= 8.5km; M*= 5.40; EPS.INTERVAL: 1 to 2 sigma % CONTRIB.= 0.613

Principal sources (faults, subduction, random seismicity having > 3% contribution)

Source Category: (mean values).	% contr.	R(km)	M	epsilon0
CA Compr. crustal gridded	8.65	9.7	5.91	1.12

Individual fault hazard details if its contribution to mean hazard > 2%:

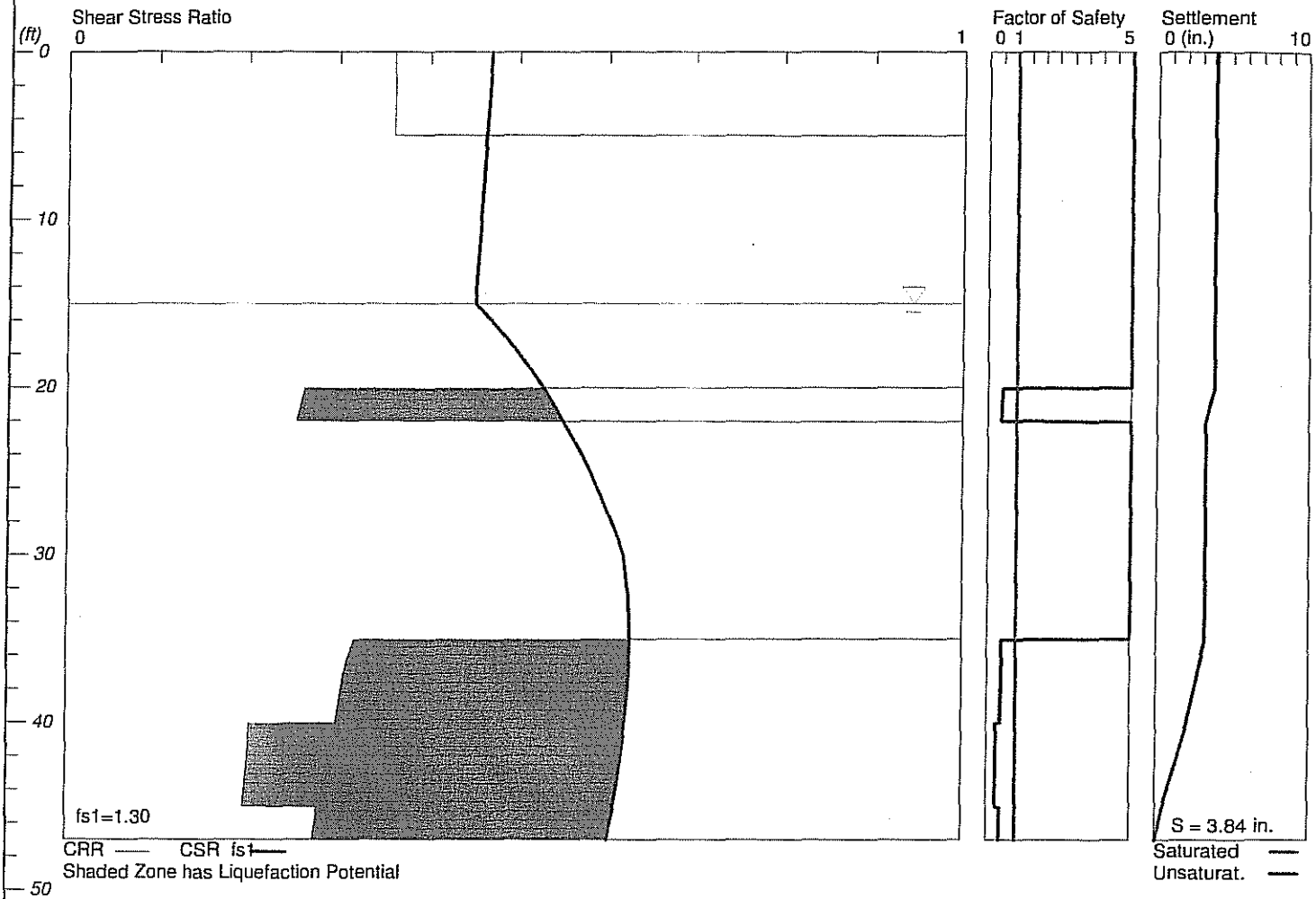
Fault ID	% contr.	Rcd(km)	M	epsilon0	Site-to-src azimuth(d)
San Jacinto;A+C aPriori	0.07	23.9	7.50	2.16	-146.7
S. S.Andr.;CO aPriori	0.29	12.0	6.98	1.87	44.4
S. S.Andr.;BG+CO aPriori	0.13	12.0	7.36	1.64	44.7
S. San Andreas;CO MoBal	1.00	12.0	6.96	1.90	

LIQUEFACTION ANALYSIS

Torres Martinez

Hole No.=BH-1 Water Depth=15 ft Surface Elev.=-130

Magnitude=6.85
Acceleration=0.554g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: C:\Liquefy5\Torres Martinez Health Clinic.liq
Title: Torres Martinez
Subtitle: 544-15270

Surface Elev.=-130
Hole No.=BH-1
Depth of Hole= 47.00 ft
Water Table during Earthquake= 15.00 ft
Water Table during In-Situ Testing= 37.00 ft
Max. Acceleration= 0.55 g
Earthquake Magnitude= 6.85

Input Data:
Surface Elev.=-130
Hole No.=BH-1
Depth of Hole=47.00 ft
Water Table during Earthquake= 15.00 ft
Water Table during In-Situ Testing= 37.00 ft
Max. Acceleration=0.55 g
Earthquake Magnitude=6.85
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
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
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: No

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	11.30	99.90	49.60
2.00	11.30	99.90	49.60
5.00	10.00	95.00	NoLiq
10.00	7.00	95.00	NoLiq
15.00	10.00	116.40	NoLiq
20.00	10.00	116.40	43.40
22.00	24.60	112.00	NoLiq
25.00	24.60	112.00	NoLiq
30.00	12.00	112.00	NoLiq
35.00	17.30	122.00	34.20
40.00	10.00	122.00	32.30

45.00	18.60	126.70	27.30
47.00	18.60	126.70	27.30

Output Results:

Settlement of Saturated Sands=3.81 in.
Settlement of Unsaturated Sands=0.03 in.
Total Settlement of Saturated and Unsaturated Sands=3.84 in.
Differential Settlement=1.919 to 2.532 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.36	0.47	5.00	3.81	0.03	3.84
0.05	0.36	0.47	5.00	3.81	0.03	3.84
0.10	0.36	0.47	5.00	3.81	0.03	3.84
0.15	0.36	0.47	5.00	3.81	0.03	3.84
0.20	0.36	0.47	5.00	3.81	0.03	3.84
0.25	0.36	0.47	5.00	3.81	0.03	3.84
0.30	0.36	0.47	5.00	3.81	0.03	3.84
0.35	0.36	0.47	5.00	3.81	0.03	3.84
0.40	0.36	0.47	5.00	3.81	0.03	3.84
0.45	0.36	0.47	5.00	3.81	0.03	3.84
0.50	0.36	0.47	5.00	3.81	0.03	3.84
0.55	0.36	0.47	5.00	3.81	0.03	3.84
0.60	0.36	0.47	5.00	3.81	0.03	3.84
0.65	0.36	0.47	5.00	3.81	0.03	3.84
0.70	0.36	0.47	5.00	3.81	0.03	3.84
0.75	0.36	0.47	5.00	3.81	0.03	3.84
0.80	0.36	0.47	5.00	3.81	0.03	3.84
0.85	0.36	0.47	5.00	3.81	0.03	3.84
0.90	0.36	0.47	5.00	3.81	0.03	3.84
0.95	0.36	0.47	5.00	3.81	0.03	3.84
1.00	0.36	0.47	5.00	3.81	0.03	3.84
1.05	0.36	0.47	5.00	3.81	0.03	3.84
1.10	0.36	0.47	5.00	3.81	0.03	3.84
1.15	0.36	0.47	5.00	3.81	0.03	3.83
1.20	0.36	0.47	5.00	3.81	0.03	3.83
1.25	0.36	0.47	5.00	3.81	0.03	3.83
1.30	0.36	0.47	5.00	3.81	0.03	3.83
1.35	0.36	0.47	5.00	3.81	0.03	3.83
1.40	0.36	0.47	5.00	3.81	0.03	3.83
1.45	0.36	0.47	5.00	3.81	0.03	3.83
1.50	0.36	0.47	5.00	3.81	0.03	3.83
1.55	0.36	0.47	5.00	3.81	0.02	3.83
1.60	0.36	0.47	5.00	3.81	0.02	3.83
1.65	0.36	0.47	5.00	3.81	0.02	3.83
1.70	0.36	0.47	5.00	3.81	0.02	3.83
1.75	0.36	0.47	5.00	3.81	0.02	3.83
1.80	0.36	0.47	5.00	3.81	0.02	3.83
1.85	0.36	0.47	5.00	3.81	0.02	3.83
1.90	0.36	0.47	5.00	3.81	0.02	3.83
1.95	0.36	0.47	5.00	3.81	0.02	3.83
2.00	0.36	0.47	5.00	3.81	0.02	3.83
2.05	0.36	0.47	5.00	3.81	0.02	3.83
2.10	0.36	0.47	5.00	3.81	0.02	3.83
2.15	0.36	0.47	5.00	3.81	0.02	3.83
2.20	0.36	0.47	5.00	3.81	0.02	3.83
2.25	0.36	0.47	5.00	3.81	0.02	3.83
2.30	0.36	0.47	5.00	3.81	0.02	3.83
2.35	0.36	0.47	5.00	3.81	0.02	3.83
2.40	0.36	0.47	5.00	3.81	0.02	3.83
2.45	0.36	0.47	5.00	3.81	0.02	3.83

2.50	0.36	0.47	5.00	3.81	0.02	3.83
2.55	0.36	0.47	5.00	3.81	0.02	3.83
2.60	0.36	0.47	5.00	3.81	0.02	3.83
2.65	0.36	0.47	5.00	3.81	0.02	3.83
2.70	0.36	0.47	5.00	3.81	0.02	3.83
2.75	0.36	0.47	5.00	3.81	0.02	3.83
2.80	0.36	0.47	5.00	3.81	0.02	3.83
2.85	0.36	0.47	5.00	3.81	0.02	3.83
2.90	0.36	0.46	5.00	3.81	0.02	3.83
2.95	0.36	0.46	5.00	3.81	0.02	3.83
3.00	0.36	0.46	5.00	3.81	0.02	3.83
3.05	0.36	0.46	5.00	3.81	0.02	3.83
3.10	0.36	0.46	5.00	3.81	0.02	3.83
3.15	0.36	0.46	5.00	3.81	0.02	3.83
3.20	0.36	0.46	5.00	3.81	0.02	3.83
3.25	0.36	0.46	5.00	3.81	0.02	3.83
3.30	0.36	0.46	5.00	3.81	0.02	3.83
3.35	0.36	0.46	5.00	3.81	0.02	3.83
3.40	0.36	0.46	5.00	3.81	0.02	3.82
3.45	0.36	0.46	5.00	3.81	0.02	3.82
3.50	0.36	0.46	5.00	3.81	0.02	3.82
3.55	0.36	0.46	5.00	3.81	0.02	3.82
3.60	0.36	0.46	5.00	3.81	0.02	3.82
3.65	0.36	0.46	5.00	3.81	0.01	3.82
3.70	0.36	0.46	5.00	3.81	0.01	3.82
3.75	0.36	0.46	5.00	3.81	0.01	3.82
3.80	0.36	0.46	5.00	3.81	0.01	3.82
3.85	0.36	0.46	5.00	3.81	0.01	3.82
3.90	0.36	0.46	5.00	3.81	0.01	3.82
3.95	0.36	0.46	5.00	3.81	0.01	3.82
4.00	0.36	0.46	5.00	3.81	0.01	3.82
4.05	0.36	0.46	5.00	3.81	0.01	3.82
4.10	0.36	0.46	5.00	3.81	0.01	3.82
4.15	0.36	0.46	5.00	3.81	0.01	3.82
4.20	0.36	0.46	5.00	3.81	0.01	3.82
4.25	0.36	0.46	5.00	3.81	0.01	3.82
4.30	0.36	0.46	5.00	3.81	0.01	3.82
4.35	0.36	0.46	5.00	3.81	0.01	3.82
4.40	0.36	0.46	5.00	3.81	0.01	3.82
4.45	0.36	0.46	5.00	3.81	0.01	3.82
4.50	0.36	0.46	5.00	3.81	0.01	3.82
4.55	0.36	0.46	5.00	3.81	0.01	3.82
4.60	0.36	0.46	5.00	3.81	0.01	3.81
4.65	0.36	0.46	5.00	3.81	0.01	3.81
4.70	0.36	0.46	5.00	3.81	0.00	3.81
4.75	0.36	0.46	5.00	3.81	0.00	3.81
4.80	0.36	0.46	5.00	3.81	0.00	3.81
4.85	0.36	0.46	5.00	3.81	0.00	3.81
4.90	0.36	0.46	5.00	3.81	0.00	3.81
4.95	0.36	0.46	5.00	3.81	0.00	3.81
5.00	2.00	0.46	5.00	3.81	0.00	3.81
5.05	2.00	0.46	5.00	3.81	0.00	3.81
5.10	2.00	0.46	5.00	3.81	0.00	3.81
5.15	2.00	0.46	5.00	3.81	0.00	3.81
5.20	2.00	0.46	5.00	3.81	0.00	3.81
5.25	2.00	0.46	5.00	3.81	0.00	3.81
5.30	2.00	0.46	5.00	3.81	0.00	3.81
5.35	2.00	0.46	5.00	3.81	0.00	3.81
5.40	2.00	0.46	5.00	3.81	0.00	3.81
5.45	2.00	0.46	5.00	3.81	0.00	3.81
5.50	2.00	0.46	5.00	3.81	0.00	3.81
5.55	2.00	0.46	5.00	3.81	0.00	3.81
5.60	2.00	0.46	5.00	3.81	0.00	3.81

5.65	2.00	0.46	5.00	3.81	0.00	3.81
5.70	2.00	0.46	5.00	3.81	0.00	3.81
5.75	2.00	0.46	5.00	3.81	0.00	3.81
5.80	2.00	0.46	5.00	3.81	0.00	3.81
5.85	2.00	0.46	5.00	3.81	0.00	3.81
5.90	2.00	0.46	5.00	3.81	0.00	3.81
5.95	2.00	0.46	5.00	3.81	0.00	3.81
6.00	2.00	0.46	5.00	3.81	0.00	3.81
6.05	2.00	0.46	5.00	3.81	0.00	3.81
6.10	2.00	0.46	5.00	3.81	0.00	3.81
6.15	2.00	0.46	5.00	3.81	0.00	3.81
6.20	2.00	0.46	5.00	3.81	0.00	3.81
6.25	2.00	0.46	5.00	3.81	0.00	3.81
6.30	2.00	0.46	5.00	3.81	0.00	3.81
6.35	2.00	0.46	5.00	3.81	0.00	3.81
6.40	2.00	0.46	5.00	3.81	0.00	3.81
6.45	2.00	0.46	5.00	3.81	0.00	3.81
6.50	2.00	0.46	5.00	3.81	0.00	3.81
6.55	2.00	0.46	5.00	3.81	0.00	3.81
6.60	2.00	0.46	5.00	3.81	0.00	3.81
6.65	2.00	0.46	5.00	3.81	0.00	3.81
6.70	2.00	0.46	5.00	3.81	0.00	3.81
6.75	2.00	0.46	5.00	3.81	0.00	3.81
6.80	2.00	0.46	5.00	3.81	0.00	3.81
6.85	2.00	0.46	5.00	3.81	0.00	3.81
6.90	2.00	0.46	5.00	3.81	0.00	3.81
6.95	2.00	0.46	5.00	3.81	0.00	3.81
7.00	2.00	0.46	5.00	3.81	0.00	3.81
7.05	2.00	0.46	5.00	3.81	0.00	3.81
7.10	2.00	0.46	5.00	3.81	0.00	3.81
7.15	2.00	0.46	5.00	3.81	0.00	3.81
7.20	2.00	0.46	5.00	3.81	0.00	3.81
7.25	2.00	0.46	5.00	3.81	0.00	3.81
7.30	2.00	0.46	5.00	3.81	0.00	3.81
7.35	2.00	0.46	5.00	3.81	0.00	3.81
7.40	2.00	0.46	5.00	3.81	0.00	3.81
7.45	2.00	0.46	5.00	3.81	0.00	3.81
7.50	2.00	0.46	5.00	3.81	0.00	3.81
7.55	2.00	0.46	5.00	3.81	0.00	3.81
7.60	2.00	0.46	5.00	3.81	0.00	3.81
7.65	2.00	0.46	5.00	3.81	0.00	3.81
7.70	2.00	0.46	5.00	3.81	0.00	3.81
7.75	2.00	0.46	5.00	3.81	0.00	3.81
7.80	2.00	0.46	5.00	3.81	0.00	3.81
7.85	2.00	0.46	5.00	3.81	0.00	3.81
7.90	2.00	0.46	5.00	3.81	0.00	3.81
7.95	2.00	0.46	5.00	3.81	0.00	3.81
8.00	2.00	0.46	5.00	3.81	0.00	3.81
8.05	2.00	0.46	5.00	3.81	0.00	3.81
8.10	2.00	0.46	5.00	3.81	0.00	3.81
8.15	2.00	0.46	5.00	3.81	0.00	3.81
8.20	2.00	0.46	5.00	3.81	0.00	3.81
8.25	2.00	0.46	5.00	3.81	0.00	3.81
8.30	2.00	0.46	5.00	3.81	0.00	3.81
8.35	2.00	0.46	5.00	3.81	0.00	3.81
8.40	2.00	0.46	5.00	3.81	0.00	3.81
8.45	2.00	0.46	5.00	3.81	0.00	3.81
8.50	2.00	0.46	5.00	3.81	0.00	3.81
8.55	2.00	0.46	5.00	3.81	0.00	3.81
8.60	2.00	0.46	5.00	3.81	0.00	3.81
8.65	2.00	0.46	5.00	3.81	0.00	3.81
8.70	2.00	0.46	5.00	3.81	0.00	3.81
8.75	2.00	0.46	5.00	3.81	0.00	3.81

8.80	2.00	0.46	5.00	3.81	0.00	3.81
8.85	2.00	0.46	5.00	3.81	0.00	3.81
8.90	2.00	0.46	5.00	3.81	0.00	3.81
8.95	2.00	0.46	5.00	3.81	0.00	3.81
9.00	2.00	0.46	5.00	3.81	0.00	3.81
9.05	2.00	0.46	5.00	3.81	0.00	3.81
9.10	2.00	0.46	5.00	3.81	0.00	3.81
9.15	2.00	0.46	5.00	3.81	0.00	3.81
9.20	2.00	0.46	5.00	3.81	0.00	3.81
9.25	2.00	0.46	5.00	3.81	0.00	3.81
9.30	2.00	0.46	5.00	3.81	0.00	3.81
9.35	2.00	0.46	5.00	3.81	0.00	3.81
9.40	2.00	0.46	5.00	3.81	0.00	3.81
9.45	2.00	0.46	5.00	3.81	0.00	3.81
9.50	2.00	0.46	5.00	3.81	0.00	3.81
9.55	2.00	0.46	5.00	3.81	0.00	3.81
9.60	2.00	0.46	5.00	3.81	0.00	3.81
9.65	2.00	0.46	5.00	3.81	0.00	3.81
9.70	2.00	0.46	5.00	3.81	0.00	3.81
9.75	2.00	0.46	5.00	3.81	0.00	3.81
9.80	2.00	0.46	5.00	3.81	0.00	3.81
9.85	2.00	0.46	5.00	3.81	0.00	3.81
9.90	2.00	0.46	5.00	3.81	0.00	3.81
9.95	2.00	0.46	5.00	3.81	0.00	3.81
10.00	2.00	0.46	5.00	3.81	0.00	3.81
10.05	2.00	0.46	5.00	3.81	0.00	3.81
10.10	2.00	0.46	5.00	3.81	0.00	3.81
10.15	2.00	0.46	5.00	3.81	0.00	3.81
10.20	2.00	0.46	5.00	3.81	0.00	3.81
10.25	2.00	0.46	5.00	3.81	0.00	3.81
10.30	2.00	0.46	5.00	3.81	0.00	3.81
10.35	2.00	0.46	5.00	3.81	0.00	3.81
10.40	2.00	0.46	5.00	3.81	0.00	3.81
10.45	2.00	0.46	5.00	3.81	0.00	3.81
10.50	2.00	0.46	5.00	3.81	0.00	3.81
10.55	2.00	0.46	5.00	3.81	0.00	3.81
10.60	2.00	0.46	5.00	3.81	0.00	3.81
10.65	2.00	0.46	5.00	3.81	0.00	3.81
10.70	2.00	0.46	5.00	3.81	0.00	3.81
10.75	2.00	0.46	5.00	3.81	0.00	3.81
10.80	2.00	0.46	5.00	3.81	0.00	3.81
10.85	2.00	0.46	5.00	3.81	0.00	3.81
10.90	2.00	0.46	5.00	3.81	0.00	3.81
10.95	2.00	0.46	5.00	3.81	0.00	3.81
11.00	2.00	0.46	5.00	3.81	0.00	3.81
11.05	2.00	0.46	5.00	3.81	0.00	3.81
11.10	2.00	0.46	5.00	3.81	0.00	3.81
11.15	2.00	0.46	5.00	3.81	0.00	3.81
11.20	2.00	0.46	5.00	3.81	0.00	3.81
11.25	2.00	0.46	5.00	3.81	0.00	3.81
11.30	2.00	0.46	5.00	3.81	0.00	3.81
11.35	2.00	0.46	5.00	3.81	0.00	3.81
11.40	2.00	0.46	5.00	3.81	0.00	3.81
11.45	2.00	0.46	5.00	3.81	0.00	3.81
11.50	2.00	0.46	5.00	3.81	0.00	3.81
11.55	2.00	0.46	5.00	3.81	0.00	3.81
11.60	2.00	0.46	5.00	3.81	0.00	3.81
11.65	2.00	0.46	5.00	3.81	0.00	3.81
11.70	2.00	0.46	5.00	3.81	0.00	3.81
11.75	2.00	0.46	5.00	3.81	0.00	3.81
11.80	2.00	0.46	5.00	3.81	0.00	3.81
11.85	2.00	0.46	5.00	3.81	0.00	3.81
11.90	2.00	0.46	5.00	3.81	0.00	3.81

11.95	2.00	0.46	5.00	3.81	0.00	3.81
12.00	2.00	0.46	5.00	3.81	0.00	3.81
12.05	2.00	0.45	5.00	3.81	0.00	3.81
12.10	2.00	0.45	5.00	3.81	0.00	3.81
12.15	2.00	0.45	5.00	3.81	0.00	3.81
12.20	2.00	0.45	5.00	3.81	0.00	3.81
12.25	2.00	0.45	5.00	3.81	0.00	3.81
12.30	2.00	0.45	5.00	3.81	0.00	3.81
12.35	2.00	0.45	5.00	3.81	0.00	3.81
12.40	2.00	0.45	5.00	3.81	0.00	3.81
12.45	2.00	0.45	5.00	3.81	0.00	3.81
12.50	2.00	0.45	5.00	3.81	0.00	3.81
12.55	2.00	0.45	5.00	3.81	0.00	3.81
12.60	2.00	0.45	5.00	3.81	0.00	3.81
12.65	2.00	0.45	5.00	3.81	0.00	3.81
12.70	2.00	0.45	5.00	3.81	0.00	3.81
12.75	2.00	0.45	5.00	3.81	0.00	3.81
12.80	2.00	0.45	5.00	3.81	0.00	3.81
12.85	2.00	0.45	5.00	3.81	0.00	3.81
12.90	2.00	0.45	5.00	3.81	0.00	3.81
12.95	2.00	0.45	5.00	3.81	0.00	3.81
13.00	2.00	0.45	5.00	3.81	0.00	3.81
13.05	2.00	0.45	5.00	3.81	0.00	3.81
13.10	2.00	0.45	5.00	3.81	0.00	3.81
13.15	2.00	0.45	5.00	3.81	0.00	3.81
13.20	2.00	0.45	5.00	3.81	0.00	3.81
13.25	2.00	0.45	5.00	3.81	0.00	3.81
13.30	2.00	0.45	5.00	3.81	0.00	3.81
13.35	2.00	0.45	5.00	3.81	0.00	3.81
13.40	2.00	0.45	5.00	3.81	0.00	3.81
13.45	2.00	0.45	5.00	3.81	0.00	3.81
13.50	2.00	0.45	5.00	3.81	0.00	3.81
13.55	2.00	0.45	5.00	3.81	0.00	3.81
13.60	2.00	0.45	5.00	3.81	0.00	3.81
13.65	2.00	0.45	5.00	3.81	0.00	3.81
13.70	2.00	0.45	5.00	3.81	0.00	3.81
13.75	2.00	0.45	5.00	3.81	0.00	3.81
13.80	2.00	0.45	5.00	3.81	0.00	3.81
13.85	2.00	0.45	5.00	3.81	0.00	3.81
13.90	2.00	0.45	5.00	3.81	0.00	3.81
13.95	2.00	0.45	5.00	3.81	0.00	3.81
14.00	2.00	0.45	5.00	3.81	0.00	3.81
14.05	2.00	0.45	5.00	3.81	0.00	3.81
14.10	2.00	0.45	5.00	3.81	0.00	3.81
14.15	2.00	0.45	5.00	3.81	0.00	3.81
14.20	2.00	0.45	5.00	3.81	0.00	3.81
14.25	2.00	0.45	5.00	3.81	0.00	3.81
14.30	2.00	0.45	5.00	3.81	0.00	3.81
14.35	2.00	0.45	5.00	3.81	0.00	3.81
14.40	2.00	0.45	5.00	3.81	0.00	3.81
14.45	2.00	0.45	5.00	3.81	0.00	3.81
14.50	2.00	0.45	5.00	3.81	0.00	3.81
14.55	2.00	0.45	5.00	3.81	0.00	3.81
14.60	2.00	0.45	5.00	3.81	0.00	3.81
14.65	2.00	0.45	5.00	3.81	0.00	3.81
14.70	2.00	0.45	5.00	3.81	0.00	3.81
14.75	2.00	0.45	5.00	3.81	0.00	3.81
14.80	2.00	0.45	5.00	3.81	0.00	3.81
14.85	2.00	0.45	5.00	3.81	0.00	3.81
14.90	2.00	0.45	5.00	3.81	0.00	3.81
14.95	2.00	0.45	5.00	3.81	0.00	3.81
15.00	2.00	0.45	5.00	3.81	0.00	3.81
15.05	2.00	0.45	5.00	3.81	0.00	3.81

15.10	2.00	0.45	5.00	3.81	0.00	3.81
15.15	2.00	0.45	5.00	3.81	0.00	3.81
15.20	2.00	0.46	5.00	3.81	0.00	3.81
15.25	2.00	0.46	5.00	3.81	0.00	3.81
15.30	2.00	0.46	5.00	3.81	0.00	3.81
15.35	2.00	0.46	5.00	3.81	0.00	3.81
15.40	2.00	0.46	5.00	3.81	0.00	3.81
15.45	2.00	0.46	5.00	3.81	0.00	3.81
15.50	2.00	0.46	5.00	3.81	0.00	3.81
15.55	2.00	0.46	5.00	3.81	0.00	3.81
15.60	2.00	0.46	5.00	3.81	0.00	3.81
15.65	2.00	0.46	5.00	3.81	0.00	3.81
15.70	2.00	0.46	5.00	3.81	0.00	3.81
15.75	2.00	0.47	5.00	3.81	0.00	3.81
15.80	2.00	0.47	5.00	3.81	0.00	3.81
15.85	2.00	0.47	5.00	3.81	0.00	3.81
15.90	2.00	0.47	5.00	3.81	0.00	3.81
15.95	2.00	0.47	5.00	3.81	0.00	3.81
16.00	2.00	0.47	5.00	3.81	0.00	3.81
16.05	2.00	0.47	5.00	3.81	0.00	3.81
16.10	2.00	0.47	5.00	3.81	0.00	3.81
16.15	2.00	0.47	5.00	3.81	0.00	3.81
16.20	2.00	0.47	5.00	3.81	0.00	3.81
16.25	2.00	0.47	5.00	3.81	0.00	3.81
16.30	2.00	0.47	5.00	3.81	0.00	3.81
16.35	2.00	0.48	5.00	3.81	0.00	3.81
16.40	2.00	0.48	5.00	3.81	0.00	3.81
16.45	2.00	0.48	5.00	3.81	0.00	3.81
16.50	2.00	0.48	5.00	3.81	0.00	3.81
16.55	2.00	0.48	5.00	3.81	0.00	3.81
16.60	2.00	0.48	5.00	3.81	0.00	3.81
16.65	2.00	0.48	5.00	3.81	0.00	3.81
16.70	2.00	0.48	5.00	3.81	0.00	3.81
16.75	2.00	0.48	5.00	3.81	0.00	3.81
16.80	2.00	0.48	5.00	3.81	0.00	3.81
16.85	2.00	0.48	5.00	3.81	0.00	3.81
16.90	2.00	0.48	5.00	3.81	0.00	3.81
16.95	2.00	0.48	5.00	3.81	0.00	3.81
17.00	2.00	0.49	5.00	3.81	0.00	3.81
17.05	2.00	0.49	5.00	3.81	0.00	3.81
17.10	2.00	0.49	5.00	3.81	0.00	3.81
17.15	2.00	0.49	5.00	3.81	0.00	3.81
17.20	2.00	0.49	5.00	3.81	0.00	3.81
17.25	2.00	0.49	5.00	3.81	0.00	3.81
17.30	2.00	0.49	5.00	3.81	0.00	3.81
17.35	2.00	0.49	5.00	3.81	0.00	3.81
17.40	2.00	0.49	5.00	3.81	0.00	3.81
17.45	2.00	0.49	5.00	3.81	0.00	3.81
17.50	2.00	0.49	5.00	3.81	0.00	3.81
17.55	2.00	0.49	5.00	3.81	0.00	3.81
17.60	2.00	0.49	5.00	3.81	0.00	3.81
17.65	2.00	0.50	5.00	3.81	0.00	3.81
17.70	2.00	0.50	5.00	3.81	0.00	3.81
17.75	2.00	0.50	5.00	3.81	0.00	3.81
17.80	2.00	0.50	5.00	3.81	0.00	3.81
17.85	2.00	0.50	5.00	3.81	0.00	3.81
17.90	2.00	0.50	5.00	3.81	0.00	3.81
17.95	2.00	0.50	5.00	3.81	0.00	3.81
18.00	2.00	0.50	5.00	3.81	0.00	3.81
18.05	2.00	0.50	5.00	3.81	0.00	3.81
18.10	2.00	0.50	5.00	3.81	0.00	3.81
18.15	2.00	0.50	5.00	3.81	0.00	3.81
18.20	2.00	0.50	5.00	3.81	0.00	3.81

18.25	2.00	0.50	5.00	3.81	0.00	3.81
18.30	2.00	0.50	5.00	3.81	0.00	3.81
18.35	2.00	0.51	5.00	3.81	0.00	3.81
18.40	2.00	0.51	5.00	3.81	0.00	3.81
18.45	2.00	0.51	5.00	3.81	0.00	3.81
18.50	2.00	0.51	5.00	3.81	0.00	3.81
18.55	2.00	0.51	5.00	3.81	0.00	3.81
18.60	2.00	0.51	5.00	3.81	0.00	3.81
18.65	2.00	0.51	5.00	3.81	0.00	3.81
18.70	2.00	0.51	5.00	3.81	0.00	3.81
18.75	2.00	0.51	5.00	3.81	0.00	3.81
18.80	2.00	0.51	5.00	3.81	0.00	3.81
18.85	2.00	0.51	5.00	3.81	0.00	3.81
18.90	2.00	0.51	5.00	3.81	0.00	3.81
18.95	2.00	0.51	5.00	3.81	0.00	3.81
19.00	2.00	0.51	5.00	3.81	0.00	3.81
19.05	2.00	0.52	5.00	3.81	0.00	3.81
19.10	2.00	0.52	5.00	3.81	0.00	3.81
19.15	2.00	0.52	5.00	3.81	0.00	3.81
19.20	2.00	0.52	5.00	3.81	0.00	3.81
19.25	2.00	0.52	5.00	3.81	0.00	3.81
19.30	2.00	0.52	5.00	3.81	0.00	3.81
19.35	2.00	0.52	5.00	3.81	0.00	3.81
19.40	2.00	0.52	5.00	3.81	0.00	3.81
19.45	2.00	0.52	5.00	3.81	0.00	3.81
19.50	2.00	0.52	5.00	3.81	0.00	3.81
19.55	2.00	0.52	5.00	3.81	0.00	3.81
19.60	2.00	0.52	5.00	3.81	0.00	3.81
19.65	2.00	0.52	5.00	3.81	0.00	3.81
19.70	2.00	0.52	5.00	3.81	0.00	3.81
19.75	2.00	0.52	5.00	3.81	0.00	3.81
19.80	2.00	0.52	5.00	3.81	0.00	3.81
19.85	2.00	0.53	5.00	3.81	0.00	3.81
19.90	2.00	0.53	5.00	3.81	0.00	3.81
19.95	2.00	0.53	5.00	3.81	0.00	3.81
20.00	2.00	0.53	5.00	3.81	0.00	3.81
20.05	0.26	0.53	0.50*	3.81	0.00	3.81
20.10	0.26	0.53	0.50*	3.80	0.00	3.80
20.15	0.26	0.53	0.50*	3.78	0.00	3.78
20.20	0.26	0.53	0.49*	3.77	0.00	3.77
20.25	0.26	0.53	0.49*	3.75	0.00	3.75
20.30	0.26	0.53	0.49*	3.74	0.00	3.74
20.35	0.26	0.53	0.49*	3.73	0.00	3.73
20.40	0.26	0.53	0.49*	3.71	0.00	3.71
20.45	0.26	0.53	0.49*	3.70	0.00	3.70
20.50	0.26	0.53	0.49*	3.69	0.00	3.69
20.55	0.26	0.53	0.49*	3.67	0.00	3.67
20.60	0.26	0.53	0.49*	3.66	0.00	3.66
20.65	0.26	0.54	0.49*	3.65	0.00	3.65
20.70	0.26	0.54	0.48*	3.63	0.00	3.63
20.75	0.26	0.54	0.48*	3.62	0.00	3.62
20.80	0.26	0.54	0.48*	3.61	0.00	3.61
20.85	0.26	0.54	0.48*	3.59	0.00	3.59
20.90	0.26	0.54	0.48*	3.58	0.00	3.58
20.95	0.26	0.54	0.48*	3.57	0.00	3.57
21.00	0.26	0.54	0.48*	3.55	0.00	3.55
21.05	0.26	0.54	0.48*	3.54	0.00	3.54
21.10	0.26	0.54	0.48*	3.52	0.00	3.52
21.15	0.26	0.54	0.48*	3.51	0.00	3.51
21.20	0.26	0.54	0.48*	3.50	0.00	3.50
21.25	0.26	0.54	0.47*	3.48	0.00	3.48
21.30	0.26	0.54	0.47*	3.47	0.00	3.47
21.35	0.26	0.54	0.47*	3.46	0.00	3.46

21.40	0.26	0.54	0.47*	3.44	0.00	3.44
21.45	0.26	0.54	0.47*	3.43	0.00	3.43
21.50	0.26	0.54	0.47*	3.41	0.00	3.41
21.55	0.26	0.55	0.47*	3.40	0.00	3.40
21.60	0.26	0.55	0.47*	3.39	0.00	3.39
21.65	0.26	0.55	0.47*	3.37	0.00	3.37
21.70	0.26	0.55	0.47*	3.36	0.00	3.36
21.75	0.26	0.55	0.47*	3.35	0.00	3.35
21.80	0.25	0.55	0.47*	3.33	0.00	3.33
21.85	0.25	0.55	0.46*	3.32	0.00	3.32
21.90	0.25	0.55	0.46*	3.30	0.00	3.30
21.95	0.25	0.55	0.46*	3.29	0.00	3.29
22.00	0.25	0.55	0.46*	3.28	0.00	3.28
22.05	2.00	0.55	5.00	3.26	0.00	3.26
22.10	2.00	0.55	5.00	3.26	0.00	3.26
22.15	2.00	0.55	5.00	3.26	0.00	3.26
22.20	2.00	0.55	5.00	3.26	0.00	3.26
22.25	2.00	0.55	5.00	3.26	0.00	3.26
22.30	2.00	0.55	5.00	3.26	0.00	3.26
22.35	2.00	0.55	5.00	3.26	0.00	3.26
22.40	2.00	0.55	5.00	3.26	0.00	3.26
22.45	2.00	0.56	5.00	3.26	0.00	3.26
22.50	2.00	0.56	5.00	3.26	0.00	3.26
22.55	2.00	0.56	5.00	3.26	0.00	3.26
22.60	2.00	0.56	5.00	3.26	0.00	3.26
22.65	2.00	0.56	5.00	3.26	0.00	3.26
22.70	2.00	0.56	5.00	3.26	0.00	3.26
22.75	2.00	0.56	5.00	3.26	0.00	3.26
22.80	2.00	0.56	5.00	3.26	0.00	3.26
22.85	2.00	0.56	5.00	3.26	0.00	3.26
22.90	2.00	0.56	5.00	3.26	0.00	3.26
22.95	2.00	0.56	5.00	3.26	0.00	3.26
23.00	2.00	0.56	5.00	3.26	0.00	3.26
23.05	2.00	0.56	5.00	3.26	0.00	3.26
23.10	2.00	0.56	5.00	3.26	0.00	3.26
23.15	2.00	0.56	5.00	3.26	0.00	3.26
23.20	2.00	0.56	5.00	3.26	0.00	3.26
23.25	2.00	0.56	5.00	3.26	0.00	3.26
23.30	2.00	0.56	5.00	3.26	0.00	3.26
23.35	2.00	0.56	5.00	3.26	0.00	3.26
23.40	2.00	0.56	5.00	3.26	0.00	3.26
23.45	2.00	0.57	5.00	3.26	0.00	3.26
23.50	2.00	0.57	5.00	3.26	0.00	3.26
23.55	2.00	0.57	5.00	3.26	0.00	3.26
23.60	2.00	0.57	5.00	3.26	0.00	3.26
23.65	2.00	0.57	5.00	3.26	0.00	3.26
23.70	2.00	0.57	5.00	3.26	0.00	3.26
23.75	2.00	0.57	5.00	3.26	0.00	3.26
23.80	2.00	0.57	5.00	3.26	0.00	3.26
23.85	2.00	0.57	5.00	3.26	0.00	3.26
23.90	2.00	0.57	5.00	3.26	0.00	3.26
23.95	2.00	0.57	5.00	3.26	0.00	3.26
24.00	2.00	0.57	5.00	3.26	0.00	3.26
24.05	2.00	0.57	5.00	3.26	0.00	3.26
24.10	2.00	0.57	5.00	3.26	0.00	3.26
24.15	2.00	0.57	5.00	3.26	0.00	3.26
24.20	2.00	0.57	5.00	3.26	0.00	3.26
24.25	2.00	0.57	5.00	3.26	0.00	3.26
24.30	2.00	0.57	5.00	3.26	0.00	3.26
24.35	2.00	0.57	5.00	3.26	0.00	3.26
24.40	2.00	0.57	5.00	3.26	0.00	3.26
24.45	2.00	0.57	5.00	3.26	0.00	3.26
24.50	2.00	0.58	5.00	3.26	0.00	3.26

24.55	2.00	0.58	5.00	3.26	0.00	3.26
24.60	2.00	0.58	5.00	3.26	0.00	3.26
24.65	2.00	0.58	5.00	3.26	0.00	3.26
24.70	2.00	0.58	5.00	3.26	0.00	3.26
24.75	2.00	0.58	5.00	3.26	0.00	3.26
24.80	2.00	0.58	5.00	3.26	0.00	3.26
24.85	2.00	0.58	5.00	3.26	0.00	3.26
24.90	2.00	0.58	5.00	3.26	0.00	3.26
24.95	2.00	0.58	5.00	3.26	0.00	3.26
25.00	2.00	0.58	5.00	3.26	0.00	3.26
25.05	2.00	0.58	5.00	3.26	0.00	3.26
25.10	2.00	0.58	5.00	3.26	0.00	3.26
25.15	2.00	0.58	5.00	3.26	0.00	3.26
25.20	2.00	0.58	5.00	3.26	0.00	3.26
25.25	2.00	0.58	5.00	3.26	0.00	3.26
25.30	2.00	0.58	5.00	3.26	0.00	3.26
25.35	2.00	0.58	5.00	3.26	0.00	3.26
25.40	2.00	0.58	5.00	3.26	0.00	3.26
25.45	2.00	0.58	5.00	3.26	0.00	3.26
25.50	2.00	0.58	5.00	3.26	0.00	3.26
25.55	2.00	0.58	5.00	3.26	0.00	3.26
25.60	2.00	0.59	5.00	3.26	0.00	3.26
25.65	2.00	0.59	5.00	3.26	0.00	3.26
25.70	2.00	0.59	5.00	3.26	0.00	3.26
25.75	2.00	0.59	5.00	3.26	0.00	3.26
25.80	2.00	0.59	5.00	3.26	0.00	3.26
25.85	2.00	0.59	5.00	3.26	0.00	3.26
25.90	2.00	0.59	5.00	3.26	0.00	3.26
25.95	2.00	0.59	5.00	3.26	0.00	3.26
26.00	2.00	0.59	5.00	3.26	0.00	3.26
26.05	2.00	0.59	5.00	3.26	0.00	3.26
26.10	2.00	0.59	5.00	3.26	0.00	3.26
26.15	2.00	0.59	5.00	3.26	0.00	3.26
26.20	2.00	0.59	5.00	3.26	0.00	3.26
26.25	2.00	0.59	5.00	3.26	0.00	3.26
26.30	2.00	0.59	5.00	3.26	0.00	3.26
26.35	2.00	0.59	5.00	3.26	0.00	3.26
26.40	2.00	0.59	5.00	3.26	0.00	3.26
26.45	2.00	0.59	5.00	3.26	0.00	3.26
26.50	2.00	0.59	5.00	3.26	0.00	3.26
26.55	2.00	0.59	5.00	3.26	0.00	3.26
26.60	2.00	0.59	5.00	3.26	0.00	3.26
26.65	2.00	0.59	5.00	3.26	0.00	3.26
26.70	2.00	0.59	5.00	3.26	0.00	3.26
26.75	2.00	0.59	5.00	3.26	0.00	3.26
26.80	2.00	0.60	5.00	3.26	0.00	3.26
26.85	2.00	0.60	5.00	3.26	0.00	3.26
26.90	2.00	0.60	5.00	3.26	0.00	3.26
26.95	2.00	0.60	5.00	3.26	0.00	3.26
27.00	2.00	0.60	5.00	3.26	0.00	3.26
27.05	2.00	0.60	5.00	3.26	0.00	3.26
27.10	2.00	0.60	5.00	3.26	0.00	3.26
27.15	2.00	0.60	5.00	3.26	0.00	3.26
27.20	2.00	0.60	5.00	3.26	0.00	3.26
27.25	2.00	0.60	5.00	3.26	0.00	3.26
27.30	2.00	0.60	5.00	3.26	0.00	3.26
27.35	2.00	0.60	5.00	3.26	0.00	3.26
27.40	2.00	0.60	5.00	3.26	0.00	3.26
27.45	2.00	0.60	5.00	3.26	0.00	3.26
27.50	2.00	0.60	5.00	3.26	0.00	3.26
27.55	2.00	0.60	5.00	3.26	0.00	3.26
27.60	2.00	0.60	5.00	3.26	0.00	3.26
27.65	2.00	0.60	5.00	3.26	0.00	3.26

27.70	2.00	0.60	5.00	3.26	0.00	3.26
27.75	2.00	0.60	5.00	3.26	0.00	3.26
27.80	2.00	0.60	5.00	3.26	0.00	3.26
27.85	2.00	0.60	5.00	3.26	0.00	3.26
27.90	2.00	0.60	5.00	3.26	0.00	3.26
27.95	2.00	0.60	5.00	3.26	0.00	3.26
28.00	2.00	0.60	5.00	3.26	0.00	3.26
28.05	2.00	0.60	5.00	3.26	0.00	3.26
28.10	2.00	0.61	5.00	3.26	0.00	3.26
28.15	2.00	0.61	5.00	3.26	0.00	3.26
28.20	2.00	0.61	5.00	3.26	0.00	3.26
28.25	2.00	0.61	5.00	3.26	0.00	3.26
28.30	2.00	0.61	5.00	3.26	0.00	3.26
28.35	2.00	0.61	5.00	3.26	0.00	3.26
28.40	2.00	0.61	5.00	3.26	0.00	3.26
28.45	2.00	0.61	5.00	3.26	0.00	3.26
28.50	2.00	0.61	5.00	3.26	0.00	3.26
28.55	2.00	0.61	5.00	3.26	0.00	3.26
28.60	2.00	0.61	5.00	3.26	0.00	3.26
28.65	2.00	0.61	5.00	3.26	0.00	3.26
28.70	2.00	0.61	5.00	3.26	0.00	3.26
28.75	2.00	0.61	5.00	3.26	0.00	3.26
28.80	2.00	0.61	5.00	3.26	0.00	3.26
28.85	2.00	0.61	5.00	3.26	0.00	3.26
28.90	2.00	0.61	5.00	3.26	0.00	3.26
28.95	2.00	0.61	5.00	3.26	0.00	3.26
29.00	2.00	0.61	5.00	3.26	0.00	3.26
29.05	2.00	0.61	5.00	3.26	0.00	3.26
29.10	2.00	0.61	5.00	3.26	0.00	3.26
29.15	2.00	0.61	5.00	3.26	0.00	3.26
29.20	2.00	0.61	5.00	3.26	0.00	3.26
29.25	2.00	0.61	5.00	3.26	0.00	3.26
29.30	2.00	0.61	5.00	3.26	0.00	3.26
29.35	2.00	0.61	5.00	3.26	0.00	3.26
29.40	2.00	0.61	5.00	3.26	0.00	3.26
29.45	2.00	0.61	5.00	3.26	0.00	3.26
29.50	2.00	0.62	5.00	3.26	0.00	3.26
29.55	2.00	0.62	5.00	3.26	0.00	3.26
29.60	2.00	0.62	5.00	3.26	0.00	3.26
29.65	2.00	0.62	5.00	3.26	0.00	3.26
29.70	2.00	0.62	5.00	3.26	0.00	3.26
29.75	2.00	0.62	5.00	3.26	0.00	3.26
29.80	2.00	0.62	5.00	3.26	0.00	3.26
29.85	2.00	0.62	5.00	3.26	0.00	3.26
29.90	2.00	0.62	5.00	3.26	0.00	3.26
29.95	2.00	0.62	5.00	3.26	0.00	3.26
30.00	2.00	0.62	5.00	3.26	0.00	3.26
30.05	2.00	0.62	5.00	3.26	0.00	3.26
30.10	2.00	0.62	5.00	3.26	0.00	3.26
30.15	2.00	0.62	5.00	3.26	0.00	3.26
30.20	2.00	0.62	5.00	3.26	0.00	3.26
30.25	2.00	0.62	5.00	3.26	0.00	3.26
30.30	2.00	0.62	5.00	3.26	0.00	3.26
30.35	2.00	0.62	5.00	3.26	0.00	3.26
30.40	2.00	0.62	5.00	3.26	0.00	3.26
30.45	2.00	0.62	5.00	3.26	0.00	3.26
30.50	2.00	0.62	5.00	3.26	0.00	3.26
30.55	2.00	0.62	5.00	3.26	0.00	3.26
30.60	2.00	0.62	5.00	3.26	0.00	3.26
30.65	2.00	0.62	5.00	3.26	0.00	3.26
30.70	2.00	0.62	5.00	3.26	0.00	3.26
30.75	2.00	0.62	5.00	3.26	0.00	3.26
30.80	2.00	0.62	5.00	3.26	0.00	3.26

30.85	2.00	0.62	5.00	3.26	0.00	3.26
30.90	2.00	0.62	5.00	3.26	0.00	3.26
30.95	2.00	0.62	5.00	3.26	0.00	3.26
31.00	2.00	0.62	5.00	3.26	0.00	3.26
31.05	2.00	0.62	5.00	3.26	0.00	3.26
31.10	2.00	0.62	5.00	3.26	0.00	3.26
31.15	2.00	0.62	5.00	3.26	0.00	3.26
31.20	2.00	0.62	5.00	3.26	0.00	3.26
31.25	2.00	0.62	5.00	3.26	0.00	3.26
31.30	2.00	0.62	5.00	3.26	0.00	3.26
31.35	2.00	0.62	5.00	3.26	0.00	3.26
31.40	2.00	0.62	5.00	3.26	0.00	3.26
31.45	2.00	0.62	5.00	3.26	0.00	3.26
31.50	2.00	0.62	5.00	3.26	0.00	3.26
31.55	2.00	0.62	5.00	3.26	0.00	3.26
31.60	2.00	0.62	5.00	3.26	0.00	3.26
31.65	2.00	0.62	5.00	3.26	0.00	3.26
31.70	2.00	0.62	5.00	3.26	0.00	3.26
31.75	2.00	0.62	5.00	3.26	0.00	3.26
31.80	2.00	0.62	5.00	3.26	0.00	3.26
31.85	2.00	0.62	5.00	3.26	0.00	3.26
31.90	2.00	0.62	5.00	3.26	0.00	3.26
31.95	2.00	0.62	5.00	3.26	0.00	3.26
32.00	2.00	0.62	5.00	3.26	0.00	3.26
32.05	2.00	0.62	5.00	3.26	0.00	3.26
32.10	2.00	0.62	5.00	3.26	0.00	3.26
32.15	2.00	0.62	5.00	3.26	0.00	3.26
32.20	2.00	0.62	5.00	3.26	0.00	3.26
32.25	2.00	0.62	5.00	3.26	0.00	3.26
32.30	2.00	0.62	5.00	3.26	0.00	3.26
32.35	2.00	0.62	5.00	3.26	0.00	3.26
32.40	2.00	0.62	5.00	3.26	0.00	3.26
32.45	2.00	0.62	5.00	3.26	0.00	3.26
32.50	2.00	0.62	5.00	3.26	0.00	3.26
32.55	2.00	0.62	5.00	3.26	0.00	3.26
32.60	2.00	0.62	5.00	3.26	0.00	3.26
32.65	2.00	0.62	5.00	3.26	0.00	3.26
32.70	2.00	0.62	5.00	3.26	0.00	3.26
32.75	2.00	0.62	5.00	3.26	0.00	3.26
32.80	2.00	0.62	5.00	3.26	0.00	3.26
32.85	2.00	0.62	5.00	3.26	0.00	3.26
32.90	2.00	0.62	5.00	3.26	0.00	3.26
32.95	2.00	0.62	5.00	3.26	0.00	3.26
33.00	2.00	0.62	5.00	3.26	0.00	3.26
33.05	2.00	0.62	5.00	3.26	0.00	3.26
33.10	2.00	0.62	5.00	3.26	0.00	3.26
33.15	2.00	0.62	5.00	3.26	0.00	3.26
33.20	2.00	0.62	5.00	3.26	0.00	3.26
33.25	2.00	0.62	5.00	3.26	0.00	3.26
33.30	2.00	0.62	5.00	3.26	0.00	3.26
33.35	2.00	0.62	5.00	3.26	0.00	3.26
33.40	2.00	0.62	5.00	3.26	0.00	3.26
33.45	2.00	0.63	5.00	3.26	0.00	3.26
33.50	2.00	0.63	5.00	3.26	0.00	3.26
33.55	2.00	0.63	5.00	3.26	0.00	3.26
33.60	2.00	0.63	5.00	3.26	0.00	3.26
33.65	2.00	0.63	5.00	3.26	0.00	3.26
33.70	2.00	0.63	5.00	3.26	0.00	3.26
33.75	2.00	0.63	5.00	3.26	0.00	3.26
33.80	2.00	0.63	5.00	3.26	0.00	3.26
33.85	2.00	0.63	5.00	3.26	0.00	3.26
33.90	2.00	0.63	5.00	3.26	0.00	3.26
33.95	2.00	0.63	5.00	3.26	0.00	3.26

34.00	2.00	0.63	5.00	3.26	0.00	3.26
34.05	2.00	0.63	5.00	3.26	0.00	3.26
34.10	2.00	0.63	5.00	3.26	0.00	3.26
34.15	2.00	0.63	5.00	3.26	0.00	3.26
34.20	2.00	0.63	5.00	3.26	0.00	3.26
34.25	2.00	0.63	5.00	3.26	0.00	3.26
34.30	2.00	0.63	5.00	3.26	0.00	3.26
34.35	2.00	0.63	5.00	3.26	0.00	3.26
34.40	2.00	0.63	5.00	3.26	0.00	3.26
34.45	2.00	0.63	5.00	3.26	0.00	3.26
34.50	2.00	0.63	5.00	3.26	0.00	3.26
34.55	2.00	0.63	5.00	3.26	0.00	3.26
34.60	2.00	0.63	5.00	3.26	0.00	3.26
34.65	2.00	0.63	5.00	3.26	0.00	3.26
34.70	2.00	0.63	5.00	3.26	0.00	3.26
34.75	2.00	0.63	5.00	3.26	0.00	3.26
34.80	2.00	0.63	5.00	3.26	0.00	3.26
34.85	2.00	0.63	5.00	3.26	0.00	3.26
34.90	2.00	0.63	5.00	3.26	0.00	3.26
34.95	2.00	0.63	5.00	3.26	0.00	3.26
35.00	2.00	0.63	5.00	3.26	0.00	3.26
35.05	0.32	0.63	0.51*	3.26	0.00	3.26
35.10	0.32	0.63	0.51*	3.25	0.00	3.25
35.15	0.32	0.63	0.51*	3.24	0.00	3.24
35.20	0.32	0.63	0.51*	3.23	0.00	3.23
35.25	0.32	0.63	0.51*	3.22	0.00	3.22
35.30	0.32	0.63	0.51*	3.21	0.00	3.21
35.35	0.32	0.63	0.51*	3.19	0.00	3.19
35.40	0.32	0.63	0.51*	3.18	0.00	3.18
35.45	0.32	0.63	0.51*	3.17	0.00	3.17
35.50	0.32	0.63	0.51*	3.16	0.00	3.16
35.55	0.32	0.63	0.50*	3.15	0.00	3.15
35.60	0.32	0.63	0.50*	3.14	0.00	3.14
35.65	0.32	0.63	0.50*	3.13	0.00	3.13
35.70	0.32	0.63	0.50*	3.11	0.00	3.11
35.75	0.31	0.63	0.50*	3.10	0.00	3.10
35.80	0.31	0.63	0.50*	3.09	0.00	3.09
35.85	0.31	0.63	0.50*	3.08	0.00	3.08
35.90	0.31	0.63	0.50*	3.07	0.00	3.07
35.95	0.31	0.63	0.50*	3.06	0.00	3.06
36.00	0.31	0.63	0.50*	3.05	0.00	3.05
36.05	0.31	0.63	0.50*	3.03	0.00	3.03
36.10	0.31	0.63	0.50*	3.02	0.00	3.02
36.15	0.31	0.63	0.50*	3.01	0.00	3.01
36.20	0.31	0.63	0.50*	3.00	0.00	3.00
36.25	0.31	0.63	0.50*	2.99	0.00	2.99
36.30	0.31	0.63	0.50*	2.98	0.00	2.98
36.35	0.31	0.63	0.50*	2.96	0.00	2.96
36.40	0.31	0.63	0.50*	2.95	0.00	2.95
36.45	0.31	0.63	0.50*	2.94	0.00	2.94
36.50	0.31	0.63	0.50*	2.93	0.00	2.93
36.55	0.31	0.63	0.50*	2.92	0.00	2.92
36.60	0.31	0.63	0.49*	2.91	0.00	2.91
36.65	0.31	0.63	0.49*	2.89	0.00	2.89
36.70	0.31	0.63	0.49*	2.88	0.00	2.88
36.75	0.31	0.63	0.49*	2.87	0.00	2.87
36.80	0.31	0.63	0.49*	2.86	0.00	2.86
36.85	0.31	0.63	0.49*	2.85	0.00	2.85
36.90	0.31	0.63	0.49*	2.84	0.00	2.84
36.95	0.31	0.63	0.49*	2.82	0.00	2.82
37.00	0.31	0.63	0.49*	2.81	0.00	2.81
37.05	0.31	0.63	0.49*	2.80	0.00	2.80
37.10	0.31	0.63	0.49*	2.79	0.00	2.79

37.15	0.31	0.62	0.49*	2.78	0.00	2.78
37.20	0.31	0.62	0.49*	2.77	0.00	2.77
37.25	0.31	0.62	0.49*	2.75	0.00	2.75
37.30	0.31	0.62	0.49*	2.74	0.00	2.74
37.35	0.31	0.62	0.49*	2.73	0.00	2.73
37.40	0.31	0.62	0.49*	2.72	0.00	2.72
37.45	0.31	0.62	0.49*	2.71	0.00	2.71
37.50	0.31	0.62	0.49*	2.70	0.00	2.70
37.55	0.31	0.62	0.49*	2.68	0.00	2.68
37.60	0.31	0.62	0.49*	2.67	0.00	2.67
37.65	0.31	0.62	0.49*	2.66	0.00	2.66
37.70	0.31	0.62	0.49*	2.65	0.00	2.65
37.75	0.31	0.62	0.49*	2.64	0.00	2.64
37.80	0.30	0.62	0.49*	2.63	0.00	2.63
37.85	0.30	0.62	0.49*	2.61	0.00	2.61
37.90	0.30	0.62	0.49*	2.60	0.00	2.60
37.95	0.30	0.62	0.49*	2.59	0.00	2.59
38.00	0.30	0.62	0.49*	2.58	0.00	2.58
38.05	0.30	0.62	0.49*	2.57	0.00	2.57
38.10	0.30	0.62	0.49*	2.56	0.00	2.56
38.15	0.30	0.62	0.49*	2.54	0.00	2.54
38.20	0.30	0.62	0.49*	2.53	0.00	2.53
38.25	0.30	0.62	0.49*	2.52	0.00	2.52
38.30	0.30	0.62	0.49*	2.51	0.00	2.51
38.35	0.30	0.62	0.49*	2.50	0.00	2.50
38.40	0.30	0.62	0.49*	2.49	0.00	2.49
38.45	0.30	0.62	0.49*	2.47	0.00	2.47
38.50	0.30	0.62	0.49*	2.46	0.00	2.46
38.55	0.30	0.62	0.49*	2.45	0.00	2.45
38.60	0.30	0.62	0.49*	2.44	0.00	2.44
38.65	0.30	0.62	0.49*	2.43	0.00	2.43
38.70	0.30	0.62	0.49*	2.42	0.00	2.42
38.75	0.30	0.62	0.49*	2.40	0.00	2.40
38.80	0.30	0.62	0.49*	2.39	0.00	2.39
38.85	0.30	0.62	0.49*	2.38	0.00	2.38
38.90	0.30	0.62	0.48*	2.37	0.00	2.37
38.95	0.30	0.62	0.48*	2.36	0.00	2.36
39.00	0.30	0.62	0.48*	2.34	0.00	2.34
39.05	0.30	0.62	0.48*	2.33	0.00	2.33
39.10	0.30	0.62	0.48*	2.32	0.00	2.32
39.15	0.30	0.62	0.48*	2.31	0.00	2.31
39.20	0.30	0.62	0.48*	2.30	0.00	2.30
39.25	0.30	0.62	0.48*	2.29	0.00	2.29
39.30	0.30	0.62	0.48*	2.27	0.00	2.27
39.35	0.30	0.62	0.48*	2.26	0.00	2.26
39.40	0.30	0.62	0.48*	2.25	0.00	2.25
39.45	0.30	0.62	0.48*	2.24	0.00	2.24
39.50	0.30	0.62	0.48*	2.23	0.00	2.23
39.55	0.30	0.62	0.48*	2.21	0.00	2.21
39.60	0.30	0.62	0.48*	2.20	0.00	2.20
39.65	0.30	0.62	0.48*	2.19	0.00	2.19
39.70	0.30	0.62	0.48*	2.18	0.00	2.18
39.75	0.30	0.62	0.48*	2.17	0.00	2.17
39.80	0.30	0.62	0.48*	2.16	0.00	2.16
39.85	0.30	0.62	0.48*	2.14	0.00	2.14
39.90	0.30	0.62	0.48*	2.13	0.00	2.13
39.95	0.30	0.62	0.48*	2.12	0.00	2.12
40.00	0.30	0.62	0.48*	2.11	0.00	2.11
40.05	0.20	0.62	0.33*	2.10	0.00	2.10
40.10	0.20	0.62	0.33*	2.08	0.00	2.08
40.15	0.20	0.62	0.33*	2.06	0.00	2.06
40.20	0.20	0.62	0.33*	2.05	0.00	2.05
40.25	0.20	0.62	0.33*	2.03	0.00	2.03

40.30	0.20	0.62	0.33*	2.02	0.00	2.02
40.35	0.20	0.62	0.33*	2.00	0.00	2.00
40.40	0.20	0.62	0.33*	1.98	0.00	1.98
40.45	0.20	0.62	0.33*	1.97	0.00	1.97
40.50	0.20	0.62	0.33*	1.95	0.00	1.95
40.55	0.20	0.62	0.33*	1.94	0.00	1.94
40.60	0.20	0.62	0.33*	1.92	0.00	1.92
40.65	0.20	0.62	0.33*	1.90	0.00	1.90
40.70	0.20	0.62	0.33*	1.89	0.00	1.89
40.75	0.20	0.62	0.33*	1.87	0.00	1.87
40.80	0.20	0.62	0.33*	1.86	0.00	1.86
40.85	0.20	0.62	0.33*	1.84	0.00	1.84
40.90	0.20	0.62	0.33*	1.82	0.00	1.82
40.95	0.20	0.62	0.33*	1.81	0.00	1.81
41.00	0.20	0.62	0.33*	1.79	0.00	1.79
41.05	0.20	0.62	0.33*	1.78	0.00	1.78
41.10	0.20	0.62	0.33*	1.76	0.00	1.76
41.15	0.20	0.62	0.33*	1.74	0.00	1.74
41.20	0.20	0.62	0.33*	1.73	0.00	1.73
41.25	0.20	0.62	0.33*	1.71	0.00	1.71
41.30	0.20	0.62	0.33*	1.70	0.00	1.70
41.35	0.20	0.62	0.33*	1.68	0.00	1.68
41.40	0.20	0.62	0.33*	1.66	0.00	1.66
41.45	0.20	0.62	0.33*	1.65	0.00	1.65
41.50	0.20	0.62	0.33*	1.63	0.00	1.63
41.55	0.20	0.62	0.33*	1.62	0.00	1.62
41.60	0.20	0.62	0.33*	1.60	0.00	1.60
41.65	0.20	0.62	0.33*	1.58	0.00	1.58
41.70	0.20	0.62	0.33*	1.57	0.00	1.57
41.75	0.20	0.62	0.33*	1.55	0.00	1.55
41.80	0.20	0.62	0.33*	1.53	0.00	1.53
41.85	0.20	0.62	0.33*	1.52	0.00	1.52
41.90	0.20	0.62	0.33*	1.50	0.00	1.50
41.95	0.20	0.62	0.33*	1.49	0.00	1.49
42.00	0.20	0.62	0.33*	1.47	0.00	1.47
42.05	0.20	0.62	0.33*	1.45	0.00	1.45
42.10	0.20	0.62	0.33*	1.44	0.00	1.44
42.15	0.20	0.62	0.33*	1.42	0.00	1.42
42.20	0.20	0.62	0.33*	1.41	0.00	1.41
42.25	0.20	0.62	0.33*	1.39	0.00	1.39
42.30	0.20	0.62	0.33*	1.37	0.00	1.37
42.35	0.20	0.62	0.33*	1.36	0.00	1.36
42.40	0.20	0.62	0.33*	1.34	0.00	1.34
42.45	0.20	0.62	0.33*	1.33	0.00	1.33
42.50	0.20	0.62	0.33*	1.31	0.00	1.31
42.55	0.20	0.62	0.32*	1.29	0.00	1.29
42.60	0.20	0.62	0.32*	1.28	0.00	1.28
42.65	0.20	0.62	0.32*	1.26	0.00	1.26
42.70	0.20	0.62	0.32*	1.24	0.00	1.24
42.75	0.20	0.61	0.32*	1.23	0.00	1.23
42.80	0.20	0.61	0.32*	1.21	0.00	1.21
42.85	0.20	0.61	0.32*	1.20	0.00	1.20
42.90	0.20	0.61	0.32*	1.18	0.00	1.18
42.95	0.20	0.61	0.32*	1.16	0.00	1.16
43.00	0.20	0.61	0.32*	1.15	0.00	1.15
43.05	0.20	0.61	0.32*	1.13	0.00	1.13
43.10	0.20	0.61	0.32*	1.12	0.00	1.12
43.15	0.20	0.61	0.32*	1.10	0.00	1.10
43.20	0.20	0.61	0.32*	1.08	0.00	1.08
43.25	0.20	0.61	0.32*	1.07	0.00	1.07
43.30	0.20	0.61	0.32*	1.05	0.00	1.05
43.35	0.20	0.61	0.32*	1.03	0.00	1.03
43.40	0.20	0.61	0.32*	1.02	0.00	1.02

43.45	0.20	0.61	0.32*	1.00	0.00	1.00
43.50	0.20	0.61	0.32*	0.99	0.00	0.99
43.55	0.20	0.61	0.32*	0.97	0.00	0.97
43.60	0.20	0.61	0.32*	0.95	0.00	0.95
43.65	0.20	0.61	0.32*	0.94	0.00	0.94
43.70	0.20	0.61	0.32*	0.92	0.00	0.92
43.75	0.20	0.61	0.32*	0.91	0.00	0.91
43.80	0.20	0.61	0.32*	0.89	0.00	0.89
43.85	0.20	0.61	0.32*	0.87	0.00	0.87
43.90	0.20	0.61	0.32*	0.86	0.00	0.86
43.95	0.20	0.61	0.32*	0.84	0.00	0.84
44.00	0.20	0.61	0.32*	0.82	0.00	0.82
44.05	0.20	0.61	0.32*	0.81	0.00	0.81
44.10	0.20	0.61	0.32*	0.79	0.00	0.79
44.15	0.20	0.61	0.32*	0.78	0.00	0.78
44.20	0.20	0.61	0.32*	0.76	0.00	0.76
44.25	0.20	0.61	0.32*	0.74	0.00	0.74
44.30	0.20	0.61	0.32*	0.73	0.00	0.73
44.35	0.20	0.61	0.32*	0.71	0.00	0.71
44.40	0.20	0.61	0.32*	0.69	0.00	0.69
44.45	0.20	0.61	0.32*	0.68	0.00	0.68
44.50	0.20	0.61	0.32*	0.66	0.00	0.66
44.55	0.20	0.61	0.32*	0.65	0.00	0.65
44.60	0.20	0.61	0.32*	0.63	0.00	0.63
44.65	0.20	0.61	0.32*	0.61	0.00	0.61
44.70	0.20	0.61	0.32*	0.60	0.00	0.60
44.75	0.20	0.61	0.32*	0.58	0.00	0.58
44.80	0.20	0.61	0.32*	0.56	0.00	0.56
44.85	0.20	0.61	0.32*	0.55	0.00	0.55
44.90	0.20	0.61	0.32*	0.53	0.00	0.53
44.95	0.20	0.61	0.32*	0.52	0.00	0.52
45.00	0.20	0.61	0.32*	0.50	0.00	0.50
45.05	0.28	0.61	0.46*	0.48	0.00	0.48
45.10	0.28	0.61	0.46*	0.47	0.00	0.47
45.15	0.28	0.61	0.46*	0.46	0.00	0.46
45.20	0.28	0.61	0.46*	0.45	0.00	0.45
45.25	0.28	0.61	0.46*	0.43	0.00	0.43
45.30	0.28	0.61	0.46*	0.42	0.00	0.42
45.35	0.28	0.61	0.46*	0.41	0.00	0.41
45.40	0.28	0.61	0.46*	0.40	0.00	0.40
45.45	0.28	0.61	0.46*	0.38	0.00	0.38
45.50	0.28	0.61	0.46*	0.37	0.00	0.37
45.55	0.28	0.61	0.46*	0.36	0.00	0.36
45.60	0.28	0.61	0.46*	0.35	0.00	0.35
45.65	0.28	0.61	0.46*	0.34	0.00	0.34
45.70	0.28	0.61	0.46*	0.32	0.00	0.32
45.75	0.28	0.61	0.46*	0.31	0.00	0.31
45.80	0.28	0.61	0.46*	0.30	0.00	0.30
45.85	0.28	0.61	0.46*	0.29	0.00	0.29
45.90	0.28	0.61	0.46*	0.27	0.00	0.27
45.95	0.28	0.61	0.46*	0.26	0.00	0.26
46.00	0.28	0.61	0.46*	0.25	0.00	0.25
46.05	0.28	0.61	0.46*	0.24	0.00	0.24
46.10	0.28	0.61	0.46*	0.22	0.00	0.22
46.15	0.28	0.61	0.46*	0.21	0.00	0.21
46.20	0.28	0.60	0.46*	0.20	0.00	0.20
46.25	0.28	0.60	0.46*	0.19	0.00	0.19
46.30	0.28	0.60	0.46*	0.17	0.00	0.17
46.35	0.28	0.60	0.46*	0.16	0.00	0.16
46.40	0.28	0.60	0.46*	0.15	0.00	0.15
46.45	0.28	0.60	0.46*	0.14	0.00	0.14
46.50	0.28	0.60	0.46*	0.12	0.00	0.12
46.55	0.28	0.60	0.46*	0.11	0.00	0.11

46.60	0.28	0.60	0.46*	0.10	0.00	0.10
46.65	0.27	0.60	0.46*	0.09	0.00	0.09
46.70	0.27	0.60	0.46*	0.07	0.00	0.07
46.75	0.27	0.60	0.46*	0.06	0.00	0.06
46.80	0.27	0.60	0.46*	0.05	0.00	0.05
46.85	0.27	0.60	0.46*	0.04	0.00	0.04
46.90	0.27	0.60	0.46*	0.02	0.00	0.02
46.95	0.27	0.60	0.46*	0.01	0.00	0.01
47.00	0.27	0.60	0.46*	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: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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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

B Biological Resources Report

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Merkel & Associates, Inc.
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Revised February 12, 2019
November 28, 2018
M&A #18-059-01

Ms. Christina Willis
BRG Consulting, Inc.
304 Ivy Street
San Diego, CA 92101

Re: Biological Resources Letter Report for the
Torres-Martinez Band of Desert Cahuilla Indians Indian Health Clinic Project,
Located on Tribal Lands within the County of Riverside, California

Dear Ms. Willis:

As requested, Merkel & Associates, Inc. (M&A) has prepared this biological resource letter report for the proposed Torres-Martinez Band of Desert Cahuilla Indians Indian Health Clinic Project in conformance with the National Environmental Policy Act (NEPA).

The Department of Health and Human Services (DHHS) – Indian Health Service (IHS) proposes to provide financial assistance to the Riverside-San Bernardino Indian Health Clinic, Inc (RSBCIHI), under the Small Ambulatory Grant Program to construct a replacement health care clinic/facility on the Torres-Martinez Desert Cahuilla Indian Reservation in Thermal, Riverside County, California (proposed action). The existing Torres Martinez Indian Health Clinic, located at 66-735 Martinez Road, serves American Indian and Alaska Natives (AI/AN) and is operated pursuant to a health care services contract or compact entered into under the Indian Self-Determination and Education Assistance Act, Public Law 93-638.

The Bureau of Indian Affairs (BIA) prepared a Draft Environmental Assessment (EA) in May 2017 to secure a lease of the project site to RSBCIHI for the replacement clinic. The Draft EA has not been finalized and a Finding of No Significant Impact (FONSI) has not been initiated. IHS is preparing an amendment to the Draft EA to address the Proposed Action. The IHS is the lead federal agency for purposes of complying with NEPA and Section 106 of the National Historic Preservation Act.

The IHS will use the Amended EA to determine if the proposed action would result in significant impacts to the environment. This Biological Resources Technical Letter Report is prepared in support of the project EA.

If you have any questions regarding this letter, please do not hesitate to contact me or Gina Krantz (Project Manager) at gkrantz@merkelinc.com or (858) 560-5465.

Sincerely,

Keith W. Merkel
Principal Consultant

Gina M. Krantz
Project Manager/Senior Biologist

Purpose of Report

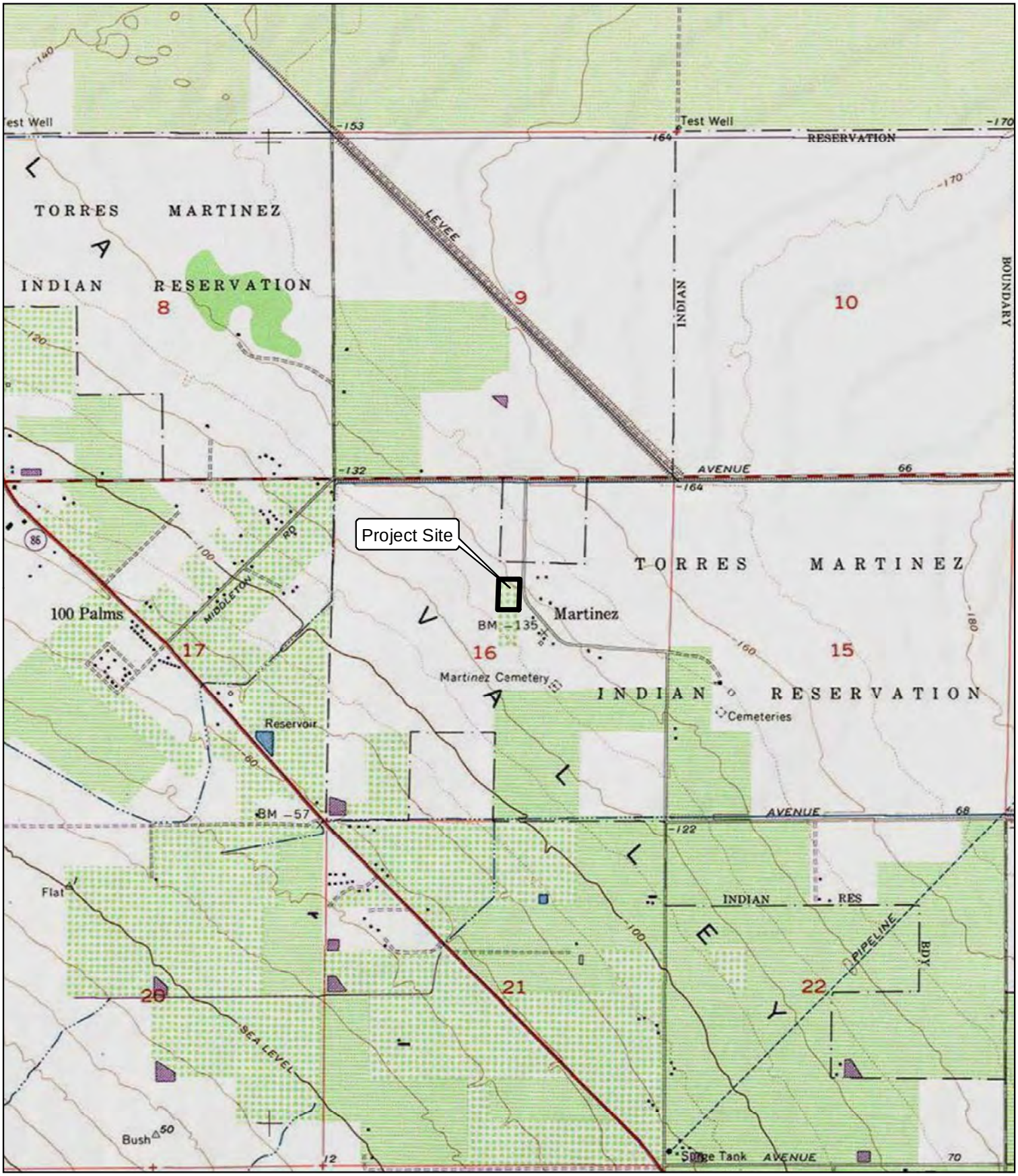
Merkel & Associates, Inc. (M&A) has prepared this biological resource technical letter report for the proposed Torres-Martinez Band of Desert Cahuilla Indians Indian Health Clinic Project. The purpose of this report is to document the existing biological conditions within the project study area; identify potential impacts to biological resources that could result from implementation of the proposed project, and recommend measures to avoid, minimize, and/or mitigate significant impacts in conformance with the National Environmental Policy Act (NEPA).

Project Site Location

The proposed project site is located within the Torres-Martinez Band of Desert Cahuilla Indians Reservation northwest of the Salton Sea and in the northeast quarter of Section 16, Township 7 South, and Range 8 East on the USGS 7.5-minute topographic quadrangle of Valerie (Figure 1). Further, the project site is located on vacant land along the western side of Martinez Road, north of the Tribal Administration Buildings and adjacent to the existing senior housing complex and residential homes.

Proposed Project Description

The proposed health clinic would consist of a single building, 10,000 square feet (SF) in size and would include 50 parking spaces, along with landscaping and lighting in the parking area. A pedestrian path is also proposed to connect the proposed health clinic to the adjacent senior housing center. Vehicle access to the site would be provided from Martinez Road. Hours of operation would be 8:00 AM to 5:00 PM, Monday through Thursday; and 8:00 AM to 2:00 PM on Friday.



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Project Vicinity Map
Torres-Martinez Band of Desert Cahuilla Indians
Indian Health Clinic Project
Source: USGS 7.5' Valerie, CA Quadrangle

Figure 1

METHODS AND SURVEY LIMITATIONS

Literature and Data Review

Historical and currently available biological literature and data pertaining to the project area were reviewed prior to initiation of the field investigation. This review included examination of: 1) aerial photography for the project site (Digital Globe, 2018; Google Earth, 2018; Google Earth-Street View 2012); 2) geological substrates and soil types mapped on the project site (USGS 2018 and USDA NRCS 2018, respectively); and 3) U.S. Fish and Wildlife Service (USFWS) special status species records and critical habitat designations for the project vicinity (USFWS CFWO 2018 and 2016, respectively). In addition, the preliminary draft EA for the proposed project (BRG Consulting, Inc., 2017) was also reviewed. All applicable information was used to assess the presence or potential for presence of sensitive habitats and species within the study area.

Field Survey Conducted

M&A biologist conducted a general biological survey within the project biological study area (BSA) as summarized in Table 1. The BSA consisted of the approximate 3.5-acre project action area as well as a habitat mapping buffer of 100 feet beyond the project APE to provide context regarding any directly adjacent biological resources.

Table 1. Summary of Survey Dates, Times, Conditions, and Staff

Survey	Date	Time	Weather Conditions [1]	Biologist[2]
General Biological Survey	November 8, 2018	1010-115	Weather: 0%–0%cc Wind: BS 1-2 Temp.: 83°F-86°F	GMK/KLI

[1] cc = cloud cover; BS= Beaufort Scale; F = Fahrenheit

[2] GMK = Gina M Krantz; KLI= Kyle L. Ince

General Biological Survey

A general biological survey of the BSA was conducted on-foot and visually and/or audibly surveyed.

Existing vegetation types were delineated onto a 1" = 100' scale, color aerial photograph (Digital Globe, 2018) with topographical overlay of the project site. The vegetation types were classified according to the Holland (1986) code classification system as modified by Oberbauer (2008). A list of detectable flora and fauna species was recorded in a field notebook. Plant identifications were either resolved in the field or later determined through verification of voucher specimens, and wildlife species were determined through direct observation (aided by binoculars), identification of songs, call notes and alarm calls, or by detection of sign (e.g., burrows, tracks, scat, etc.). A nest survey was also conducted during the general biological survey to determine the presence and location of any active nests (or previously active nests) of avian and/or raptor species.

The scientific and common names utilized for the floral and faunal resources were noted according to the following nomenclature: flora, Rebman and Simpson (2014); Klein/San Diego Natural History

Museum (2002); amphibians and reptiles, Crother et al. (2001 and 2012); birds, American Ornithologists' Union (1998 and 2017); and mammals, (species level) Wilson and Reeder (2005) and (sub-species level) Hall (1981).

Photographs of the project BSA were taken to record the biological resources present as shown in Figure 2 and Appendix 1. Data collected from the survey were digitized into current Geographical Information System (GIS) Environmental Systems Research Institute (ESRI) software platforms.

Federally Listed Species Assessment

Concurrent with the general biological survey (i.e., vegetation mapping and general botanical/wildlife survey), a directed assessment for federally listed animal and/or plant species protected under the federal Endangered Species Act was conducted within the BSA.

The potential for listed species to occur on the project site was assessed based on the presence of potentially suitable habitat, site conditions, soil types, and/or historical and currently available known sensitive species record data (i.e., USFWS GIS database).

SURVEY RESULTS

Physical and Environmental Setting

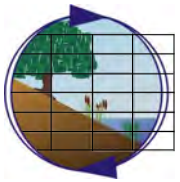
The project site occurs within a predominately developed area of the Torres-Martinez Indian Reservation. The project APE currently consists of recently disturbed habitat void of vegetation that had previously supported a date palm (*Phoenix dactylifera*) tree farm that had burned several years ago. The project site is directly surrounded by active agricultural land (i.e., irrigated grape vineyard) to the west, tribal land residential and administrative development to the south and east, and a vacant lot to the north that supports the only remnant of native desert scrub habitat in the immediate project vicinity.

The BSA is relatively flat at approximately 130 feet above sea level. The soil type mapped for the project area is Indio very fine sandy loam, wet (USDA-NRCS 2018). The underlying geology is mapped as quarternary alluvium and marine deposits (USGS 2018).

Biological Resources

Botanical Resources-Flora

Four vegetation types were identified within the BSA: desert saltbush scrub, disturbed habitat, active agriculture, and urban/developed land (Figure 2). The project site APE only supports disturbed habitat, while the other habitats mapped within the BSA occur outside of the APE.



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Biological Resources Map

Torres-Martinez Band of Desert Cahuilla Indians Indian Health Clinic Project

Figure 2

The project action area currently consists of a cleared pad that had been sprayed with a soil stabilizer for erosion control and as such is mapped as disturbed habitat in Figure 2. Only a few individual plants were resprouting within the site at the time of the field survey. The only plant species identified within the APE consisted of resprouting big saltbush (*Atriplex lentiformis*) and arrow weed (*Pluchea sericea*). Evidence of heavy equipment tracks was evident throughout the site during the field survey. Based on a Google Earth-Street View dated February 2012 review of the site, the site supported burned date palm trees with an understory of desert scrub species and/or weedy non-native shrub species, presumably prior to the current disturbance. Further, based on the field survey, no federal wetlands occur within the project APE due to the lack of all three wetland parameters (i.e., wetland dominant vegetation, hydric soils, and wetland hydrology) onsite.

The area immediately north of the project action area supports an isolated patch of desert saltbush scrub that is dominated by big saltbush but also supports arrow weed and the non-native invasive salt cedar/tamarisk (*Tamarix* sp.). The active agriculture land to the west supports a large grape vineyard. The developed areas to the east and south of the action area support urban development including planted roadside trees such as California fan palm (*Washingtonia filifera*) and date palms.

Zoological Resources-Fauna

Due to the lack of vegetation within the project site, a limited amount of faunal species were observed within the BSA. The majority of the observed faunal species predominately consisted of common avian species such as northern mockingbird (*Mimus polyglottos*), verdin (*Auriparus flaviceps*), loggerhead shrike (*Lanius ludovicianus*), house finch (*Haemorhous mexicanus*), white-crowned sparrow (*Zonotrichia leucophrys*) and Eurasian collared dove (*Streptopelia decaocto*) within the desert saltbush scrub and/or California fan palm trees outside of the action area but within the BSA. In addition, domestic dog (*Canis familiaris*) tracks were identified within the bare ground in the action area.

Federally Threatened and Endangered Listed Species

No federally threatened and/or endangered listed species and/or potentially suitable habitat for listed species were identified within the project BSA during the biological survey. Further, no federally listed animal and/or plant species are expected to occur within the project BSA primarily due to the lack of suitable habitat, presumed site condition prior to the recent disturbance, soils, known records, and/or the directed field assessment. The only known USFWS record in the project vicinity (i.e., within 3 miles the BSA) is for western burrowi ng owl (*Athene cunicularia*), a species that is not a federally listed species but is a part of the USFWS GIS database presumably since this species was previously proposed for listing. No western burrowing owls or potentially suitable habitat for this species occurs within the project action area.

No designated critical habitat for any federally listed species occurs within or directly adjacent to the project BSA. The closest designated critical habitat is for the federally endangered peninsular bighorn sheep (*Ovis canadensis nelson*) approximately 3 miles to the west along the desert slopes of the Peninsular Mountain Range.

Wildlife Corridors

Wildlife corridors are important in preserving species diversity. Connections between areas of open space are integral to maintaining biological diversity and population viability. For the purposes of this report, we have defined wildlife corridor as follows: a linear landscape feature utilized by resident or transient wildlife for movement between two blocks of habitat.

The project site is completely surrounded by urban development or active agriculture and is not located within a landscape that typically facilitates wildlife movement such as a canyon, ridgeline, or riparian corridor. Therefore, the project action area is not a part of a regional or local wildlife corridor.

Federal Migratory Bird Treaty Act

Due to the lack of vegetation within the project action area, the proposed project site only has the potential to be utilized by a very limited amount of ground nesting regionally common migratory birds that are protected under the federal Migratory Bird Treaty Act (MBTA). Similarly, due to the lack of trees, the project site does not support potentially suitable nesting raptor habitat.

PROJECT IMPACT ANALYSIS

Direct impacts were determined by overlaying the project APE boundary on the mapped vegetation communities/habitats in GIS ESRI software platforms. Indirect impacts were determined based on the design, intended use, and location of the proposed project elements relative to biological resources.

Habitats/Vegetation Communities

The proposed project would not result in direct impacts to any sensitive habitat/vegetation communities, but rather only disturbed habitat. Due to the lack of sensitivity, no habitat mitigation is required for this proposed impact.

Indirect impacts to the adjacent offsite desert saltbush scrub habitat from the proposed health clinic development such as an increase in noise, and/or night lighting may occur; however, the proposed project site currently experiences edge effects due to the extent of surrounding development; therefore, it is not anticipated that the proposed project would result in a substantial increase in indirect impacts.

Federally Threatened and Endangered Listed Species

No federally listed animal or plant species occur or are expected to occur onsite based on a lack of suitable habitat, conditions, and/or known records in project action area and thus no federally listed animal or plant species would be impacted by the proposed project.

No designated critical habitat for any federally listed species occurs within or directly adjacent to the project BSA and thus no critical habitat would be affected by the proposed project.

Wildlife Corridors

The project action area does not support a regional or local wildlife movement corridor and thus no wildlife corridors would be impacted by the proposed project.

Impacts Under the Federal Migratory Bird Treaty Act

The proposed project action area has the potential to be utilized by a limited amount of nesting regionally common migratory birds that are protected under the federal Migratory Bird Treaty Act (MBTA). Due to the lack of vegetation and specifically larger trees, the project site does not support potentially suitable nesting raptor habitat.

Under the MBTA, it is unlawful, except as permitted by the USFWS, to "take, possess, transport, sell, purchase, barter, import, or export all species of birds protected by the MBTA, as well as their feathers, parts, nests, or eggs. Take means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect (50 CFR 10.12)." It is important to note that "take" as defined under the federal MBTA is not synonymous with "take" as defined under the federal ESA. The MBTA definition of "take" lacks a "harm and harassment" clause comparable to "take" under the ESA, thus, the MBTA authority does not extend to activities beyond the nests, eggs, feathers, or specific bird parts (i.e., activities or habitat modification in the vicinity of nesting birds that do not result in "take" as defined under the MBTA are not prohibited).

The proposed project could result in impacts to active bird nests for a limited amount of common species such as mourning dove or killdeer that may nest on the ground within the project site if construction-related activities were to occur during the avian breeding season (February 1 to September 15). No suitable raptor habitat (i.e., trees) occurs within the project site and thus no raptor species would be impacted. If construction cannot avoid the avian, a pre-construction survey for active migratory bird nests protected under MBTA should be conducted by a qualified biologist within 14 days of construction, covering a radius of 300 feet for non-listed raptors and 100 feet for non-listed passerines at the proposed project site area. The survey will cover all affected areas where substantial ground disturbance or vegetation clearing is required. If any active nests containing eggs or young are found, an appropriate nest exclusion zone will be established; the biologist shall evaluate whether sufficient screening buffers (such as trees or intervening topography) exist that work may proceed in the area and shall determine what level of nest monitoring is needed.

To the extent practicable, no project vehicles, chain saws, or heavy equipment will be operated in this exclusion zone until the biologist has determined that the nest is no longer active and or the young have fledged. If it is not practicable to avoid work in an exclusion zone around an active nest, work activities will be modified to minimize disturbance of nesting birds but may proceed in these zones at the discretion of the biologist. The biologist shall monitor all work activities in these zones daily when construction is occurring and assess their effect on the nesting birds. If the biologist determines that particular activities pose a high risk of disturbing an active nest, the biologist shall recommend additional, feasible measures to minimize the risk of nest disturbance. If work cannot proceed without disturbing the nesting birds, or signs of disturbance are observed by the monitor, work may need to be halted or redirected to other areas until the nesting and fledging is completed

or the nest has otherwise failed for non-construction-related reasons. The biologist shall conduct periodic biological monitoring where needed and adjust buffers as appropriate.

INVASIVE SPECIES (EXECUTIVE ORDER 13112)

On February 3, 1999, President William J. Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Under the E.O. 13112, federal agencies cannot authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless the agency has determined that the benefits of the actions outweigh the potential harm caused by invasive species and that all reasonable measures to minimize risk of harm will be taken in conjunction with the actions. Any federal invasive animal species or noxious weed species found to be present within the BSA must be considered as part of the NEPA analysis for the proposed project.

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) Federal Noxious Weed List webpage (https://plants.usda.gov/java/noxious) provides the most current noxious weed list. The NRCS Federal Noxious Weed List was cross-referenced with the flora observed within the BSA to determine if any of the non-native plant species identified within the BSA were considered invasive/noxious weed species, as defined by the above referenced list/source. No invasive plant species as identified on the federal Noxious Weed List occur within the project BSA and thus it is not expected that the proposed project would cause or promote the introduction or spread of invasive species.

Similarly, no invasive non-native animal species on the NRCS National Invasive Species Information Center webpage (https://www.invasivespeciesinfo.gov/terrestrial-invasives) were identified within the BSA during the recent field survey or expected to occur onsite based on suitable habitat. No invasive animal species as identified on the federal NRCS Invasive Species List occur within the project BSA and thus it is not expected that the proposed project would cause or promote the introduction or spread of invasive species.

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Appendix 1. Photo Pages

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Photo Point 1. Photo facing north, taken November 8, 2018.

Photo Point 2. Photo facing west, taken November 8, 2018.

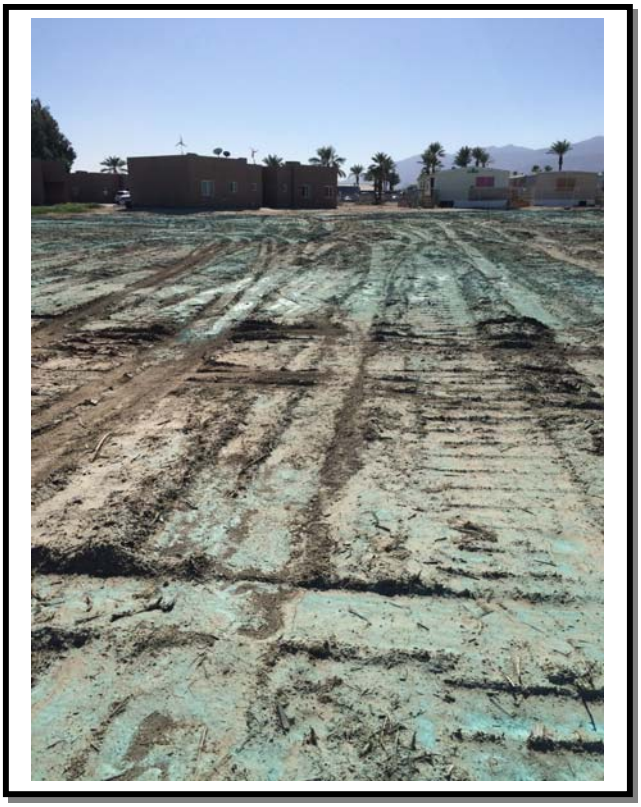

Photo Point 3. Photo facing south, taken November 8, 2018.

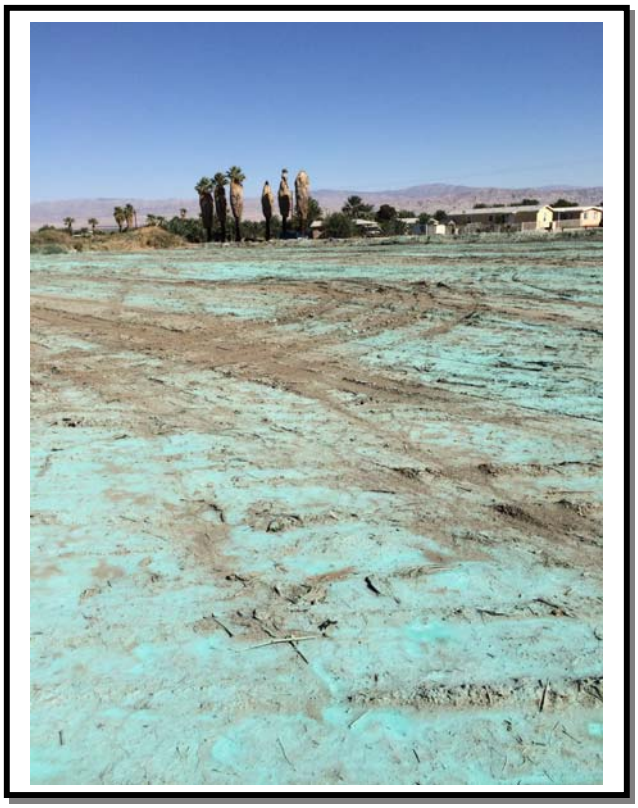

Photo Point 4. Photo facing northeast, taken November 8, 2018.

Photo Point 5. Photo facing north, taken November 8, 2018.

Photo Point 6. Photo facing south, taken November 8, 2018.

Photo Point 7. Photo facing south, taken November 8, 2018.

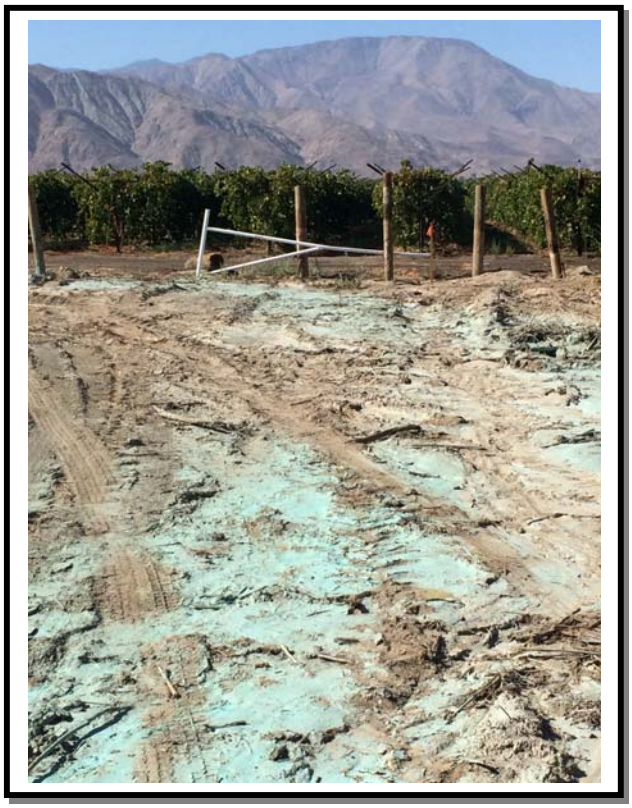

Photo Point 8. Photo facing west, taken November 8, 2018.

C Air Quality Report

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Air Quality Technical Report

for the

Torres Martinez Indian Health Clinic Replacement Project

Submitted To:

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And

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November 29, 2018

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1 INTRODUCTION

The Department of Health and Human Services (DHHS) – Indian Health Service (IHS) proposes to provide financial assistance to the Riverside-San Bernardino Indian Health Clinic, Inc. (RSBCIHI), under the Small Ambulatory Grant Program to construct a replacement health clinic on the Torres-Martinez Desert Cahuilla Indian Reservation in Thermal, Riverside County, California (proposed action). The existing Torres Martinez Indian Health Clinic, located at 66-735 Martinez Road, serves American Indian and Alaska Natives (AI/AN) and is operated pursuant to a health care services contract or compact entered into under the Indian Self-Determination and Education Assistance Act, Public Law 93-638.

The Bureau of Indian Affairs (BIA) prepared a Draft Environmental Assessment (EA) in May 2017 to secure a lease of the project site to RSBCIHI for the replacement clinic. Lease approval is a BIA federal action requiring environmental compliance with the National Environmental Policy Act (NEPA). The May 2017 Draft EA was not finalized and a Finding of No Significant Impact (FONSI) has not been initiated. IHS is preparing an amendment to the Draft EA to address the Proposed Action. The IHS is the lead federal agency for purposes of complying with NEPA and Section 106 of the National Historic Preservation Act.

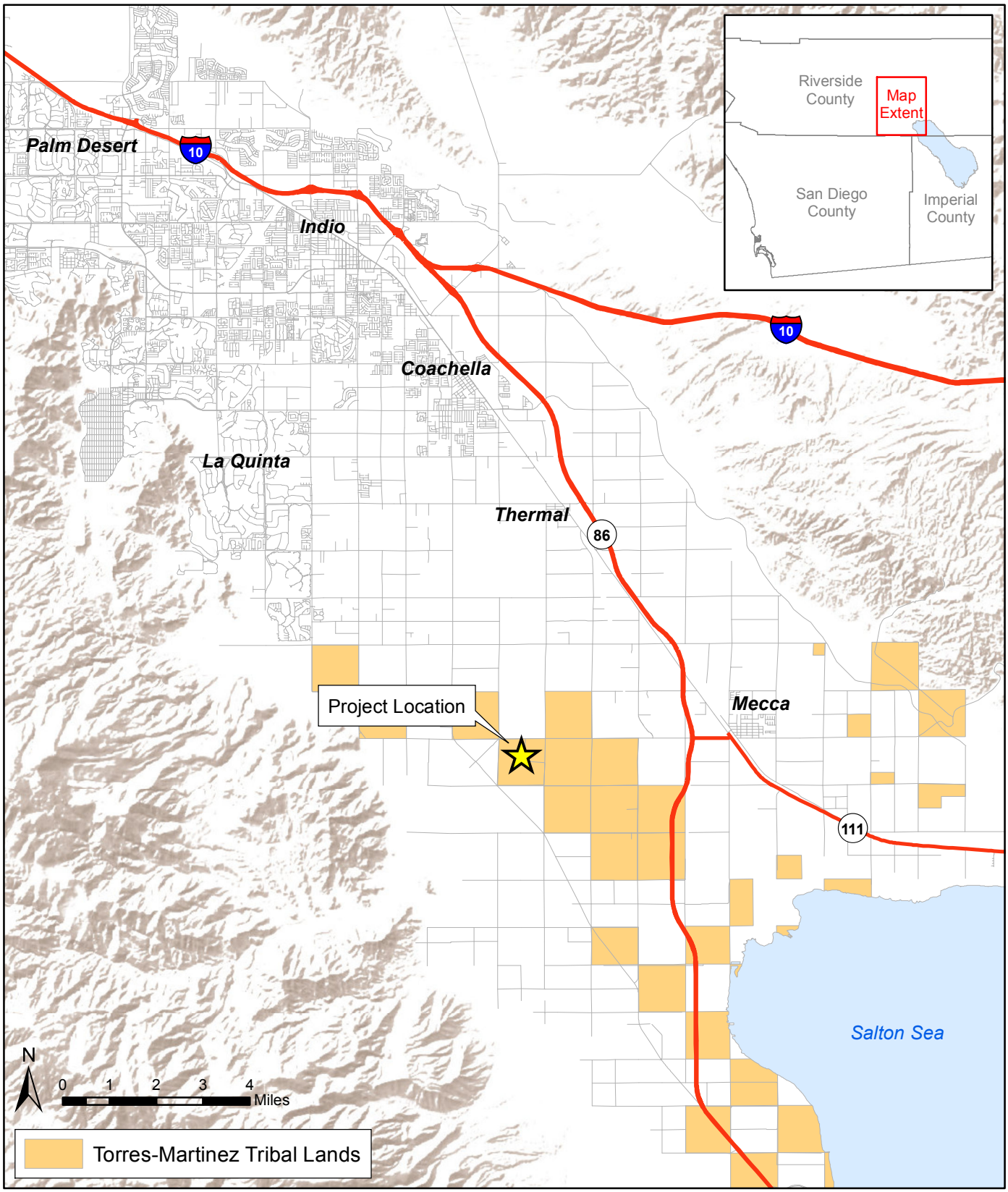
2 PROPOSED ACTION

The project site is approximately 2.5 acres in size and located on the west side of Martinez Road on the north side of the residential area within the Torres-Martinez Reservation. The site is currently undeveloped and had previously supported a date orchard that was destroyed in a fire more than 10 years ago. The site would be graded and developed with a single one-story building approximately 11,605 square feet in size. Parking would be provided for 50 vehicles. Drought tolerant landscaping would be installed and a pedestrian path would be constructed to connect the health clinic to the adjacent Torres Martinez senior housing center. For the purpose of this report, it is assumed construction would begin as early as mid-2019 and take approximately 6 months to complete.

This Air Quality Specialist Report addresses potential air quality impacts associated with the Torres-Martinez Indian Health Care Clinic Replacement Project (Proposed Action). Activities required to implement the Proposed Action will be focused on the 2.5-acre site referenced above. A regional vicinity map is shown in Figure 1. The project site is shown in Figure 2.

3 EXISTING CONDITIONS

As stated in Section 1.0, the project is located within the community of Thermal, east of Highway 111 and south of 66th Avenue in Riverside County. The project site is located within the Coachella Valley portion of the Salton Sea Air Basin (which is under the jurisdiction of the South Coast Air Quality Management District). The United States Environmental Protection Agency (EPA) has primary responsibilities for air quality management under the Federal Clean Air Act. However, the



SOURCE: Riverside County, 2016; Esri, 2016

10/23/18

BRG CONSULTING, INC.

Torres-Martinez Indian Health Clinic Replacement Project

Regional Location

FIGURE 1

SOURCE: Riverside County, 2016; Esri, 2016

11/28/18

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Torres-Martinez Indian Health Clinic Replacement Project

Project Location

FIGURE 2

EPA has transfered a number of responsibilities to the states and, in most cases, regional air quality management districts. Air quality conditions in the Coachella Valley are under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment." The Coachella Valley is currently designated as a nonattainment area with respect to the State and Federal ozone and PM10 standards. The Coachella Valley is designated attainment or unclassified for the remaining State and Federal standards.

The following discussion provides information on meteorological conditions, background air quality data, the regulatory framework, and locations of sensitive receptors in the vicinity of the project site.

3.1 Meteorological Conditions

The climate of southern California is characterized by hot, dry summers and mild to cold winters with seasonally heavy precipitation that occurs primarily during the winter months. The meteorological conditions in the region are influenced by the Eastern Pacific High, a strong, persistent high-pressure system that blocks migrating storm systems over the eastern Pacific Ocean. The area is also influenced by the moderating effects of the Pacific Ocean and mountain ranges that block air flow. Seasonal variations in the position and strength of the Eastern Pacific High are key factors in the weather changes in the area. The Eastern Pacific High attains its greatest strength and most northerly position during the summer, when it is centered west of northern California. In this location, this high effectively shelters southern California from the effects of polar storm systems. Large-scale atmospheric subsidence associated with the high produces an elevated temperature inversion along the West Coast. The base of this subsidence inversion is generally 1,000 to 2,500 feet above mean sea level during the summer. Vertical mixing is often limited to the base of the inversion, and air pollutants are trapped in the lower atmosphere. The mountain ranges that surround the greater Coachella Valley area constrain the horizontal movement of air and also inhibit the dispersion of air pollutants out of the region.

The unincorporated community of Thermal is located in Riverside County and within the Salton Sea Air Basin. The SSAB consists of the Coachella Valley and Imperial County. The Coachella Valley is generally aligned from the northwest to the southeast and is bound by the San Jacinto Mountains to the west and the Little San Bernardino Mountains to the east. The climate of the Coachella Valley is a continental, desert-type, with hot summers, mild winters, and very little annual rainfall. Precipitation is less than six inches annually and occurs mostly in the winter months from active frontal systems, and in the late summer months from thunderstorms. Temperatures exceed 100 degrees Fahrenheit, on the average, for four months each year, with daily highs near 110 degrees Fahrenheit during July and August. Summer nights are very mild with minimum temperatures in the mid-70's. During the winter season, daytime highs are mild, but

the dry air is conducive to nocturnal radiational cooling, with early morning lows around 40 degrees.

The mountain ranges that surround the Coachella Valley constrain the horizontal movement of air and also inhibit the dispersion of air pollutants out of the region. These two factors, combined with the air pollution sources from the Los Angeles metropolitan area, are responsible for the high pollutant concentrations that can occur in the SCAB. In addition, high solar radiation during the warmer months promotes the formation of ozone, which has its highest concentration levels during the summer season.

Meteorological data from the Thermal (Desert Resorts) Airport monitoring station (Western Regional Climatic Center 2018) are representative of the project area as they are the closest reliable temperature and precipitation data available to the site. Monthly average temperatures and precipitation for the San Fernando meteorological station are summarized in Table 3-1.

Table 3-1 Monthly Average Temperatures and Precipitation – Thermal (Desert Resorts) Airport Meteorological Station

Month	Temperature, ºF			Precipitation, Inches
	Maximum	Minimum	Mean	
January	70.8	38.5	54.7	0.52
February	74.6	42.6	58.6	0.50
March	79.8	48.4	64.1	0.32
April	86.6	55.0	70.8	0.07
May	94.0	62.7	78.4	0.04
June	102.5	69.2	85.9	0.01
July	106.7	75.8	91.3	0.17
August	105.5	75.2	90.4	0.27
September	101.1	68.6	84.9	0.32
October	91.2	57.3	74.3	0.15
November	78.6	44.7	61.7	0.28
December	70.7	37.7	54.2	0.31
Annual	88.5	56.3	72.4	2.96

Source: www.wrcc.dri.edu

3.2 Background Ambient Air Quality

Air pollution generally refers to additional chemical compounds, gases and particulates that may have been added to the air. The source of these pollutants can be from vegetation sources (biogenic), geological (geogenic) sources, or sources generated from human activity (anthropogenic). Pollution can also be classified as to the category of the source of the emissions.

The two major categories of emissions are mobile sources and stationary sources. Mobile sources include on-road automobiles and trucks, off-highway vehicles (OHV), aircraft, trains, construction equipment, and recreational vehicles. Stationary sources include point sources such as large stack emissions from industrial sources and power generation, and area sources which represent an accumulation of many small point sources spread over a larger area.

Air quality is defined by ambient air concentrations of specific pollutants identified by the EPA to be of concern with respect to health and welfare of the general public. The EPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the EPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the EPA established both primary and secondary standards for several pollutants (called "criteria" pollutants). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. The criteria pollutants that were originally identified in the CAA include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter of 10 microns or less, which is considered to be respirable (PM_{10}), and lead (Pb). In 1997, the EPA added particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$) to its list of criteria pollutants for which it has established NAAQS.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The California Air Resources Board (CARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six original criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles.

The following discussion provides information on each of the criteria pollutants and their potential health effects.

Ozone. O_3 is considered a photochemical oxidant, which is a chemical that is formed when reactive organic gases (ROG) and oxides of nitrogen (NO_X), both by-products of combustion, react in the presence of ultraviolet light. O_3 is considered a respiratory irritant, and prolonged exposure can reduce lung function, aggravate asthma and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to O_3.

Carbon Monoxide. CO is a product of combustion, and the main source of CO in the SCAB is from motor vehicle exhaust. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease, and it can also affect mental alertness and vision. Elevated CO concentrations are generally found only

near a significant source of emissions such as a freeway or busy intersection. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as a stable boundary layer. These conditions occur more frequently in wintertime than in summer. Since mobile sources (motor vehicles) are the main source of CO, ambient concentrations of CO are dependent on motor vehicle activity. CO concentrations in California have declined substantially due to the 1992 wintertime oxygenated gasoline program and Phases I and II of the reformulated fuel program. Increasingly stringent motor vehicle emission standards and phase-out of older vehicles has also reduced CO emissions statewide.

Nitrogen Dioxide. NO_2 is also a by-product of fuel combustion, and it is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. Both NO_2 and NO are oxides of nitrogen (NO_x). NO_2 is a respiratory irritant that may affect those with existing respiratory illness, including asthma. NO_2 can also increase the risk of respiratory illness.

The majority of the NO_X that is emitted from combustion sources is emitted as NO, with the balance emitted as NO_2. NO_2 is formed in the atmosphere by a reaction of NO with O_2 and O_3. Some level of photochemical activity is required for the conversion of NO to NO_2. Highest concentrations of NO_2 generally occur during the fall months when inversion can occur to trap pollutants near the ground but there is adequate ultraviolet radiation to oxidize NO to NO_2.

Respirable Particulate Matter and Fine Particulate Matter. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of ten microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations, and windblown dust. Human activities that contribute to PM_{10} emissions include combustion sources such as stack emissions, diesel exhaust, and smoke from prescribed fire and wildfire, fugitive dust sources such as construction and demolition activities, OHV travel, unpaved public roads and parking lots, industrial activities, OHV open areas, and military activities. Both PM_{10} and $PM_{2.5}$ can either be emitted directly or formed from the interaction of precursor pollutants such as NO_X, oxides of sulfur (SO_X), ROG, and ammonia in the atmosphere.

One of the reasons for concern with PM_{10} and $PM_{2.5}$ emissions is their adverse effect on human health. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs. All of the PM_{10} particles are considered respirable particulates because they can be inhaled into the nose, throat and/or lungs. The fine PM_{10} particles are the largest threat to health because they tend to deposit in air sacks located in the lungs. In addition, many of the fine particles are from precursor emissions, many of which are toxic or

carcinogenic. Fugitive dust is primarily coarse particulate matter that is not as likely to contain toxic materials. The most recent study reported that a 100 $\mu g/m^3$ increase in daily PM_{10} concentrations would increase mortality by 10 percent (CARB 2009).

The remaining pollutants for which EPA and/or CARB have established ambient air quality standards are not measured in the Project Area and are not considered to be pollutants of concern for the Project. A summary of pollutant sources and effects is provided below.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Pb in the atmosphere occurs as particulate matter. Pb has historically been emitted from vehicles combusting leaded gasoline as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Pb has the potential to cause gastrointestinal, central nervous system, kidney, and blood diseases upon prolonged exposure. Pb is also classified as a probable human carcinogen.

Sulfates. Sulfates are the fully oxidized ionic form of sulfur. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The CARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility, and due to the fact that they are usually acidic they can harm ecosystems and damage materials and property.

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. It can also be present in sewer gas and some natural gas, and it can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the standard would result in exposure to a very disagreeable odor. In 1984, an CARB committee concluded that the ambient standard for H_2S is adequate to protect public health and significantly reduce odor annoyance.

Vinyl Chloride. Vinyl chloride, 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. Short-term exposure to high levels of vinyl chloride

in air causes central nervous system effects such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer, in humans.

The EPA and CARB classify areas as "attainment," "nonattainment," or "unclassified" depending on whether ambient air quality data collected in the area indicate that the area shows compliance with the NAAQS and CAAQS, shows noncompliance with the NAAQS and CAAQS, or whether there are insufficient data to make a determination of the area's classification relative to the NAAQS and CAAQS. The NAAQS and CAAQS are presented in Table 3-2.

Table 3-2 Ambient Air Quality Standards

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS[1]		NATIONAL STANDARDS[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]
Ozone[8] (O_3)	1 hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 hours	0.070 ppm (137µg/m^3)		0.070 ppm (137 µg/m^3)		
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)	--	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)[10]	Annual Average	0.030 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3)	--	
Sulfur Dioxide (SO_2)[11]	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 µg/m^3)	--	Pararosaniline
	24 hours	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	--	
	3 hours	--		--	0.5 ppm (1300 µg/m^3)	
	1 hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	--	
Respirable Particulate Matter (PM_{10})[9]	24 hours	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	150 µg/m^3	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--	--	
Fine Particulate Matter ($PM_{2.5}$)[9]	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 µg/m^3	Same as Primary Standard	

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS[1]		NATIONAL STANDARDS[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]
Sulfates	24 hours	25 µg/m^3	Ion Chromatography	--	--	--
Lead[12, 13] (Pb)	30-day Average	1.5 µg/m^3	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m^3	Same as Primary Standard	
	3-month Rolling Average	--		0.15 µg/m^3		
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride[12]	24 hours	0.010 ppm (26 µg/m^3)	Gas Chromatography	--	--	--

Notes:

ppm = parts per million
µg/m^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
Source: California Air Resources Board 2017

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, 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.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone 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. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. 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.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that 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.
12. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/ m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Table 3-3 presents a summary of the federal and State attainment classification for the Project Area.

Table 3-3 Attainment Status – Coachella Valley

Pollutant	**Attainment Status South Coast Air Basin**	
	Federal	State
Ozone – 1 hour	N/A	Extreme Nonattainment
Ozone – 8 hour (2015 Standard)	Designation Pending	Nonattainment
CO	Attainment (Maintenance)	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM_{10}	Attainment (Maintenance)	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment

Source: South Coast Air Quality Management District (2017)

The nearest ambient air monitoring station to the proposed Project site is the Indio monitoring station located at 46-990 Jackson Street. The station measures O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$. SO_2 has not been monitored in the immediate area and is not considered to be an air quality issue in the Project Area. Table 3-4 provides a summary of background air quality representative of the area.

Table 3-4 Representative Air Quality Data for the Torres Martinez Project

Air Quality Indicator	2015	2016	2017
Ozone (O_3)			
Peak 8-hour value (ppm)	0.085	0.089	0.093
Days above state standard (0.070 ppm)	11	27	44
Days above federal standard (0.070 ppm)(3)	11	27	44
Particulate matter less than or equal to 10 microns in diameter (PM_{10})			
Peak 24-hour value ($\mu g/m^3$)	381	393.2	196.6
Days above state standard (50 $\mu g/m^3$)	*	*	*
Days above federal standard (150 $\mu g/m^3$)	*	*	1
Annual Average value ($\mu g/m^3$) (federal)	44.0	37.0	34.8
Particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$)			
Peak 24-hour value ($\mu g/m^3$)	24.6	25.8	18.8
Days above federal standard (35 $\mu g/m^3$)	*	0.0	*
Annual Average value ($\mu g/m^3$)	*	7.7	*
Carbon Monoxide (CO)			
Peak 8-hour value (ppm)	ND	ND	ND
Days above state/federal standard (9.0 ppm)	ND	ND	ND
Nitrogen Dioxide (NO_2)(1)			
Peak 1-hour value ($\mu g/m^3$)	41.5	42.6	42.5
Days above state standard (0.18 ppm)	0	0	0
Annual Average ($\mu g/m^3$)	6	6	6

[1]-Nitrogen dioxide data obtained from the Palm Springs Fire Station Monitoring Station.

In addition to criteria pollutants, the EPA and CARB regulate both toxic air contaminants and greenhouse gases.

Toxic Air Contaminants. Toxic air contaminants (TACs) are air pollutants that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the

general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources.

Greenhouse Gas Emissions. Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. These emissions occur from natural processes as well as human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences worldwide.

Recent observed changes resulting from global warming include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (Intergovernmental Panel on Climate Change 2007). Predictions of long-term environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack.

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. Total GHG emissions from a source are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs. On a national scale, federal agencies are addressing emissions of GHGs by reductions mandated in federal laws and Executive Orders. Most recently, Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management,* was enacted. Several states have promulgated laws as a method to reduce GHG emissions statewide. In particular, the California Global Warming Solutions Act of 2006 directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020.

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts.

3.3 Applicable Regulations and Standards

The following summarizes the air quality rules and regulations that apply to the Proposed Action.

3.3.1 Federal Requirements

Federal Clean Air Act. The EPA is responsible for enforcing the CAA of 1970 and its 1977 and 1990 Amendments. As discussed above in Section 3.2, the EPA established the NAAQS to protect human health and welfare. The EPA classifies areas as "attainment," "nonattainment," or "unclassified" depending on whether ambient air quality data collected in the area indicate that the area shows compliance with the NAAQS (attainment), shows noncompliance with the NAAQS (nonattainment), or whether there are insufficient data to make a determination of the area's classification relative to the NAAQS (unclassified). Areas which the EPA has classified as nonattainment areas for criteria pollutants, which include O_3, NO_2, CO, PM_{10}, $PM_{2.5}$, and SO_2, are required to prepare and implement a State Implementation Plan (SIP).

The CARB is the agency responsible for compiling and adopting the California SIPs. SIPs are not single documents. They are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. The individual SIP sections are prepared by local air districts. State law designates CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies, such as the Bureau of Automotive Repair and the Department of Pesticide Regulation, prepare SIP elements and submit them to CARB for review and approval. CARB forwards SIP revisions to the EPA for approval and publication in the Federal Register. The Code of Federal Regulations Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items which are included in the California SIP. At any one time, several California submittals are pending EPA approval.

The SIP identifies and quantifies sources of emissions and presents a comprehensive strategy to control and reduce locally generated emissions. The SIP also includes an attainment demonstration which shows (generally through modeling) that the proposed combination of existing sources and the proposed actions will result in meeting attainment by the prescribed deadline. SIPs for areas that have been designated as "moderate" must contain "reasonably available control measures" (RACM) or "reasonably available control technology" (RACT) to be implemented, unless their effect on a source is insignificant. In addition, the EPA mandates the application of RACMs to existing sources. The SIP must justify the non-inclusion of RACMs not selected. Serious nonattainment areas are required to apply best available control measures (BACM) or best available control technology (BACT).

Federal Emission Standards. The EPA has also adopted on-road and off-road engine emission reduction requirements, including Federal Exhaust and Evaporative Emission Standards for Light-Duty Vehicles and Light-Duty Trucks, Federal Emission Standards for Heavy-Duty and Non-Road Engines, and other emission control programs that affect a Project's potential impacts to air quality through the phase-in of clean fuel and engine requirements.

General Conformity Rule. To further assure compliance with the NAAQS, the EPA General Conformity Rule requires that federal agencies demonstrate that federal actions conform with the applicable SIP to ensure that federal activities do not hamper local efforts to control air pollution (EPA 2017). In addition, the General Conformity Rule prohibits federal agencies, departments, or instrumentalities from engaging in, supporting, providing financial assistance for, licensing, permitting, or approving any action which does not conform to an approved SIP or federal implementation plan.

According to 40 CFR Part 93, Section 153(c)(4), a conformity determination is not required for actions which implement a decision to conduct or carry out a conforming program which is consistent with a conforming land management plan. The proposed project is consistent with the land use defined for the project site. Accordingly, emissions associated with the Proposed Action are not subject to a conformity determination. Related activities, such as equipment and vehicle use required to implement the Proposed Action, is subject to a conformity analysis.

Global Climate Change Regulations. International and federal legislation have been enacted to address global climate change issues. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis for human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

In October 1993, President William Clinton announced his Climate Change Action Plan (CCAP), which had a goal of returning GHG emissions to 1990 levels by the year 2000. This was to be accomplished through 50 initiatives that relied on innovative voluntary partnerships between the private sector and government aimed at producing cost-effective reductions in GHG emissions. On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change (UNFCCC). Under the Convention, governments agreed to gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing greenhouse gas (GHG) emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of global climate change.

In 2007, the United States Supreme Court declared in the court case of *Massachusetts et al. vs. the Environmental Protection Agency et al.*, 549 C.S. 497 (2007), that the EPA does have the authority to regulate GHG emissions. In addition to the national and international efforts described above, many local jurisdictions have adopted climate change policies and programs.

In December 2009, the United Nations Climate Change Conference was held in Copenhagen, Denmark. The Copenhagen Accord was drafted at the conference by the United States, China, Brazil, India and South Africa, but no binding resolution was adopted at the conference.

Endangerment Finding. On April 17, 2009, EPA issued its proposed endangerment finding for GHG emissions. On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—in the atmosphere threaten the public health and welfare of current and future generations.

Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

The endangerment findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the EPA's proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009.

Mandatory GHG Reporting Rule. On March 10, 2009, in response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), EPA proposed a rule that requires mandatory reporting of greenhouse gas (GHG) emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of Greenhouse Gases Rule was signed and was published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. The rule will collect accurate and comprehensive emissions data to inform future policy decisions.

EPA is requiring suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA. The gases covered by the proposed rule are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF_6), and other fluorinated gases including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE).

Corporate Average Fuel Economy Standards. The Federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the United States. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased for new light-duty vehicles to 35 miles per gallon by 2020. In May 2009, President Barack Obama announced plans to increase CAFE standards requiring light-duty vehicles to meet an average fuel economy of 35.5 miles per gallon by 2016. At the end of 2016, the Obama administration EPA, as

well as the National Highway Traffic Safety Administration, revised the fuel-economy and GHG emission targets for the automakers requiring them to achieve an average of 54.5 mpg by 2025. In April 2017, the Trump administration announced the current CAFE standards would be evaluated for potential revision. No decisions have yet been made on revising the 2016 CAFE standards.

3.3.2 State Regulations

The California Ambient Air Quality Standards (CAAQS), which are the State equivalent of the NAAQS, identify the State emission thresholds for criteria pollutants. As with the NAAQS, the CARB is the State regulatory agency with authority to enforce regulations to both achieve and maintain the CAAQS. The CAAQS for criteria pollutants are more stringent than the NAAQS. Additionally, as part of the CAAQS, CARB has established standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride.

CARB is also responsible for regulating mobile source emissions within California and has adopted on-road and off-road emission reduction programs that indirectly affect the Project's emissions through the phase-in of increasingly stringent engine emission standards and clean fuels requirements. CARB has also adopted a Portable Equipment Registration Program that allows owners or operators of portable engines to register their units under a statewide portable registration program, provided the engines meet specific emission requirements. Generally, portable engines with a brake horsepower rating of 50 horsepower or more can be operated within the jurisdiction of the SCAQMD provided they obtain either a permit to operate or are registered under the Portable Equipment Registration Program (PERP). Portable equipment registered under the PERP program must meet the current USEPA emission standards (Tier standards) for NO_x, hydrocarbons, and particulate matter. They must arrange for an inspection with the SCAQMD on a three-year schedule, and equipment registered under the PERP program is not required to obtain individual permits. On July 26, 2007, CARB approved a regulation to reduce emissions from existing off-road diesel vehicles used in California in construction. This regulation affects operators of fleets of construction equipment, and requires fleets of equipment to meet emission rate targets for PM and NO_X.

The following subsections describe regulations and standards that have been adopted by the State of California to address air quality and global climate change issues.

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 states that by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent of 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report recommended various strategies that the state could pursue to reduce GHG emissions. These strategies could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty

truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the Statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15% reduction below 2005 emission levels; the same requirement as under S-3-05), and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, the CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2E. The Scoping Plan was approved by CARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms. CARB approved the 2017 California Climate Change Scoping Plan in December 2017. The purpose of the 2017 scoping plan is to provide guidance focused on reducing existing GHG emissions by an additional 40% by 2035.

Executive Order S-01-07 was enacted on January 18, 2007. The order mandates that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.

Other regulations affecting state and local GHG planning and policy development are summarized as follows:

Assembly Bill 939 and Senate Bill 1374. Assembly Bill 939 (AB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004 suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills.

Senate Bill 1368. Senate Bill 1368 (SB 1368) is the companion Bill of AB 32 and was adopted September, 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007 and for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas-fired plant. Furthermore, the legislation states that all electricity provided to the State, including

imported electricity, must be generated by plants that meet the standards set by California Public Utilities Commission (CPUC) and California Energy Commission (CEC).

Senate Bill 97. Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is an environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify and adopt those guidelines by January 1, 2010. Pursuant to the requirements of SB 97 as stated above, on December 30, 2009 the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The CEQA Guidelines Amendments changed sections of the CEQA Guidelines and incorporated GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010 and are summarized below:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.

- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.

- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.

- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in *Appendix F* of the CEQA Guidelines.

- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."

- OPRs emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.

- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Senate Bills 1078, 107, and X1-2 and Executive Orders S-14-08 and S-21-09. Senate Bill 1078 (SB 1078) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) changed the target date to 2010. Executive Order S-14-08 was signed on November 2008 and expands the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

California Code of Regulations (CCR) Title 24, Part 6. CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008 and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. All buildings for which an application for a building permit is submitted on or after July 1, 2014 must follow the 2013 standards. The 2013 commercial standards are estimated to be 30 percent more efficient than the 2008 standards; 2013 residential standards are at least 25 percent more efficient. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

Senate Bill 375. Senate Bill 375 (SB 375) was adopted in September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities' strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable community's strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Southern California Association of Governments (SCAG) jurisdiction, which has authority to develop the SCS or APS. For the SCAG region, the targets set by CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 13 percent below 2005 per capita GHG emissions levels by 2035. In April 2016, SCAG adopted the 2016-2040 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS), which meets the CARB emission reduction requirements. The Housing Element Update is required by the State to be completed within 18 months after RTP/SCS adoption. The current Riverside County Housing Element 2013-2021 was adopted October 2015.

City and County land use policies, including General Plans, are not required to be consistent with the RTP and associated SCS or APS. However, CEQA incentivizes, through streamlining and other provisions, qualified projects that are consistent with an approved SCS or APS and categorized as "transit priority projects."

Senate Bill X7-7. Senate Bill X7-7 (SB X7-7), enacted on November 9, 2009, mandates water conservation targets and efficiency improvements for urban and agricultural water suppliers. SB X7-7 requires the Department of Water Resources (DWR) to develop a task force and technical panel to develop alternative best management practices for the water sector. Additionally, SB X7-7 required the DWR to develop criteria for baseline uses for residential, commercial, and industrial uses for both indoor and landscaped area uses. The DWR was also required to develop targets and regulations that achieve a statewide 20 percent reduction in water usage.

California Green Building Standards. On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial and school buildings. The California Green Building Standards Code does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings must meet for occupancy certification. Enforcement is generally through the local building official.

27 CCR Title 24, Part 11: California Green Building Standards (Title 24) became effective in 2001 in response to continued efforts to reduce GHG emissions associated with energy consumption. CCR Title 24, Part 11 now require that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low pollutant-emitting finish materials. One focus of CCR Title 24, Part 11 is water conservation measures, which reduce GHG emissions by reducing electrical consumption associated with pumping and treating water. CCR Title 24, Part 11 has approximately 52 nonresidential mandatory measures and an additional 130 provisions for optional use. Some key

mandatory measures for commercial occupancies include specified parking for clean air vehicles, a 20 percent reduction of potable water use within buildings, a 50 percent construction waste diversion from landfills (AB 341 approved in 2015 increased the goal to 75% diversion by 2020), use of building finish materials that emit low levels of volatile organic compounds, and commissioning for new, nonresidential buildings over 10,000 square feet.

Executive Order B-30-15. On April 29, 2015, Governor Brown issued an executive order to establish a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030 - the most aggressive benchmark enacted by any government in North America to reduce dangerous carbon emissions over the next decade and a half. This executive action set the stage for the important work being done on climate change by the Legislature. The Governor's executive order aligns California's greenhouse gas reduction targets with those of leading international governments.

California is on track to meet or exceed the current target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent from 1990 levels by 2050.

3.3.3 Local Regulations

It is the responsibility of the local air districts to ensure that State and federal ambient air quality standards are achieved and maintained in the area under their jurisdiction. The Proposed Action is under the jurisdiction of the SCAQMD and is therefore subject to its rules and regulations. The local air districts are responsible for planning, implementing, and enforcing federal and State ambient air quality standards, and developing plans and programs to attain and maintain the air quality standards for their jurisdiction.

Each of the local air districts has adopted rules and regulations that regulate visible emissions, nuisance emissions, and fugitive dust emissions. These rules will apply to the Project during construction. As the Project does not involve installation of any stationary sources, stationary source rules and regulations do not apply. Specific regulations that apply to the Project are as follows:

SCAQMD Rule 401 – Visible Emissions. SCAQMD Rule 401 restricts emissions from any single source, over a period or periods aggregating more than three minutes in any one hour, emissions which are: (A) As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or (B) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in (A). Notwithstanding the provisions above, Rule 401 states that a person shall not discharge into the atmosphere from any diesel pile-driving hammer, operating exclusively using kerosene fuel, containing approved smoke-reducing fuel additives, as the sole fuel, and using only synthetic engine lubrication oil, or other method deemed technologically and economically feasible by the Executive Officer, any air

contaminant for a period or periods aggregating more than four minutes during the driving of a single pile which is: (A) As dark or darker in shade as that designated No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines; or (B) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in (A).

SCAQMD Rule 402 – Nuisance. SCAQMD Rule 402 requires that 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.

SCAQMD Rule 403 – Fugitive Dust. The purpose of SCAQMD Rule 403 is to reduce the amount of particulate matter entrained in ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 includes Best Available Control Measures and control measures for large operations to control fugitive dust emissions.

SCAQMD Rule 1186 – PM_{10} Emissions from Paved and Unpaved Roads, and Livestock Operations. The purpose of this rule is to reduce the amount of particulate matter entrained in the ambient air as a result of vehicular travel on paved and unpaved public roads, and at livestock operations. The rule requires removal of visible material on paved roads and dust control measures to be implemented on unpaved roads. Only paved roads would be used to access the proposed health care clinic.

Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology. The SCAQMD has developed methodologies to calculate $PM_{2.5}$ emissions and has established localized significance thresholds (LSTs) that are applicable under the California Environmental Quality Act. The LSTs are based on area-specific air dispersion modeling, and apply to sources from 1 to 5 acres in size.

The proposed project would occur on Native American reservation land within an area designated for public services. Implementation of SCAQMD Rule 403 would reduce fugitive dust during construction and paving existing undeveloped areas would reduce fugitive dust emissions post-construction. An evaluation of project consistency with LST for NOx, CO, PM_{10} and $PM_{2.5}$ is also provided.

This analysis provides an estimate of the emissions for implementation of the Torres Martinez Indian Health Clinic Replacement Project and an evaluation of project consistency with emission estimates contained in the AQMP.

4 THRESHOLDS OF SIGNIFICANCE

For the Proposed Action, the Project may result in significant air quality impacts if:

- Criterion AIR-1: The Project would conflict with the current approved Air Quality Management Plan and SIP.
- Criterion AIR-2: The Project would generate emissions of air pollutants that would exceed any regional thresholds.
- Criterion AIR-3: The Project would generate emissions of air pollutants that would exceed the Federal General Conformity Applicability Thresholds and would not be in conformity with the applicable State Implementation Plan.
- Criterion AIR-4: The Project would result in a significant impact to global climate change based on the Tier 3 threshold of 3,000 metric tons of CO_2E per year proposed by the SCAQMD (September 2010 Stakeholder Working Group Meeting).

A discussion of each significance criterion is provided in the following sections:

4.1 Criterion AIR-1: Conformance with Applicable Air Quality Management Plan

The most recent air quality management plan adopted by the SCAQMD for the SCAB is the 2016 Air Quality Management Plan (AQMP) (SCAQMD 2017), which was adopted by the SCAQMD Governing Board on March 3, 2017. The 2016 AQMP focuses on strategies for attainment and maintenance of ozone and $PM_{2.5}$ standards. To meet ozone standards, both NO_x and volatile organic compounds (VOC) emissions are addressed in the AQMP. However, air quality modeling demonstrates that NO_x reductions prove to be much more effective in reducing ozone levels and will also lead to significant improvement in $PM_{2.5}$ concentrations. NO_x -emitting stationary sources regulated by the SCAQMD include refineries, power plants, natural gas combustion equipment (e.g., boilers, heaters, engines, burners, flares) and other combustion sources that burn wood or propane. The 2016 AQMP proposes significant NO_x reductions from new regulations on refineries, power plants, non-refinery flares, commercial cooking, and residential and commercial appliances.

The AQMP states that based on projections from 2012, continued implementation of previously adopted regulations will lead to NO_x emission reductions of 68 percent by 2023 and 80 percent by 2031. With the addition of 2016 AQMP proposed regulatory measures, a 30 percent reduction of NO_x from stationary sources is expected in the 15-year period between 2008 and 2023. This is in addition to significant NO_x reductions from stationary sources achieved prior to 2008.

The AQMP contains estimates of emissions for off-road equipment and on-road vehicles. Post-construction, the primary emission source associated with the project will be on-road vehicles. Emissions for these source categories for the year 2010 are shown in Table 4-1.

Table 4-1 Air Quality Management Plan Emissions estimate - 2019 Baseline (tons per day)

Source Category	VOC	NO_x	CO	SO_x	$PM_{2.5}$
Off-road Equipment	79	124	697	5	6
On-Road Vehicles	82	167	639	2	11

Source: SCAQMD 2016 Air Quality Management Plan.

The Proposed Action does not exceed these emissions budgets as shown below; thus, it would conform to the AQMP.

4.2 Criterion AIR-2: Regional Air Quality Significance Thresholds

Local air quality regulatory agencies have established significance thresholds under CEQA that can be used to assess whether a proposed project could have a significant impact on regional air quality. The SCAQMD has established thresholds based on lbs/day and/or tons/year of emissions for construction activities and project operations. Regional significance thresholds are summarized in Table 4-2.

Table 4-2 Regional Air Quality Significance Thresholds

Criteria Pollutant	South Coast AQMD	
	Construction	Operation
	lbs/day	lbs/day
Carbon Monoxide (CO)	550	550
Oxides of Nitrogen (NO_X)	100	55
Reactive Organic Compounds (ROG)	75	55
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150

Source: SCAQMD, 2015

4.3 Criterion AIR-3: Federal General Conformity Significance Criteria

As discussed in section 3.3, the General Conformity Rule is applicable to the Proposed Action because the related emissions are associated with the use of vehicles to transport staff, vendors, patients and employees to/from the health clinic. Mobile source emissions are evaluated based on the General Conformity Rule *de minimis* thresholds for the SCAB.

The General Conformity Rule applies to Federal actions. The applicability emission thresholds (also referred to as *de minimis* thresholds) are shown in Table 4-3 and would apply to projects that require Federal approval and are located in Federal nonattainment areas.

Table 4-3 Federal General Conformity Applicability Thresholds

Air Basin	NO_x and ROG	PM_{10}	CO and $PM_{2.5}$
South Coast	10 tons/year	70 tons/year	100 tons/year

Source: US EPA *De minimis* tables, https://www.epa.gov/general-conformity/de-minimis-tables

4.4 Criterion AIR-4: Global Climate Change

Currently, there are no formally adopted or published National Environmental Policy Act (NEPA) thresholds for GHG emissions. On March 28, 2017, President Trump signed Executive Order 13783, *Promoting Energy Independence and Economic Growth*, which suspended regulations interpreted to be contrary to this objective. On April 5, 2017, the Council on Environmental Quality (CEQ) withdrew the "Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews." The guidance that was implemented August 5, 2016, indicated that use of 25,000 metric tons of CO_2e emissions as a reference point would provide federal agencies with a useful indicator, rather than an absolute standard of significance, for agencies to provide action-specific evaluation of GHG emissions and disclosure of potential impacts.

The SCAQMD has developed interim guidelines for the evaluation of global climate impacts for projects under its jurisdiction. SCAQMD staffs recommended an interim GHG significance threshold proposal using a tiered approach for determining significance. Tier 3, which is expected to be the primary tier by which the SCAQMD will determine significance for projects where it is the lead agency, uses the Governor of California's Executive Order S-3-05 goal (as described under Regulatory Framework, Section 3, above) as the basis for deriving the screening level.

Tier 3 has been used to evaluate whether the Project would have a significant impact on global climate. The quantitative threshold under Tier 3 would be 3,000 metric tons of CO_2 equivalent emissions. Project air quality impacts were evaluated on the basis of these significance criteria.

5 AIR QUALITY IMPACTS

This section presents an evaluation of impacts associated with the Proposed Action and with the No Action Alternative.

5.1 Proposed Action

Potential air quality impacts associated with the Proposed Action would arise due to emissions from activities associated with the Project. Emission sources would consist of construction equipment and vehicles required to transport work crews, equipment and materials to/from the site. Operation emissions would be comprised primarily of mobile sources emissions associated with transporting patients, vendors and employees to/from the clinic as well as operation of the clinic (energy, water and solid waste). All emissions were calculated using the California Emission

Estimator Model (CalEEMod 2016.3.2) (CARB 2017). Table 5-1 presents a summary of the emissions associated with the Proposed Action.

Table 5-1 Proposed Action Emissions

Emission Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Total Construction Emissions, lbs/day	58.6	10.3	8.0	0.01	1.3	0.9
SCAQMD Significance Thresholds	75	100	550	150	150	55
Above Significance Thresholds?	No	No	No	No	No	No
Operational Emissions	1.03	5.01	6.3	0.02	1.5	0.4
Above Significance Thresholds?	No	No	No	No	No	No
Federal *De Minimis* Thresholds	10	10	100	N/A	70	100
Above *De Minimis* Thresholds?	No	No	No	No	No	No

LSTs have been developed by SCAQMD for emissions within areas up to five acres in size, with air pollutant modeling recommended for activity within larger areas. The SCAQMD provides lookup tables for project sites that measure one, two, or five acres. As referenced, the site is approximately two acres in size; thus, the associated look up table values for two acres were used to provide a conservative evaluation of potential impacts. The project site is located in Source Receptor Area 30 (SRA-30, Coachella Valley). LSTs for construction related emissions in the SRA 30 at varying distances between the source and receiving property are shown in Table 5-2.

Table 5-2 SCAQMD LSTs for Construction

Pollutant	Allowable emissions as a function of receptor distance in meters from a two-acre site (lbs/day)				
	25	**50**	**100**	**200**	**500**
Gradual conversion of NO_x to NO_2	191	225	296	425	769
CO	1,299	1,931	3,409	7,174	26,212
PM_{10}	7	22	44	89	223
$PM_{2.5}$	5	7	12	28	112

Source: http://www.aqmd.gov/CEQA/handbook/LST/appC.pdf, October 2009.

The nearest sensitive receptors are residential uses located adjacent to and both south and east of the project site. Consistent with SCAQMD recommendations for projects with receptors 25 meters or less from a construction site, the 25-meter LSTs are used. As discussed, LSTs apply to on-site uses only and do not include off-site vehicle trips and emissions. LSTs are compared to estimated project emissions in Table 5-3.

Table 5-3 Estimated Maximum Daily On-Site Construction Emissions and LSTs

On-Site Construction Emissions	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
-Site Preparation	8.9	4.7	0.6	0.3
-Grading	8.6	7.6	0.8	0.6
-Building Construction	9.8	7.6	0.6	0.5
-Paving	7.8	7.1	0.4	0.4
- Architectural Coating	1.8	1.8	0.1	0.1
Local Significance Threshold – 25 meters (on-site only)[3]	**191**	**1,299**	**7**	**5**
Threshold Exceeded	No	No	No	No

Notes: All calculations were made using CalEEMod. See the Appendix A. Grading, Paving, Building Construction, and Architectural Coating totals include worker trips, construction vehicle emissions and fugitive dust.

LSTs are for a 2-acre disturbance area in SRA-30 within 25 meters of sensitive properties boundary.

An evaluation of potential impacts based on significance criteria AIR-1 through AIR-4 is presented in the following sections.

5.1.1 Criterion AIR-1: Conformance with Applicable Air Quality Management Plan

The proposed project conforms with the SCAQMD's 2016 AQMP because air emissions would not exceed the CEQA thresholds presented in Tables 4-2 and 5-1. A less than significant impact would occur under this criterion.

5.1.2 Criterion AIR-2: Regional Air Quality Significance Thresholds

As shown in Table 5-1, emissions are below the CEQA and Federal De Minimis thresholds for ROG, NO_x, CO, SO_x, PM_{10} and $PM_{2.5}$. As shown in Table 5-3, emissions would be below the LST limits. A less than significant impact would occur under this criterion.

5.1.3 Criterion AIR-3: Federal General Conformity

Emissions associated with the project are presumed to conform with the SIP because they are generated by use of a project site consistent with the approved land use plan. Further, emissions are below the CEQA thresholds shown in Tables 4-2, 5-1 and 5-3. The project would therefore

conform to the applicable AQMP and SIP. Accordingly, a conformity determination is not required under 40 CFR Part 51.

5.1.4 Criterion AIR-4: Global Climate Change

Greenhouse gas emissions are addressed under cumulative impacts.

5.2 No Action Alternative

Under the No Action Alternative, the replacement clinic would not be constructed. Emissions associated with travel to/from existing medical facilities in the area would continue. The proposed project would be located adjacent to an existing senior housing facility which would avoid the need to transport residents out of the area for medical care. Impacts from dust, vehicle emissions associated with travel to other medical facilities in the area, and other sources would be unchanged from existing conditions under the No Action Alternative.

6 CUMULATIVE IMPACTS

There are no known past, present, and foreseeable future activities within the Project Area that could have the potential to result in cumulative air quality impacts. The project would provide necessary medical care for Tribal members and reduce the need to travel off the reservation for routine health care services. Because overall travel associated with obtaining medical care would be reduced from existing conditions, it is not anticipated that the project would result in long-term cumulatively considerable impacts.

Greenhouse gas emissions do not result in direct impacts (CNRA 2009). They are addressed only on a cumulative basis. Table 6-1 presents a summary of the estimated greenhouse gas emissions.

Table 6-1 Proposed Action Greenhouse Gas Emissions

Emission Source	CO_2	CH_4	N_2O
Emissions, metric tons/year			
Construction Emissions	65.6 (2.1)	0.01	0.0
Operating Emissions	392.7	1.5	0.01
TOTAL	394.8	1.5	0.01
CO_2 Equivalent Total	396.3		

Total construction emissions are estimated to be 65.6 metric tons of CO2E. Amortized over the 30-year life of the project, a total of 2.1 metric tons was added to the operational emissions. Total CO_2e emissions would be 396.3 metric tons. The estimated total is well below the SCAQMD's proposed threshold of 3,000 metric tons of CO2e. The level is also below the 900-metric ton CO_2E threshold proposed by the California Air Pollution Control Officers Association (CAPCOA) as a threshold below which further analysis is not required. This level of GHG emissions would not result in a cumulatively considerable impact on global climate.

7 RECOMMENDED MITIGATION MEASURES

The Torres Martinez Indian Health Clinic Replacement project would result in emission related to motor vehicle operation. Estimated emissions would not exceed SCAQMD or Federal *de minimis* thresholds; thus, no air quality mitigation is required.

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Appendix A - Emission Calculations

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Torres Martinez Indian Replacement Clinic

Riverside-Salton Sea County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	11.60	1000sqft	0.27	11,600.00	0
Parking Lot	50.00	Space	0.45	20,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	15			**Operational Year**	2020
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	1270.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Area Coating - Rule 1113 compliant low VOC paint

Construction Off-road Equipment Mitigation -

Area Mitigation - Rule 1113 low VOC striping paint for parking lot.

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	50
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	250	100

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					
2019	56.8225	10.3750	8.0535	0.0135	0.8364	0.6094	1.3740	0.4360	0.5608	0.9489	0.0000	1,347.9669	1,347.9669	0.3705	0.0000	1,357.2285
Maximum	**56.8225**	**10.3750**	**8.0535**	**0.0135**	**0.8364**	**0.6094**	**1.3740**	**0.4360**	**0.5608**	**0.9489**	**0.0000**	**1,347.9669**	**1,347.9669**	**0.3705**	**0.0000**	**1,357.2285**

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					
2019	56.8225	10.3750	8.0535	0.0135	0.4224	0.6094	0.9600	0.2084	0.5608	0.7214	0.0000	1,347.9669	1,347.9669	0.3705	0.0000	1,357.2285
Maximum	**56.8225**	**10.3750**	**8.0535**	**0.0135**	**0.4224**	**0.6094**	**0.9600**	**0.2084**	**0.5608**	**0.7214**	**0.0000**	**1,347.9669**	**1,347.9669**	**0.3705**	**0.0000**	**1,357.2285**

	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**	**49.50**	**0.00**	**30.13**	**52.20**	**0.00**	**23.98**	**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	0.2745	6.0000e-005	6.3300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0135	0.0135	4.0000e-005		0.0144
Energy	1.1900e-003	0.0108	9.0800e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9741	12.9741	2.5000e-004	2.4000e-004	13.0512
Mobile	0.7633	5.0015	6.3933	0.0238	1.5154	0.0206	1.5360	0.4055	0.0194	0.4249		2,431.0817	2,431.0817	0.1608		2,435.1020
Total	**1.0389**	**5.0123**	**6.4087**	**0.0239**	**1.5154**	**0.0214**	**1.5368**	**0.4055**	**0.0202**	**0.4258**		**2,444.0693**	**2,444.0693**	**0.1611**	**2.4000e-004**	**2,448.1675**

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	0.2722	6.0000e-005	6.3300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0135	0.0135	4.0000e-005		0.0144
Energy	1.1900e-003	0.0108	9.0800e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9741	12.9741	2.5000e-004	2.4000e-004	13.0512
Mobile	0.7633	5.0015	6.3933	0.0238	1.5154	0.0206	1.5360	0.4055	0.0194	0.4249		2,431.0817	2,431.0817	0.1608		2,435.1020
Total	**1.0366**	**5.0123**	**6.4087**	**0.0239**	**1.5154**	**0.0214**	**1.5368**	**0.4055**	**0.0202**	**0.4258**		**2,444.0693**	**2,444.0693**	**0.1611**	**2.4000e-004**	**2,448.1675**

	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	**0.22**	**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	Site Preparation	Site Preparation	6/15/2019	6/17/2019	5	1	
2	Grading	Grading	6/18/2019	6/19/2019	5	2	
3	Building Construction	Building Construction	6/20/2019	11/6/2019	5	100	
4	Paving	Paving	11/7/2019	11/13/2019	5	5	
5	Architectural Coating	Architectural Coating	11/14/2019	11/20/2019	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.45

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 17,400; Non-Residential Outdoor: 5,800; Striped Parking Area: 1,200 (Architectural Coating – sqft)

OffRoad Equipment

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	4	6.00	9	0.56
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	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
Site Preparation	2	5.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	12.00	5.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2019

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.7195	8.9170	4.1407	9.7500e-003		0.3672	0.3672		0.3378	0.3378		965.1690	965.1690	0.3054		972.8032
Total	**0.7195**	**8.9170**	**4.1407**	**9.7500e-003**	**0.5303**	**0.3672**	**0.8975**	**0.0573**	**0.3378**	**0.3951**		**965.1690**	**965.1690**	**0.3054**		**972.8032**

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	0.0227	0.0131	0.1721	4.3000e-004	0.0418	2.7000e-004	0.0421	0.0111	2.5000e-004	0.0113		42.8551	42.8551	1.2200e-003		42.8857
Total	**0.0227**	**0.0131**	**0.1721**	**4.3000e-004**	**0.0418**	**2.7000e-004**	**0.0421**	**0.0111**	**2.5000e-004**	**0.0113**		**42.8551**	**42.8551**	**1.2200e-003**		**42.8857**

3.2 Site Preparation - 2019

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					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.7195	8.9170	4.1407	9.7500e-003		0.3672	0.3672		0.3378	0.3378	0.0000	965.1690	965.1690	0.3054		972.8032
Total	**0.7195**	**8.9170**	**4.1407**	**9.7500e-003**	**0.2386**	**0.3672**	**0.6058**	**0.0258**	**0.3378**	**0.3636**	**0.0000**	**965.1690**	**965.1690**	**0.3054**		**972.8032**

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	0.0227	0.0131	0.1721	4.3000e-004	0.0418	2.7000e-004	0.0421	0.0111	2.5000e-004	0.0113		42.8551	42.8551	1.2200e-003		42.8857
Total	**0.0227**	**0.0131**	**0.1721**	**4.3000e-004**	**0.0418**	**2.7000e-004**	**0.0421**	**0.0111**	**2.5000e-004**	**0.0113**		**42.8551**	**42.8551**	**1.2200e-003**		**42.8857**

3.3 Grading - 2019

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					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.9530	8.6039	7.6917	0.0120		0.5371	0.5371		0.5125	0.5125		1,159.6570	1,159.6570	0.2211		1,165.1847
Total	**0.9530**	**8.6039**	**7.6917**	**0.0120**	**0.7528**	**0.5371**	**1.2898**	**0.4138**	**0.5125**	**0.9263**		**1,159.6570**	**1,159.6570**	**0.2211**		**1,165.1847**

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	0.0454	0.0262	0.3442	8.6000e-004	0.0837	5.3000e-004	0.0842	0.0222	4.9000e-004	0.0227		85.7102	85.7102	2.4400e-003		85.7713
Total	**0.0454**	**0.0262**	**0.3442**	**8.6000e-004**	**0.0837**	**5.3000e-004**	**0.0842**	**0.0222**	**4.9000e-004**	**0.0227**		**85.7102**	**85.7102**	**2.4400e-003**		**85.7713**

3.3 Grading - 2019

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					0.3387	0.0000	0.3387	0.1862	0.0000	0.1862			0.0000			0.0000
Off-Road	0.9530	8.6039	7.6917	0.0120		0.5371	0.5371		0.5125	0.5125	0.0000	1,159.6570	1,159.6570	0.2211		1,165.1847
Total	**0.9530**	**8.6039**	**7.6917**	**0.0120**	**0.3387**	**0.5371**	**0.8758**	**0.1862**	**0.5125**	**0.6987**	**0.0000**	**1,159.6570**	**1,159.6570**	**0.2211**		**1,165.1847**

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	0.0454	0.0262	0.3442	8.6000e-004	0.0837	5.3000e-004	0.0842	0.0222	4.9000e-004	0.0227		85.7102	85.7102	2.4400e-003		85.7713
Total	**0.0454**	**0.0262**	**0.3442**	**8.6000e-004**	**0.0837**	**5.3000e-004**	**0.0842**	**0.0222**	**4.9000e-004**	**0.0227**		**85.7102**	**85.7102**	**2.4400e-003**		**85.7713**

3.4 Building Construction - 2019

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	0.9576	9.8207	7.5432	0.0114		0.6054	0.6054		0.5569	0.5569		1,127.6696	1,127.6696	0.3568		1,136.5892
Total	**0.9576**	**9.8207**	**7.5432**	**0.0114**		**0.6054**	**0.6054**		**0.5569**	**0.5569**		**1,127.6696**	**1,127.6696**	**0.3568**		**1,136.5892**

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	0.0149	0.5228	0.0973	1.1100e-003	0.0251	3.4300e-003	0.0285	7.2300e-003	3.2800e-003	0.0105		117.4450	117.4450	0.0108		117.7138
Worker	0.0545	0.0314	0.4130	1.0300e-003	0.1004	6.4000e-004	0.1010	0.0266	5.9000e-004	0.0272		102.8523	102.8523	2.9300e-003		102.9256
Total	**0.0694**	**0.5543**	**0.5103**	**2.1400e-003**	**0.1255**	**4.0700e-003**	**0.1296**	**0.0339**	**3.8700e-003**	**0.0377**		**220.2972**	**220.2972**	**0.0137**		**220.6394**

3.4 Building Construction - 2019

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	0.9576	9.8207	7.5432	0.0114		0.6054	0.6054		0.5569	0.5569	0.0000	1,127.6696	1,127.6696	0.3568		1,136.5892
Total	**0.9576**	**9.8207**	**7.5432**	**0.0114**		**0.6054**	**0.6054**		**0.5569**	**0.5569**	**0.0000**	**1,127.6696**	**1,127.6696**	**0.3568**		**1,136.5892**

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	0.0149	0.5228	0.0973	1.1100e-003	0.0251	3.4300e-003	0.0285	7.2300e-003	3.2800e-003	0.0105		117.4450	117.4450	0.0108		117.7138
Worker	0.0545	0.0314	0.4130	1.0300e-003	0.1004	6.4000e-004	0.1010	0.0266	5.9000e-004	0.0272		102.8523	102.8523	2.9300e-003		102.9256
Total	**0.0694**	**0.5543**	**0.5103**	**2.1400e-003**	**0.1255**	**4.0700e-003**	**0.1296**	**0.0339**	**3.8700e-003**	**0.0377**		**220.2972**	**220.2972**	**0.0137**		**220.6394**

3.5 Paving - 2019

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	0.8300	7.8446	7.1478	0.0113		0.4425	0.4425		0.4106	0.4106		1,055.1823	1,055.1823	0.3016		1,062.7231
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0658**	**7.8446**	**7.1478**	**0.0113**		**0.4425**	**0.4425**		**0.4106**	**0.4106**		**1,055.1823**	**1,055.1823**	**0.3016**		**1,062.7231**

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	0.0817	0.0471	0.6195	1.5500e-003	0.1506	9.6000e-004	0.1516	0.0400	8.8000e-004	0.0408		154.2784	154.2784	4.4000e-003		154.3884
Total	**0.0817**	**0.0471**	**0.6195**	**1.5500e-003**	**0.1506**	**9.6000e-004**	**0.1516**	**0.0400**	**8.8000e-004**	**0.0408**		**154.2784**	**154.2784**	**4.4000e-003**		**154.3884**

3.5 Paving - 2019

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	0.8300	7.8446	7.1478	0.0113		0.4425	0.4425		0.4106	0.4106	0.0000	1,055.1823	1,055.1823	0.3016		1,062.7231
Paving	0.2358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0658**	**7.8446**	**7.1478**	**0.0113**		**0.4425**	**0.4425**		**0.4106**	**0.4106**	**0.0000**	**1,055.1823**	**1,055.1823**	**0.3016**		**1,062.7231**

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	0.0817	0.0471	0.6195	1.5500e-003	0.1506	9.6000e-004	0.1516	0.0400	8.8000e-004	0.0408		154.2784	154.2784	4.4000e-003		154.3884
Total	**0.0817**	**0.0471**	**0.6195**	**1.5500e-003**	**0.1506**	**9.6000e-004**	**0.1516**	**0.0400**	**8.8000e-004**	**0.0408**		**154.2784**	**154.2784**	**4.4000e-003**		**154.3884**

3.6 Architectural Coating - 2019

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	56.5470					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**56.8134**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

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	9.0800e-003	5.2400e-003	0.0688	1.7000e-004	0.0167	1.1000e-004	0.0168	4.4400e-003	1.0000e-004	4.5400e-003		17.1420	17.1420	4.9000e-004		17.1543
Total	**9.0800e-003**	**5.2400e-003**	**0.0688**	**1.7000e-004**	**0.0167**	**1.1000e-004**	**0.0168**	**4.4400e-003**	**1.0000e-004**	**4.5400e-003**		**17.1420**	**17.1420**	**4.9000e-004**		**17.1543**

3.6 Architectural Coating - 2019

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	56.5470					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**56.8134**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

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	9.0800e-003	5.2400e-003	0.0688	1.7000e-004	0.0167	1.1000e-004	0.0168	4.4400e-003	1.0000e-004	4.5400e-003		17.1420	17.1420	4.9000e-004		17.1543
Total	**9.0800e-003**	**5.2400e-003**	**0.0688**	**1.7000e-004**	**0.0167**	**1.1000e-004**	**0.0168**	**4.4400e-003**	**1.0000e-004**	**4.5400e-003**		**17.1420**	**17.1420**	**4.9000e-004**		**17.1543**

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	0.7633	5.0015	6.3933	0.0238	1.5154	0.0206	1.5360	0.4055	0.0194	0.4249		2,431.0817	2,431.0817	0.1608		2,435.1020
Unmitigated	0.7633	5.0015	6.3933	0.0238	1.5154	0.0206	1.5360	0.4055	0.0194	0.4249		2,431.0817	2,431.0817	0.1608		2,435.1020

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Medical Office Building	419.11	103.94	17.98	537,016	537,016
Parking Lot	0.00	0.00	0.00		
Total	419.11	103.94	17.98	537,016	537,016

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
Medical Office Building	12.50	4.20	5.40	29.60	51.40	19.00	60	30	10
Parking Lot	12.50	4.20	5.40	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
Medical Office Building	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120
Parking Lot	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120

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	1.1900e-003	0.0108	9.0800e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9741	12.9741	2.5000e-004	2.4000e-004	13.0512
NaturalGas Unmitigated	1.1900e-003	0.0108	9.0800e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9741	12.9741	2.5000e-004	2.4000e-004	13.0512

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					
Medical Office Building	110.279	1.1900e-003	0.0108	9.0800e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9741	12.9741	2.5000e-004	2.4000e-004	13.0512
Parking Lot	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		**1.1900e-003**	**0.0108**	**9.0800e-003**	**6.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**		**12.9741**	**12.9741**	**2.5000e-004**	**2.4000e-004**	**13.0512**

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					
Medical Office Building	0.110279	1.1900e-003	0.0108	9.0800e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9741	12.9741	2.5000e-004	2.4000e-004	13.0512
Parking Lot	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		**1.1900e-003**	**0.0108**	**9.0800e-003**	**6.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**		**12.9741**	**12.9741**	**2.5000e-004**	**2.4000e-004**	**13.0512**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	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	0.2722	6.0000e-005	6.3300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0135	0.0135	4.0000e-005		0.0144
Unmitigated	0.2745	6.0000e-005	6.3300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0135	0.0135	4.0000e-005		0.0144

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	0.0185					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2553					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0000e-004	6.0000e-005	6.3300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0135	0.0135	4.0000e-005		0.0144
Total	**0.2745**	**6.0000e-005**	**6.3300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0135**	**0.0135**	**4.0000e-005**		**0.0144**

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	0.0163					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2553					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.0000e-004	6.0000e-005	6.3300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0135	0.0135	4.0000e-005		0.0144
Total	**0.2722**	**6.0000e-005**	**6.3300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0135**	**0.0135**	**4.0000e-005**		**0.0144**

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

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

Torres Martinez Indian Replacement Clinic

Riverside-Salton Sea County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	11.60	1000sqft	0.27	11,600.00	0
Parking Lot	50.00	Space	0.45	20,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	15			**Operational Year**	2020
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	1270.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Area Coating - Rule 1113 compliant low VOC paint

Construction Off-road Equipment Mitigation -

Area Mitigation - Rule 1113 low VOC striping paint for parking lot.

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	50
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	250	100

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					
2019	0.1973	0.5566	0.4344	7.3000e-004	7.7100e-003	0.0326	0.0403	2.2500e-003	0.0301	0.0323	0.0000	65.6421	65.6421	0.0179	0.0000	66.0898
Maximum	**0.1973**	**0.5566**	**0.4344**	**7.3000e-004**	**7.7100e-003**	**0.0326**	**0.0403**	**2.2500e-003**	**0.0301**	**0.0323**	**0.0000**	**65.6421**	**65.6421**	**0.0179**	**0.0000**	**66.0898**

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					
2019	0.1973	0.5566	0.4344	7.3000e-004	7.1500e-003	0.0326	0.0398	2.0000e-003	0.0301	0.0321	0.0000	65.6421	65.6421	0.0179	0.0000	66.0897
Maximum	**0.1973**	**0.5566**	**0.4344**	**7.3000e-004**	**7.1500e-003**	**0.0326**	**0.0398**	**2.0000e-003**	**0.0301**	**0.0321**	**0.0000**	**65.6421**	**65.6421**	**0.0179**	**0.0000**	**66.0897**

	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**	**7.26**	**0.00**	**1.39**	**11.11**	**0.00**	**0.74**	**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	6-3-2019	9-2-2019	0.3226	0.3226
2	9-3-2019	9-30-2019	0.1140	0.1140
		Highest	0.3226	0.3226

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	0.0500	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-003	1.1000e-003	0.0000	0.0000	1.1700e-003
Energy	2.2000e-004	1.9700e-003	1.6600e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	69.8441	69.8441	1.5900e-003	3.6000e-004	69.9907
Mobile	0.0874	0.6939	0.8147	3.0900e-003	0.2051	2.8500e-003	0.2079	0.0550	2.6800e-003	0.0576	0.0000	286.5579	286.5579	0.0205	0.0000	287.0696
Waste						0.0000	0.0000		0.0000	0.0000	25.4307	0.0000	25.4307	1.5029	0.0000	63.0035
Water						0.0000	0.0000		0.0000	0.0000	0.4618	12.7016	13.1633	0.0477	1.1800e-003	14.7079
Total	**0.1376**	**0.6959**	**0.8169**	**3.1000e-003**	**0.2051**	**3.0000e-003**	**0.2081**	**0.0550**	**2.8300e-003**	**0.0578**	**25.8925**	**369.1046**	**394.9971**	**1.5727**	**1.5400e-003**	**434.7730**

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	0.0496	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-003	1.1000e-003	0.0000	0.0000	1.1700e-003
Energy	2.2000e-004	1.9700e-003	1.6600e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	69.8441	69.8441	1.5900e-003	3.6000e-004	69.9907
Mobile	0.0874	0.6939	0.8147	3.0900e-003	0.2051	2.8500e-003	0.2079	0.0550	2.6800e-003	0.0576	0.0000	286.5579	286.5579	0.0205	0.0000	287.0696
Waste						0.0000	0.0000		0.0000	0.0000	25.4307	0.0000	25.4307	1.5029	0.0000	63.0035
Water						0.0000	0.0000		0.0000	0.0000	0.3694	10.5164	10.8858	0.0382	9.5000e-004	12.1222
Total	**0.1372**	**0.6959**	**0.8169**	**3.1000e-003**	**0.2051**	**3.0000e-003**	**0.2081**	**0.0550**	**2.8300e-003**	**0.0578**	**25.8001**	**366.9194**	**392.7196**	**1.5632**	**1.3100e-003**	**432.1872**

	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	**0.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.36**	**0.59**	**0.58**	**0.61**	**14.94**	**0.59**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/15/2019	6/17/2019	5	1	
2	Grading	Grading	6/18/2019	6/19/2019	5	2	
3	Building Construction	Building Construction	6/20/2019	11/6/2019	5	100	
4	Paving	Paving	11/7/2019	11/13/2019	5	5	
5	Architectural Coating	Architectural Coating	11/14/2019	11/20/2019	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.45

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 17,400; Non-Residential Outdoor: 5,800; Striped Parking Area: 1,200 (Architectural Coating – sqft)

OffRoad Equipment

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	4	6.00	9	0.56
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	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
Site Preparation	2	5.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	12.00	5.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2019

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-004	4.4600e-003	2.0700e-003	0.0000		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413
Total	**3.6000e-004**	**4.4600e-003**	**2.0700e-003**	**0.0000**	**2.7000e-004**	**1.8000e-004**	**4.5000e-004**	**3.0000e-005**	**1.7000e-004**	**2.0000e-004**	**0.0000**	**0.4378**	**0.4378**	**1.4000e-004**	**0.0000**	**0.4413**

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	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0179	0.0179	0.0000	0.0000	0.0179
Total	**1.0000e-005**	**1.0000e-005**	**7.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0179**	**0.0179**	**0.0000**	**0.0000**	**0.0179**

3.2 Site Preparation - 2019

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					1.2000e-004	0.0000	1.2000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-004	4.4600e-003	2.0700e-003	0.0000		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413
Total	**3.6000e-004**	**4.4600e-003**	**2.0700e-003**	**0.0000**	**1.2000e-004**	**1.8000e-004**	**3.0000e-004**	**1.0000e-005**	**1.7000e-004**	**1.8000e-004**	**0.0000**	**0.4378**	**0.4378**	**1.4000e-004**	**0.0000**	**0.4413**

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	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0179	0.0179	0.0000	0.0000	0.0179
Total	**1.0000e-005**	**1.0000e-005**	**7.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0179**	**0.0179**	**0.0000**	**0.0000**	**0.0179**

3.3 Grading - 2019

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					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5000e-004	8.6000e-003	7.6900e-003	1.0000e-005		5.4000e-004	5.4000e-004		5.1000e-004	5.1000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570
Total	**9.5000e-004**	**8.6000e-003**	**7.6900e-003**	**1.0000e-005**	**7.5000e-004**	**5.4000e-004**	**1.2900e-003**	**4.1000e-004**	**5.1000e-004**	**9.2000e-004**	**0.0000**	**1.0520**	**1.0520**	**2.0000e-004**	**0.0000**	**1.0570**

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	4.0000e-005	3.0000e-005	3.0000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0716	0.0716	0.0000	0.0000	0.0716
Total	**4.0000e-005**	**3.0000e-005**	**3.0000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0716**	**0.0716**	**0.0000**	**0.0000**	**0.0716**

3.3 Grading - 2019

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					3.4000e-004	0.0000	3.4000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5000e-004	8.6000e-003	7.6900e-003	1.0000e-005		5.4000e-004	5.4000e-004		5.1000e-004	5.1000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570
Total	**9.5000e-004**	**8.6000e-003**	**7.6900e-003**	**1.0000e-005**	**3.4000e-004**	**5.4000e-004**	**8.8000e-004**	**1.9000e-004**	**5.1000e-004**	**7.0000e-004**	**0.0000**	**1.0520**	**1.0520**	**2.0000e-004**	**0.0000**	**1.0570**

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	4.0000e-005	3.0000e-005	3.0000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0716	0.0716	0.0000	0.0000	0.0716
Total	**4.0000e-005**	**3.0000e-005**	**3.0000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0716**	**0.0716**	**0.0000**	**0.0000**	**0.0716**

3.4 Building Construction - 2019

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	0.0479	0.4910	0.3772	5.7000e-004		0.0303	0.0303		0.0279	0.0279	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548
Total	**0.0479**	**0.4910**	**0.3772**	**5.7000e-004**		**0.0303**	**0.0303**		**0.0279**	**0.0279**	**0.0000**	**51.1502**	**51.1502**	**0.0162**	**0.0000**	**51.5548**

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	7.6000e-004	0.0264	5.2800e-003	5.0000e-005	1.2400e-003	1.7000e-004	1.4100e-003	3.6000e-004	1.7000e-004	5.2000e-004	0.0000	5.2285	5.2285	5.1000e-004	0.0000	5.2413
Worker	2.4100e-003	1.6800e-003	0.0178	5.0000e-005	4.9400e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	4.2948	4.2948	1.2000e-004	0.0000	4.2978
Total	**3.1700e-003**	**0.0281**	**0.0231**	**1.0000e-004**	**6.1800e-003**	**2.0000e-004**	**6.3800e-003**	**1.6700e-003**	**2.0000e-004**	**1.8600e-003**	**0.0000**	**9.5233**	**9.5233**	**6.3000e-004**	**0.0000**	**9.5391**

3.4 Building Construction - 2019

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	0.0479	0.4910	0.3772	5.7000e-004		0.0303	0.0303		0.0279	0.0279	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548
Total	**0.0479**	**0.4910**	**0.3772**	**5.7000e-004**		**0.0303**	**0.0303**		**0.0279**	**0.0279**	**0.0000**	**51.1502**	**51.1502**	**0.0162**	**0.0000**	**51.5548**

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	7.6000e-004	0.0264	5.2800e-003	5.0000e-005	1.2400e-003	1.7000e-004	1.4100e-003	3.6000e-004	1.7000e-004	5.2000e-004	0.0000	5.2285	5.2285	5.1000e-004	0.0000	5.2413
Worker	2.4100e-003	1.6800e-003	0.0178	5.0000e-005	4.9400e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	4.2948	4.2948	1.2000e-004	0.0000	4.2978
Total	**3.1700e-003**	**0.0281**	**0.0231**	**1.0000e-004**	**6.1800e-003**	**2.0000e-004**	**6.3800e-003**	**1.6700e-003**	**2.0000e-004**	**1.8600e-003**	**0.0000**	**9.5233**	**9.5233**	**6.3000e-004**	**0.0000**	**9.5391**

3.5 Paving - 2019

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	2.0700e-003	0.0196	0.0179	3.0000e-005		1.1100e-003	1.1100e-003		1.0300e-003	1.0300e-003	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102
Paving	5.9000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6600e-003**	**0.0196**	**0.0179**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**2.3931**	**2.3931**	**6.8000e-004**	**0.0000**	**2.4102**

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	1.8000e-004	1.3000e-004	1.3400e-003	0.0000	3.7000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3221	0.3221	1.0000e-005	0.0000	0.3223
Total	**1.8000e-004**	**1.3000e-004**	**1.3400e-003**	**0.0000**	**3.7000e-004**	**0.0000**	**3.7000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3221**	**0.3221**	**1.0000e-005**	**0.0000**	**0.3223**

3.5 Paving - 2019

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	2.0700e-003	0.0196	0.0179	3.0000e-005		1.1100e-003	1.1100e-003		1.0300e-003	1.0300e-003	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102
Paving	5.9000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6600e-003**	**0.0196**	**0.0179**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**2.3931**	**2.3931**	**6.8000e-004**	**0.0000**	**2.4102**

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	1.8000e-004	1.3000e-004	1.3400e-003	0.0000	3.7000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3221	0.3221	1.0000e-005	0.0000	0.3223
Total	**1.8000e-004**	**1.3000e-004**	**1.3400e-003**	**0.0000**	**3.7000e-004**	**0.0000**	**3.7000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3221**	**0.3221**	**1.0000e-005**	**0.0000**	**0.3223**

3.6 Architectural Coating - 2019

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	0.1414					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	**0.1420**	**4.5900e-003**	**4.6000e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**0.6383**	**0.6383**	**5.0000e-005**	**0.0000**	**0.6397**

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	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0358	0.0358	0.0000	0.0000	0.0358
Total	**2.0000e-005**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0358**	**0.0358**	**0.0000**	**0.0000**	**0.0358**

3.6 Architectural Coating - 2019

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	0.1414					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	**0.1420**	**4.5900e-003**	**4.6000e-003**	**1.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**0.6383**	**0.6383**	**5.0000e-005**	**0.0000**	**0.6397**

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	2.0000e-005	1.0000e-005	1.5000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0358	0.0358	0.0000	0.0000	0.0358
Total	**2.0000e-005**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0358**	**0.0358**	**0.0000**	**0.0000**	**0.0358**

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	0.0874	0.6939	0.8147	3.0900e-003	0.2051	2.8500e-003	0.2079	0.0550	2.6800e-003	0.0576	0.0000	286.5579	286.5579	0.0205	0.0000	287.0696
Unmitigated	0.0874	0.6939	0.8147	3.0900e-003	0.2051	2.8500e-003	0.2079	0.0550	2.6800e-003	0.0576	0.0000	286.5579	286.5579	0.0205	0.0000	287.0696

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Medical Office Building	419.11	103.94	17.98	537,016	537,016
Parking Lot	0.00	0.00	0.00		
Total	419.11	103.94	17.98	537,016	537,016

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
Medical Office Building	12.50	4.20	5.40	29.60	51.40	19.00	60	30	10
Parking Lot	12.50	4.20	5.40	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
Medical Office Building	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120
Parking Lot	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120

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	67.6961	67.6961	1.5400e-003	3.2000e-004	67.8300
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	67.6961	67.6961	1.5400e-003	3.2000e-004	67.8300
NaturalGas Mitigated	2.2000e-004	1.9700e-003	1.6600e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1480	2.1480	4.0000e-005	4.0000e-005	2.1608
NaturalGas Unmitigated	2.2000e-004	1.9700e-003	1.6600e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1480	2.1480	4.0000e-005	4.0000e-005	2.1608

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					
Medical Office Building	40252	2.2000e-004	1.9700e-003	1.6600e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1480	2.1480	4.0000e-005	4.0000e-005	2.1608
Parking Lot	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		**2.2000e-004**	**1.9700e-003**	**1.6600e-003**	**1.0000e-005**		**1.5000e-004**	**1.5000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**2.1480**	**2.1480**	**4.0000e-005**	**4.0000e-005**	**2.1608**

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					
Medical Office Building	40252	2.2000e-004	1.9700e-003	1.6600e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1480	2.1480	4.0000e-005	4.0000e-005	2.1608
Parking Lot	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		**2.2000e-004**	**1.9700e-003**	**1.6600e-003**	**1.0000e-005**		**1.5000e-004**	**1.5000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**2.1480**	**2.1480**	**4.0000e-005**	**4.0000e-005**	**2.1608**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Medical Office Building	110432	63.6608	1.4500e-003	3.0000e-004	63.7867
Parking Lot	7000	4.0353	9.0000e-005	2.0000e-005	4.0433
Total		**67.6961**	**1.5400e-003**	**3.2000e-004**	**67.8299**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Medical Office Building	110432	63.6608	1.4500e-003	3.0000e-004	63.7867
Parking Lot	7000	4.0353	9.0000e-005	2.0000e-005	4.0433
Total		**67.6961**	**1.5400e-003**	**3.2000e-004**	**67.8299**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	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	0.0496	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-003	1.1000e-003	0.0000	0.0000	1.1700e-003
Unmitigated	0.0500	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-003	1.1000e-003	0.0000	0.0000	1.1700e-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	3.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0466					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-003	1.1000e-003	0.0000	0.0000	1.1700e-003
Total	**0.0500**	**1.0000e-005**	**5.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.1000e-003**	**1.1000e-003**	**0.0000**	**0.0000**	**1.1700e-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	2.9700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0466					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-003	1.1000e-003	0.0000	0.0000	1.1700e-003
Total	**0.0496**	**1.0000e-005**	**5.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.1000e-003**	**1.1000e-003**	**0.0000**	**0.0000**	**1.1700e-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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.8858	0.0382	9.5000e-004	12.1222
Unmitigated	13.1633	0.0477	1.1800e-003	14.7079

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Medical Office Building	1.45557 / 0.277252	13.1633	0.0477	1.1800e-003	14.7079
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**13.1633**	**0.0477**	**1.1800e-003**	**14.7079**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Medical Office Building	1.16446 / 0.277252	10.8858	0.0382	9.5000e-004	12.1222
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**10.8858**	**0.0382**	**9.5000e-004**	**12.1222**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.4307	1.5029	0.0000	63.0035
Unmitigated	25.4307	1.5029	0.0000	63.0035

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Medical Office Building	125.28	25.4307	1.5029	0.0000	63.0035
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.4307**	**1.5029**	**0.0000**	**63.0035**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Medical Office Building	125.28	25.4307	1.5029	0.0000	63.0035
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.4307**	**1.5029**	**0.0000**	**63.0035**

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

D Farmland Conversion Impact Rating Form (AD-1006)

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U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request February 28, 2019	
Name of Project Torres Martinez Indian Health Clinic		Federal Agency Involved Dept. of Indian Health Services	
Proposed Land Use Health Clinic/Medical Facility		County and State Riverside County, California	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS	Person Completing Form:
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☐ NO ☐	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount of Farmland As Defined in FPPA Acres: %	
Name of Land Evaluation System Used	Name of State or Local Site Assessment System	Date Land Evaluation Returned by NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	2.5			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	2.5			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	7			
2. Perimeter In Non-urban Use	(10)	5			
3. Percent Of Site Being Farmed	(20)	0			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	0			
6. Distance To Urban Support Services	(15)	0			
7. Size Of Present Farm Unit Compared To Average	(10)	0			
8. Creation Of Non-farmable Farmland	(10)	10			
9. Availability Of Farm Support Services	(5)	0			
10. On-Farm Investments	(20)	0			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	22			
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or local site assessment)*	160	22			
TOTAL POINTS ***(Total of above 2 lines)***	260				

Site Selected: Site A	Date Of Selection February 28, 2019	Was A Local Site Assessment Used? YES ☐ NO ☑

Reason For Selection:

Site A selected due to its proximity to existing utilities (water, electrical service, etc) and proximity to Torres-Martinez Administrative Complex and senior residences.

Name of Federal agency representative completing this form: Donna M. Meyer	Date:

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map**,** or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

E-1 Cultural Resources Survey

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ASM affiliates
archaeology
history
ethnography
architectural history

February 12, 2016

Erich Lathers, President
BRG Consulting, Inc.
304 Ivy Street
San Diego, CA 92101

Update: Cultural Resources Survey for the Indian Health Clinic Project, Torres Martinez Desert Cahuilla Indian Reservation, Thermal, California

Dear Mr. Lathers,

ASM Affiliates, Inc. (ASM) has completed the cultural resources records search and survey for the proposed Indian Health Clinic Project on the Torres Martinez Desert Cahuilla Indian Reservation in Thermal, California. This letter report presents the results of the records search and the pedestrian survey, and it provides recommendations for additional archaeological monitoring at the propose project site. The cultural resources study was conducted in support of compliance with Section 106 of the National Historic Preservation Act (NHPA) and the National Environmental Protection Act (NEPA).

The proposed project's area of potential effect (APE) is a 2.09-acre parcel located on Martinez Road on the Torres Martinez Desert Cahuilla Indian Reservation (Figure 1). The project area may be located in the northeast quarter of Section 16, Township 7 South, and Range 8 East on the USGS 7.5-minute topographic quadrangle of Valerie (Figure 2). There was some discrepancy between the maps of the proposed project APE, so a larger area was surveyed than is proposed for development. The results of the cultural resources study indicate that there are previously recorded archaeological sites within the immediate vicinity of the project APE, and during the survey three isolated potsherds and one freshwater shell were identified. However, visibility during the survey was extremely poor due to dense vegetation, and the APE appeared to be highly disturbed. It is unlikely that the project APE contains significant intact cultural deposits, but archaeological and Native American monitoring is recommended during construction in case of inadvertent archaeological discoveries.

Records Search Results

ASM Associate Archaeologist Tony Quach conducted a records search at the Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS) on January 6-7, 2016. The records search area encompassed the project area and a search radius of 1 mi. around it.

The results of the records search are summarized below. The confidential record search results are archived at ASM's Carlsbad office.

A total of 25 previous cultural resources reports that address areas within a 1-mi. radius of the project area were identified during the records search at the EIC. Three of those reports included portions of the present project's APE within their scope (Table 1).

Table 1: Previous Cultural Resources Reports Addressing the APE

NADB No.	*Authors*	**Date**	**Title**
1080151	Chris Chaloupka	1972	*Archaeological Survey of Martinez Canyon*
1081604	Christopher W. White	1981	*A Cultural Resource Survey and Evaluation of the Torres-Martinez Indian Reservation, Riverside County, California*
RI8966	John J. Eddy and Josh Smallwood	2011	*Phase I Cultural Resources Assessment for the Martinez Road Domestic Water Pipeline Extension Project, Unincorporated Riverside County and Torres Martinez Indian Reservation, California*

The results of the records search indicate a total of 28 previously recorded sites and isolates within a 1-mi. radius of the project APE (Table 2). Two of those previously recorded sites, CA-RIV-1292 and -10172, are located just outside the boundaries of the proposed project APE.

Table 2: Previously Recorded Cultural Resources

Designation		**Contents**	**Recorder, Date**
Primary Number P-33-	**Trinomial CA-RIV-**		
00386	386	AP3. Ceramic scatter	Johnston 1968
01292	1292	AP15. Habitation debris, AH4. Historic trash scatter	Pigniolo 1999
02250	2250	AP3. Ceramic scatter	Cook 1981
02251	2251	AP3. Ceramic scatter	Cook 1981
05510	--	HP2. Single family property	Trunnell 1982, Kremkau 2011
05590	--	Isolate volcanic flake	Becker and Knell 1994
05591	--	Isolate metate	Becker and Knell 1994
05686	--	HP15. Educational building	Foulkes 1983
05687	--	HP14. Government Building	Foulkes 1983
05688	--	HP14. Government Building	Foulkes 1983
05689	--	HP4. Ancillary building - shed	Foulkes 1983
05690	--	HP44. Adobe building	Foulkes 1983
05691	--	HP4. Ancillary building - outhouse	Foulkes 1983
05692	--	HP16. Religious Building	Foulkes 1983
05693	--	HP40. Cemetery	Foulkes 1983
09462	6377	AP15. Habitation debris, AH4. Historic trash scatter	Pigniolo 1999

Designation		Contents	Recorder, Date
Primary Number P-33-	**Trinomial CA-RIV-**		
14739	--	AH4. Historic trash scatter	O'Neil and Miller 2005
17370	--	AH7. Road	Brock 2008
17371	9027	AP2. Lithic scatter, AP3. Ceramic scatter	Mirro and Eddy 2010
17372	--	AP3. Ceramic scatter	Brock 2008
17761	--	AP3. Ceramic scatter	McDougall and Gothar 2009
20028	10172	AH7. Road	Eddy and Smallwood 2011
20735	19657	AH7. Road	Stanton 2012
20736	10658	AH7. Road	Stanton 2012
20737	10659	AH7. Road	Stanton 2012
20742	10664	AH7. Road	Stanton 2012
20752	10674	AH7. Road	Stanton 2012
23959	--	AP8. Cairns/rock feature	Moslak 2012

CA-RIV-1292

The site designated as CA-RIV-1292 is located just outside the southeast corner of the proposed project APE. The site was first recorded in 1972 by T. F. King and included three historic buildings as well as a scattering of historic and prehistoric artifacts, including potsherds and projectile points. The buildings and much of the area surrounding it were associated with the Martinez Historical District. The resources identified as P-37-05686, -05687, -05688, -05689, and -05690 are all historic structures within the boundaries of CA-RIV-1292 that make up the Martinez Historical Complex. The three main buildings include a schoolhouse (P-37-05686), the agent quarters (P-37-05687), and the former agency office (P-37-05688). These structures are believed to be the oldest standing U.S. Indian Agency buildings in California. They were apparently built around 1907 by the Martinez Agency, which was established in 1876. The district was listed on the NRHP in 1973.

The site record was last updated in August 1999 by Andrew Pigniolo. The site surface was noted to be heavily disturbed, with a light scatter of recent to historic refuse dominated by glass, ceramics, and metal. Three prehistoric Tumco Buff potsherds and one Colorado Buff potsherd were identified on the surface. The integrity of the site surface was noted as poor, and evidence of grading, landscaping, brush removal, and agricultural activity associated with a date orchard was noted. Pigniolo notes that a village was reported by William Blake in the vicinity in 1853 and that two rancherias were noted in the area in 1856 by John La Croze of the Henry Washington party. Pigniolo suggests that the site location may have been the Cahuilla village of Puicheckiva or Wanteauem.

P-33-20028

Martinez Road (P-33-20028) runs along the eastern edge of the propose project APE and consists of a two-lane paved road that runs through the Torres Martinez Desert Cahuilla Indian Reservation from its intersection with Avenue 66 to its terminus at Polk Avenue, a distance of approximately

4,388 ft. The present alignment appears on the 1941 Coachella 15' quadrangle, and was thus presumed to be of historic age and was thus recorded by J. Eddy as a historic resource in 2011.

Native American Heritage Commission Correspondence

On January 14, 2016, ASM Associate Archaeologist Tony Quach requested from the Native American Heritage Commission (NAHC) a search of the Sacred Lands File and a list of Native American contacts that may have additional information or concerns regarding the proposed project. ASM received a response from Gayle Totton, Associate Governmental Program Analyst at the NAHC. The letter indicates a search of the SFL was completed for the project area with negative results. The list of tribal contacts provided included Mary Resvaloso, Chairperson of the Torres-Martinez Desert Cahuilla Indians and Michael Mirelez, Cultural Resource Coordinator for the Torres-Martinez Desert Cahuilla Indians. A copy of this letter report should be provided to the listed tribal contacts. A copy of the request letter and NAHC response is provided in Appendix A.

Results of Survey

The archaeological survey of the proposed project APE was conducted on January 25, 2016 by ASM Associate Archaeologist Tony Quach. The Torres Martinez Cultural Resources Coordinator, Michael Mirelez, was also present during the survey. Because of previous discrepancies in the exact location of the APE, a larger area was surveyed that included areas south of the project location (Figure 3). The total area surveyed was approximately 3.4 acres.

Visibility during the survey was extremely poor due to dense vegetation (Figure 4). Survey intervals were based on the ability to penetrate the vegetation in the area. The entire APE appears to have once been a date orchard. The vegetation in the area consisted of date palms, mesquite, and tamarisk with thickly woven and interspersed shadscale, sagebrush, and quail bushes. The entire project area appeared to be heavily disturbed due to previous grading and agricultural activities associated with the date palm orchard. Lots of modern plastic debris, building materials, and modern trash were noted on the surface. There was some evidence of bulldozer push piles near some of the overturned date palms. Access to the project area from Martinez Road was blocked by a dozer push pile.

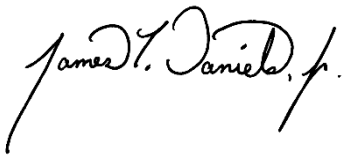
Despite the visibility issues and the disturbed ground surface, three potsherds and one *Physa* shell were identified on the surface. The potsherds were small (less than 1 in.) brownware potsherds (Figure 5), and the shell is most likely associated with freshwater snails that used to live in ancient Lake Cahuilla.

Conclusions and Recommendations

While three isolated potsherds were identified on the surface, the integrity of the deposits within the project APE is highly compromised by previous earth movement and disturbance in the area. Due to the level of disturbance noted during the survey and the relatively low density of surface artifacts, subsurface testing is not recommended prior to the start of the project. However, because

of the culturally sensitive nature of the area and the presence of prehistoric and historic resources in the immediate vicinity, ASM recommends full-time cultural resources monitoring by both a qualified Archaeologist and Tribal Monitor during all ground-disturbing activities associated with the construction of the Project.

Should you have any questions regarding the results of this study, please feel free to contact me.
Respectfully submitted,



James T. Daniels, Jr.
Senior Archaeologist
jdaniels@asmaffiliates.com

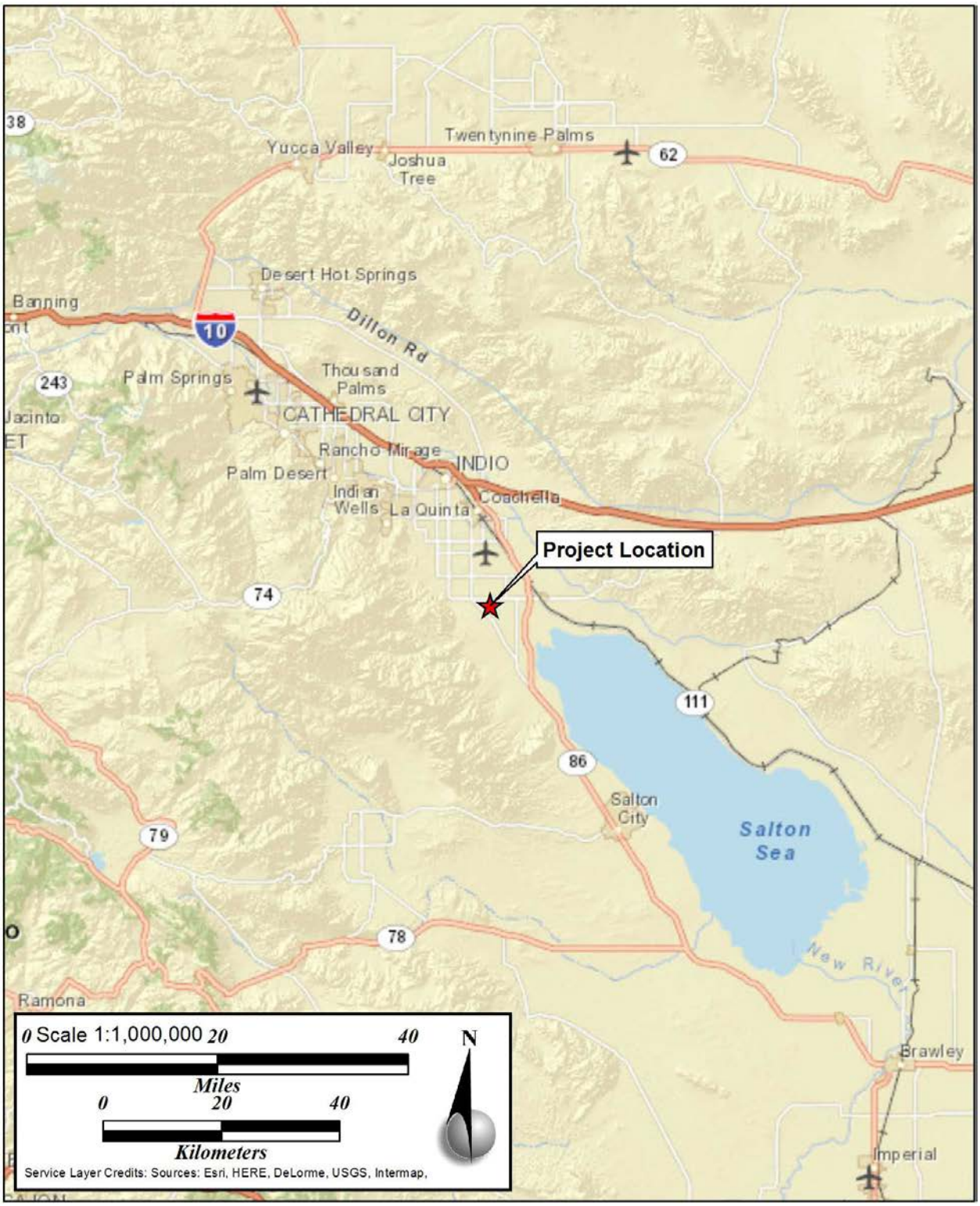


Figure 1. Project Vicinity Map.

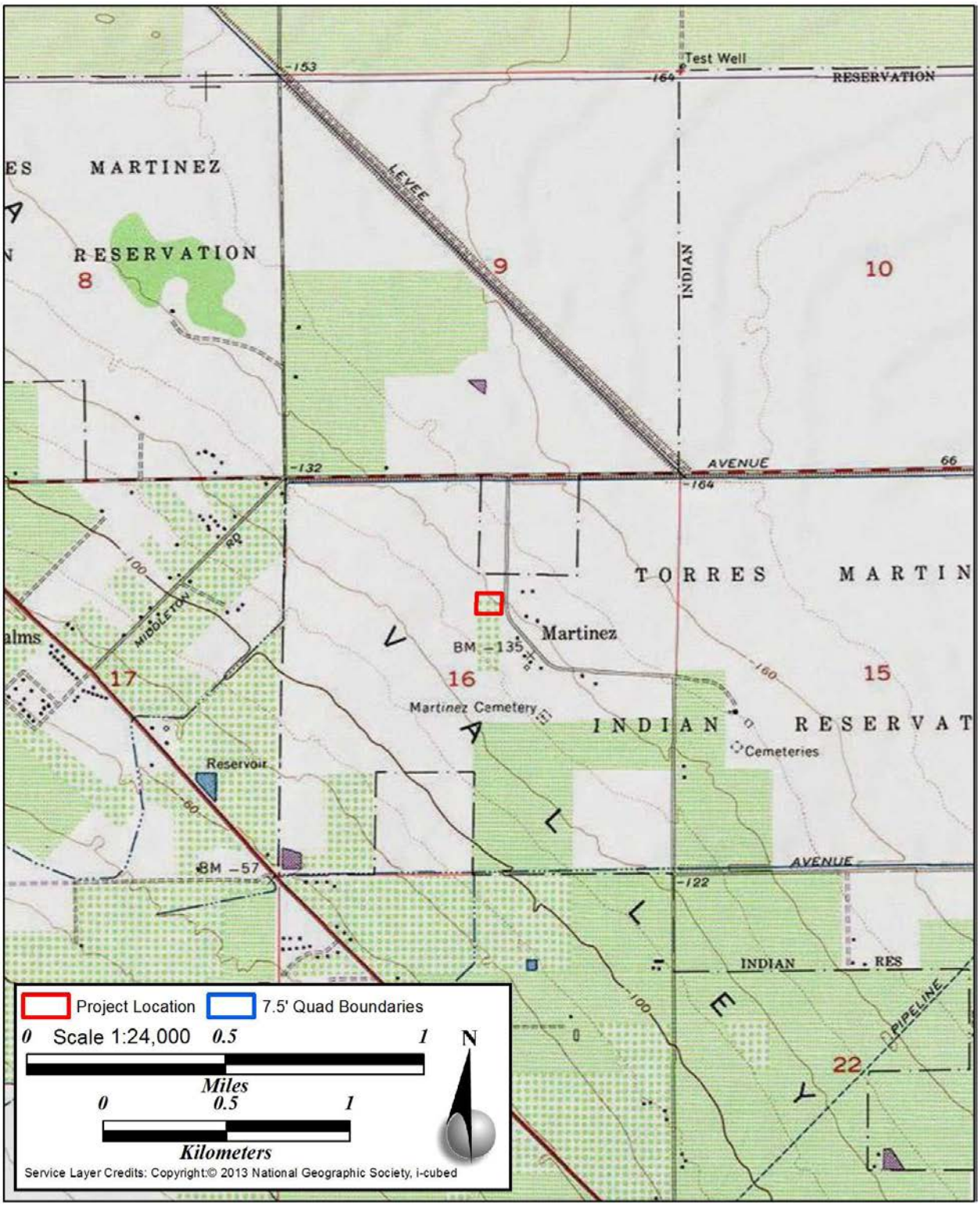


Figure 2. Project Location Map.

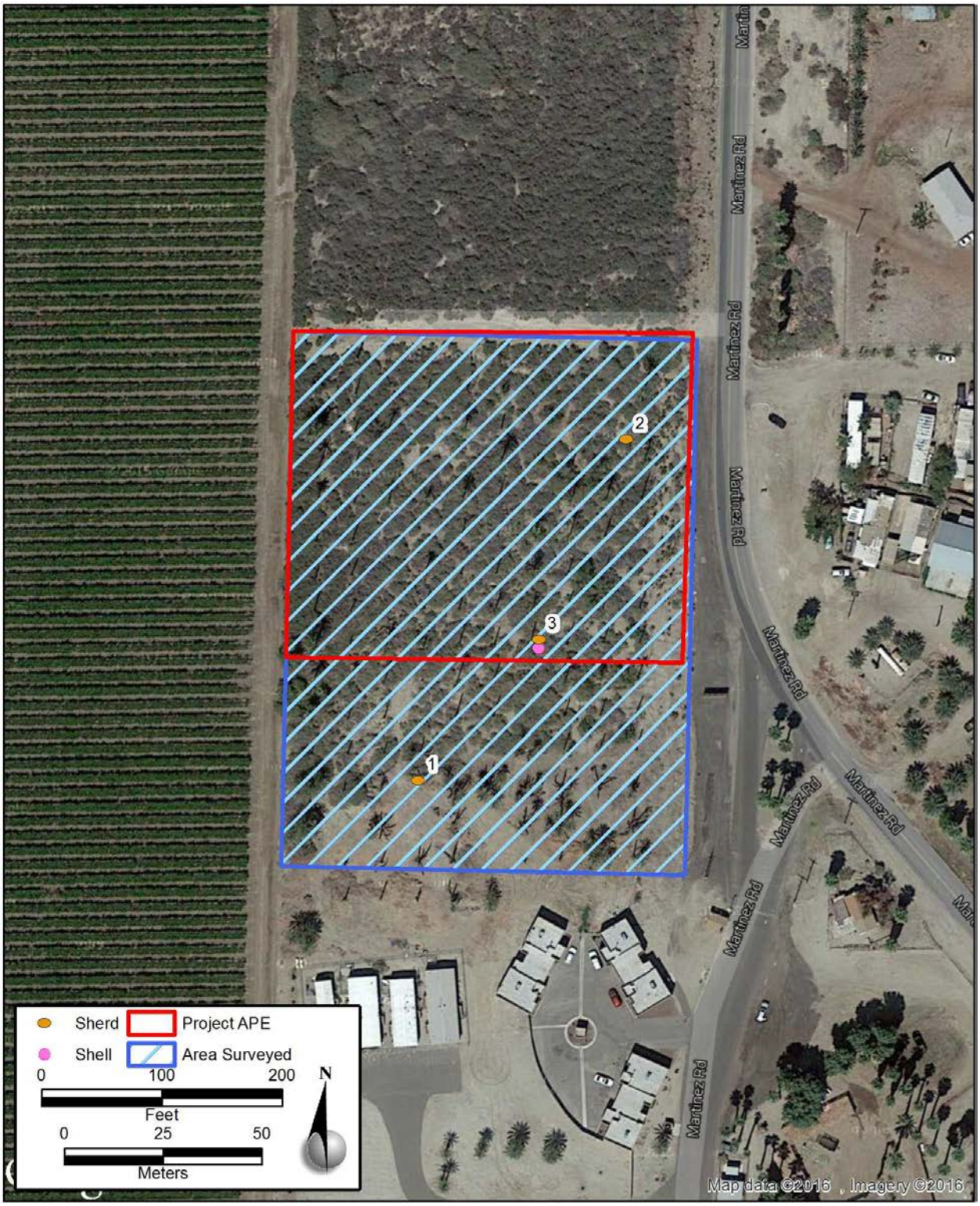


Figure 3. Overview of project APE, the area surveyed, and the results of the pedestrian survey.

Figure 4. North-facing view of project APE showing area overgrown with shadscale saltbush.

Figure 5. One of the three potsherds located on the surface during the pedestrian survey.

Appendix A

NAHC Correspondence

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January 14, 2015

California Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
Via fax: (916) 373-5471

Subject: Cultural Resources Survey for the Indian Health Clinic Project, Torres Martinez Desert Cahuilla Indian Reservation, Thermal, California (ASM Project # 25610)

Good Day,

ASM Affiliates is currently conducting a cultural resource investigation for the Indian Health Clinic Project located on a 0.23-acre parcel on Martinez Road, Torres Martinez Desert Cahuilla Indian Reservation (TM), Riverside County, California. I am writing to inquire if you have registered any cultural resources, traditional cultural properties, or areas of heritage sensitivity within this proposed project area or in the general vicinity.

The search should include the project area and a one-mile radius surrounding it. The project area is located on the 7.5-Minute USGS Valerie Quadrangle within Section 16 of Township 7 South, Range 8 West. Attached to this request are maps of the project area for your records and to put on file.

Our investigation will include direct consultation with local tribal entities in a manner that ensures complete confidentiality. To facilitate this dialogue I would like to make a request for a listing of the appropriate individuals to contact for this project. You can reply to me at the ASM Carlsbad office, listed above or through any of the other means of contact listed below. Feel free to call, write, Fax, or e-mail if you have any questions.

Sincerely,

Tony T. Quach

Associate Archaeologist
ASM Affiliates Inc.,
2034 Corte del Nogal
Carlsbad, CA 92011
Office: (760) 804-5757 Fax: 760-804-5755
tquach@asmaffiliates.com

Attachments:
Form 1. NAHC Sacred Lands Request
Figure 2. The 1:24,000 scale location map of the project area.

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Indian Health Clinic Project, Torres Martinez (ASM PN 25610)
County: Riverside County
USGS Quadrangle: 7.5 Minute USGS Quadrangle
Quad Name: Valerie
Township: 7S Range: 8W Section(s): 16
Company/Firm/Agency: ASM Affiliates Inc.
Contact Person: Tony Quach
Street Address: 2034 Corte del Nogal
City: Carlsbad, CA 92011
Phone: 760-804-5757
Fax: 760-804-5755
Email: tquach@asmaffiliates.com

Preliminary Project Description:

The current project proposes to construct an Indian Health Clinic on the Torres Martinez Reservation.

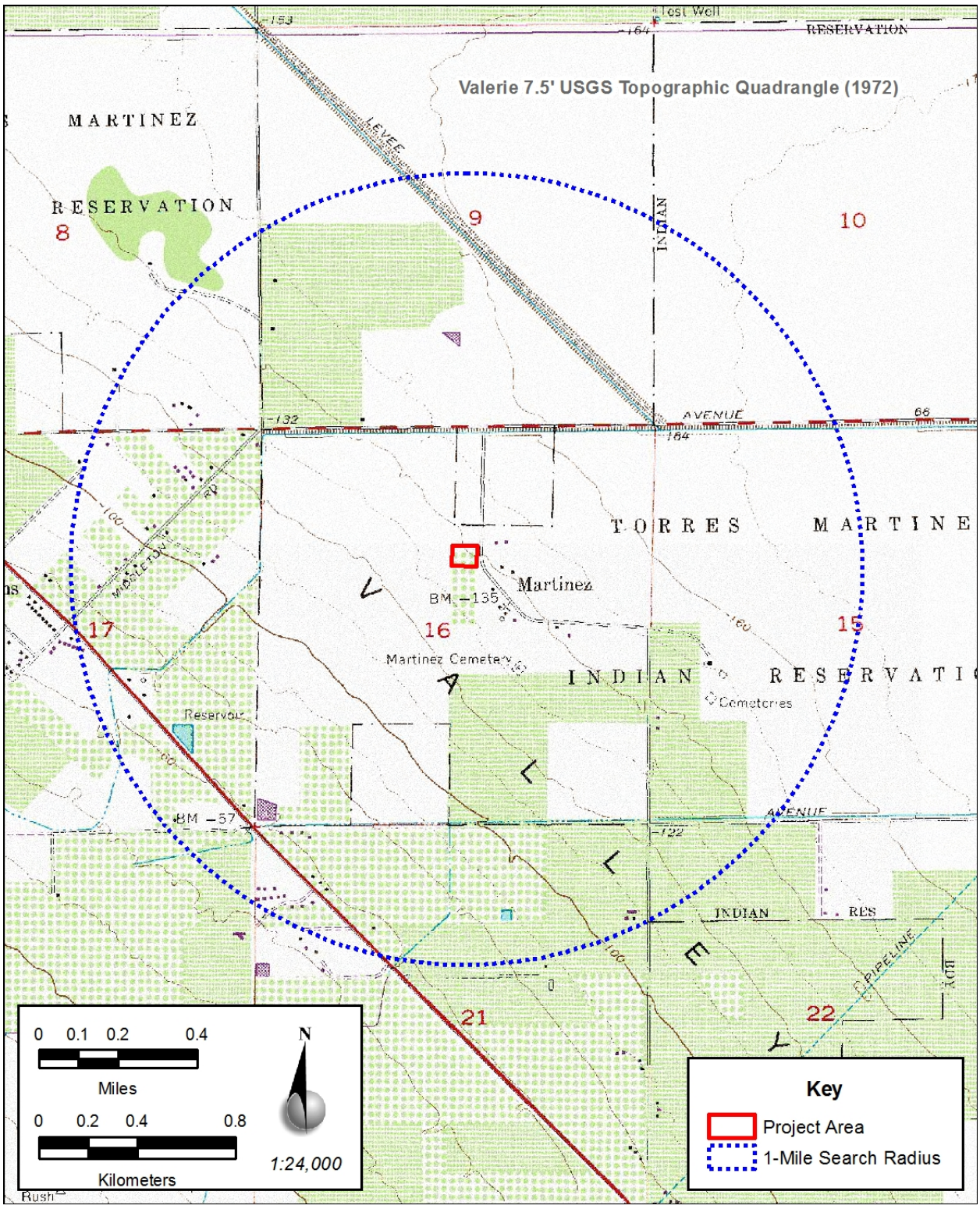

Figure 2. The 1:24,000 scale location map of the project area.

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

February 10, 2016

Tony T. Quach
ASM Affiliates, Inc.

Sent via e-mail: tquach@asmaffiliates.com
Number of pages: 3

RE: Proposed Indian Health Clinic Project, Torres Martinez Desert Cahuilla Indian Reservation, City of Thermal, Valeria Quadrangle, Riverside County, California

Dear Mr. Quach:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent above reference codes is to mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects.

As of July 1, 2015, Public Resources Code Sections 21080.1, 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.

     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 pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. A search of the SFL was completed for the USGS quadrangle information provided with negative results.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton
Associate Governmental Program Analyst

Native American Heritage Commission
Tribal Consultation List
Riverside County
February 10, 2016

Torres-Martinez Desert Cahuilla Indians
Mary Resvaloso, Chairperson
P.O. Box 1160 Cahuilla
Thermal , CA 92274
tmchair@torresmartinez.org
(760) 397-0300

Torres-Martinez Desert Cahuilla Indians
Michael Mirelez, Cultural Resource Coordinator
P.O. Box 1160 Cahuilla
Thermal , CA 92274
mmirelez@tmdci.org
(760) 399-0022, Ext. 1213

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.
This list applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Indian Health Clinic project, Torres Martinez Desert Cahuilla Reservation, City of Thermal, Riverside County.

E-2 Archaeological Testing Report

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

ARCHAEOLOGICAL TESTING REPORT FOR THE INDIAN HEALTH CLINIC PROJECT ON THE TORRES MARTINEZ DESERT CAHUILLA INDIAN RESERVATION, THERMAL, RIVERSIDE COUNTY, CALIFORNIA

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April 2017

Cogstone Project Number: 3958-00
ARPA Permit Number: BIA/PRO-17-01-J54 (577)
Type of Study: Phase II Archaeological Testing
Sites: CA-RIV-1292
USGS 7.5' Quadrangle: Valerie
Area: 3.5 acres
Key Words: Flakes, Cahuilla, Torres Martinez

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SUMMARY OF FINDINGS

This study was part of an environmental assessment for the proposed Indian Health Clinic Project located on the Torres Martinez Desert Cahuilla Indian Reservation in the City of Thermal, Riverside County, California. The Riverside-San Bernardino County Indian Health, LLC proposes to build an Indian Health Clinic on Martinez Road on the Torres Martinez Desert Cahuilla Reservation. The proposed clinic would consist of a single building, 10,000 square feet (SF) in size and would include 50 parking spaces, along with landscaping and lighting in the parking area. A pedestrian path is also proposed to connect the proposed health clinic to the adjacent senior housing center. Vehicle access to the site would be provided from Martinez Road. The proposed Project's Area of Potential Effects (APE) is a 3.5 acre portion of APN 751-210-008.

In January 2016, ASM Affiliates, Inc. (ASM) completed a cultural records search and survey for the Indian Health Clinic Project. The California Historical Resources Information System (CHRIS) records search found that one historic property, the Martinez Historical District, (CA-RIV-1292) was partially located within the APE. The field survey resulted in identification of three brownware potsherds. Due to the proximity of CA-RIV-1292, subsurface testing of the Project area was instituted under compliance responsibilities to Section 106 of the National Historic Preservation Act (NHPA) to insure that no cultural resources would be damaged or disturbed by the construction of the clinic. Initial subsurface testing was contracted to ASM in the fall of 2016 under Archaeological Resources Protection Act (ARPA) Permit # BIA/PRO-16-01-J54(577). The ASM testing plan included 12 one meter (m) square Test Excavation Units (TEUs) to be excavated by hand to a depth of five feet across the APE. ASM completed four 1 m^2 TEUs to 1.524 m (5 feet) in depth. Two 1 m^2 TEUs were excavated to 50 cm in depth with a smaller shovel test unit (STU) excavated within the TEUs to 1.524 m (5 feet) in depth. Two 1 m^2 TEUs were excavated to 60 cm in depth with a STU excavated within the TEUs to 1.524 m in depth. Four test units (1, 2, 5, and 6) were positive for cultural resources. One tertiary chert flake was recovered from TEU 1 at 30-40 cm below datum (cmbd). One deer bone fragment was recovered from TEU 2 at 0-20cm. One historic glass neck fragment, 1 historic white stoneware fragment, and 2 two buffware body sherds were recovered from TEU 5 at 20-30 cmbd. Two buffware body sherds were also recovered from TEU 5 at 30-40 cmbd. From TEU 6, 1 historic plain white improved earthenware fragment was recovered at 0-20 cmbd, and 1 historic plain white improved earthenware fragment was recovered at 20-40 cmbd. TEUs 1 and 6 are within the boundaries of CA-RIV- 1292. Four proposed TEUs were not unexcavated.

Cogstone was contracted to complete the subsurface testing under ARPA Permit BIA/PRO-17-01-J54(577) between November 29, 2016 and December 10, 2016. Cogstone personnel re-excavated the four previously incomplete (TEUs 1-4) and the four unexcavated TEUs (9-12) using a breaker bar, picks, and shovels to the proposed dimensions of 1 m^2 x 1.524 m in depth.

The TEUs were excavated in 20 cm levels and the sediments were first dry-screened through 1/8" wire mesh then wet screened through 1/8" wire mesh.

Subsurface testing by Cogstone identified 59 chalcedony flakes within TEU 11. The artifacts within TEU 11 are neither within the boundaries of site CA-RIV-1292 nor within the proposed Indian Health Clinic project footprint and represent an isolated single reduction locus (SRL) that is recommended not eligible for listing on the National Register of Historic Places. TEUs 9, 10, and 12 were negative for cultural resources.

The Torres Martinez Historical District (CA-RIV-1292) was listed on the NRHP in 1973 under Criteria C (historic building representing a specific type and period (1907)) and D (potential to yield archaeological data). There are no historic buildings located within the APE, thus the site's eligibility under Criteria C would not be affected. During the Phase II cultural resources study, TEUs 1 and 6 which were located within the boundaries of CA-RIV-1292 and the APE were positive for cultural resources. One tertiary chert flake was recovered from TEU 1 at 30-40 cmbd. One historic plain improved white earthenware fragment was recovered at 0-20 cmbd, and 1 historic plain improved white earthenware fragment was recovered at 20-40 cmbd from TEU 6. No intact cultural deposits were observed during excavations thus this area is not likely to yield any information important to the study of research questions within the region, state, or nation. Based on the fieldwork and recordation for this site, the portion of CA-RIV-1292 that is within the APE does not appear to contribute to the eligibility of the site to the National Register Historic Places under Criteria D.

No intact cultural deposits were observed within the project footprint thus the subsurface sensitivity for cultural resources is considered low. However, because of the culturally sensitive nature of the area and the presence of prehistoric and historic resources in the immediate vicinity, the Torres Martinez Desert Cahuilla Indians have requested full-time cultural resources monitoring by a qualified archaeologist and Tribal Monitor during all ground-disturbing activities associated with Project construction. Special attention should be given to excavations in the immediate vicinity of TEUs and 5 and 11.

In the event of an unanticipated discovery, all work must be suspended within 50 feet of the find until a qualified archaeologist evaluates it. If cultural objects are identified by the Tribe as funerary objects, sacred objects, or objects of cultural patrimony, compliance with the Native American Grave Protection and Repatriation Act (NAGPRA), Section 3(d), and implementing regulations 43 CFR Part 10, S10.4 will be initiated.

In the unlikely event that human remains are encountered during Project development, all work must be suspended within 50 feet of the remains and the BIA and tribe will take steps to determine whether the burial remains are of Native American or non-Native American origin.

The BIA may seek the advice and other services of the County Coroner. Work will remain diverted while the BIA and Tribe determines whether the remains are Native American and for any subsequent treatment. Protection of human burials while awaiting BIA and the Tribe's determination will include keeping the discovery confidential and securing the discovery location to prevent disturbance of the remains and associated materials. If the County Coroner, in cooperation with the BIA and the Tribe, determines that the remains are most likely of Native American origin, compliance of NAGPRA, Section 3(d), and implementing regulations 43 CFR Part 10, S10.4 will be initiated.

If the County Coroner, in cooperation with the BIA and the Tribe, determines the remains represent a historic non- Native American burial, the BIA and the Tribe will consult with the State Historic Preservation Officer (SHPO) regarding their proposed treatment of these remains.

INTRODUCTION

PURPOSE OF STUDY

Excavations were conducted to identify subsurface cultural resources as part of an environmental assessment for the proposed Indian Health Clinic Project located on the Torres Martinez Desert Cahuilla Indian Reservation in the City of Thermal, Riverside County, California (Figure 1). This investigation was completed at the request of the Torres Martinez Desert Cahuilla Indians and the Bureau of Indian Affairs as lead agencies in compliance with Section 106 of the National Historic Preservation Act (NHPA).

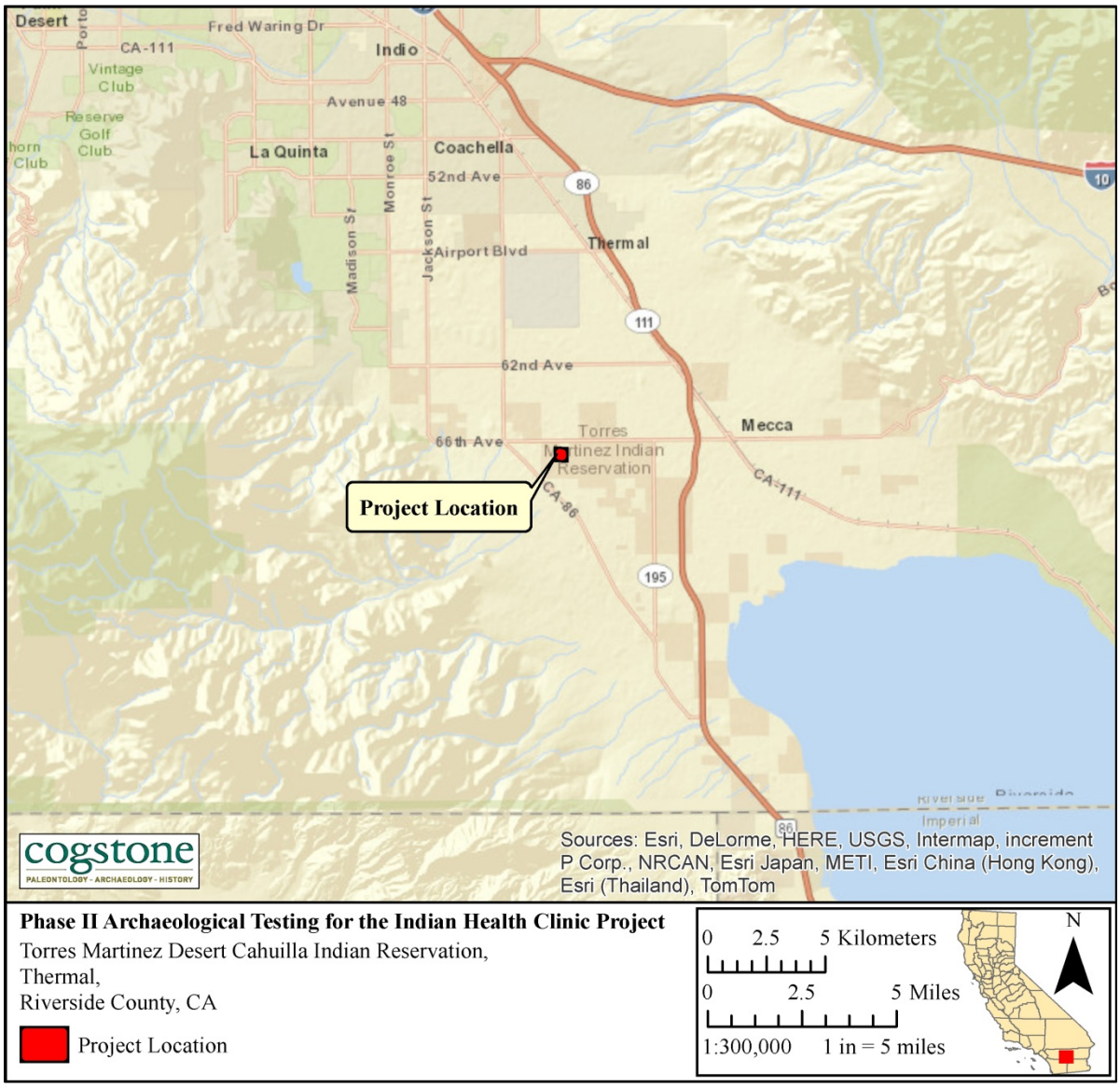

Figure 1. Project Vicinity Map

PROJECT DESCRIPTION

Riverside-San Bernardino County Indian Health, LLC proposes to build an Indian Health Clinic on Martinez Road on the Torres Martinez Desert Cahuilla Indian Reservation. The proposed Project would consist of a single building, 10,000 square feet (SF) in size and would include 50 parking spaces, along with landscaping and lighting in the parking area. A pedestrian path is also proposed to connect the proposed health clinic to the adjacent senior housing center. Vehicle access to the site would be provided from Martinez Road. Construction will include brush removal, site grading and paving, construction of a driveway entrance/exit from Martinez Road, installation of landscaping and lighting within the parking area. Construction will also include the extension of water and electrical lines to the site and installation of a new septic system. The project would take approximately six (6) months to construct. Site preparation will involve minor cuts and fills in order to achieve the desired building pad elevation and provide adequate gradients for site drainage.

AREA OF POTENTIAL EFFECTS

The proposed Project's Area of Potential Effects (APE) is a 3.5 acre portion of APN 751-210-008 within the Torres Martinez Desert Cahuilla Indian Reservation located in the City of Thermal, Riverside County, California (Figure 1). The APE is situated in the northeast quarter of Section 16, Township 7 South, and Range 8 East on the USGS 7.5-minute Valerie topographic quadrangle (Figure 2). The project site is bounded by existing facility structures to the south, agricultural property to the west, undeveloped land and scattered structures to the north, and Martinez Road to the east (Figure 3). The site itself contains vegetative remains of palm trees that were destroyed in a fire over 10 years ago. The maximum depth of excavation is five feet within the project footprint.

In January 2016, ASM Affiliates, Inc. (ASM) completed a California Historical Resources Information System (CHRIS) cultural records search for the Indian Health Clinic Project at the at the Eastern Information Center (EIC) located at the University of California, Riverside. The records search identified that one historic property (CA-RIV-1292) was partially located within the APE. ASM conducted a pedestrian survey of the APE and identified three brownware potsherds as well as freshwater snail shells native to ancient Lake Cahuilla (see Site Context section for further information on CA-RIV-1292; Daniels 2016).

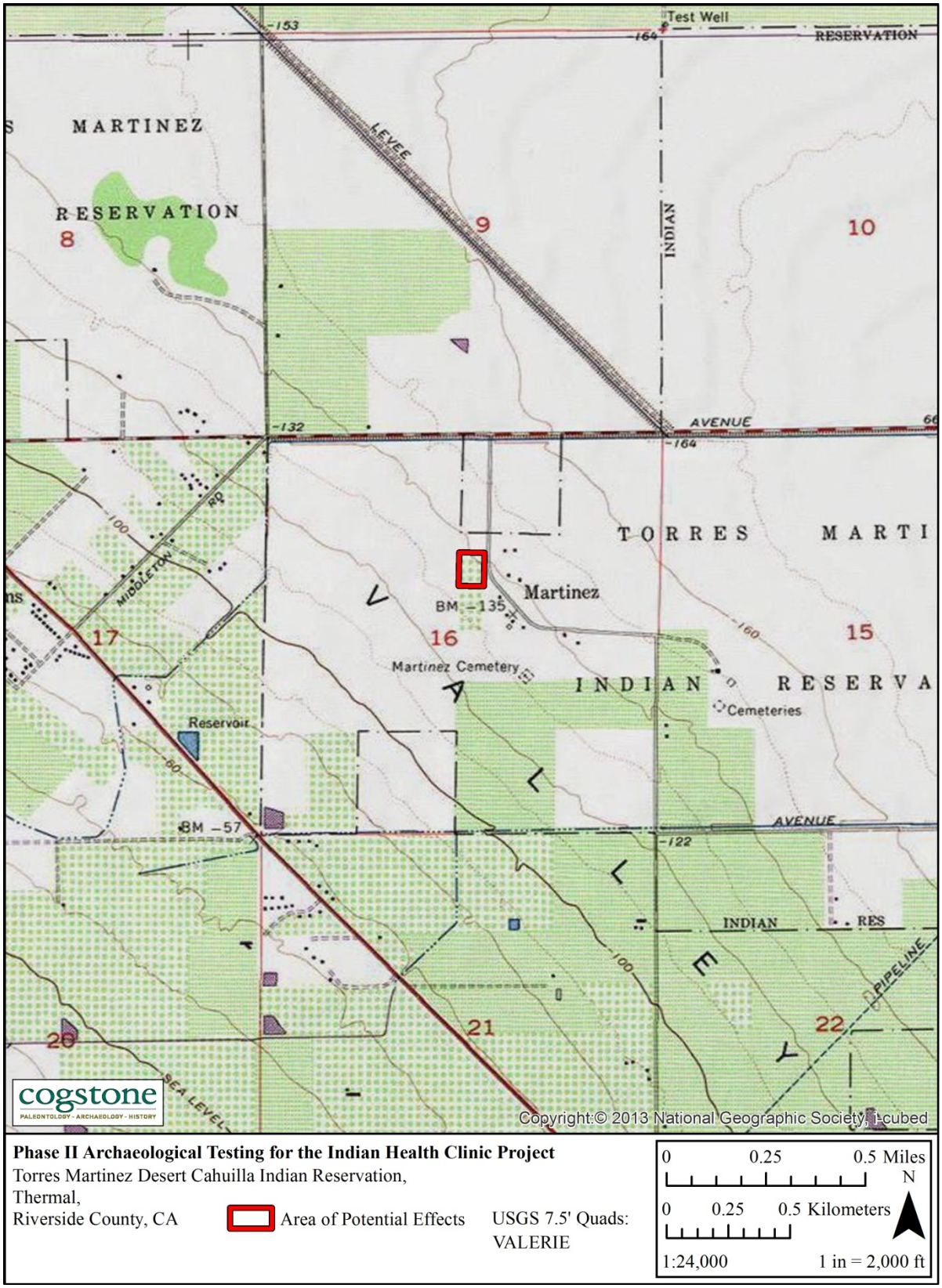

Figure 2. Project Location

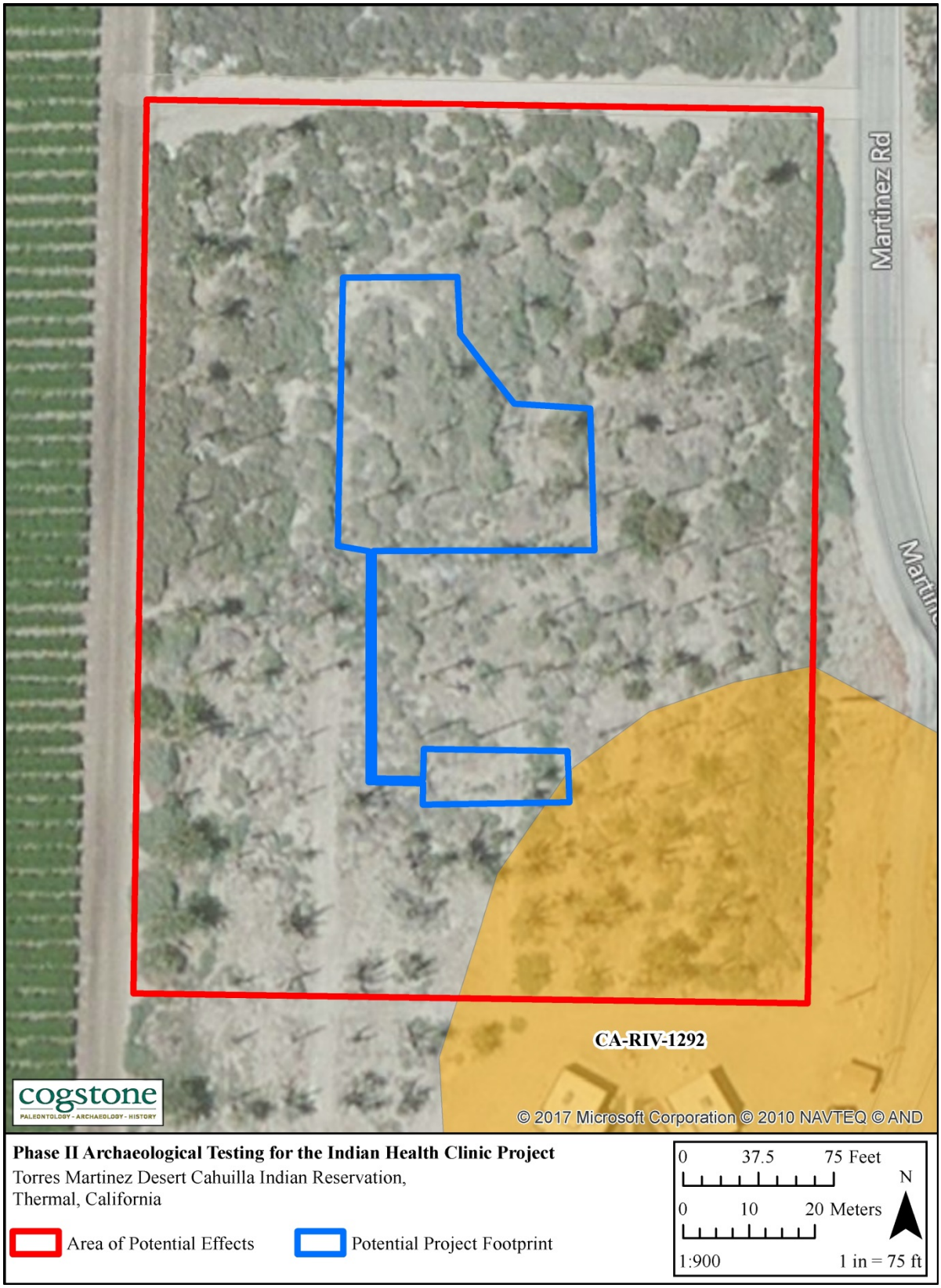

Figure 3. Area of Potential Effects Map

PROJECT PERSONNEL

Cogstone Resource Management Inc. (Cogstone) conducted this study. All personnel meet the Secretary of the Interior's Standards for Archaeology and Historic Preservation (36 CFR Part 61). Qualifications of Cogstone personnel are provided in Appendix A.

Desireé R. Martinez served as the Principal Investigator, supervised all work, analyzed the prehistoric artifacts recovered by ASM and Cogstone, and is co-Author of this report. Martinez is a qualified archaeologist with over 21 years of experience in archaeological fieldwork, research, and curation. She received her M.A. in Anthropology from Harvard University.

André Simmons served as a field director, Geographic Information Systems (GIS) supervisor, and co-Author of this report. He supervised fieldwork conducted between November 29 to December 2 and December 8 to December 10, 2016. Simmons is a Registered Professional Archaeologist (RPA) and has an M.A. in Anthropology from California State University, Fullerton, and over seven years of experience in southern California archaeology.

Albert Knight served as a field director supervising fieldwork conducted between December 5 and December 7, 2016. Knight has a B.A. in Anthropology from University of California, Santa Barbara, and over thirty years of experience in southern California archaeology.

Sherri Gust analyzed the faunal remains recovered by ASM. Ms. Gust has a M.S. in Anatomy from the University of Southern California. She has more than 30 years of experience in California and has special expertise in the identification of animal bones and human remains from archaeological sites.

Lynn Furnis analyzed the historic artifacts recovered by ASM. Ms. Furnis has an M.A. in Anthropology from the University of Nevada, Reno. She has over 45 years of experience in archaeology, including 15 in California. Her area of emphasis is in historical archaeology.

Holly Duke served as co-Author of this report. Duke has a B.A. degree in Archaeology and History from Simon Fraser University, British Columbia, Canada, and has over four years of experience in California archaeology.

Five additional archaeological crew members assisted in excavation between November 29 and December 10, 2016. The crew members' highest degrees earned or experience are summarized in Table 1.

Table 1. Field Crew

Name	Highest Degree Earned
Terri Terry	M.A. Anthropology
Marc Serrano	B.A. Anthropology
Matthew Cappetta	B.A. Anthropology
Francisco Palacios	B.S. Geology
Sam Dunlap	30 years Archaeological Fieldwork Experience

SITE CONTEXT

ENVIRONMENT

Located in the Coachella Valley, the Torres Martinez Cahuilla Indian Reservation enjoys a subtropical desert climate. The San Jacinto and Santa Rosa Mountains flank the area on the west with the San Bernardino and Little San Bernardino Mountains to the north and east, respectively. Mean annual rainfall is very low from the desert floor into the foothills, ranging from three to six inches per year and averaging about five to six inches along the Little San Bernardino foothills (Coachella Valley Water District 2010). Most of the rainfall occurs during the cooler months of November through March, but occasional high-intensity thunderstorms and tropical monsoonal storms occur in late summer and early fall. Although the ground may be generally dry at the beginning of a storm, sufficient amounts and intensities of rainfall can saturate the surface, substantially reducing percolation and increasing runoff. Development also increases runoff by creating large areas of impermeable surfaces. Increased runoff upstream can contribute significantly to downstream flooding damage.

Summer daytime temperatures can occasionally exceed 125 °F and winter temperatures rarely fall below freezing. The surrounding mountain slopes generally receive rainfall that increases with elevation. The mountains and upper elevations surrounding the APE are generally cooler, with an approximate 5 °F drop with every 1,000-foot increase in elevation. Potential flooding problems within the APE are associated with storm flows in the Whitewater River and its tributaries, flooding on the alluvial fans, and to runoff associated with the Indio Hills and the San Bernardino and Little San Bernardino mountain foothills.

The APE lies within the prehistoric dry lakebed of prehistoric Lake Cahuilla (Figure 4). Prehistoric Lake Cahuilla was one of the largest freshwater lakes ever to exist in North America. At its maximum, the lake would stretch from the Colorado River Delta in Mexico to the vicinity of Indio, California. Lake Cahuilla formed when sediment carried by the Colorado River formed

a natural barrier in the Colorado River Delta, forcing the course of the river to turn northward into the Salton Basin where, over the course of centuries, it formed the massive lake. Throughout the Pleistocene Epoch and recent Holocene, the course of the Colorado River alternated between flowing into the Gulf of Mexico and flowing into the Salton Basin. Each time Lake Cahuilla filled, it brought with it an entire ecosystem that included freshwater fish, mussels, waterfowl, and marsh plants. Ethnographic accounts taken from Cahuilla Native Americans from the mid-nineteenth century have been used to estimate A.D. 1600 as the latest date for last time the Lake Cahuilla formed. Holocene fossil shell and vertebrates are commonly found throughout the ancient lakebed (Singer 2010).

PREHISTORIC CULTURAL SETTING

Approaches to prehistoric frameworks have changed over the years from those being based on material cultural attributes to radiocarbon-based chronologies to those associated with cultural traditions. Archaeologists defined a material complex consisting of an abundance of milling stones (for grinding food items) with few projectile points or vertebrate faunal remains dating from about seven to three thousand years before the present as the "Millingstone Horizon" (Wallace 1955). Later, the "Millingstone Horizon" was redefined as a cultural tradition named the Encinitas Tradition (Warren 1968) with various regional expressions including Topanga and La Jolla. Use by archaeologists varied as some adopted a generalized Encinitas Tradition without regional variations, some continued to use "Millingstone Horizon," and some used Middle Holocene (the geologic time period) to indicate this observed pattern (Sutton and Gardner 2010:1-2).

Recently, the generalized use of the "Millingstone Horizon" terminology has been seen to suppress the identification of specific cultural, spatial, and temporal cultural variations that occurred over several thousand years and the coincident movement of peoples, and it is these factors that are seen to be critical to understanding prehistoric adaptation and change (Sutton and Gardner 2010:1-2).

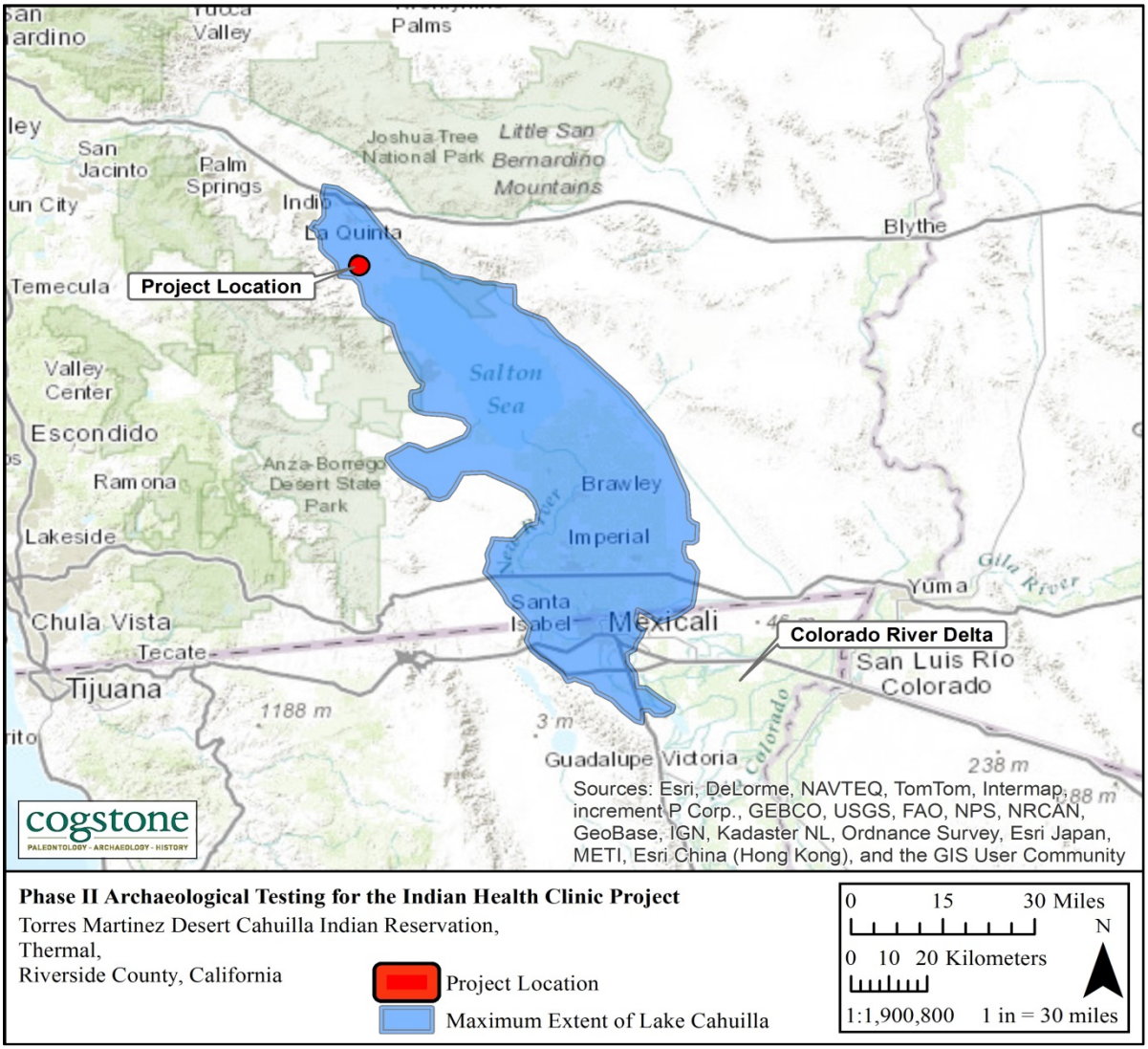

Figure 4. Project Area Relative to Prehistoric Lake Cahuilla

The Encinitas Tradition characteristics are abundant metates and manos, crudely made core and flake tools, bone tools, shell ornaments, and very few projectile points with subsistence focusing on collecting (plants, shellfish, etc.). Faunal remains vary by location but include shellfish, land animals, marine mammals and fish (Sutton and Gardner 2010:7). The Encinitas Tradition has been redefined to have four patterns (Sutton and Gardner 2010: 8-25). These are (1) Topanga in coastal Los Angeles and Orange counties, (2) La Jolla in coastal San Diego County, (3) Greven Knoll in inland San Bernardino, Riverside, Orange and Los Angeles counties, and (4) Pauma in inland San Diego County.

About 900 B.P. Greven Knoll III groups in the Project Area adopted new cultural traits that transformed them into Palomar groups. The Palomar Tradition characteristics include bow and arrow technology, new rock art styles, new settlement and subsistence systems, and Takic

languages. The Palomar Tradition is defined to have two patterns (Sutton 2010). These are the San Luis Rey Pattern in the southern California coastal area and the Peninsular Pattern in the inland areas of the northern Peninsular Ranges (e.g., San Jacinto and Santa Rosa mountains) and northern Coachella Valley.

CULTURE HISTORY

The latest cultural history for the Project Area define traits for time phases of the Greven Knoll Pattern of the Encinitas Tradition applicable to inland San Bernardino, Riverside, Los Angeles, and Orange counties (Sutton and Gardner 2010). This pattern is subsequently replaced in the Project Area by the Peninsular Pattern of the Palomar Tradition later in time (Sutton 2010; Table 2).

Greven Knoll sites tend to be in located in the inland valley areas characteristic of the Project Area. These inland people apparently did not switch from the use of manos and metates to the use of pestles and mortars that is seen in coastal sites dating to approximately 5000 years ago, possibly reflecting their closer relationship with desert cultural peoples who did not exploit acorns. The Greven Knoll toolkit is dominated by manos and metates throughout its 7,500-year extent. In Phase I, other typical characteristics were pinto dart points for atlatls or spears, charmstones, cogged stones, absence of shell artifacts, and flexed position burials (Table 2). In Phase II, Elko dart points for atlatls or spears and core tools are observed along with increased indications of gathering. In Phase III, stone tools including scraper planes, choppers and hammerstones are added to the tool kit, and yucca and plant seeds are staple foods, animals bones are heavily processed (broken and crushed to extract marrow), and burials tend to be marked by stone cairns (Table 2; Sutton and Gardner 2010).

Table 2. Cultural Patterns and Phases

Phase	Dates B.P.	Material Culture	Other Traits
Greven Knoll I	8,500 to 4,000	Abundant manos and metates; Pinto dart points for atlatls or spears; charmstones, cogged stones, and discoidals rare; no mortars or pestles; and general absence of shell artifacts.	No shellfish; hunting important; flexed inhumations; and cremations rare.
Greven Knoll II	4,000 to 3,000	Abundant manos and mutates; Elko dart points for atlatls or spears; core tools; late discoidals; few mortars and pestles; and general absence of shell artifacts.	No shellfish; hunting and gathering important; flexed inhumations; and cremations rare.

Phase	Dates B.P.	Material Culture	Other Traits
Greven Knoll III (formerly Sayles complex)	3,000 to 900	Abundant manos and mutates; Elko dart points for atlatls or spears; scraper planes, choppers, and hammerstones; late discoidals; few mortars and pestles; and general absence of shell artifacts.	No shellfish; yucca and seeds as staples; hunting important but animal bones also processed; flexed inhumations beneath rock cairns; and cremations rare.
Peninsular I	900 to 750	Appearance of small points (Cottonwood points &, Desert Side-notched) for arrows; shaft straighteners; pottery; few stone ornaments or stone pipes; appearance of shell ornaments; use of obsidian glass from Coso, Obsidian Butte, Bagdad, and unknown sources; and use bedrock metates but few mortars and pestles.	Adoption of a lacustrine-based subsistence system; movement of people into the northern Coachella Valley from the interior valleys as Lake Cahuilla filled; establishment of major residential bases along the Lake Cahuilla shoreline; and primary pit cremations.
Peninsular II	750 to 300	Addition of brown ware pottery, ceramic pipes and figurines; use of same obsidian sources; and the use of stone fish traps as levels of Lake Cahuilla fluctuated and eventually declined.	Lacustrine based subsistence; and the appearance of the Peninsular Funerary Complex, with secondary cremations placed in ceramic "containers" and associated mourning ceremonies.
Peninsular III	300 to 150	Continued use of Cottonwood and Desert Side-notched points; brown ware and buff ware pottery; primary use of Obsidian Butte as an obsidian source; addition of new figurine types and cultigens such as melons and squash, and the introduction of Euro-American material culture (e.g., glass beads and metal tools).	Adoption of terrestrial-based subsistence system; full-time villages near springs; movement of some people west into the northern Peninsular Ranges as Lake Cahuilla became desiccated; use of domesticated species obtained from Colorado River Yumans and Euro-Americans; primary pit cremation as the principal mortuary practice; and retention of mourning ceremonies.

Note: Adapted from Sutton and Gardner 2010 and Sutton 2010

Early Peninsular sites tend to be near sources of fresh water in valleys. The former Lake Cahuilla played a major role in the prehistory of the Colorado Desert. As detailed above, Lake Cahuilla formed periodically when the Colorado River broke its channel and flowed into the Salton Trough of the Coachella and Imperial Valleys, forming a large, deep body of fresh water. Sutton (2011) suggests that some San Luis Rey I people of Yuman descent split away and migrated east to the northern Peninsular Ranges and the northern Coachella Valley to exploit Lake Cahuilla, and in so doing became Peninsular I. The Peninsular Pattern then developed through the Peninsular I, II and III phases (Sutton 2010).

The Peninsular I phase is marked by small points for arrows, the appearance of bedrock mortars indicating use of acorns, pottery, the appearance of shell ornaments, and pit cremations are

common. Hunting and gathering of terrestrial resources and the exploitation of Lake Cahuilla's lacustrine resources resulted in the development of new technologies for waterfowl decoys and fish traps and/or nets (Table 2). The Peninsular II phase has some important new material traits including brown ware pottery, ceramic pipes and figurines, and secondary burials in containers (Table 2). The Peninsular III phase reflects the archaeological signature of the ethnographic groups that had become established in Peninsular I and II phases with the addition of some Euro-American material culture (Sutton 2010).

ETHNOGRAPHIC HISTORY

By the Late Prehistoric period, the Coachella Valley was home to affiliated peoples known as the Cahuilla. They occupied the San Gorgonio Pass (referred to as the Pass Cahuilla), San Jacinto and Santa Rosa Mountains (Mountain Cahuilla), and the Coachella Valley and the northern end of Imperial Valley (Desert Cahuilla) (Figure 5). The Cahuilla are linked to other Takic language family groups such as the Serrano and Luiseño, and share many aspects of culture and religion with those tribes.

These peoples spoke the Cahuilla language but each person's primary identity was linked to clan lineage and moiety, rather than tribal affiliation. The two moieties of the Cahuilla were *Istam* (coyote) and *Tuktum* (wild cat). Affiliation was inherited from the father's moiety and members of one moiety had to marry into the other group. Each clan was an independent, politically autonomous land-holding unit (Bean 1972; Strong 1929).

In addition to lineage residence areas and clan territory owned in common with other clan members, each lineage had ownership rights to various food collecting and hunting areas. Individuals also "owned" specific areas rich in plant resources, as well as hunting grounds, rock quarry locations, and sacred spots used only by shamans, healers, and ritual practitioners.

Cahuilla clans varied in size from several family groups to those composed of several thousand people. Clans were generally situated so that each lineage or community was located near a reliable water source and in proximity to significant food resources. Within each community, house structures were spatially placed at some distance from each other. Often a community would spread over a mile or two in distance with each nuclear and extended family having homes and associated structures for food storage and shaded work places (ramadas) for tool manufacture and food processing. Each community also contained a house clan leader.

In more recent times, a ceremonial house (kishumnawat) was placed within each community, and most major religious ceremonies of the clan were held there. In addition, house and ceremonial structures, storage granaries, sweat houses, and song houses (for recreational music)

were present. Usually an area within one to three miles contained the bulk of materials needed for daily subsistence, although territories of a given clan might be larger, and longer distances were traveled to get precious exotic resources, usually found in the higher elevations of the surrounding mountains.

While most daily secular and religious activities took place within the community, there were locations at some distance from the community where people camped for extended periods to harvest acorns or piñon nuts. Throughout the area, there were sacred places used primarily for rituals, intergroup or inter-clan meetings, caches for sacred materials, and locations for use by shamans or medicine men. Generally, hilly, rocky areas, cave sites, or walled cave sites were used for temporary camping, storage of foods, fasting by shamans, and as hunting blinds.

Between the mid-1500s and the 1800s, the Cahuilla were variously contacted by Spanish explorers, then Mexican ranchers, and later American settlers. By the mid-1800s, the Cahuilla were fully exposed to new peoples with new cultural ways, opportunities, and constraints. In the 1860s, several epidemics devastated the Cahuilla population and the increasing contact with Europeans continued to have a major impact on their traditional lifeway. Survivors of decimated Cahuilla clans joined villages that were able to maintain their ceremonial, cultural, and economic institutions (Bean 1972).

The Cahuilla were influenced by contact with the Patayan peoples of the lower Colorado River area. The Patayan were of the Yuman language family and introduced both floodplain agriculture, the use of ceramics, and bow-and-arrow technology to the Cahuilla approximately 1500 years ago. The Cahuilla were observed by early European explorers and settlers growing small plots of corn, pumpkin, melon, watermelon, barley, and wheat where there were reliable water sources (Schaefer and Laylander 2007: 253).

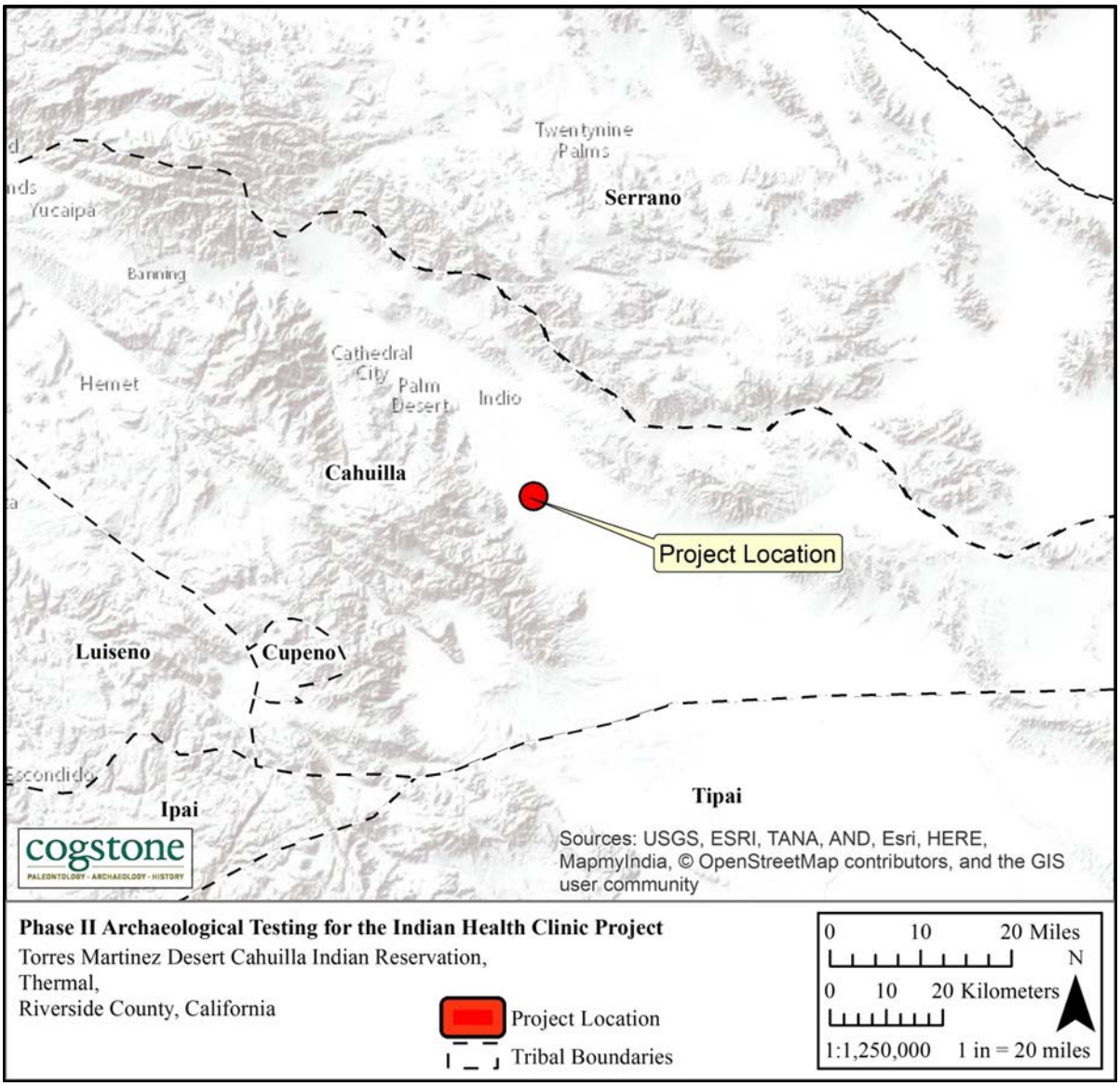

Figure 5. Cahuilla Territory (adapted from Heizer 1978)

HISTORICAL SETTING

The Cahuilla retained control of their ancestral lands longer than most California tribes did, as they were somewhat distant from the established Spanish Missions. The first regular incursion into Cahuilla territory was Hank Brown's wagon road in the 1850s along what is now the route of Interstate 10 (Lech 2004:137-8).

Because of competing economic and political considerations, however, it was not until the mid-1870s that a serious push to settle the Coachella Valley occurred when the Southern Pacific Railroad transected the western Colorado Desert through the Coachella Valley. This route connected the San Gorgonio Pass to the town of Yuma, Arizona, via the eastern shore of the Salton Sink. Within a decade, the Federal Government gave all the odd-numbered sections of land in the Coachella Valley to the Southern Pacific (now the Union Pacific) Railroad, which completed its line through the desert to the Pacific Ocean in 1877. When President U.S. Grant established the Cahuilla Indian Reservations beginning in 1875, only the even-numbered sections were still available, thus creating the present Reservation checkerboard pattern. At the same time, ancestral Cahuilla lands were being granted to American settlers and Cahuilla peoples were being moved onto reservations (Agua Caliente Band of Indians n.d.). Development was very slow and towns were small until relatively recently; however, residential and commercial development is now reaching new peaks (Lech 2004:142).

CA-RIV-1292

As part of their initial research for the Indian Health Clinic Project, ASM conducted a cultural records search at the California Historic Information System (CHRIS) in January 2016. The CHRIS records search determined that CA-RIV-1292, the Torres Martinez Historical District, is partially located within the proposed APE (Daniels 2016). The site was first recorded in 1972 by T. F. King and included historic buildings as well as a scattering of historic and prehistoric artifacts, including potsherds and projectile points. The site measured 200 feet in diameter. The Martinez Historical District includes: P-33-05686 (Moravian Church and Indian School), P-33-05687 (former U.S. Indian agent quarters), P-33-05688 (former U.S. Indian agency office), P-33-05689 (shed), and P-33-05690 (Jean and Late Russel Force House). All are historic structures. P-37-05686, P-37- 05687 and P-37-05688 are believed to be the oldest standing U.S. Indian Agency buildings in California. They were built around 1907 by the Martinez Agency, which was established in 1876. The district was declared a historical site by the Riverside Historical Commission in 1970. The district was also listed as a California Point of Historical Interest in 1971. The district was recommended eligible under Criteria C (historic building representing type and period (1907) and D (potential to yield archaeological data). It was listed on the National Register of Historic Places (NRHP) in May 1973.

The site record was last updated in August 1999 by Andrew Pigniolo (1999). The site surface was noted to be heavily disturbed, with a light scatter of recent to historic refuse dominated by glass, ceramics, and metal. One Colorado Buff potsherd was identified on the surface within the previously recorded boundaries. Three prehistoric Tumco Buff potsherds were identified approximately 200 feet to the west of CA-RIV-1292. As a result, the boundary of CA-RIV-1292 was expanded to encompass these artifacts. The integrity of the site surface was noted as poor, with evidence of grading, landscaping, brush removal, and agricultural activity associated with a

date orchard. Pigniolo notes that a village was reported in the vicinity by William Blake in 1853 and that two rancherias were noted in the area in 1856 by John La Croze of the Henry Washington party. Pigniolo suggests that the prehistoric component may have been the Cahuilla village of *Puicheckiva* or *Wanteauem*.

RESEARCH DESIGN

The purpose of the research design is to determine the extent of which site CA-RIV-1292 is located within the APE. Based on previous assessment results and the cultural sensitivity of the area, the Torres Martinez Band of Desert Cahuilla Indians requested Phase II archaeological testing in order to determine if there are subsurface archaeological deposits within or immediately surrounding the proposed Project footprint (Figure 6). All TEUs would be excavated to a depth of 5 feet in order to match the maximum depth of ground disturbance for the Indian Health Clinic Project.

Initial subsurface testing was contracted to ASM in the fall of 2016 under ARPA Permit # BIA/PRO-16-01-J54(577). The ASM testing plan included 12 systematically-placed one meter (m) square Test Excavation Units (TEUs) to be excavated by hand to a depth of 1.524 m (5 feet) across the APE. ASM completed four 1 m^2 TEUs to 1.524 m (5 feet) in depth. Two 1 m^2 TEUs were excavated to 50 cm in depth with a smaller shovel test unit (STU) excavated within the TEUs to 1.524 m (5 feet) in depth. Two 1 m^2 TEUs were excavated to 60 cm in depth with a STU excavated within the TEUs to 1.524 m (5 feet) in depth. Four TEUs (1, 2, 5, and 6) were positive for cultural resources. One tertiary chert flake was recovered from TEU 1 at 30-40 cm below datum (cmbd). One deer bone fragment was recovered from TEU 2 at 0-20 cmbd. One historic glass neck fragment, 1 historic white stoneware fragment, and 2 two buffware body sherds were recovered from TEU 5 at 20-30 cmbd. Two buffware body sherds were also recovered from TEU 5 at 30-40 cmbd. From TEU 6, 1 historic plain white improved earthenware fragment was recovered at 0-20 cmbd and 1 historic plain white improved earthenware fragment was recovered at 20-40 cmbd. TEUs 1 and 6 are within the boundaries of CA-RIV- 1292. Four proposed TEUs were not unexcavated. All sediments were screened through 1/8th inch wire mesh. A total of 10 artifacts were recovered. All excavated TEUs were backfilled (Becker 2016). Although the geotechnical borings concluded that the sediments within the APE were silt and sand, ASM found that during their excavations the sediments were more compact than anticipated. The prehistoric artifacts were analyzed by Desiree Martinez, historic artifacts by Lynn Furnis and faunal remains by Sherri Gust.

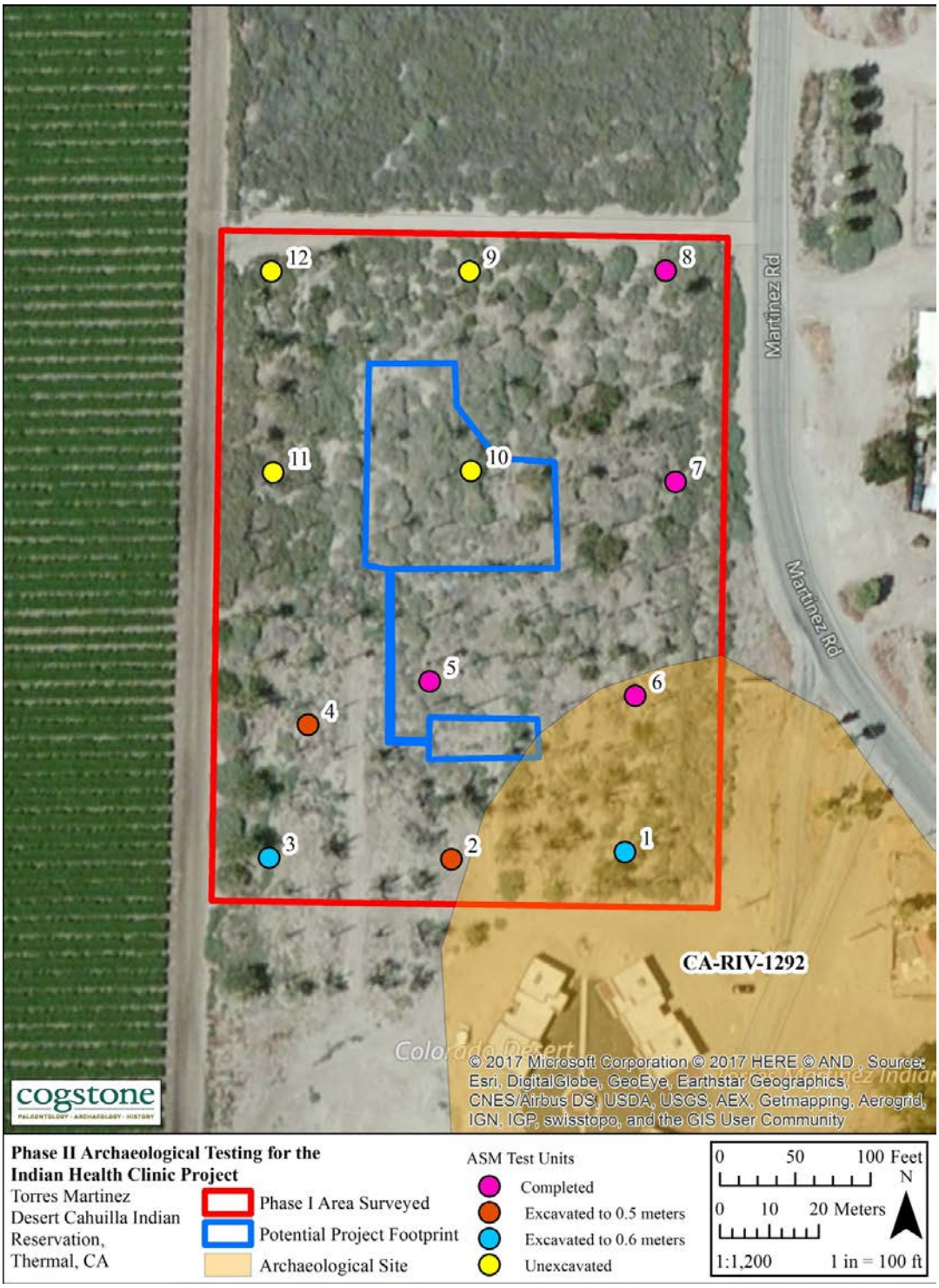

Figure 6. Location of Proposed and Excavated TEUs by ASM

Table 3. Artifacts Recovered by ASM

Field Number	Unit Number	Depth (bd)	Qty	Description
ASM-1	1	30-40 cm	1	Flake, Chert, Tertiary
ASM-2	2	0-20 cm	1	Bone, Vertebra fragment, Deer
ASM-3	5	20-30 cm	1	Historic White Stoneware Fragment, Large Vessel
ASM-4	5	20-30 cm	1	Historic colorless glass fragment, neck
ASM-5	5	20-30 cm	2	Buffware body sherds
ASM-6	5	30-40 cm	2	Buffware body sherds
ASM-7	6	0-20 cm	1	Historic Plain White Improved Earthenware, Foot Fragment.
ASM-8	6	20-40 cm	1	Historic Plain White Improved Earthenware, Plate Fragment.
	Total Cultural Resources Recovered		**10**	

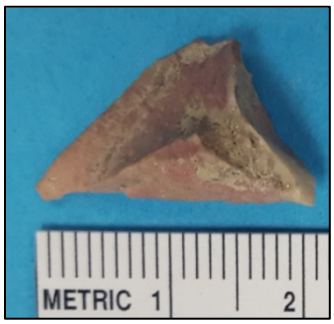

Figure 7. ASM-1 Lithic Material

Figure 8. ASM- 2 Deer Bone Fragment

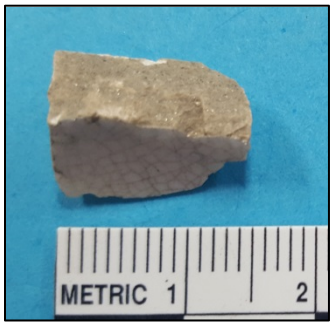

Figure 9. ASM-3 Historic White Stoneware

Figure 10. ASM-5 Buffware sherd

Cogstone was contracted to complete the subsurface testing under ARPA Permit BIA/PRO-17-01-J54(577). In order to accommodate the Tribe's request for TEUs to be hand excavated, Cogstone proposed to continue ASM's original incomplete excavations with hand breaker bars and picks. Since a majority of the sediments were silt and clay, Cogstone proposed dry-screening through 1/8th inch wire mesh as well as additional wet screening of the sediments through 1/8th inch wire mesh.

Cogstone proposed to provide a crew of four. The Field Director and three Field Technicians would remove the backfill dirt from the four partially excavated units and excavate them to their original proposed dimensions of 1 m^2 x 1.524 m (5 feet). Four additional 1 m^2 x 1.524 m (5 feet) TEUs would be excavated. The results of two partially excavated TEUs located within the boundaries of CA-RIV-1292 would be used to determine the depth of the site's cultural deposits and its integrity.

FIELD METHODS

FIELDWORK

On November 28, 2016, Cogstone Field Director André Simmons marked the proposed TEUs within the APE. Some of the locations of the TEUs were adjusted slightly due to vegetation. Each TEUs' location was recorded using a Trimble GeoXH 6000 unit (Figure 11)..

Phase II excavations were conducted between November 29, 2016 and December 10, 2016. André Simmons supervised the excavation activities between November 29 to December 2 and December 8 to December 10, 2016. Albert Knight supervised the excavation activities between December 5 and December 7, 2016. Archaeological technicians included Marc Serrano, Matthew Cappetta, Terri Terry, Sam Dunlap and Francisco Palacios (Table 4).

All hand-excavations were completed using a breaker bar and picks to the proposed dimensions of 1 m^2 x 1.524 m (5 feet). The TEUs were excavated in 20 cm levels and the sediments were first dry-screened through 1/8" wire mesh and wet screened using 1/8" wire mesh. Digital photographs of each level were taken using a Nikon Coolpix Camera (Figures 12 and 13).

Artifacts identified through excavation were identified, described and quantified in the field with no further analysis. Artifacts were not removed from the Torres Martinez Desert Cahuilla Indian Reservation and were given to the Tribe's Cultural Resource Coordinator at the end of the day. A tribal member of Torres Martinez was present as a monitor during excavation

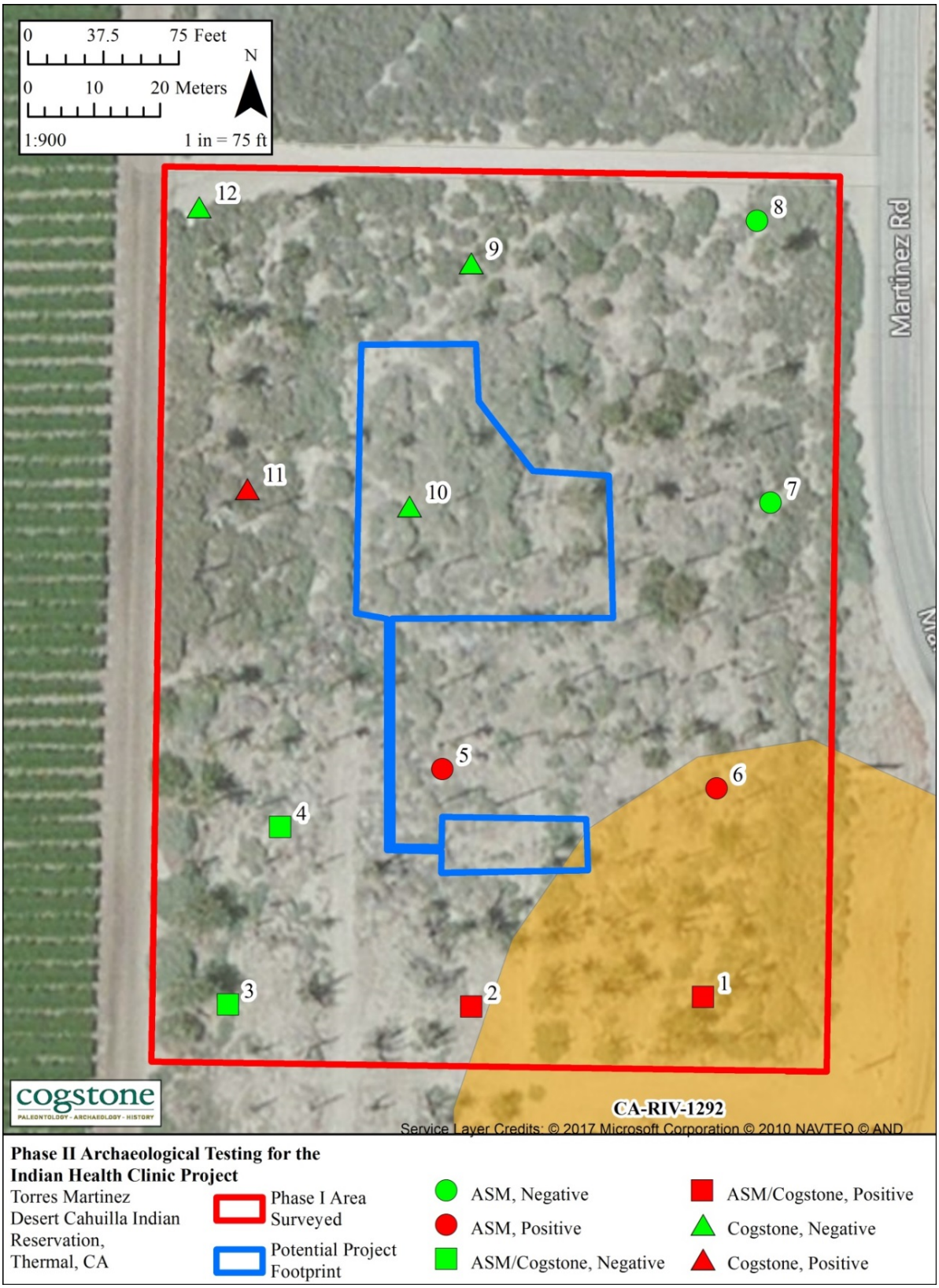

Figure 11. Test Excavation Units

Table 4. Excavation Summary

Date	Archaeological Technician	Excavation	Resources
11/29/2016	André Simmons Marc Serrano Matthew Cappetta Sam Dunlap	Excavated Unit 1	None
11/30/2016	André Simmons Marc Serrano Matthew Cappetta Sam Dunlap	Excavated Unit 2	None
12/01/2016	André Simmons Marc Serrano Matthew Cappetta Sam Dunlap	Excavated Unit 3; Began Excavation of Unit 4	None
12/02/2016	André Simmons Marc Serrano Matthew Cappetta Sam Dunlap	Completed Excavation of Unit 4	None
12/05/2016	Albert Knight Matthew Cappetta Terri Terry Sam Dunlap	Excavated Unit 11 to 100 cm	59 flakes
12/06/2016	Albert Knight Matthew Cappetta Terri Terry Sam Dunlap	Completed Excavation of Unit 11; Excavated 3 levels of Unit 12	None
12/07/2016	Albert Knight Matthew Cappetta Terri Terry Sam Dunlap	Completed Excavation of Unit 12	None
12/08/2016	André Simmons Matthew Cappetta Francisco Palacios Sam Dunlap	Excavated Unit 9 to 140 cm	None
12/09/2016	André Simmons Matthew Cappetta Francisco Palacios Sam Dunlap	Completed Excavation of Unit 9; Started Excavation of Unit 10 to Level 6	None
12/10/2016	André Simmons Matthew Cappetta Francisco Palacios Sam Dunlap	Completed Excavation of Unit 10	None

Figure 12. TEU 1 Pre-Excavation

Figure 13. TEU 1 Post-Excavation

TEST UNIT STRATIGRAPHY

The stratigraphy within the APE maintained relative uniformity in each TEU. The surface soil was non-indurated silt and sand with a moderate amount of detritus extending approximately 10 cm below surface. Between 10 and 40 cm, sediments were non-indurated brown sand and silt with a Munsell color of 10YR 5/6 yellowish brown. Between 40 and 80 cm, sediment was moderately indurated brown sand and silt with a Munsell color of 10YR 5/4 yellowish brown. Between 80 and 1.524 cm, sediment was moderately indurated brown sand with a Munsell color of 10YR 6/6 brownish yellow. Freshwater snail from ancient Lake Cahuilla were found in varying amounts throughout each TEU.

RESULTS

Of the eight TEUs excavated by Cogstone, only one contained cultural resources. Fifty-nine chalcedony flakes were recovered from TEU 11 (Figures 14 and 15). Fifty-seven flakes were recovered from level 3 (40 – 60 cm) and two flakes were recovered from level 4 (60 – 80 cm) (Table 5).

FIELD ANALYSIS

Of the 59 flakes recovered, nine were secondary flakes exhibiting partial amounts of cortex and 50 were tertiary flakes lacking cortex (Table 4). None of the flakes exhibited signs of retouching or use-wear. The flakes were all of the same material and concentrated in a small area. This indicates that they likely represent a single reduction locale (SRL). This SRL represents a single tool manufacturing event and as such is considered an isolate and is not eligible for listing on the National Register of Historic Places (NRHP). As per Cogstone's agreement with the Torres Martinez Desert Cahuilla Indians, no further analysis was conducted and the flakes were returned to the tribe.

Table 5. Cultural Resources Recovered During Cogstone Excavation

Unit Number	Depth	Prehistoric Count	Description
11	40-60	57	9 Secondary Chalcedony Flakes 48 Tertiary Chalcedony Flakes
11	60-80	2	2 Tertiary Chalcedony Flakes
Total Cultural Resources Recovered		59	

Figure 14. Lithic Material recovered from Unit 11 level 3.

Figure 15. Lithic Material recovered from Unit 11 level 4.

NATIONAL REGISTER ELIGIBILITY

To be eligible for the NRHP, a resource must:

A) be associated with events that have made a significant contribution to the broad patterns of history;
B) be associated with the lives of significant persons of the past;
C) embody distinctive characteristics of type, period, or method of construction or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity those components may lack individual distinction; or
D) yielded or may likely yield information important in history or prehistory.

Criterion D is typically applied to archaeological sites and the evaluation here follows the federal guidance in Bulletin 15: How to Apply the National register Criteria for Evaluation (NPS 2002). The bulletin states:

"Criterion D has two requirements, which must *both* be met for a property to qualify:

- The property must have, or have had, information to contribute to our understanding of human history or prehistory, and
- The information must be considered important.

Under the first of these requirements, a property is eligible if it has been used as a source of data and contains more, as yet unretrieved data. A property is also eligible if it has not yet yielded information but, through testing or research, is determined a likely source of data.

Under the second requirement, the information must be carefully evaluated within an appropriate context to determine its importance. Information is considered "important" when it is shown to have a significant bearing on a research design that addresses such areas as: 1) current data gaps or alternative theories that challenge existing ones or 2) priority areas identified under a State or Federal agency management plan."

SRL

Fifty-nine chalcedony flakes were recovered from TEU 11 which was located outside of CA-RIV-1292 and the project footprint. The artifacts within TEU 11 represent an isolated SRL that embodies none of the necessary criteria for NRHP eligibility and is recommended as not eligible for the NRHP.

CA-RIV-1292

The Torres Martinez Historical District (CA-RIV-1292) was listed on the NRHP in 1973 under Criteria C (historic building representing a specific type and period (1907)) and D (potential to yield archaeological data). There are no historic buildings located within the APE, thus the site's eligibility under Criteria C would not be affected. During the Phase II cultural resources study, TEUs 1 and 6, which were located within the boundaries of CA-RIV-1292 and the APE, were positive for cultural resources. One tertiary chert flake was recovered from TEU 1 at 30-40 cmbd. One historic plain improved white earthenware fragment was recovered at 0-20 cmbd, and 1 historic plain improved white earthenware fragment was recovered at 20-40 cmbd from TEU 6. Based on the fieldwork and recordation for this site, the portion of CA-RIV-1292 that is within the APE does not appear to contribute to the eligibility of the site to the NRHP under Criteria D. No intact cultural features were observed during excavations thus this area is not likely to yield any information important to the study of research questions within the region, state, or nation.

RECOMMENDATIONS

Because no intact cultural deposits were observed within the Project footprint and only one isolated SRL was observed during subsurface testing of the APE, the subsurface sensitivity for cultural resources is considered low. However, because of the culturally sensitive nature of the area and the presence of prehistoric and historic resources in the immediate vicinity, the Torres Martinez Desert Cahuilla Indians have requested full-time cultural resources monitoring by both a qualified archaeologist and Tribal Monitor during all ground-disturbing activities associated with the construction of the Project. Special attention should be given to excavations in the immediate vicinity of TEUs and 5 and 11.

In the event of an unanticipated discovery, all work must be suspended within 50 feet of the find until a qualified archaeologist evaluates it. If cultural objects are identified by the Tribe as funerary objects, sacred objects, or objects of cultural patrimony, compliance with the Native American Grave Protection and Repatriation Act (NAGPRA), Section 3(d), and implementing regulations 43 CFR Part 10, S10.4 will be initiated.

In the unlikely event that human remains are encountered during Project development, all work must be suspended within 50 feet of the remains and the BIA and tribe will take steps to determine whether the burial remains are of Native American or non-Native American origin. The BIA may seek the advice and other services of the County Coroner. Work will remain diverted while the BIA and Tribe determines whether the remains are Native American and for any subsequent treatment. Protection of human burials while awaiting BIA and the Tribe's determination will include keeping the discovery confidential and securing the discovery location to prevent disturbance of the remains and associated materials. If the County Coroner, in cooperation with the BIA and the Tribe, determines that the remains are most likely of Native American origin, compliance of NAGPRA, Section 3(d), and implementing regulations 43 CFR Part 10, S10.4 will be initiated.

If the County Coroner, in cooperation with the BIA and the Tribe, determines the remains represent a historic non- Native American burial, the BIA and the Tribe will consult with the State Historic Preservation Officer (SHPO) regarding their proposed treatment of these remains.

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APPENDIX A. QUALIFICATIONS

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

SHERRI GUST
Faunal Analyst

EDUCATION

1994 M. S., Anatomy, University of Southern California, Los Angeles
1979 B. S., Anthropology (Physical), University of California, Davis

SUMMARY QUALIFICATIONS

Gust is a Qualified Principal Paleontologist and Registered Professional Archaeologist with more than 35 years of experience. She is accepted as a principal investigator for prehistoric and historical archaeology by the Califonia Historic Resources Information System (chris.org). She meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. Gust holds California statewide BLM permits for cultural and paleontology. She has expertise in the archaeology and paleontology of the western United States including research, survey, assessment of impacts/effects, significance criteria and determinations, management plans, mitigation implementation, fossil identification and analysis.

SELECTED PROJECTS

High Desert Corridor, Caltrans Districts 7 & 8, Los Angeles and San Bernardino Counties, CA. Managed work to complete the Caltrans cultural and paleontological documents for a proposed new 63 mile long freeway and rail line from SR 14 in Palmdale to SR 18 in Apple Valley. The documents produced to date are Historical Properties Survey Report, Archaeological Survey Report, Historical Resources Evaluation Report, Extended Phase I Testing Report for three sites, Extended Phase I and Archaeological Evaluation Report for 20 Phased Sites and one District, Supplemental Historic Properties Survey Report and Archaeological Survey Report, Finding of Effect, Programmatic Agreement, Historic Properties Treatment Plan and combined Paleontological Identification and Evaluation Report. Task Manager and Principal Investigator. 2013-2015

Purple Line Extension (Westside Subway), Metro/FTA, Los Angeles. The project involves extension of the subway from Wilshire/Western to the VA Facility in Westwood for 9 miles. Cogstone prepared the supplemental Archaeology and Architectural History Reports and the cultural and paleontological sections of the FEIS/FEIR. Cogstone sunsequently prepared the cultural and paleontological mitigation and monitoring plans for the entire project. Currently providing monitoring and all other cultural and paleontological services for Section One of the project. Cultural and paleontological resources principal investigator.. 2011-present

Metropole Vaults Replacement Project, **Southern California Edison, Avalon, Catalina Island.** Managed monitoring, recovery of multiple prehistoric burials with artifacts, negotiation with Most Likely Descendent regarding analysis permitted, processing of all materials and report. Helped arrange reburial ceremony attended by Gabrielino/Tongva elders. Project Manager and Principal Archaeologist. 2014-15

Historical Sites Preservation, Veterans Affairs Long Beach Healthcare System, Long Beach, Los Angeles County, CA. The undertaking involves eleven projects, divided into two construction phases for improvements to the campus. Congstone conducted evaluation of all buildings on campus and determined recommended none were eligible for the National Register and SHPO concurred. One National Register-listed prehistoric archaeological site, the Puvungna Indian Village, is known on the campus. Documents prepared were Evaluation Report, POA, MOA, HPTP with monitoring. Project Manager and Principal Archaeologist. 2014-15

Exposition Light Rail Phase 2, **Exposition Transit Authority, Culver City to Santa Monic**a. Prepared Paleontological Assessment in support of EIR. Subsequently prepared Cultural and Paleontological Resources Management Plans, Santa Monica Air Line Railroad Data Recovery Plan and Paleontological Resources Management Plan for 7 linear miles of new rail facilities including stations. Supervised monitoring and data recovery programs. Lead author of final reports. Principal Archaeologist and Paleontologist and Project Manager. 2012-2014

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

DESIREÉ RENEÉ MARTINEZ
Project Manager/Principal Archaeologist

EDUCATION

1999 M.A., Anthropology (Archaeology), Harvard University, Cambridge

1995 B.A., Anthropology, University of Pennsylvania, Philadelphia

SUMMARY QUALIFICATIONS

Ms. Martinez is a qualified archaeologist with 20 years of experience in archaeological fieldwork, research, and curation. She has expertise in the planning, implementation, and completion of all phases of archaeological work and has participated in archaeological investigations as a crew member, tribal monitor, and principal researcher. She meets national standards in archaeology set by the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. Her experience also includes teaching and compliance with CEQA, NEPA, NAGPRA, SB 18, AB 52 and other cultural resource laws. In addition, Ms. Martinez also has extensive experience consulting with Native American leaders and community members in a variety of contexts including training, monitoring, and consultations. Finally, Ms. Martinez is at the forefront of creating and implementing collaborative archaeological agendas at the State and National levels.

TESTING EXPERIENCE

Fisher House and Golf Course Parking Lot Project, Veterans Affairs Long Beach Healthcare System, Long Beach, Los Angeles County, CA. In compliance with the Historic Properties Treatment Plan, supervising an archaeological testing program to identify cultural resources by utilizing ground penetrating radar and magnetometry and systematically placed auger holes to 6 ft. Provided archaeological and Native American monitoring for ground disturbing activities within the project areas. Project Manager/Principal Investigator. 2015-present

Veterans Affairs Long Beach Health Systems, Cultural Resources Services and Native American Monitoring, Long Beach, Los Angeles County, CA. Managed a variety of public works and infrastructure improvements on the VALBHS campus. Services have included archaeological surveys, testing, archaeological monitoring, providing and managing Gabrielino (Tongva) Native American monitoring, and compliance reporting. Native American monitoring was provided on a rotating basis from a number of Gabrielino (Tongva) tribes as per a Memorandum of Agreement between the VALBHS, State Historic Perseveration Office. Projects on the campus have included: an intensive-level archaeological survey utilizing ground penetrating radar and magnetometry to identify subsurface cultural debris, accurately map abandoned utilities, and locate a historic trash pit within the APE; archaeological and Native American monitoring of construction activities of the Fisher House and Golf Course project area; Principal Archaeologist. 2014-present

Metropole Vault Replacements, Southern California Edison, Avalon, Catalina Island, Los Angeles County, CA. The project involved archaeological monitoring and coordinating with Native American monitors during ground disturbing activities of a 30,000 s.f. APE for replacement of two underground electrical vaults. The site is located within the boundaries of a Tongva tribal village. Facilitated recovery and reburial of remains discovered on-site. Managed negotiation with Most Likely Descendent regarding analysis permitted, processing of all materials and report. Created the lithics catalog, supervised laboratory analysis, performed and reviewed lithic analysis. Facilitated communication between MLD, SCE and City of Avalon regarding reburial. Publicly presented preliminary findings to Avalon City Council. Arranged reburial ceremony attended by Gabrielino/ Tongva elders, conducted historic and ethnographic research, and co-authored the technical report. Principal Investigator. 2014

Pimu Catalina Island Archaeology Project and Field School. California State University, Northridge. Conducted Phase II excavations at and documentation of SCAI 41 the "Indian Oven site" with students. Supervised artifact cataloging, artifact analysis and preparation of California DPR site update. Co-Principal Investigator. 2012

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

ANDRÉ-JUSTIN C. SIMMONS
Archaeological Field Director/GIS Supervisor

EDUCATION

2014 M.A., Anthropology: Specializing in Anthropological Archaeology, California State University, Fullerton
2010 B.A., Anthropology and History, California State University, Fullerton, graduated *cum laude*
2012 Certificate in Geographic Information Systems, California State University, Fullerton

SUMMARY QUALIFICATIONS

Mr. Simmons is a Registered Professional Archaeologist (RPA) and cross-trained paleontologist with extensive field experience in survey, monitoring, faunal analysis, and excavation. He exceeds the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. Further, he is certified in Geographic Information Systems (GIS) and specializes in ESRI's ArcGIS software. He regularly prepares Area of Potential Effects maps in coordination with Caltrans, as well as contributing to technical reports. Mr. Simmons is responsible for supervising GIS data collection and management, geospatial analysis, and the production of GIS maps and databases for large and small-scale projects. Mr. Simmons is well versed in CEQA and NHPA Section 106 compliance procedures and reporting. He has over six years of experience in California Archaeology and paleontological monitoring along with more than 24 hours of paleontology training and over four years of GIS experience.

SELECTED PROJECTS

Longboat Solar Photovoltaic, EDF Renewable Energy, Barstow and Lenwood, San Bernardino County, CA. Managing on-call cultural resources monitoring during ground disturbing activities for this ~233-acre site in compliance with the Cultural Resources Mitigation Plan .The Project would connect to the electrical grid by way of a line tap on an existing Southern California Edison (SCE) 33kV transmission line, at which point the power generated from the Project changes ownership from the project developer to SCE. Supervised construction monitoring and mechanical testing within site CA-LAN-2294. Sub to Environmental Intelligence. Archaeology Supervisor. 2016

High Desert Corridor/ SR-138 Widening Project, Caltrans District 7 On-Call (07A3145)/LA Metro, Los Angeles and San Bernardino Counties, CA. This project proposed by Caltrans and Metro involves construction of a new, approximately 63-mile long, east-west freeway/expressway and rail line between SR-14 in Los Angeles County and SR-18 in San Bernardino County. Following the Archaeological Survey Report, prepared an extended phase I testing proposal and implemented in upon approval. Testing involved 24 archaeological sites. Participated in the field program, laboratory analysis and reporting. Archaeologist/GIS Supervisor. 2014-2016

Fisher House Project, Veterans Affairs Long Beach Healthcare System, Long Beach, Los Angeles County, CA. In compliance with the Historic Properties Treatment Plan, conducted an archaeological testing program to identify cultural resources by utilizing ground penetrating radar and magnetometry and systematically placed auger holes and excavation units to 6 ft. deep. Participated in testing excavations, mapping. Archaeologist/GIS Supervisor. 2015-2016

Golf Course Project, Veterans Affairs Long Beach Healthcare System, Long Beach, Los Angeles County, CA. In compliance with the Historic Properties Treatment Plan, conducted an archaeological testing program to identify cultural resources by utilizing ground penetrating radar and magnetometry and systematically placed auger holes and excavation units to 6 ft. deep. Participated in the testing excavations, mapping, and report preparation. Archaeologist/GIS Supervisor. 2015-2016

Descanso Pathway Project, County of San Diego Department of Public Works, Descanso, San Diego County, CA. Conducted field testing and prepared GIS maps associated with proposed construction of a 10-foot wide pedestrian pathway in proximity to Descanso Elementary School. This large multicomponent site consists of six loci with a prehistoric habitation site containing numerous bedrock milling features and midden soils and the 1930s Merigan Ranch facility. Sub to ICF. Archaeologist. 2014

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

ALBERT KNIGHT
Archaeological Field Director

EDUCATION

1983 B.A., Anthropology, University of California, Santa Barbara

SUMMARY QUALIFICATIONS

Mr. Knight is a qualified archaeologist and cross-trained paleontologist with more than 30 years of professional experience in prehistoric and historic archaeological fieldwork, including field survey, testing, excavation, analysis, and reporting. He is a Lifetime Member of the Society for California Archaeology, the Santa Susana Mountains Park Association, and the Little Landers Historical Society. His personal research interests include California and Great Basin prehistory and history, geography, rock art, and hot springs. The Stonehurst Historic District, in the San Fernando Valley, was created by the City of Los Angeles, largely due to his efforts. He was also directly involved in the establishment of Santa Susana Pass State Historic Park, in the west San Fernando Valley, and Tomo-Kahni State Historic Park, in Tehachapi Valley.

SELECTED PROJECTS

Longboat Solar Photovoltaic, EDF Renewable Energy, Barstow and Lenwood, San Bernardino County, CA. Supervised monitoring during ground disturbing activities for this ~233-acre site in compliance with the Cultural Resources Mitigation Plan. The Project would connect to the electrical grid by way of a line tap on an existing Southern California Edison (SCE) 33kV transmission line, at which point the power generated from the Project changes ownership from the project developer to SCE. Sub to Environmental Intelligence. Field Supervisor. 2016

Fair Oaks Medical Office Building, Arroyo Grande, San Luis Obispo County, CA. Supervised and participated in the archaeological monitoring of ground disturbing activities for construction of a new 45,000 sq.ft., three-story medical office building on a vacant lot in proximity to Arroyo Grande Community Hospital on behalf of the developer. The project is Phase II of an approved mixed-use project which consists of a Phase I residential community. Monitoring was conducted in compliance with CEQA. Field Supervisor. 2016

California State University, Long Beach, On-Call Archaeological Services, Physical Planning and Facilities Management, Long Beach, Los Angeles County, CA. Supervised the archaeological and Native American monitoring of excavations for Lot 7 and the Hot Water piping project. Field Supervisor. 2016

Sterling West Hills Development (Dayton Canyon), Los Angeles County, CA. (BonTerra Psomas). Principal author of the CRMMP (Cultural Resource Mitigation and Management Plan). Coordinated activities of archaeology monitors and with Native American project consultants and tribal monitor. Coordinated and participated in historic research with the Chatsworth Historical Society and with the Leonis Adobe Association. Final project report co-author (report in process). Senior Field Monitor. 2014-2016

Santa Susana Sacred Sites and Traditional Cultural Landscape, Ventura County, CA. Conducted research and prepared the State of California Sacred Lands nomination forms and supporting documentation on behalf of the Santa Ynez Band of Chumash Indians for presentation to the California Native American Heritage Commission. Archaeologist. 2014

Agua Dulce Canyon Restoration Due Diligence, Mountains Recreation and Conservation Authority, Los Angeles County, CA. This project implemented a riparian Habitat Mitigation and Monitoring Plan, in order to offset impacts caused by a nearby road improvement project by the Los Angeles County Department of Public Works. Conducted a cultural resources assessment of one acre, in compliance with NHPA Section 106, including the records search, and the pedestrian survey, and was co-author of the Phase I Cultural Resources Assessment Report for the Habitat Mitigation and Monitoring Plan. Archaeologist. 2014

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

MEGAN PATRICIA WILSON
Archaeologist/GIS Specialist

EDUCATION

2014 M.A. Anthropology, California State University, Fullerton *cum laude*
2013 GIS Certificate, California State University, Fullerton
2006 B.A., Anthropology, University of California, Los Angeles *cum laude*

SUMMARY QUALIFICATIONS

Ms. Wilson is a Registered Professional Archaeologist (RPA) and cross-trained paleontologist with experience in survey, excavation, and laboratory preparation/curation analysis. She meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. Her key research areas include prehistoric subsistence and settlement patterns of coastal southern California, protohistoric and historic archaeology of southern California and the Great Basin, and paleoenvironmental reconstructions based on archaeological flora and faunal analysis. She is GIS proficient and assists with the digitizing and mapping of spatial data for archaeology projects. Ms. Wilson has six years of experience in southern California archaeology and is an expert in prehistoric and historic Orange County archaeology and artifact identification.

SELECTED PROJECTS

High Desert Corridor/ SR 138 Widening Project, FHWA/Caltrans District 7, Los Angeles and San Bernardino Counties, CA. The project involves construction of a new, approximately 63-mile long, east-west freeway/expressway between SR 14 in Los Angeles County and SR 18 in San Bernardino County. Field pedestrian survey for Extended Phase I (XPI) Testing, subsurface testing of four archaeological sites in the Area of Potential Effects (APE), and lab work. Tasks included paleontological records, GIS maps, and organizing artifacts. Sub to Parsons Transportation Group. Archaeology Technician. 2014-2015

I-10 Grove Avenue Interchange, Ontario, San Bernardino County, CA. Archaeological and paleontological records search, historic map search, and NAHC consultation to support preparation of PIR/PER, PMP, HPSR/ASR, and HRER documents. Sub to Parsons Transportation Group. Archaeologist. 2015

Del Sur Solar EIR, Lancaster, Los Angeles County, CA. Conducted records search, prepared GIS maps and updated site records for a cultural resources assessment on behalf of the City of Lancaster for a proposed 100 MW solar facility on ~725 acres in the western portion of the Antelope Valley along with a 2-4 mile gen-tie line to Antelope Substation. Reviewed regulatory environment and environmental document. Sub to Aspen Environmental Group. Archaeologist. 2015

Aliso Creek and Wood Canyons Survey, Laguna Beach, Orange County, CA. Created GIS maps and conducted a cultural resources records search and field survey in the lower Aliso Creek and Wood Canyons Parks. Assessed the conditions of archaeological sites located there for the California Cultural Resource Preservation Alliance (CCRPA). Archaeologist/GIS Technician. 2014

Greenville-Banning Channel Rehabilitation, OC Public Works, Costa Mesa, Orange County, CA. Conducted record search, Sacred Lands search, NAHC consultation, DPR preparation, and GIS mapping and report documenting survey of 6.95-acre site. Prepared cultural resources assessment. Sub to PlaceWorks. Principal Investigator. 2014-2015

Santa Clarita Valley Sanitation District (SCVSD) Chloride Compliance Project, Sanitation Districts of Los Angeles County, Santa Clarita, CA. Prepared site records to support an updated/expanded cultural resources study. Tasks included records search and mapping for APE within .5 mile of the Saugus and Valencia Water Reclamation Plants (WRPs). Prepared a letter report documenting any differences from previous study conducted by another firm. Archaeologist. 2015

LYNN FURNIS, RPA
Historic Archaeologist

EDUCATION

1999	M.A., Anthropology, University of Nevada, Reno
1972	B.A., Anthropology, University of California at Davis

SUMMARY QUALIFICATIONS

Ms. Furnis is a Registered Professional Archaeologist (RPA), historical archaeologist and architectural historian with 45 years of experience in the western United States. She has experience working in California (15 years), Nevada (25 years) and Alaska. She meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. Ms. Furnis is a skilled professional who is well-versed in the compliance procedures of CEQA, Section 106 of the NHPA and in working with a variety of federal, state, and local agencies. As a historical archaeologist, she has supervised crews, conducted surveys and excavations as part of research and CRM projects. Ms. Furnis has supervised large and small artifact processing labs for historic and prehistoric collections; conducted extensive historic research; written reports for inventory, test excavation, and data recovery projects; and analyzed historic artifacts.

SELECTED PROJECTS

High Desert Corridor/ SR 138 Widening Project, FHWA/Caltrans District 7, Los Angeles and San Bernardino Counties, CA. Prepared a Historic Resources Evaluation Report (HRER). Visited 16 historic sites to determine STP locations and to conduct additional site recording. Contributed to an Extended Phase I (XPI) Testing Proposal, subsurface testing of 16 archaeological sites in the Area of Potential Effects (APE), and related XPI Report. Conducted research, wrote histories, and made NRHP recommendations for 16 historic sites within the APE. Sub to Parsons Transportation Group. Principal Historical Archaeologist. 2014-2015

1200 Figueroa Mixed-Use Development, Jamison Services and Hankey Group, Los Angeles, Los Angeles County, CA. This project is a massive, mixed-use project which will consist of 648 luxury residential condominiums in twin towers, 36 stories tall. There will be 28 stories of residential units and eight floors of parking, with 50,000 sf of retail space on the ground floor. Cogstone is providing archaeological and paleontological on-call monitoring services, plus Cultural and Paleontological Resources Awareness Training for construction crews and supervisors. Principal Investigator. 2015

FBI Sonnet Ring, MCB Quantico, Prince William County, VA. Joint project with Louis Berger Group. Phase I and Phase II Archaeological Survey of land areas that could be adversely affected by projects proposed in the Marine Corps Base Quantico (MCBQ) Master Plan. Specifically, evaluating impact of construction activities associated with installation of a fiber optic line. Analyzed historic artifacts recovered during survey and provided National Register eligibility evaluations. Edited catalog and artifact descriptions, wrote sections of compliance report. Historical Archaeologist. 2015

Longboat Solar Photovoltaic, EDF Renewable Energy, Barstow and Lenwood, San Bernardino County, CA. Conducted a cultural resources Phase I and Extended Phase I studies to support MND for this ~235-acre site. Supervised and participated in the extended identification field effort. Cogstone also conducted archaeological and paleontological resources records search, Sacred Lands search, NAHC consultation, Sub to Environmental Intelligence. Principal Archaeologist. 2014

Accelerated Charter Elementary School, Los Angeles Unified School District, Los Angeles, Los Angeles County, CA. LAUSD is constructing a new facility on a 2.3-acre site in South Central Los Angeles consisting of classrooms, open areas and parking. The project involves documentation of the interiors of five historic-age buildings prior to demolition, updating of existing DPR forms, recommendations for architectural elements worthy of salvage for preservation, background research, mitigation monitoring plans, archaeological and paleontological monitoring, and preparation of a buildings compliance report and monitoring compliance report. Sub to Gafcon. Principal Archaeologist/Quality Control. 2014-2015

HOLLY DUKE
Lab and Data Manager
Archaeologist and Cross-Trained Paleontologist

EDUCATION

2009 B.A., Archaeology & History, Simon Fraser University, Canada

SUMMARY QUALIFICATIONS

Ms. Duke is a qualified archaeologist and cross-trained paleontologist with four years of experience in survey, monitoring, excavation, and the identification of human and faunal skeletal remains. She is Cogstone's Lab and Data Manager. Her laboratory responsibilities include: identification and analysis of human and faunal skeletal remains; identifying and cataloging prehistoric and historic artifacts; and fossil preparation and stabilization. As Data Manager, she is responsible for the organization of field data; supervising lab work and organization, and maintaining the iPads used for data collection in the field. Ms. Duke also assists with the QA/QC of reports and catalogs. She is also responsible for drafting Monitoring Compliance reports as well as other sections of larger reports.

Metropole Vault Replacements, Southern California Edison, Avalon, Catalina Island, Los Angeles County, CA. Conducted archaeological monitoring during ground disturbing activities of a 30,000 s.f. APE for replacement of two underground electrical vaults. The site is located in proximity to the original Tongva tribal village on the island. Coordinated with the Most-Likely Descendant (MLD) and Native American monitor during the excavation of human remains. Responsible for the collections management of all artifacts and remains during excavation. Created spreadsheet databases to manage artifacts and features. Identified, cleaned, and recorded human remains per the MLD's instructions. Assisted with the repatriation of human remains prior to construction completion. Managed and organized field photos and feature data after construction was complete. Archaeological Monitor/Lab and Data Manager. 2014

Fisher House and Golf Course Parking Lot Project, Veterans Affairs Long Beach Healthcare System, Long Beach, Los Angeles County, CA. In compliance with the Historic Properties Treatment Plan, supported an archaeological testing program to identify cultural resources by utilizing ground penetrating radar and magnetometry, shovel test pits, and mechanical excavation. Recovered numerous historic artifacts from a trash dump during ground disturbing activities within the Golf Course Parking Lot project area. Cleaned, identified, and cataloged all recovered artifacts. Monitored excavation for utilities at Golf Course Parking Lot project. Archaeological Monitor/Lab and Data Manager. 2015-2016

Bodie Hills FY14-15 Cultural Resources Survey, Desert Restoration Project, Bureau of Land Management, Bishop Field Office, Mono County, CA. The project is a Class III Cultural Resources Inventory survey of 2,721 acres of BLM land identified for vegetation management. Conducted intensive pedestrian survey, organized and maintained data collected in the field, and prepared site records for final report. Archaeological Monitor/Lab and Data Manager. 2014-2015

Crowder Canyon, Hesperia, San Bernardino County, CA. Conducted archaeological testing and data recovery at two archaeological sites for the two-mile realignment of SR-138 near the community of Hesperia. Conducted excavation and data recovery on more than six prehistoric features. Archaeologist. 2016.

Del Sur Solar EIR, Lancaster, Los Angeles County, CA. The project involved a cultural resources assessment on behalf of the City of Lancaster for a proposed 100 MW solar facility on ~725 acres in the western portion of the Antelope Valley along with a 2-4 mile gen-tie line to Antelope Substation. Conducted field survey, recorded sites on DPR series 523 forms, drafted sections of technical reports for inclusion in the cultural resources section of the EIR document. Archaeologist. 2015

APPENDIX B. UPDATED DPR RECORD

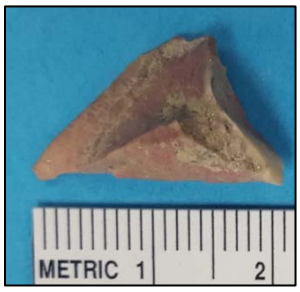
The site was first recorded in 1972 by T. F. King and included historic buildings as well as a scattering of historic and prehistoric artifacts, including potsherds and projectile points. The site measured 200 feet in diameter. The Martinez Historical District includes: P-33-05686 (Moravian Church and Indian School), P-33-05687 (former U.S. Indian agent quarters), P-33-05688 (former U.S. Indian agency office), P-33-05689 (shed), and P-33-05690 (Jean and Late Russel Force House). All are historic structures. P-37-05686, P-37- 05687 and P-37-05688 are believed to be the oldest standing U.S. Indian Agency buildings in California. They were built around 1907 by the Martinez Agency, which was established in 1876. The district was declared a historical site by the Riverside Historical Commission in 1970. The district was also listed as a California Point of Historical Interest in 1971. The district was recommended eligible for the National Register of Historic Places (NRHP) under Criteria C (historic building representing type and period (1907) and D (potential to yield archaeological data). It was listed on the NRHP in 1973.

The site record was last updated in August 1999 by Andrew Pigniolo. The site surface was noted to be heavily disturbed, with a light scatter of recent to historic refuse dominated by glass, ceramics, and metal. Three prehistoric Tumco Buff potsherds and one Colorado Buff potsherd were identified on the surface. The integrity of the site surface was noted as poor, and evidence of grading, landscaping, brush removal, and agricultural activity associated with a date orchard was noted. Pigniolo notes that a village was reported by William Blake in the vicinity in 1853 and that two rancherias were noted in the area in 1856 by John La Croze of the Henry Washington party. Pigniolo suggests that the site location may have been the Cahuilla village of Puicheckiva or Wanteauem.

In February, 2016, ASM Affiliates, Inc. (ASM) excavated 2 one meter (m) square Test Excavation Units (TEUs) within the boundaries of the site (TEUs 1 and 6). TEU 1 was excavated to 60 cm in depth with a shovel test unit (STU) excavated within the TEU to 1.524 m (5 feet). TEU 6 was excavated to 1.524 m (5 feet) in depth. Both TEUs were positive for cultural resources (Table 1).

Table 1 Artifacts Recovered By ASM

Field Number	Unit Number	Depth (bd)	Qty	Description
ASM-1	1	30-40 cm	1	Flake, Chert, Tertiary
ASM-7	6	0-20 cm	1	Historic Plain White Improved Earthenware, Foot Fragment.
ASM-8	6	20-40 cm	1	Historic Plain White Improved Earthenware, Plate Fragment.



ASM-1 Chert Flake, Dorsal

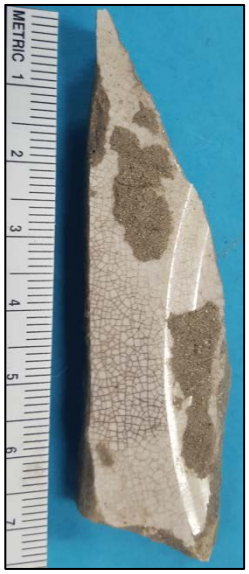
ASM-1 Chert Flake, Ventral

ASM-7 Historic Plain White Improved Earthenware, Foot Fragment, Interior

ASM-7 Historic Plain White Improved Earthenware, Foot Fragment, Exterior

ASM-7 Historic Plain White Improved Earthenware, Foot Fragment, Paste

ASM-8 Historic Plain White Improved Earthenware, Plate Fragment, Interior



ASM-8 Historic Plain White Improved Earthenware, Plate Fragment, Exterior

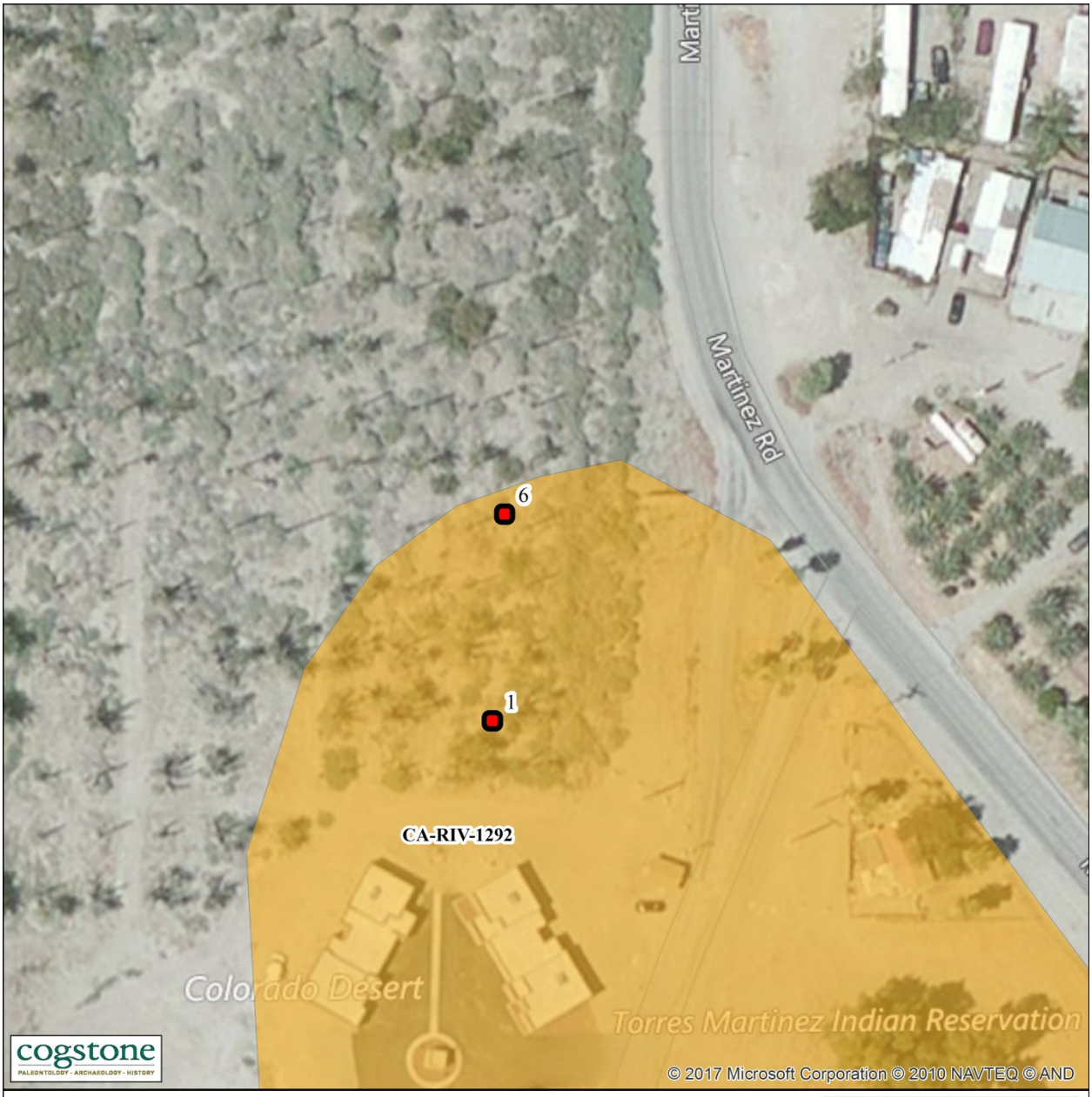
ASM-8 Historic Plain White Improved Earthenware, Plate Fragment, Paste

Cogstone excavated TEU 1 to its full 1 m^2 dimensions to a depth of 1.524 m (5 feet) on November 29, 2016. Cogstone personnel used a breaker bar, picks, and shovels to excavate the TEU. The TEU was excavated in 20 cm levels and the sediments were first dry-screened through 1/8" wire mesh then wet screened using 1/8" wire mesh. No artifacts were recovered.

Evaluation

The Torres Martinez Historical District (CA-RIV-1292) was listed on the NRHP under Criteria C (historic building representing a specific type and period (1907)) and D (potential to yield archaeological data). There are no historic buildings located within the area tested, thus the site's eligibility under Criteria C would not be affected. TEUs 1 and 6 , which were located within the boundaries of CA-RIV-1292, were positive for cultural resources. One tertiary chert flake was recovered from TEU 1 at 30-40 cmbd. One historic plain improved white earthenware fragment was recovered at 0-20 cmbd, and 1 historic plain improved white earthenware fragment was recovered at 20-40 cmbd from TEU 6. No intact cultural features were observed during excavations thus the area tested is not likely to yield any information important to the study of research questions within the region, state, or nation. Based on the fieldwork and recordation for this site, the portion of CA-RIV-1292 tested does not appear to contribute to the eligibility of the site to the NRHP under Criteria D.

Report Citation: 2017. Simmons, André, Holly Duke and Desiree Martinez. Archaeological Testing Report for the Indian Health Clinic Project on the Torres Martinez Desert Cahuilla Indian Reservation, Thermal, Riverside County, California. Report on file at Cogstone Resource Management Inc., Orange, California.



CA-RIV-1292

Torres Martinez
Desert Cahuilla Indian
Reservation,
Thermal, CA

Test Excvation Unit

Positive

0 37.5 75 Feet
N
0 10 20 Meters
1:900 1 in = 75 ft

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E-3 SHPO Consultation and Request For Concurrence

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DEPARTMENT OF HEALTH & HUMAN SERVICES

PUBLIC HEALTH SERVICE

Indian Health Service
California Area Office
650 Capitol Mall, Suite 7-100
Sacramento, California 95814-4708

January 25, 2019

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

RE: Riverside-San Bernardino County Indian Health, Inc. (RSBCIHI) - Health Clinic Replacement

Dear Ms. Polanco:

The Department of Health and Human Services – Indian Health Service (IHS) is considering funding under the Small Ambulatory Grant program to the RSBCIHI to construct a new health clinic to replace the existing clinic on the Torres-Martinez Band of Cahuilla Indians (Torres-Martinez Band) reservation. The Torres-Martinez Band currently leases trust land to the RSBCIHI for the existing clinic, located at 66-735 Martinez Road in Thermal, Riverside County. A new health clinic is proposed to be constructed on 2.5 acres of vacant land, north of the Tribal Administration Building and adjacent to the existing senior housing complex located on Martinez Road (T7S, RE8, S16, USGS 7.5 Quadrangle Valerie).

IHS's action of providing Federal financial assistance meets the definition of an Undertaking in accordance with 36 CFR Part 800.16(y) and therefore requires the completion of a Section 106 review in accordance with the National Historic Preservation Act of 1966 (16 U.S.C. §470f). IHS has identified a horizontal Area of Potential Effect (APE) as the entire 2.5 acre parcel and a vertical APE as a maximum of 5 feet. IHS has determined that the proposed undertaking and subsequent construction would result in no historic properties affected pursuant to 36 CFR Part 800.4(d)(1).

IHS requests your concurrence on our APE delineation and our finding of effect. For your review, IHS has enclosed documentation in accordance with 36 CFR Part 800.11(d) to support no historic properties identified within the current APE.

IHS will authorize the funding for the proposed project unless you notify us of your non-concurrence within 30 days of your receipt of this documentation. If you require any additional information please do not hesitate to contact me at (916) 930-3981x342 or donna.meyer@ihs.gov.

Sincerely,

Donna M. Meyer, CEM/HPS
CAIHS Environmental Coordinator

Enclosures

DOCUMENTATION – NO HISTORIC PROPERTIES AFFECTED

RSBCIHI Health Clinic Replacement

January 25, 2019

1) A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, drawings, as necessary;

The IHS intends to provide Federal financial assistance to the Riverside-San Bernardino County Indian Health, Inc., to replace an undersized existing health clinic with a new 11,605 square foot, modern facility that can accommodate increased patient loads and additional staff. In addition, the facility would include 62 parking spaces along with landscaping and lighting in the parking area. A pedestrian path would connect the clinic to the adjacent senior housing center. The replacement clinic would be located on a 2.5 acre vacant parcel, approximately .28 mile south of 66th Avenue and immediately west of Martinez Road. The proposed project site is bounded on the north by undeveloped land and scattered structures, on the east by Martinez Road, on the south by the Torres Martinez Administration Center and Senior Housing complex, and by agricultural land to the west. The proposed site itself contains the vegetative remains of a date palm orchard that was destroyed in a fire over 10 years ago.

Construction will include brush removal, site grading and paving, construction of a driveway entrance/exit from Martinez Road, the extension of water and electrical lines to the site and installation of a new septic system. Site preparation will involve minor cuts and fills in order to achieve the desired building pad elevation and provide adequate gradients for site drainage.

The horizontal Area of Potential Effect (APE) is a 2.5 acre portion of APN 751-210-008 and it encompasses all ground disturbing activities identified in the project description above. The vertical APE would range between 6-inches for construction of the new access road and 5-feet for the septic system.

2) A description of the steps taken to identify historic properties;

A research strategy consisting of California Historical Resources Information System (CHRIS) and Native American Heritage Commission (NAHC) information searches, consultation with NAHC identified contacts, and field-survey was used to identify historic properties in the APE.

A. The *CHRIS Search* was completed at the Eastern Information Center of the California Historical Resources Information System on *January 6-7, 2016* for the APE and a 1-mile study radius.

B. The *NAHC Sacred Lands and Contacts Search* was completed on *January 14, 2016 and* identified two (2) NAHC contacts representing the Torres-Martinez Desert Cahuilla Indians. It did not identify NAHC resources in the current APE.

C. *Native American Consultation* was completed with all contacts identified by the NAHC. Consultation involved field-visits with the Torres-Martinez Representative.

D. *Field-Surveys:* In January 2016, ASM Affiliates, Inc. (ASM) completed a cultural records search and survey for the health clinic proposal. The California Historical Resources Information System (CHRIS) records search found that one historic property, the Torres Martinez Historical District, (CA-RIV-1292) was partially located within the APE. Cogstone was contracted to complete the subsurface testing under ARPA Permit BIA/PRO-17-01-J54(577) between November 29, 2016 and December 10, 2016. These surveys were completed for BIA who was going to give a lease. The proposed project has been slightly modified since production of these.

(3) The basis for determining that no historic properties are present or affected.

The Torres Martinez Historical District (CA-RIV-1292) was listed on the NRHP in 1973 under Criteria C (historic building representing a specific type and period (1907)) and D (potential to yield archaeological data). There are no historic buildings located within the APE, thus the site's eligibility under Criteria C would not be affected.

During the Phase II Cultural Resources Study, TEUs 1 and 6 which were located within the boundaries of CA-RIV-1292 and the APE were positive for cultural resources. One tertiary chert flake was recovered from TEU 1 at 30-40 cmbd. One historic plain improved white earthenware fragment was recovered at 0-20 cmbd, and 1 historic plain improved white earthenware fragment was recovered at 20-40 cmbd from TEU 6. No intact cultural deposits were observed during excavations thus this area is not likely to yield any information important to the study of research questions within the region, state, or nation. Based on the fieldwork and recordation for this site, the portion of CA-RIV-1292 that is within the APE does not appear to contribute to the eligibility of the site to the National Register Historic Places under Criteria D. Simmons et al. (2017: 26) recommended that the proposed project would have no adverse effects to the Torres Martinez Historical District (CA-RIV-1292).

No intact cultural deposits were observed within the project footprint thus the subsurface sensitivity for cultural resources is considered low. However, because of the culturally sensitive nature of the area and the presence of prehistoric and historic resources in the immediate vicinity, the Torres Martinez Desert Cahuilla Indians have requested full-time cultural resources monitoring by a qualified archaeologist and Tribal Monitor during all ground-disturbing activities associated with the proposed construction. Special attention should be given to excavations in the immediate vicinity of TEUs and 5 and 11.

In the event of an unanticipated discovery, all work would be suspended within 50 feet of the find until a qualified archaeologist meeting the Secretary of Interior's standards has evaluated it. If cultural objects are identified by the Tribe as funerary objects, sacred objects, or objects of cultural patrimony, compliance with the Native American Grave Protection and Repatriation Act (NAGPRA), Section 3(d), and implementing regulations 43 CFR Part 10, S10.4 would be initiated.

E-4 SHPO Concurrence Letter

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State of California • Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

Gavin Newsom., *Governor*
Lisa Ann L. Mangat, *Director*

January 30, 2019

Reply In Reference To: HHS_2019_0128_001

Donna M. Meyer - National Environmental Policy Act Coordinator
Indian Health Service - California Area Office
Division of Sanitation Facilities Construction
650 Capitol Mall, Suite 7-100
Sacramento, CA 95814-4708

RE: Section 106 consultation for the *Riverside-San Bernardino County Indian Health Inc., (RSBCIHI) Health Clinic Replacement*

Dear Ms. Meyer:

The Office of Historic Preservation (OHP) received Indian Health Service's (IHS) letter of 25 January 2019 initiating consultation on the above referenced action pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA). IHS determined the action to be a Federal undertaking and requests the SHPO's concurrence on a proposed finding of effect (FOE) of "*No historic properties affected.*"

IHS is proposing to provide financial assistance from the Small Ambulatory Grant to the Riverside-San Bernardino County Indian Health, Inc. (RSBCICI) for the construction of a new health clinic on a 2.5-acre parcel of trust that they lease from the Torres-Martinez Band of Cahuilla Indians. As I understand it, the proposed undertaking is for the approval of funding and construction of the new health facility.

IHS determined the vertical Area of Potential Effects (APE) to range between 6-inches and 5-feet, and the horizontal APE to be the aforementioned 2.5-acre parcel - encompassing "all ground disturbing activities." The subject parcel was described in submitted materials as vacant land. The APE was depicted in the following report IHS submitted as evidence of having completed CHRIS and Native American Heritage Commission (NAHC) record searches, consultation with NAHC identified contacts, field-survey, and archaeological testing:

- *Documentation – No Historic Properties Affected, RSBCHIHI Health Clinic Replacement, January 25, 2019* (IHS 2019)

Section 106 work completed for the proposed undertaking identified the APE as located within the National Register listed Torres Martinez Historic District (CA-RIV-1292). Field work

(archaeological survey and testing) identified no (archaeological or built environment) cultural features in the APE and a total of two artifacts, described as one chert flake and one fragment of historic earthenware, in discrete archaeological test units. Submitted materials stated that "no intact cultural deposits were observed during excavations."

The following comments are based on a review of submitted materials:

1. I have no objection to the APE pursuant to 36 CFR Part 800.4(a)(1).

2. I have no objections to the "*Level of Effort*" identifying historic properties in the APE pursuant to 36 CFR Part 800.4(b)(1).

3. I find the results of Section 106 work more consistent (**and can concur**) with a finding of "*No adverse effects*" pursuant to 36 CFR Part 800.5(b) rather than the proposed FOE of "*No historic properties affected*" pursuant to 36 CFR Part 800.4(d)(1) as the undertaking appears to be located within the boundary of the National Register listed Torres Martinez Historic District (CA-RIV-1292) but, based on the results of the field-work, there are no cultural resources in the APE that would qualify to the National Register as either an individual property or, more specifically, a contributing resource to the historic district.

4. Please be aware that the recommended FOE of "*No adverse effects*" should not alter project work in any way from that which would have been implemented under the proposed FOE of "*No historic properties affected.*"

5. Please also be aware that project activities at the locations of inadvertent finds of cultural resources in the APE should be redirected to other project areas until OHP has been consulted on their potential for being historic properties pursuant to 36 CFR Part 800.13(b) for "*Post Review Discoveries.*

6. Please also be aware that IHS may have additional Section 106 responsibilities should the scope of the proposed undertaking change from that reviewed for this letter.

IHS has taken into account the effects of its actions on historic properties and, on the part of the OHP, afforded the Advisory Council on Historic Preservation (ACHP) reasonable opportunity to comment. Please direct questions to Jeff Brooke, Associate State Archaeologist, at (916) 445-7003 or at Jeff.Brooke@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

E-5 Torres-Martinez Correspondence

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DEPARTMENT OF HEALTH & HUMAN SERVICES PUBLIC HEALTH SERVICE

Indian Health Service
California Area Office
650 Capitol Mall, Suite 7-100
Sacramento, California 95814-4708

March 21, 2019

Mr. Michael Mirelez
Cultural Resource Coordinator
Torres Martinez Desert Cahuilla Indians
66-725 Martinez Road
Thermal, CA 92274

RE: Torres Martinez Health Clinic

Dear Mr. Mirelez:

Section 101(d)(6)(B) of the National Historic Preservation Act of 1966 as amended requires the Department of Health and Human Services- Indian Health Service (IHS) to consult with any Indian Tribe that may attach religious and cultural significance to historic properties that might be affected by an IHS undertaking. IHS is considering funding to the Riverside-San Bernardino County Indian Health Inc., to replace the existing clinic. The proposed undertaking would involve the construction of a new 11, 605 square foot health clinic on a 2.5 acre parcel. The site is located 0.28 mile south of 66th Avenue and immediately west of Martinez Road near the Torres Martinez Administration complex, Thermal, Riverside County (T7S, R8E, Section 16, Mount Diablo Meridian).

Because the proposed project has an effect on the landscape we respectfully request your interest regarding the proposal, any comments regarding the undertaking, advise us on the identification and evaluation of any historic properties, including those of traditional religious and cultural importance, and to participate in the resolution of any adverse effects, if applicable.

If you have any questions or require additional information please do not hesitate to contact me at the letterhead address above, (916) 930-3981x342 or donna.meyer@ihs.gov.

Sincerely,

Donna M. Meyer, CEM/HPS
California Area Office Environmental Coordinator
California Area Indian Health Service - SFC

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F Traffic Generation Memo

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Hernandez, Kroone & Associates
Engineers & Land Surveyors

January 29, 2019

Mr. Bill Guerth
Construction Management
RSBCIHI
11980 Mount Vernon Ave.
Grand Terrace, CA

19-1002
Trip Generation Memo
Proposed New Medical - Dental Clinic
Thermal, CA

RE: Trip Generation Memo for Proposed New Medical-Dental Clinic in Thermal, CA

Dear Mr. Bill Guerth:

Hernandez, Kroone & Associates (HKA) has been contracted by Riverside San Bernardino County Indian Health, Inc. (RBCIHI) to prepare a trip generation report comparing the proposed RSBCIHI Medical-Dental Clinic project trips to the trips created by an existing facility located just south of the proposed site. Based on the proposed project description, HKA has determined that there are no impacts to the traffic operations of the circulation network and that further traffic analysis is not warranted.

RSBCIHI intends to replace an existing medical clinic (building size roughly 4,000 square feet) which is currently located approximately two blocks south of the proposed development. The proposed developments is located south of 66th Avenue on the west side of Martinez Road in Thermal, CA. The new clinic will be 11,605 square foot in size and located further north on Martinez Road, outside of the gated reservation community, ultimately reducing vehicle trips entering the gated community area.

The Riverside County Transportation Department Traffic Impact Analysis Guidelines (RCTD) does not require a traffic impact analysis (TIA) for projects that generate less than 100 vehicle trips during the peak hour. Based on HKA's methodology for the trip generation of both the existing site and the proposed site, project vehicle trips fall well below this threshold.

Traffic project trips were estimated using the staffing numbers, schedule, and appointment sign-in data provided by RSBCIHI for the approximately 4,000 square foot existing site. All RSBCIHI medical-dental facilities operate during weekdays from 8:00 am to 5:00 pm. Facilities close during holidays and weekends. According to RSBCIHI data, a total of 4,646 total appointments occurred during 2018. Permanent staff on site includes 15 full time employees. HKA assumed 253 working days in 2018 factoring 8 holidays and weekends. Per the facility's schedule and the operation data provided this amounts to 68 average daily trips per day.

To convert these average daily trips (ADT) into AM / PM Peak Hour trips, HKA used the Institute of Transportation Engineers *Trip Generation Manual*, 10th Edition (ITE) Usage Code - 720 for Medical and Dental Offices. HKA took the ADT and peak hour rates and determined the appropriate ratio of vehicle trips that would occur during the AM / PM peak hours based on this usage code.

Once these trip volumes were calculated for the existing facility, HKA then developed the trips for the proposed facility. As the proposed facility is larger in size (11,605 square feet), HKA increased the volumes conservatively by a factor of 3. The following is a breakdown of the project trips for the existing facility, the proposed facility, and the net difference when the proposed facility replaces the existing facility.

Table 1: Trips Generation Table

Based on Land Use Category, 720 and RSBCIHI Data		**AM Peak Hour**			**PM Peak Hour**		
	Daily	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**
Existing Facility	68	4	1	5	2	5	7
Proposed Facility	204	12	3	15	6	15	21
Net Change in Trips	**136**	**8**	**2**	**10**	**4**	**10**	**14**

*Note: Daily trips are assumed to be 50% in, 50% out

Based on the trip generation volumes shown in Table 1, the proposed site generates well less than the minimum vehicle trips outlined in the RCTD Guidelines and standard industry thresholds. This number of project trips will not create significant impacts to the traffic operations of the circulation network and a traffic impact study is not warranted. The proposed facility will also move vehicle trips outside of the gated reservation community. An exhibit of the existing project trips, proposed project trips, and distribution of project trips is attached to this memo.

Based on these projections, HKA concludes that no further traffic analysis is needed for this project. If you have any questions or concerns, please call Omar Sarsour at (909) 884-3222 or email him at omars@hkagroup.com.

Sincerely,

Omar Sarsour, PE, LSIT
omars@hkagroup.com
(909) 884-3222 ext. 1170

Anne M. Hernandez, PE
Principal

Attachment: Trip Generation - Existing and Proposed Facilities