Public Draft

Initial Study/Mitigated Negative Declaration/Initial Environmental Checklist

City of South Lake Tahoe's
Tahoe Valley Stormwater and Greenbelt Improvement Project

March 1, 2019

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Acronymns

AASHTO	American Association of State Highway and Transportation Officials
AB 32	California Global Warming Solutions Act of 2006
ADA	Americans with Disabilities Act
APCD	Air Pollution Control District
APE	Area of Potential Effect
APN	Assessor's Parcel Number
AQMD	Air Quality Management District
BAL	Base Allowable Land Coverage
BMP	Best Management Practice
BPMP	Lake Tahoe Region Bike and Pedestrian Plan
CAA	Federal Clean Air Act of 1970
CalFire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEP	Community Enhancement Program
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
City	City of South Lake Tahoe
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
CO_2	Carbon Dioxide
Conservancy	California Tahoe Conservancy
County	El Dorado County
CRHR	California Register of Historical Resources
CWA	Federal Clean Water Act of 1972
dB/dBA	Decibel/A-weighted decibel
dbh	Diameter at Breast Height
DPM	Diesel Particulate Matter

DVTE	Daily Vehicle Trip Ends
EIP	TRPA Environmental Improvement Program
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	US Environmental Protection Agency
ESCP	Erosion and Sediment Control Plan
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FONSE	Finding of No Significant Effect
Forest Service	United States Department of Agriculture Forest Service
GHGs	Greenhouse Gases
IEC	Initial Environmental Checklist
IPaC	Information for Planning and Conservation
IS	Initial Study
Lahontan	Regional Water Quality Control Board – Lahontan Region
Lahontan Basin Plan	Water Quality Control Plan for the Lahontan Region
LCD	Land Capability District
LOS	Level of Service
LTBMU	USDA Forest Service Lake Tahoe Basin Management Unit
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MMP	Mitigation Monitoring Plan
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NO_2	Nitrogen Dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NOX	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System permit program
O_3	Ozone
PAOT	Persons at One Time
PAS	Plan Area Statement
PIES	Public Improvements and Engineering Standards
PLRM	Pollutant Load Reduction Model

PLRM	Pollutant Load Reduction Model
PM_{10}	Particulate Matter Less than 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter Less than 2.5 Microns in Diameter
PPM	Parts per Million
PRC	Public Resource Code
Project	Tahoe Valley Stormwater and Greenbelt Improvement Project
QSP	Qualified SWPPP Developer
RCEM	Road Construction Emissions Model
ROG	Reactive organic gases
ROW	Right-of-Way
RPU	TRPA 2012 Regional Plan Update
RTP	Regional Transportation Plan
SEZ	Stream Environment Zone
SIP	State Implementation Plan
SLTFD	South Lake Tahoe Fire District
SLTPD	South Lake Tahoe Police Department
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	Sulfur Dioxide
SQIP	Scenic Quality Improvement Program
State Water Board	California State Water Resources Control Board
STPUD	South Tahoe Public Utility District
SWPPP	Storm Water Pollution Prevention Plan
SWPZ	Source Water Protection Zones
TCP	Traffic Control Plan
TMDL	Total Maximum Daily Load
TMPO	Tahoe Metropolitan Planning Organization
TPZ	Timberland Production Zone
TRPA	Tahoe Regional Planning Agency
TRPA Code	TRPA Code of Ordinances
TVAP	Tahoe Valley Area Plan
UAIC	United Auburn Indian Community
UCMP	University of California Museum of Paleontology
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

VMT	Vehicle Miles of Travel
WBS	Western Botanical Services, Inc.
WQO	Water Quality Objective
µg/m3	Microgram per Cubic Meter

EXECUTIVE SUMMARY

The purpose of this Initial Study/Mitigated Negative Declaration/Initial Environmental Checklist (IS/MND/IEC) is to evaluate the potential environmental impacts of the Tahoe Valley Stormwater and Greenbelt Improvement Project (Project). The Project is located in Sections 4-5 and 8-9, Township 12 North, Range 18 East, in South Lake Tahoe, California (**Figure 1**). According to the California Environmental Quality Act (CEQA) Guidelines Section 15063(c), one of the purposes of an IS is to provide a preliminary analysis of a proposed project to determine whether a Negative Declaration, MND, or Environmental Impact Report (EIR) should be prepared.

California Environmental Quality Act

This IS/MND/IEC has been prepared pursuant to the California Environmental Quality Act of 1970, Public Resources Code (PRC) Section 21000-21177, and the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387). The City of South Lake Tahoe is the Lead Agency for this Project. CEQA-defined levels of impact significance are as follows:

Impact Severity	Definition
No Impact	A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
Less than Significant Impact	"Less than Significant Impact" applies where the Project's impact creates no significant impacts based on the criterion or criteria that sets the level of impact to a resource and require no mitigation to avoid or reduce impacts.
Less than Significant Impact after Mitigation	"Less than Significant Impact after Mitigation" applies where the incorporation of mitigation measures has reduced an effect from potentially "Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.
Significant Impact	"Significant Impact" is appropriate if there is substantial evidence that an effect is potentially significant, as based on the criterion or criteria that sets the level of impact to a resource. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

The decision to prepare a Negative Declaration or Mitigated Negative Declaration is outlined in California Code of Regulations Section 15070:

A public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

(b) The initial study identifies potentially significant effects, but:

(1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

Subsection (b) reflects the concept of the "Mitigated Negative Declaration" as defined in PRC Section 21064.5. A Mitigated Negative Declaration is not intended to be a new kind of document. It is merely a Negative Declaration prepared in a slightly different situation. The CEQA Guidelines would continue to give Lead Agencies the option of allowing applicants to modify their projects so that the Lead Agency could make a finding that the project would not have a significant effect on the environment.

Tahoe Regional Planning Agency

Article VI of the Tahoe Regional Planning Agency (TRPA) Rules of Procedures presents the rules governing the preparation and processing of environmental documents pursuant to Article VII of the Compact and Code of Ordinance Chapter 3. The Project is located within the jurisdictional boundary of the TRPA and is therefore required to comply with the environmental compliance guidelines of the agency. Except for planning matters, ordinary administrative and operational functions of TRPA, or exempt classes of projects, TRPA uses either an IEC or environmental assessment to determine whether an Environmental Impact Statement (EIS) shall be prepared for a project or other matter. TRPA Code of Ordinances (TRPA Code) Section 3.3.1, Initial Environmental Checklist, states that applicants for projects shall complete a TRPA IEC and shall submit the checklist as part of the project application.

A. The applicant shall describe and evaluate the significance of all impacts receiving "yes" answers.

B. The applicant shall describe and evaluate the significance of all impacts receiving "no with mitigation" answers and shall describe, in detail, the mitigation measures proposed to mitigate these impacts to a less than a significant level.

Based on the information submitted in the IEC, and other information known to TRPA, TRPA shall make one of the following findings and take the identified action:

1. *The proposed project could not have a significant effect on the environment and a finding of no significant effect shall be prepared in accordance with Rules of Procedure Section 6.6;*

2. *The proposed project could have a significant effect on the environment but, due to the listed mitigation measures that have been added to the project, the project could have no significant effect on the environment and a mitigated finding of no significant effect shall be prepared in accordance with Rules of Procedure Section 6.7; or*

3. *The proposed project may have a significant effect on the environment and an environmental impact statement shall be prepared in accordance with Code Chapter 3 and the Rules of Procedure, Article 6.*

When completed, TRPA reviews the IEC to determine the adequacy and objectivity of the responses. When appropriate, TRPA consults informally with federal, state, or local agencies with jurisdiction over the project or with special expertise on applicable environmental impacts. This document serves as a joint IS/MND/IEC to analyze potential environmental impacts of the Project and is compliant with both CEQA and TRPA policies and guidelines.

Environmental Factors Potentially Affected

This checklist identifies physical, biological, and social factors that might be affected by the proposed Project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included, either following the applicable section of the checklist or is within the body of the environmental document itself. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance. The environmental factors checked below involve at least one impact that is a "Potentially Significant Impact" as indicated by the checklist analyses presented in IS/IEC Sections 2.0 through 19.0.

☐	Aesthetics	☒	Agriculture and Forestry	☐	Air Quality
☒	Biological Resources	☐	Cultural Resources	☐	Geology/Soils
☐	Greenhouse Gas Emissions	☐	Hazards and Hazardous Materials	☐	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Population/Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Utilities/Service Systems	☐	Mandatory Findings of Significance

MITIGATED NEGATIVE DECLARATION SCH No. TBD

Pursuant to Title 14 California Code of Regulations, Chapter 3 Guidelines for Implementation of the California Environmental Quality Act and based on the information contained in the attached Initial Study, the determination is made that the Project would not have a significant adverse effect on the environment.

Project Name: Tahoe Valley Stormwater and Greenbelt Improvement Project

Project Location: City of South Lake Tahoe, El Dorado County, California

Project Description: The Project is located in the southwest portion of the City of South Lake Tahoe (City), California and consists of a 320-acre Project drainage area (**Figure 1**) that is bisected by the US Highway 50 (US 50) and State Route 89 (SR 89) corridors. The purpose of the Project is to implement the policies of and fulfill the goals and objectives of a number of regional and local plans and programs. The Project purpose is supported by the need to improve upon and expand existing stormwater infrastructure and to develop recreational amenities, increase pedestrian and bicycle connectivity and encourage investments to help achieve economic development goals for the community.

The Project proposal includes multi-benefit stormwater quality, stream environment zone (SEZ), bicycle and pedestrian, and recreational improvements. Stormwater improvements and SEZ enhancements include improving existing drainage-ways and storm water systems to spread, treat, infiltrate, and retain flows from roadways, commercial areas, and other high-priority, directly connected urban areas. The Project stormwater improvements are designed to enhance the existing stormwater management system from an area-wide drainage area perspective, and achieve pollutant load reduction milestones in compliance with the Lake Tahoe TMDL requirements for the City. Pedestrian and bicycle improvements include improving connectivity of the Project Area to the regional network with pedestrian pathways and a Class I shared-use trail. Recreational improvements include open space, view corridors, and passive seating areas, along with opportunities to enhance natural play areas and engage public art.

The Project is identified on the Lake Tahoe Environmental Improvement Program (EIP) 5-year list as Project #01.01.01.0012 (Tahoe Valley Greenbelt). In 2015, at the request of the City, previous EIP projects Tahoe Valley Stormwater and Tahoe Valley SEZ Restoration were combined into one project.

The City is designated as the lead implementer for EIP Project #01.01.01.0012, with a planning/design start year of 2009 and implementation start year targeted for 2019. Opportunities for TRPA threshold attainment identified for this Project are water quality, recreation, soil conservation and air quality. Importantly, the Project is included in the City's Pollutant Load Reduction Plan (PLRP) and will help meet pollutant load reductions required under the Lake Tahoe Total Maximum Daily Load (TMDL) Program.

Findings: This IS/MND/IEC follows the standard content required for environmental documents under CEQA and the TRPA Code and Rules of Procedure. This IS/MND/IEC is a full disclosure document, describing the Project and its environmental effects in sufficient detail to aid decision-making.

Based on the IS and IEC analyses and level of significant conclusion, the determination can be made that the proposed Project will not result in a significant impact on the environment. An EIR/ EIS was determined to be unnecessary, as there are no potentially significant environmental effects associated with approval of the Project that could not be avoided, reduced, minimized, or otherwise mitigated by the design to a less-than-significant level. A Mitigated Negative Declaration has been prepared in accordance with CEQA statutes and a finding of no significant effect has been prepared in accordance with Rules of Procedure Section 6.6.

Based on the IS, it has been determined that the Project may have potentially significant impacts on the environment. However, once resource protection measures, standard construction measures, best

management practices (BMPs), and mitigation measures are implemented, Project impacts would be reduced to less than significant. This conclusion is supported by the following findings:

- The Project would have a less-than-significant impact on aesthetics, agriculture and forest resources, air quality, geology and soils, tribal and cultural resources, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, cultural resources, noise, recreation uses land use and planning, minerals and energy, population and housing, public services, traffic and circulation, and utilities and service systems.
- In addition to the design features, construction measures, BMPs and resource protection measures that are incorporated into the Project, **Mitigation Measure BIO-1, Complete Jurisdictional Wetland Delineation and Determination**, will be implemented to inform the final Project location and design to avoid, reduce, and minimize the potential environmental impacts of the Project to jurisdictional waters of the US to a less-than-significant level.
- The Project transects forested lands and provides access, but would result in no loss of areas designated as forest land or conversion of forest land to non-forest use by nature of passing through such areas. The analysis for CEQA IVa (Biological Resources) provides the discussion of tree removal from areas zoned Mixed Use, Town Center, and Tahoe Valley Area Plan (TVAP) Open Space within the Project Area. The Project will require the removal of trees and may affect more than three (3) acres of forestland. The Project Applicant shall file for a Public Agency Right-of-Way exemption from the Director of the California Department of Forestry and Fire Protection (CalFire) to comply with requirements for conversion of Timberland for installation of public service projects. **Mitigation Measure AGR-1, Public Agency Right-of-Way Exemption with CalFire**, will be implemented to ensure compliance with exemption and noncommercial disposal requirements to reduce potential impacts to forest land to a level of less than significant.

CEQA Environmental Checklist:

Project Title:	**Tahoe Valley Stormwater and Greenbelt Improvement Project**
Lead agency name and address:	City of South Lake Tahoe
Contact person and phone number:	Hilary Roverud (530) 542-6024
Project Location:	City of South Lake Tahoe, Tahoe Valley, Figure 1
Project sponsor's name and address:	City of South Lake Tahoe 1052 Tata Lane, South Lake Tahoe, CA 96150
General plan description:	Low Density Residential, Height Density Residential, Town Center, and Special District
Zoning:	Town Center-Gateway, Town Center-Core, Town Center Mixed Use Corridor, Commercial Mixed Use Services, Recreation
Description of Project: (Describe the whole action involved, including but not limited to later phases of the Project, and any secondary, support, or off-site features necessary for its implementation.)	Refer to Chapter 1.0, Project Description
Surrounding land uses and setting; briefly describe the Project's surroundings:	The Project is located within residential and commercial neighborhoods, alongside public use roads and open space area
Other public agencies whose approval is required (e.g. permits, financial approval, or participation agreements):	Tahoe Regional Planning Agency, California Tahoe Conservancy (License Agreements), Lahontan Regional Water Quality Control Board (Tahoe General Construction Permit coverage)

Determination: On the basis of this initial evaluation:

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	**I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.**
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature: Hilary Roverud	Date: 2/25/19
Printed Name: Hilary Roverud	For:

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1.0 PROJECT DESCRIPTION

1.1 Introduction

This Initial Study/Initial Environmental Checklist (IS/IEC) has been prepared to address the potential environmental effects of the Tahoe Valley Area Plan (TVAP) in South Lake Tahoe, California. An IS is a preliminary environmental analysis that is used by the lead agency as a basis for determining whether an Environmental Impact Report (EIR), a Mitigated Negative Declaration (MND), or a Negative Declaration is required for a project under California Environmental Quality Act (CEQA) guidelines. An IEC is a preliminary environmental analysis that is used for determining whether an Environmental Impact Statement (EIS), a Mitigated Finding of No Significant Effect, or a Finding of No Significant Effect (FONSE) is required for a project under Tahoe Regional Planning Agency (TRPA) guidelines. The IS and the IEC contain a project description, description of environmental setting, identification of environmental effects by checklist or other similar form, explanation of environmental effects, discussion of mitigation for significant environmental effects, evaluation of the project's consistency with existing, applicable land use controls, and the names of persons who prepared the study.

This IS/MND has been prepared pursuant to the California Environmental Quality Act of 1970, Cal. Pub. Res. Code §21000 et seq. The CEQA lead agency for this project is the City of South Lake Tahoe (City).

This document also serves as an IEC/FONSE prepared pursuant to the requirements of Article VI of the TRPA Rules of Procedure and Chapter 3 of TRPA's Code of Ordinances. TRPA serves as lead agency pursuant to its own regulations.

1.1.1 CEQA Tiering Process

The CEQA concept of "tiering" refers to the evaluation of general environmental matters in a broad program-level EIR, with subsequent focused environmental documents for individual projects that implement the program. CEQA and the CEQA Guidelines encourage the use of tiered environmental documents to reduce delays and excessive paperwork in the environmental review process. This isaccomplished in tiered documents by eliminating repetitive analyses of issues that were adequately addressed in the Program EIR and by incorporating those analyses by reference.

This environmental document incorporates by reference the discussions in the 2010 City General Plan EIR (the Program EIR) and the IS/MND/IEC/FONSE document prepared for the TVAP approval. By tiering, the Tahoe Valley Stormwater and Greenbelt Improvement Project IS will rely on the 2010 City General Plan EIR and the TVAP IS/MND/IEC/FONSE for the following:

- A discussion of general background and setting information for environmental topic areas;
- Issues that were evaluated in sufficient detail in the TVAP for which there is no significant new information or change in circumstances that would require further analysis;
- Incorporation of the feasible mitigation measures identified in the TVAP environmental document for implementation by subsequent projects that are applicable to the Project; and
- Assessment of cumulative impacts.

1.1.2 TRPA Tiering Process

The TRPA concept of "tiering" refers to the coverage of general matters in broader EISs (Program EIS) and subsequent narrow environmental documents incorporating by reference the general discussions and concentrating solely on the issues specific to the document subsequently prepared. Therefore, when an EIS

has been certified for a project or matter, TRPA should limit the analysis on a later related or consistent project or matter to effects which were not examined as significant effects in the prior EIS or which are susceptible to substantial reduction or avoidance by revisions in the project or matter through conditions of approval or mitigation. Tiering is limited to situations where a later project or matter is consistent with a program, plan, policy or ordinance for which an EIS was prepared, is consistent with applicable TRPA plans, and a supplemental EIS is not required

The 2012 RPU EIS is a Program EIS that was prepared pursuant to Article VI of TRPA Rules of Procedure and Chapter 3 of the TRPA Code of Ordinances. The TRPA 2012 Regional Plan Update (RPU) is a comprehensive land use plan that guides physical development within the Lake Tahoe Region through 2035. The 2012 RPU EIS analyzes full implementation of uses and physical development proposed under the 2012 RPU, and it identifies measures to mitigate the significant adverse program-level and cumulative impacts associated with that growth. The Project is an element of the growth that was anticipated in the 2012 RPU and evaluated in the 2012 RPU EIS. The Tahoe Valley Stormwater and Greenbelt Improvement Project IEC is tiered from the TRPA 2012 RPU EIS in accordance with Sections 6.12j of the TRPA Rules of Procedure. By tiering from the 2012 RPU EIS, this IEC will rely on the 2012 RPU EIS for the following:

- A discussion of general background and setting information for environmental topic areas;
- Issues that were evaluated in sufficient detail in the 2012 RPU EIS for which there is no significant new information or change in circumstances that would require further analysis; and
- Assessment of cumulative impacts.

1.2 Project Summary

The Project is located within the in the southwest portion of the City of South Lake Tahoe (City), California and consists of a 320-acre Project drainage area (**Figure 1**) that is bisected by the US Highway 50 (US 50) and State Route 89 (SR 89) corridors.

The Project proposal includes multi-benefit stormwater quality, stream environment zone (SEZ), bicycle and pedestrian, and recreational improvements. Stormwater improvements and SEZ enhancements include improving existing drainage-ways and storm water systems to spread, treat, infiltrate, and retain flows from roadways, commercial areas, and other high-priority, directly connected urban areas. Pedestrian and bicycle improvements include improving connectivity of the Project Area to the regional network with pedestrian pathways and a Class I shared-use trail. Recreational improvements include open space, view corridors and passive seating areas, along with opportunities to enhance natural play areas and engage public art.

The Project is identified on the Lake Tahoe Environmental Improvement Program (EIP) 5-year list as Project #01.01.01.0012 (Tahoe Valley Greenbelt). In 2015, at the request of the City, previous EIP projects Tahoe Valley Stormwater and Tahoe Valley SEZ Restoration were combined into one project. The EIP project number identifiers represent the following:

- EIP Focus Area: 01 - Watersheds, habitat, and water quality;
- EIP Program: 01.01 - Stormwater management; and
- EIP Action Priority: 01.01.01 - Reducing stormwater pollution from City and El Dorado County (County) roads.

The City is designated as the lead implementer for EIP Project #01.01.01.0012, with a planning/design start year of 2009 and implementation start year targeted for 2019. Opportunities for major threshold attainment identified for this Project are water quality, recreation, soil conservation, and air quality. Importantly, the

Project is included in the City's Pollutant Load Reduction Plan (PLRP) and will help meet pollutant load reductions required under the Lake Tahoe Total Maximum Daily Load (TMDL) Program.

1.3 Project Background

The *Tahoe Valley Area Plan* (TVAP), adopted in 2015, provides land use regulation and a zoning plan for the Tahoe Valley area (City and TRPA 2015), consistent with the policy directions of the *City of South Lake Tahoe General Plan* (General Plan) (City 2011) and the TRPA's RPU (TRPA 2012a). The TVAP establishes goals, policies, and implementation strategies for enhancement of the built environment, environmental protections, and revitalization of the Tahoe Valley area (City and TRPA 2015). The Project is a combination of two key projects (Tahoe Valley Greenbelt Project and Tahoe Valley Stormwater Project) that were identified in the TVAP as having the potential to help the TRPA improve and meet environmental thresholds for water quality, recreation, soil conservation (i.e., SEZ restoration), and air quality. The individual project descriptions, as described in the TVAP, are provided as follows:

> ***Tahoe Valley Greenbelt***
>
> *The project focuses on two key elements: (1) construction of pedestrian and bicycle connectivity trails, passive recreation uses, and open space community amenity; and (2) construction of regional storm water treatment basin/system for SEZ restoration and storm water treatment opportunities to augment Tahoe Valley Stormwater improvements (see description below). This project will create a distinct and unique recreation and open space amenity southeast of the "Y" intersection. The project will include SEZ restoration, installation of pedestrian-bicycle pathways, pedestrian amenities and interpretive signage along with storm water improvements. The Greenbelt will serve as a visual amenity for adjacent residential and commercial uses and provide a bicycle and pedestrian link from residential neighborhoods to the Tahoe Valley commercial core. Existing bicycle paths and stormwater facilities in the area, would be upgraded and enhanced as part of the project.*

The TVAP also identifies the Tahoe Valley Greenbelt Project as a necessary transportation and circulation project that implements the vision, guiding principles, goals, and policies of the TVAP aimed at improving TRPA's environmental thresholds. The TVAP states the following:

> *Continuing to make connections between the completed and proposed trails and sidewalks and strengthening the connections to public transportation options will create the foundation for a complete transportation network. This will improve TRPA's thresholds for Vehicles Miles Travelled (VMT), air quality, water quality and noise, support the local economy, improve public health and support a connected, walkable and bikeable community.*
>
> ***Tahoe Valley Stormwater***
>
> *As part of the Lake Tahoe TMDL (total maximum daily load) pollutant load reduction milestones for the City under its municipal NPDES (National Pollution Discharge Elimination System) permit, the TVAP identifies strategies to attain water quality thresholds including the Tahoe Valley Stormwater project. This project includes much of the densely developed commercial areas near US50 and SR89 corridors intersection (otherwise known as the south "Y") and is a priority drainage area for storm water treatment as municipal runoff discharge is connected to the Upper Truckee River drainage, which ultimately drains to Lake Tahoe. Project strategies include designs for water quality source controls and treatment system improvements to reduce pollutant loads discharged to the municipal drainage system and Upper Truckee River. The TVAP identifies the Tahoe Valley Stormwater improvements to be implemented along with the Tahoe Valley Greenbelt for a combined project.*

1.4 Project Location, Setting, and Surrounding Land Uses

Figure 1 illustrates the Project Vicinity. The Project Area is contained entirely within the City of South Lake Tahoe, El Dorado County, California. **Figure 2**, Project Area Location, depicts the Project Area boundary in the context of the TVAP planning area and the Tahoe Valley urban planning catchment. A substantial amount of the Project improvements will be contained within the public right-of-way (ROW), as depicted by the purple boundary lines. Commercial, residential, open space, and mixed-use land uses comprise and surround the Project Area.

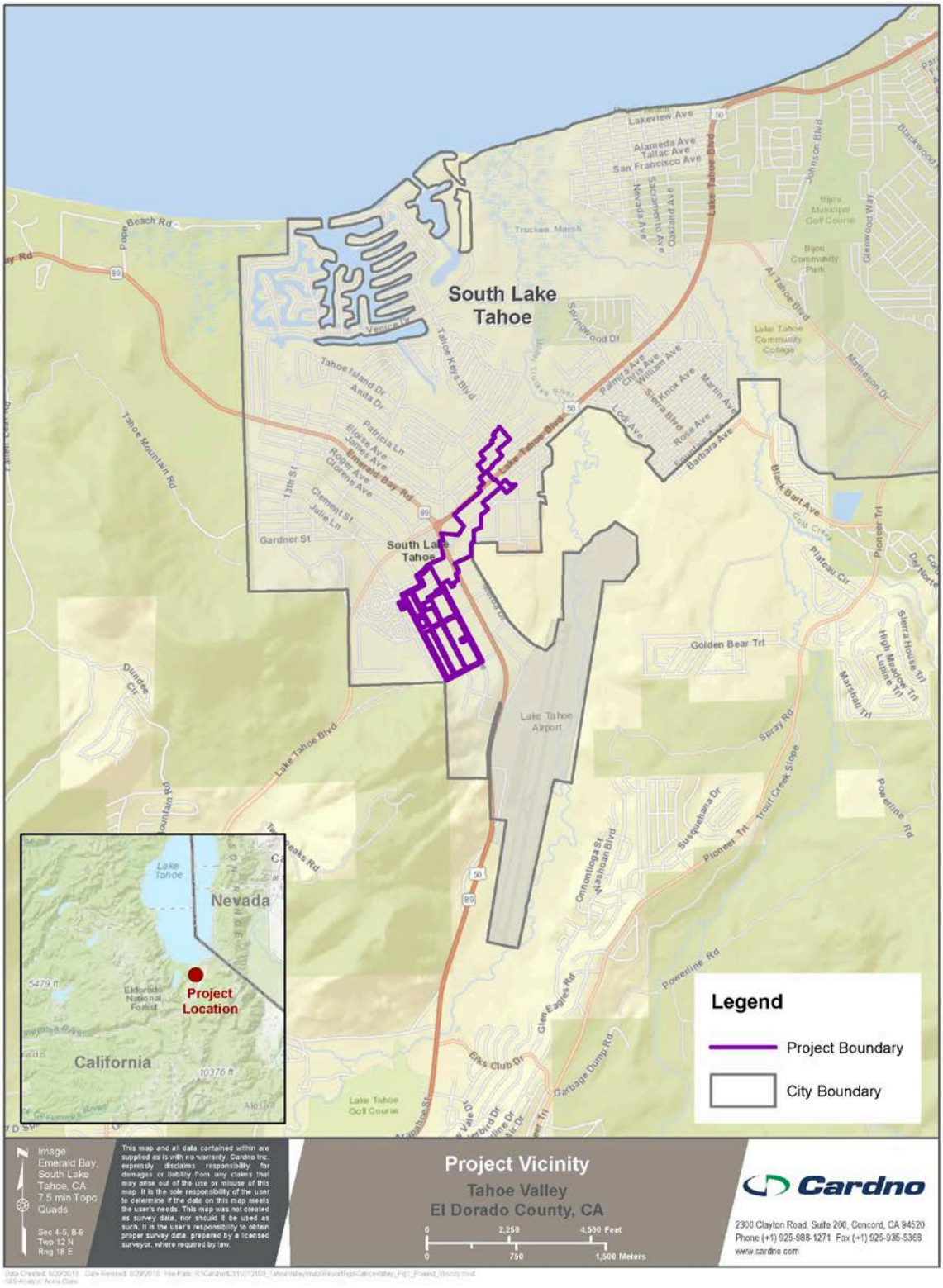

Figure 1 Project Vicinity.

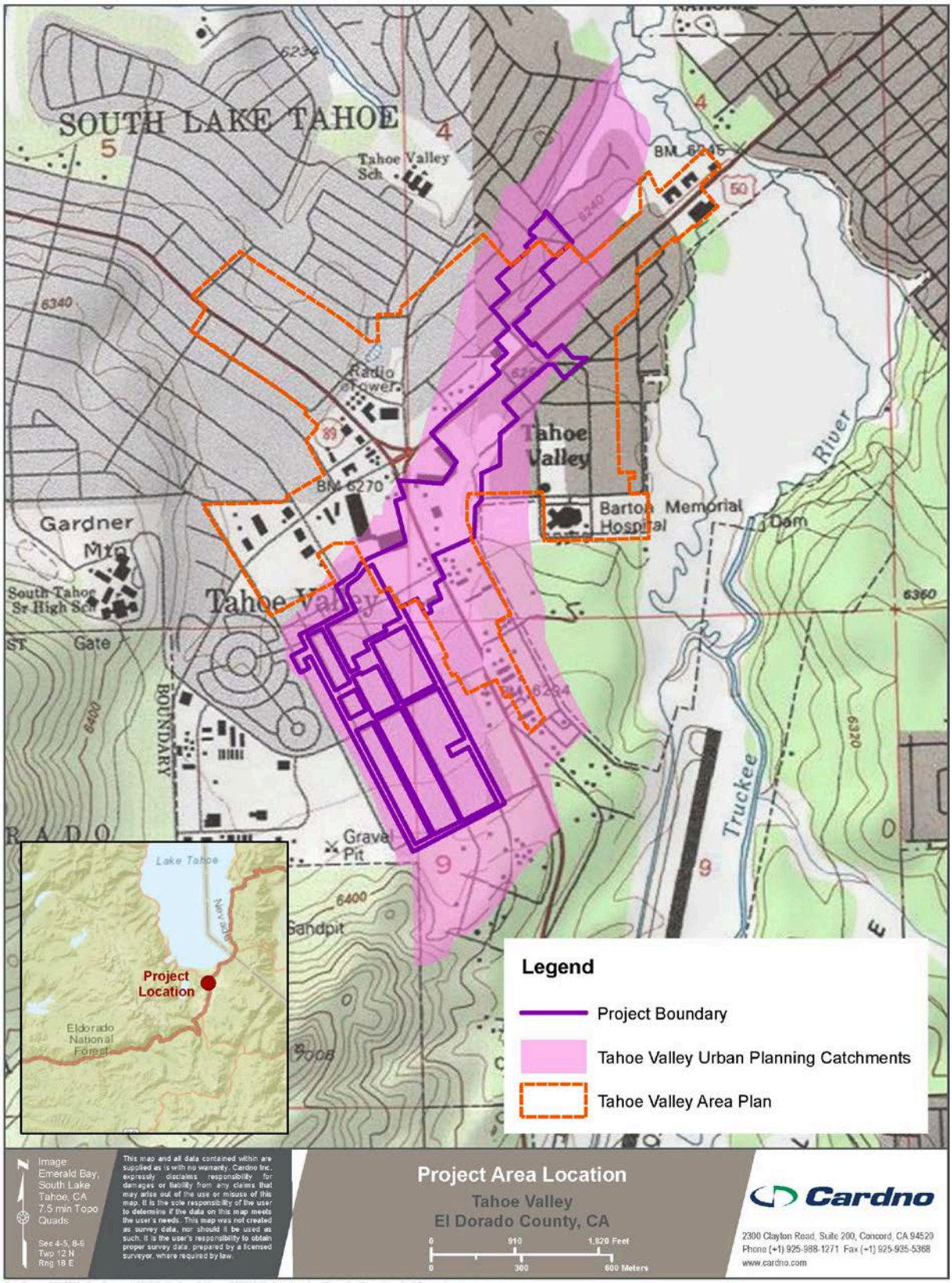

Figure 2 Project Area Location Map.

1.5 Purpose and Need

The purpose of the Project is to implement the policies of and fulfill the goals and objectives of a number of regional and local plans and programs, including but not limited to the following:

- TRPA RPU;
- Lake Tahoe EIP;
- Regional Transportation Plan;
- City's General Plan;
- TVAP;
- Lake Tahoe TMDL Program; and
- Pollutant Load Reduction Program.

The TVAP is located within the City's General Plan land use designation of Town Center (City 2011). Town Centers are identified in the TRPA RPU as containing most of the region's non-residential services and have been identified as a significant source of sediments and other contaminants that enter Lake Tahoe (TRPA 2012a). Town Centers are targeted for redevelopment projects that improve environmental conditions, create a more sustainable and less auto-dependent development pattern, and provide economic opportunities in the region (City and TRPA 2015).

Project improvements have been identified in response to the goals of the TVAP and associated policies aimed at restoring and enhancing water quality and promoting the Greenbelt area, recreation amenities and transportation connections within the Tahoe Valley. Specifically, the following policy from TVAP gives directive to implement the Tahoe Valley Stormwater Project and Tahoe Valley Greenbelt Project as one overall Project:

Policy NCR-5.1: *Construct the Tahoe Valley Water Quality Improvement Project as part of the Greenbelt Project to treat stormwater from Tahoe Valley and adjacent residential areas, in order to reduce fine sediment loads to the Upper Truckee River and Lake Tahoe, and restore disturbed SEZs.*

Policy NCR-5.5: *Coordinate with TRPA to implement the EIP water quality improvement projects in the Tahoe Valley area, with priority on Total Maximum Daily Load (TMDL) pollutant load reduction opportunities.*

Additionally, the TRPA RPU established goals and policies to guide future land use decisions within the Tahoe region. Priorities of the RPU that apply to the TVAP and the Project specifically include (TRPA 2012a):

1. *Accelerating water quality restoration and other threshold gains by supporting environmental redevelopment opportunities, restoration of disturbed lands and Environmental Improvement Program (EIP) investments.*

2. *Creating walkable communities and increasing alternative transportation options.*

3. *Integrating with the TRPA/TMPO Regional Transportation Plan to support sidewalk and bike trail projects that reduce automobile dependency and increase walkability and safety.*

4. *Continuing to deliver restoration projects under the EIP that achieve erosion control on roadways and restore forests and wetlands.*

The Project purpose is supported by the need to improve upon and expand existing stormwater infrastructure and to develop recreational amenities, increase pedestrian and bicycle connectivity and encourage investments within the planning area to help achieve economic development goals for the community. The Project stormwater improvements are designed to enhance the existing stormwater management system from an area-wide drainage area perspective, and achieve pollutant load reduction milestones in compliance with the Lake Tahoe TMDL requirements for the City.

1.6 Public Involvement

Opportunities for public participation in the environmental document review process are provided in order to promote open communication and better decision-making. Pursuant to the requirements of CEQA, this IS/IEC/MND will be sent, along with a Notice of Completion, to the California State Clearinghouse. In addition, copies of this document will be distributed to other Lake Tahoe Basin reviewing agencies and interested individuals and entities for review.

After closure of the public review period, City staff will respond to comments received on the Public Draft IS/IEC. City staff will then prepare an agenda item for the City Planning Commission's action that includes consideration of the IS/IEC, the comments, and responses to the comments. If the Planning Commission determines that the Project would not have significant adverse impacts after mitigation, the Planning Commission would certify the environmental document. Following Planning Commission adoption, the Notice of Determination would be filed with the County recorder-clerk and State Clearinghouse.

Pursuant to the TRPA's Rules of Procedure and Chapter 3 of the TRPA Code of Ordinances, this IS/IEC will be made available for public review to those entities that request copies. The IEC will be reviewed and approved at the staff level, and Project conditions issued at the staff level. If it is determined that significant adverse impacts would not result from the Project after mitigation, a Mitigated Finding of No Significant Effect will be issued. Should the final Project require consideration by the Governing Board, TRPA staff will prepare an agenda item for the Advisory Planning Commission's recommendation and Governing Board action.

One public meeting, three scoping workshops, and an online survey were held to allow oral expression of opinion regarding the design of the project, as listed below:

- **Public meeting December 14, 2016:** A public meeting was held on December 14th, 2016 to discuss preliminary concepts that were developed for the Tahoe Valley Stormwater and Greenbelt Improvement Project. Members from the City, Cardno and Design Workshop presented the project overview, stormwater alternatives, and recreational concepts. The intent of the public workshop was to gather feedback from the community in order to help inform the design moving forward. Twenty-one people attended the Public Workshop (Design Workshop 2017).
- **Online Survey:** An additional 224 people responded to an online survey which was open to the public between December 12, 2016 and January 30, 2017.
- **Workshops:** Three workshops were hosted by the City of South Lake Tahoe between 2014 and 2015 for property owners within the TVAP 'greenbelt study area' to receive comment from public and business owners on the idea of utilizing the greenbelt area for stormwater quality and management, recreation opportunities, and revitalize the Tahoe Valley commercial core, among others. The workshops identified public and business owners' concerns, areas of weakness, strength, and opportunity of the concept plans.

1.7 Relationship to Land Use Plans, Policies, and Regulations

The Project falls under the direct jurisdiction of both the City and the TRPA. In addition, federal and state agencies exercise varying levels of control concerning specific resources. This section identifies each

agency's responsibility relative to the Project; it also identifies the plans and policies with which the Project must show compliance for use in TRPA actions.

1.7.1 State

Regional Water Quality Control Board – Lahontan Region (Lahontan): The Lahontan has water quality authority on the California side of the Lake Tahoe Basin. This agency establishes water quality standards, subject to the approval of the State Water Resources Control Board (State Water Board). By issuing waste discharge permits and requiring monitoring to show compliance, among other activities, the Lahontan actively enforces attainment of standards. Any party responsible for construction activity over 1 acre must obtain a National Pollutant Discharge Elimination System (NPDES) permit from Lahontan and coverage under the Tahoe General Construction Permit (Board Order No. R6T-2016-0010) to eliminate or reduce pollutants in stormwater discharged to surface waters from the area of construction activity.

The Tahoe Municipal Stormwater Permit (Board Order No. R6T-2017-0010) requires permittees (City, Placer County, and El Dorado County) to reduce the estimated 2004 baseline jurisdictional pollutant loads for fine sediment particles by 10 percent, total nitrogen by 8 percent, and total phosphorus by 7 percent by September 30, 2016. The City's requirement to "prepare a detailed plan describing how it expects to meet the pollutant load reduction requirements" is outlined in the permit. The PLRP details the City's approach for meeting pollutant load reduction requirements. The City Council adopted a PLRP in January 2013 that outlined the proposed strategy for meeting the 2016 load reduction targets.

The PLRP estimates the City's pollutant load reduction from water quality projects and enhanced operations and maintenance activities by using the same Pollutant Load Reduction Model (PLRM) that was used in establishing the City's 2004 baseline pollutant load. Estimated load reductions for specific projects and operational improvements are shown in the PLRP. Pollutant load reductions will be credited to the City as catchments (subwatersheds) with projects and/or operational improvements registered with Lahontan pursuant to the Lake Clarity Crediting Program.

The State anti-degradation policy (Resolution No. 68-16) is incorporated into regional water quality control plans, including the Water Quality Control Plan for the Lahontan Region (Lahontan Basin Plan). The policy applies to high quality waters only (i.e., Lake Tahoe and tributaries) and requires that existing high quality be maintained to the maximum extent possible. The must Project implement reasonable and appropriate measures for the protection of surface water quality and beneficial uses and complies with conditions set forth in Board Orders No. R6T-2017-0010 (Tahoe Stormwater Permit) and R6T-2016-0010 (Tahoe General Construction Permit).

California Department of Transportation (Caltrans): Caltrans is responsible for planning, designing, constructing, and maintaining all state highway systems. The jurisdictional interest of Caltrans extends to facilities within the state highway system (including roadways designated as US highways). Connections or modifications to existing stormwater facilities or installation of new facilities within the state highway right-of-way (ROW) as part of the Project would require coordination and review under Caltrans' encroachment-permitting procedures and applicable engineering/hydraulic design reviews. Any proposed facilities would be required to meet state standards.

1.7.2 Regional

Tahoe Regional Planning Agency: TRPA is a bi-state planning agency with the authority to regulate growth and development in the Lake Tahoe region. TRPA implements that authority through its Regional Plan. The plan's goals and policies establish an overall framework for development and environmental conservation in the region.

In April of 2017, the TRPA Governing Board adopted *Linking Tahoe, Regional Transportation Plan* (Transportation Plan). Projects, studies, and programs listed in the TRPA EIP are considered part of the

capital improvement programs for the 208 Water Quality Plan and the Regional Transportation Plan/Air Quality Plan. Priorities of the 2017 Transportation Plan (TRPA 2017) that apply to this Project include:

- Environment: Protect and enhance the environment, promote energy conservation, and reduce greenhouse gas (GHG) emissions.
- Connectivity: Enhance the connectivity and accessibility of the Tahoe transportation system, across and between modes, communities, and neighboring regions, for people and goods.

The Project contributes towards attainment of TRPA water quality thresholds and Lahontan's water quality objectives (WQOs) for specific water bodies and general hydrologic areas through Project benefits such as environmental protection of air and water quality and of sensitive lands. The Project provides for an incremental step in meeting the basin-wide water quality thresholds through implementation of TRPA EIP Project # 01.01.01.0012 and installs an essential public transportation linkage identified in the *Lake Tahoe Regional Transportation Plan* (RTP) (TRPA and Tahoe Metropolitan Planning Organization [TMPO] 2017), *Lake Tahoe Regional Bicycle and Pedestrian Master Plan* (TMPO 2010) and *TRPA EIP Update, Planning Horizon 2008-2018* (TRPA 2009).

The TRPA Code contains minimum development standards for future development. It is intended to implement the goals and policies in a manner that attains or maintains the environmental thresholds' carrying capacities. Activities that may have a substantial effect on the land, air, water, space, or any other natural resources in the Lake Tahoe region are subject to TRPA review and approval and pursuant to the applicable Code Chapters and mandatory findings.

In 1982, TRPA adopted nine (9) environmental threshold carrying capacities (thresholds), which set environmental standards for the Lake Tahoe Basin and indirectly define the capacity of the Region to accommodate additional land development. The EIP is intended to accelerate threshold attainment. These thresholds and goals are defined as follows:

- *Water Quality: Return the Lake to 1960s water clarity and algal levels by reducing nutrient and sediment in surface runoff and groundwater.*
- *Soil Conservation: Preserve natural stream environment zones (SEZ), restore 25% of disturbed urban SEZ areas (1,100 acres), and reduce total land coverage.*
- *Air Quality: Achieve strictest of federal, state, or regional standards for carbon monoxide, ozone, and particulates; increase visibility; reduce U.S. 50 traffic; and reduce vehicle miles of travel.*
- *Vegetation: Increase plant diversity in forests, preserve uncommon plant communities including deepwater plants, enhance late seral forests and reduce forest fuels, and maintain minimum sustainable populations of sensitive plants including Tahoe Yellow Cress.*
- *Wildlife: Provide habitat for special interest species, prevent degradation of habitats of special significance.*
- *Fisheries: Maintain 180 miles of good to excellent stream habitat, achieve nearly 6,000 acres of excellent lake habitat, and attempt to reintroduce Lahontan Cutthroat Trout.*
- *Scenic Resources: Maintain or improve 1982 roadway and shoreline scenic travel route ratings, maintain or improve views of individual scenic resources, and maintain or improve quality of views from public outdoor recreation areas.*
- *Noise: Minimize noise disturbance from single events, and minimize background noise disturbance in accordance with land use patterns.*

- *Recreation: Preserve and enhance a high quality recreational experience. Preserve undeveloped shorezone and other natural areas, and maintain a fair share of recreational capacity for the general public.*

1.7.3 Local

City of South Lake Tahoe General Plan: The General Plan is a comprehensive and long-term document, outlining proposals for the physical development of the City and any land outside its boundaries that in the City's judgment bears relation to its planning. The General Plan is comprehensive in covering all territory within its jurisdiction and addresses all physical aspects of development within the City. It provides guidance to the City through 2030. The General Plan includes the following policies that are directly applicable to the Project through improvements to the trail system and pedestrian connectivity to residential and commercial areas:

- Policy LU-2.7 directs the City to transform the Tahoe Valley area into an attractive gateway commercial district that serves both residents and visitors.
- Policy LU-2.11 designates the Tahoe Valley as a primary area in the City for resident-serving commercial uses, workforce housing, and affordable housing. Furthermore, the policy encourages transforming the area into a contemporary, pedestrian-oriented, mixed-use, commercial service district served by a transit center and alternate transportation opportunities.

City of South Lake Tahoe City Code: Chapter 6.10, Land Use Development Standards, of the City Code provides development standards, including standards related to site and building design, setbacks, landscaping and street improvements (including provisions for scenic highway corridors), fence and wall design, and parking standards. Additionally, per Chapter 6.55, regulations for land use in the City are provided by both the City and TRPA (e.g., setback standards are established by the City, while height restrictions are established by TRPA) and often require actions by both the City and TRPA.

Tahoe Valley Area Plan: The TVAP provides for more detailed direction for the Tahoe Valley area and incorporates land use and zoning consistent with the RPU and the General Plan (City and TRPA 2015). Therefore, if the Project complies with the TVAP, it would comply with both the Regional and General Plans. The TVAP establishes land use regulations, development standards, strategies, and needed environmental improvements for the area, and encourages new development and redevelopment that enhances the area. Policies developed for the TVAP have been incorporated into the Project to be consistent with both the TVAP and the General and Regional Plan. The following land use policies developed for the TVAP direct development of the Project to be consistent with the General and Regional Plan.

The TVAP includes the following policies (below) that are directly applicable to the Project through improvements to land use and community design. Additional policies developed for the TVAP have been incorporated throughout the Project and are detailed in the appropriate resources sections.

- Policy LU-1.2 – Connectivity: Create bike, pedestrian, and open space connections from the TVAP to the adjacent residential neighborhoods and nearby recreation.
- Policy LU-3.3 – Inter-connected Development: Ensure that every project is planned to enhance the physical, visual, and social connections to surrounding parcels and to the larger community.
- Policy LU-3.6 – Lighting: Establish pedestrian-scaled and strategically-placed lighting along US 50, SR 89, and Lake Tahoe Boulevard. Lighting must promote pedestrian safety and comfort and enhance architectural and site design. Prevent unnecessary and intrusive lighting that detracts from the beauty and view of the night sky.

- Policy T-3.1 – Connectivity: Provide adequate pedestrian and bicycle facilities such as continuous sidewalks, bike paths, and bike lanes throughout the Tahoe Valley area that connect commercial, health services, entertainment, residential, and recreation areas.
- Policy T-3.6 – Pedestrian/Bicycle Crossing at the "Y" Intersection and US 50: Develop strong pedestrian and bicycle links (e.g., crosswalks and refuge islands) between the four corners of the "Y" intersection and along US 50. Coordinate with Caltrans to evaluate alternative crossings that create safe passage across US 50 for pedestrians and cyclists.

1.8 Existing Conditions

The Project Area is located in the southwest portion of the City, as depicted above in **Figure 1**, with all but a small portion contained within the Tahoe Valley Urban Planning Catchment, as shown in **Figure 2**. The Project is generally bisected by the US 50 and SR 89 corridors. The portion of the Project Area that is located within the TVAP is zoned as Town Center-Gateway, Town Center-Core, Town Center Mixed Use Corridor, and Commercial Mixed Use Services. Much of the TVAP area contains a discontinuous system of curbs, gutters, and roadside stormwater infiltration (City and TRPA 2015: 22).

Native vegetation within the Project Area consists primarily of Jeffrey pine (*Pinus jeffreyi*) and white fir (*Abies concolor*) trees with little understory vegetation on high-capability lands (Land Capability Districts [LCDs] 5, 7) and willows and grasses on low-capability lands (LCD 1B) (City and TRPA 2015). Many of the developed parcels are also landscaped with native vegetation.

The Project Area contains a SEZ, which is a term unique to the Lake Tahoe region. The TRPA Code Chapter 90, Definitions, defines an SEZ as "Generally an area that owes its biological and physical characteristics to the presence of surface or ground water." SEZs are recognized by TRPA's LCD system as Class 1b. The Project Area also contains LCDs 5 and 7. **Figure 3**, Project Area Land Capability Districts, presents the LCDs mapped within the Project Area. The LCDs range from 1 to 7, with 1 being the most environmentally sensitive and 7 being the most suitable for supporting development. SEZs within the TVAP region generally have been disturbed (City and TRPA 2015).

Figure 4, Existing Land Coverage by Land Capability District, illustrates the location of existing land coverage within the Greenbelt portion of the Project Area. The Greenbelt portion of the Project Areameasures 755,938 square feet or 17.35 acres. Existing land coverage in the Greenbelt portion of the Project Area, which was TRPA-verified as part of analyses and approvals for the TVAP, is primarily associated with bike trails, footpaths, commercial developments, public roads and ROWs and totals 162,148 square feet or 3.72 acres.

Existing land coverage outside of the Greenbelt area is not presented because the Project would result in temporary disturbance during construction of stormwater improvements but would not result in permanent disturbance or land coverage in these areas.

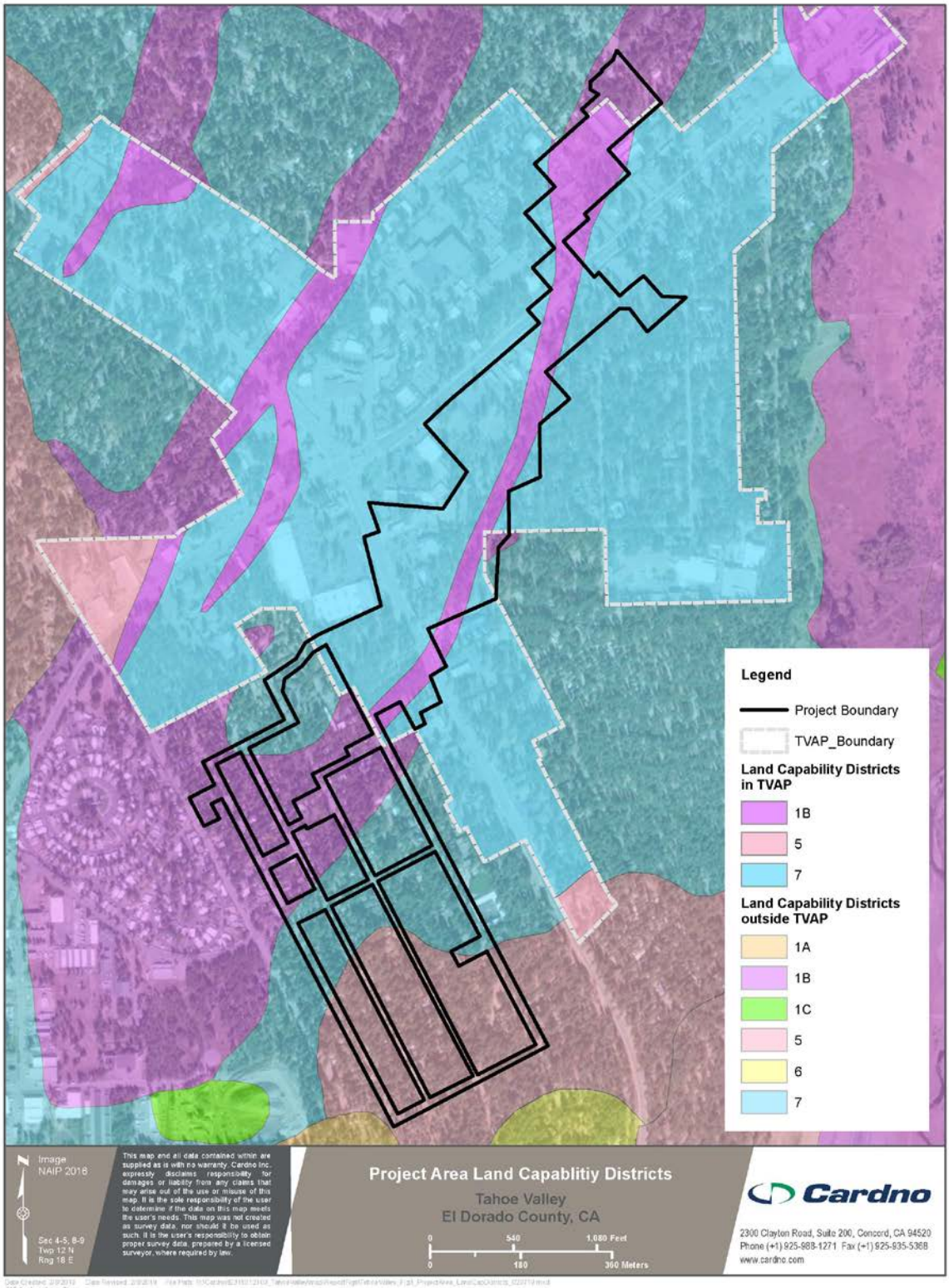

Figure 3 Project Area Land Capability Districts.

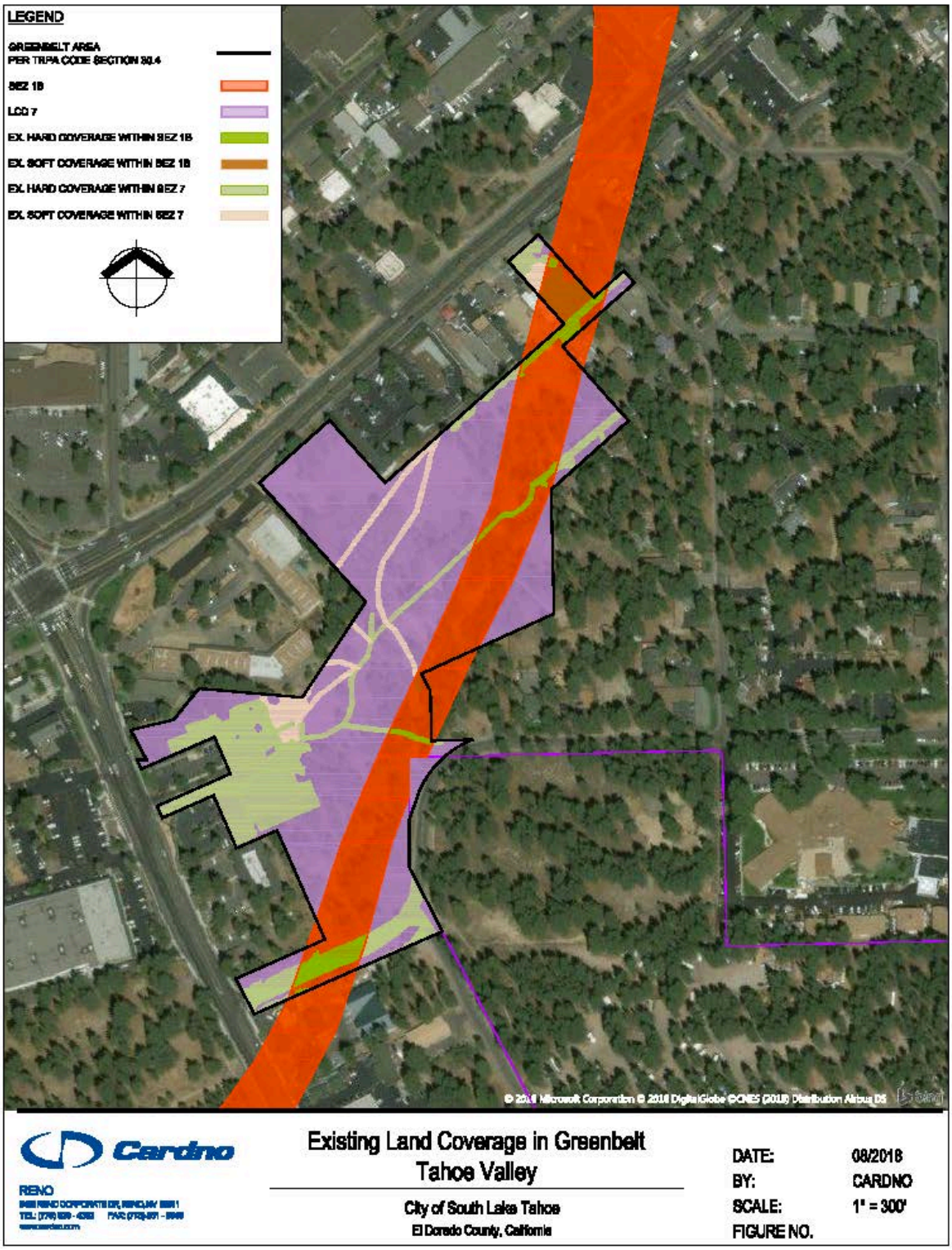

Figure 4 Existing Land Coverage by Land Capability District.

The Project Area contains both formal and informal recreation uses. Bonanza Park (located at 1209 Bonanza Avenue) is a 1-acre neighborhood park with a multipurpose play area, children's play structure, half-court basketball court, horseshoe pit, picnic tables, and seating area. The Project does not propose impacts to Bonanza Park. The Project Area also contains the "Greenbelt" area, which is an informal recreation area used for biking and walking connectivity, and various other pedestrian-oriented recreation purposes. The Greenbelt area is identified for threshold attainment.

Additionally, localized multi-use/Class I paths are located to the east of the "Y" intersection and behind the "The Crossing at Tahoe Valley" shopping center, which provides paved paths through the existing Greenbelt area and connects users to South Avenue, and to an existing Class III bike lane on Helen Avenue. There is a narrow walkway connection across private land (a public easement over McDonald's property) that provides connectivity between US 50 and the multi-use paths in the Greenbelt area.

Within the TVAP, use of public parcels is encouraged to support Project improvements including lands owned by City and California Tahoe Conservancy (Conservancy). The TVAP directs the City to use such lands as defined in Policy NCR-7.5: Stormwater Enhancement: *Collaborate with the California Tahoe Conservancy in identifying priority parcels in sensitive lands for public acquisition and coverage removal to facilitate construction of the Tahoe Valley Water Quality Improvement Project.*

In addition to vacant public lands owned by the City and Conservancy that are suitable for proposed Project improvements and conservancy goals,the Conservancy also owns six (6) parcels in the Tahoe Valley Area Plan boundary totaling 16.06 acres that are considered "asset lands." Based on extensive public comments, in March 2014, the Conservancy Board designated 17 developable parcels in three highly urbanized areas (Tahoe Valley, Meyers, and Kings Beach) that could support sustainable compact development consistent with local area or town center plans, which could be sold to help achieve regional and area plan objectives and other Conservancy goals. The Conservancy will work closely with TRPA and local jurisdictions to ensure that sales of these parcels are consistent with area plan goals. (Conservancy Land Transfer Guidelines 2016)..

1.9 Project Components

As detailed in Section 1.5, Purpose and Need, the Project implements the policies of and fulfill the goals and objectives of a number of regional and local plans and programs.

- TRPA RPU;
- Lake Tahoe EIP;
- Regional Transportation Plan;
- City's General Plan;
- TVAP;
- Lake Tahoe TMDL Program; and
- Pollutant Load Reduction Program.

Table 1 identifies the priority public parcels within the Project Area that are identified for construction use and/or the siting of the Project improvements, along with the Assessor's Parcel Number (APN), land use designation and parcel address. **Table 1** then lists the priority private parcels that are identified for acquisition in order to implement the Project, along with APN, land use designation, parcel address and Project improvements. **Figure 5** provides a location reference for the Project improvements listed in **Table 1.**

Table 1. Project Improvements by Parcel, Public and Private

APN/ Agency	Land Use Designation	Parcel Address (South Lake Tahoe, CA 96150)	Improvement within Parcel
Project Improvements by Public Parcel			
023-081-05 City	Rural Residential	2160 South Avenue	Greenbelt meadow/stormwater basin & SEZ enhancement & recreational improvements, paths/trails, open space
023-211-04 City	Vacant Industrial	2209 Eloise Avenue	Stormwater vegetated channel, micro basin, SEZ enhancement
023-211-10 Conservancy	Vacant Industrial	2208 Eloise Avenue	Stormwater vegetated channel, micro basin, SEZ enhancement
023-211-44 Conservancy	Vacant Industrial	2193 James Avenue	Stormwater channel/connectivity (Note: existing Caltrans stormwater infiltration gallery from US 50 storm drain system is located on parcel)
023-231-03 Conservancy	Vacant Industrial	2070 Lake Tahoe Boulevard	Greenbelt meadow/stormwater basin & SEZ enhancement & recreational improvements, paths/trails, open space
023-231-10 Conservancy	Vacant Industrial	2113 Helen Avenue	Greenbelt meadow/stormwater basin & SEZ enhancement & recreational improvements, paths/trails, open space
023-231-16 City	Vacant Commercial	2097 Helen Avenue	Greenbelt meadow/stormwater basin & SEZ enhancement &recreational improvements, paths/trails, open space
023-231-12 Conservancy	Vacant Residential	2108 Barton Avenue	Greenbelt meadow/stormwater basin & SEZ enhancement & recreational improvements, paths/trails, open space
023-241-23 Conservancy	Commercial	2122 Lake Tahoe Boulevard	Greenbelt recreational improvements, paths/trails, connectivity, open space Maintenance/restoration of existing storm drain piping
023-241-43 City	Unassigned	2166 Barton Avenue	Existing roadway improvements (3rd Street) Stormwater pipelines and structures
023-241-45 City	Unassigned	2182 Helen Avenue	Existing roadway improvements (3rd Street) Stormwater inlets, pipelines, and structures
023-241-46 City	Unassigned	2180 Barton Avenue	Stormwater treatment basin
023-241-47 City	Unassigned	2170 Barton Avenue	Existing roadway improvements (3rd Street) Stormwater inlets, pipelines, and structures
023-241-48 City	Unassigned	2176 Helen Avenue	Stormwater treatment basin
023-241-50 City	Unassigned	N/A – (3rd Street)	Existing roadway improvements (3rd Street) Stormwater inlets, pipelines, and structures

APN/ Agency	Land Use Designation	Parcel Address (South Lake Tahoe, CA 96150)	Improvement within Parcel
023-381-01 Conservancy	Vacant Residential	N/A – (Helen Avenue)	Greenbelt meadow/stormwater basin & SEZ enhancement + recreational improvements, paths/trails, open space
023-381-03 City	Subject to Open Space Contract	2076 Helen Avenue	Greenbelt meadow/stormwater basin & SEZ enhancement + recreational improvements, paths/trails, open space
023-381-10 Conservancy	Vacant Residential	2086 Helen Avenue	Greenbelt meadow/stormwater basin & SEZ enhancement + recreational improvements, paths/trails, open space
023-430-40 Conservancy	Vacant Commercial	N/A – (B Street)	Greenbelt meadow/stormwater basin & SEZ enhancement + recreational improvements, paths/trails, open space
023-681-01 Conservancy	Vacant Residential	969 Council Rock Drive	Stormwater inlets, pipelines, and structures
023-681-02 City	Vacant Residential	942 Tahoe Keys Boulevard	Vegetation maintenance/restoration – existing drainage channel/catchment
023-681-17 City	Vacant Residential	947 Council Rock Drive	Vegetation maintenance/restoration – existing drainage channel/catchment
023-682-13 City	Vacant Residential	958 Council Rock Drive	Vegetation maintenance/restoration – existing drainage channel/catchment
032-141-02 Conservancy	Vacant Commercial	1100 Emerald Bay Road	Stormwater treatment basin & SEZ enhancement
032-141-03 Conservancy	Commercial	1120 Emerald Bay Road	Stormwater treatment basin & SEZ enhancement
032-152-20 Conservancy	Vacant Residential	1234 Bonanza Avenue	Stormwater treatment basin
032-241-15 City	Vacant Residential	1123 Tata Lane	Vegetation maintenance/restoration – existing drainage channel/catchment
032-277-03 Conservancy	Vacant Residential	1105 Julie Lane	Vegetation maintenance/restoration – existing drainage channel/catchment
032-277-04 Conservancy	Vacant Residential	1107 Julie Lane	Vegetation maintenance/restoration – existing drainage channel/catchment
032-277-05 Conservancy	Vacant Residential	1109 Julie Lane	Vegetation maintenance/restoration – existing drainage channel/catchment
032-278-21 Conservancy	Vacant Residential	1177 Margaret Avenue	Stormwater treatment basin
032-278-22 Conservancy	Vacant Residential	1881 D Street	Stormwater treatment basin
032-278-23 Conservancy	Vacant Residential	1885 D Street	Stormwater treatment basin

APN/ Agency	Land Use Designation	Parcel Address (South Lake Tahoe, CA 96150)	Improvement within Parcel
032-278-24 Conservancy	Vacant Residential	1889 D Street	Stormwater treatment basin
032-278-30 City	Vacant Residential	1152 Dedi Avenue	Vegetation maintenance/restoration – existing drainage channel/catchment
032-279-12 City	Vacant Residential	1141 Dedi Avenue	Vegetation maintenance/restoration – existing drainage channel/catchment
Project Improvements by Private Parcels			
APN	**Land Use Designation**	**Parcel Address (South Lake Tahoe, CA 96150)**	**Improvements within Parcel**
023-081-07	Vacant Residential	N/A	Public roadway (existing) Greenbelt recreational improvements, paths/trails, connectivity, and stormwater pipelines, and structures
023-081-08	Miscellaneous (Campgrounds)	1175 Melba Drive	Public roadway (existing) Greenbelt recreational improvements, paths/trails, connectivity, and stormwater pipelines and structures
023-211-05	Industrial	2227 Eloise Avenue	Vegetation maintenance/restoration – existing drainage channel/catchment
023-211-13	Commercial	2161 Lake Tahoe Boulevard	Maintenance, restore/replace existing stormwater pipelines and structures
023-211-43	Industrial	2192 Eloise Avenue	Vegetation maintenance/restoration – existing drainage channel/catchment
023-241-22	Industrial	2130 Lake Tahoe Boulevard	Maintenance, restore/replace existing stormwater pipelines and structures
023-241-40	Commercial	2136 Lake Tahoe Boulevard	Maintenance, restore/replace existing stormwater pipelines and structures
023-381-02	Vacant Commercial	2060 South Avenue	Greenbelt recreational improvements, paths/trails, connectivity, open space Stormwater treatment basin
023-430-36	Commercial	1043 Emerald Bay Road	Greenbelt recreational improvements, paths/trails, connectivity, open space Stormwater treatment basin
023-430-38	Vacant Commercial	1029 Emerald Bay Road	Greenbelt recreational improvements, paths/trails, connectivity, open space Stormwater treatment basin
023-682-28	Residential	953 Linda Avenue	Vegetation maintenance/restoration – existing drainage channel/catchment, and stormwater pipelines and structures

APN/ Agency	Land Use Designation	Parcel Address (South Lake Tahoe, CA 96150)	Improvement within Parcel
023-761-13	Vacant Residential	928 Tahoe Keys Boulevard	Vegetation maintenance/restoration – existing drainage channel/catchment, and stormwater pipelines and structures
023-811-19	Residential	N/A; Sky Meadows Homeowners Association	Maintenance, restore/replace existing stormwater pipelines and structures

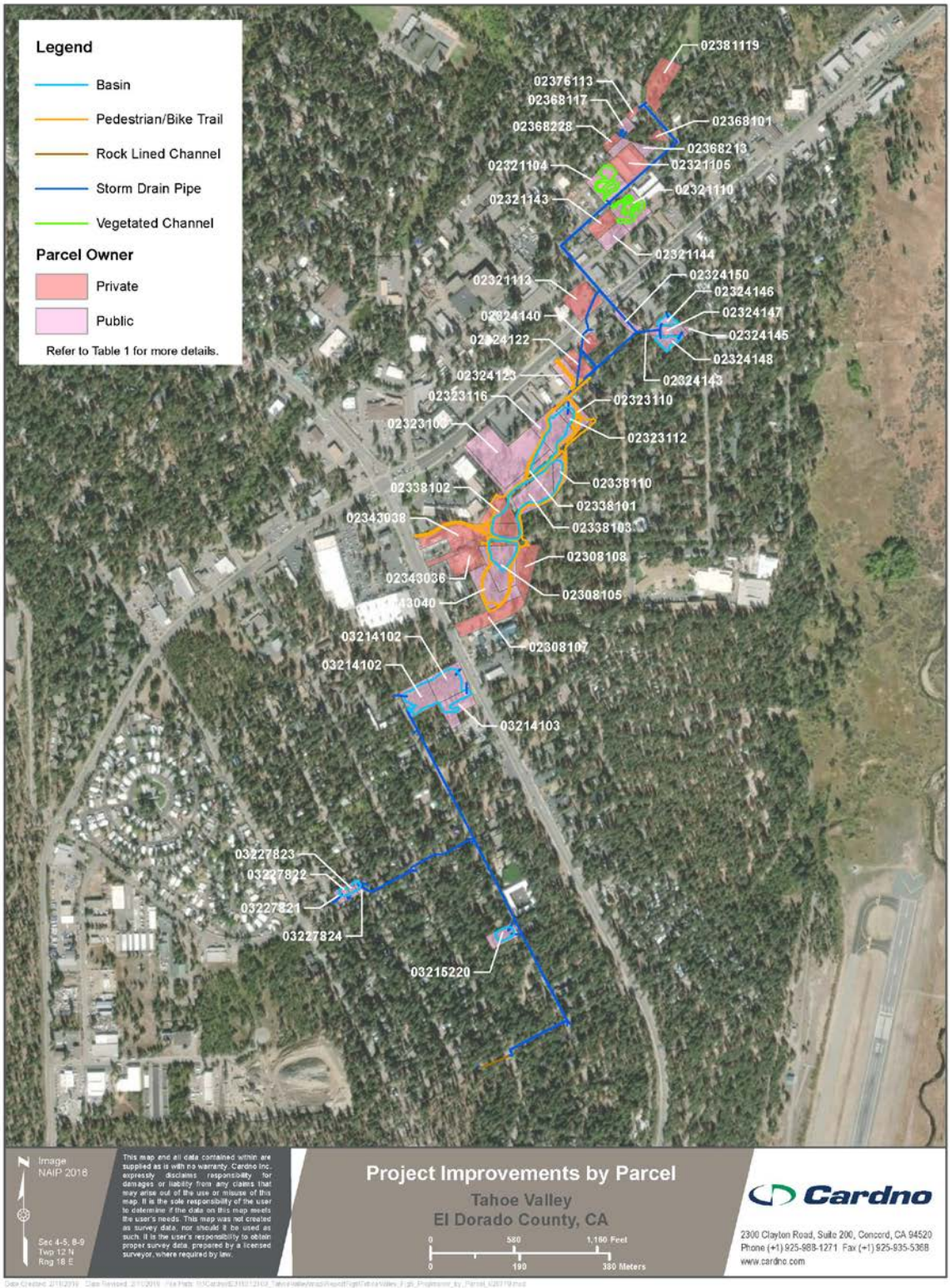

Figure 5 Project Improvements by Parcel (refer to Table 1).

1.9.1 Stormwater Quality and Management

The Project will retrofit existing drainage systems and install a series of new stormwater collection, conveyance, and infiltration facilities (referred to as the area-wide stormwater treatment system throughout this IS/IEC) to promote water quality treatments for targeted pollutant load reductions (i.e., fine sediment particles, and total nitrogen and total phosphorus concentrations). **Figure 6** displays the stormwater improvement locations within the Project Area.

The Project proposes the installation of swales/rock channels, inlets, curb and gutter, and pipelines to direct surface runoff to an area-wide stormwater treatment system designed to improve water quality treatment, promote infiltration within existing and expanded systems, and restore and enhance SEZs. To create open space and natural infiltration areas, new treatment basins and vegetated channels are proposed at select locations across the Project Area, along with the enhancement and restoration of existing SEZs, Greenbelt drainage channels, and the Helen Avenue basin areas. The area-wide stormwater treatment system (**Appendix A**, 30% Plan Drawings), is separated into three (3) general areas as follows:

1) Bonanza Area (west of US 50)

- Retrofitting and restoration of existing storm drain inlets, drainage channels, road shoulders, and storm drain systems (i.e., existing D Street Erosion Control Project storm drain facilities) within residential areas for improved collection and conveyance, sediment capture, and pollutant load reductions;
- Construction of a roadside rock-lined channel along F Street for improved stormwater collection and conveyance;
- Installation of new storm drain inlets and below-ground pipelines for collection, conveyance, and connection between stormwater drainage, treatment basins, and prominent natural drainages;
- Installation of new stormwater treatment basins (**Figure 6**) at D Street/Margaret Avenue, and mid-block portion of Bonanza Avenue for water quality improvement;
- Installation of a new area-wide stormwater treatment basin (**Figure 6**) at Bonanza Avenue/B Street for water quality improvement, flood control, and SEZ restoration; and
- Routine maintenance of City stormwater facilities and roadway shoulders to remove accumulated sediment.

2) Greenbelt Area (southeast of State Route 89/US 50 intersection referred to as the "Y")

- Retrofitting and expansion of existing Helen Avenue basin and Greenbelt area drainage channels;
- Installation of new area-wide stormwater treatment basin designed to blend into the surrounding existing meadow system for water quality improvement, flood control and SEZ enhancements,
- Construction of new stormwater basins (**Figure 6**) at Third Street/Barton Avenue/Helen Avenue for localized flood controls and stormwater treatment;
- Retrofitting of existing and installation of new storm drain inlets and below-ground pipelines for collection, conveyance, and connection between stormwater drainage, treatment basins, and prominent natural drainages; and
- Routine maintenance of City stormwater facilities and roadway shoulders to remove sediment buildup.

3) James/Eloise and Outfall (to north of US 50)

- Retrofitting of existing storm drain inlets, stormwater drainage, road shoulders, and stormwater treatment system for improved collection and conveyance, sediment capture, and pollutant load reduction;
- Restoration of SEZ areas and enhancement of existing SEZs;
- Construction of new below-ground storm drain pipelines for collection, conveyance, and connection between stormwater drainage, treatment basins, and prominent natural drainages;
- Restoration and expansion of the existing shallow stormwater treatment basins at James and Eloise Avenue for water quality improvements, increased fine sediment capture, and SEZ restoration;
- Construction of meandering vegetated channels and micro-basin catchment areas within the existing stormwater drainage catchment and vegetated to promote lower flow conveyance, settling of suspended sediments, and some infiltration; and
- Routine maintenance of City stormwater facilities and roadway shoulders to remove accumulated sediment.

1.9.2 Pedestrian, Bicycle, and Recreational Improvements

The "Greenbelt" portion of the Project Area, located southeast of the US 50/SR 89 intersection (aka the "Y"), is to be designed as a central feature of the area-wide stormwater treatment system, and will retain areas for the development of recreational amenities and enhanced community mobility and connectivity that are consistent with TVAP goals and policies. Improvements within the Greenbelt area will serve to provide connections for pedestrian and bicycle trails, support stormwater quality improvements, and develop open space, natural play areas, community gathering areas, and recreational amenities. **Figure 7** presents the Conceptual Plan for the Greenbelt portion of the Project Area.

Within the Greenbelt, recreational amenities will include the realignment of the existing shared-use Class I trail through the Greenbelt section to improve connectivity and access between residential and commercial areas, specifically the TVAP commercial core. Greenbelt options for recreational amenities include:

- Interpretive path;
- Seating areas;
- Adventure play areas;
- Construction of crossings and overlook at the meadow area;
- Wayfinding map/kiosk;
- Expanded plaza area behind The Crossings commercial development;
- Path connectivity and open space across a parcel lot between Barton Avenue and US 50; and
- New pedestrian-oriented trail lighting compliant with City's Public Improvement and Engineering Standards.

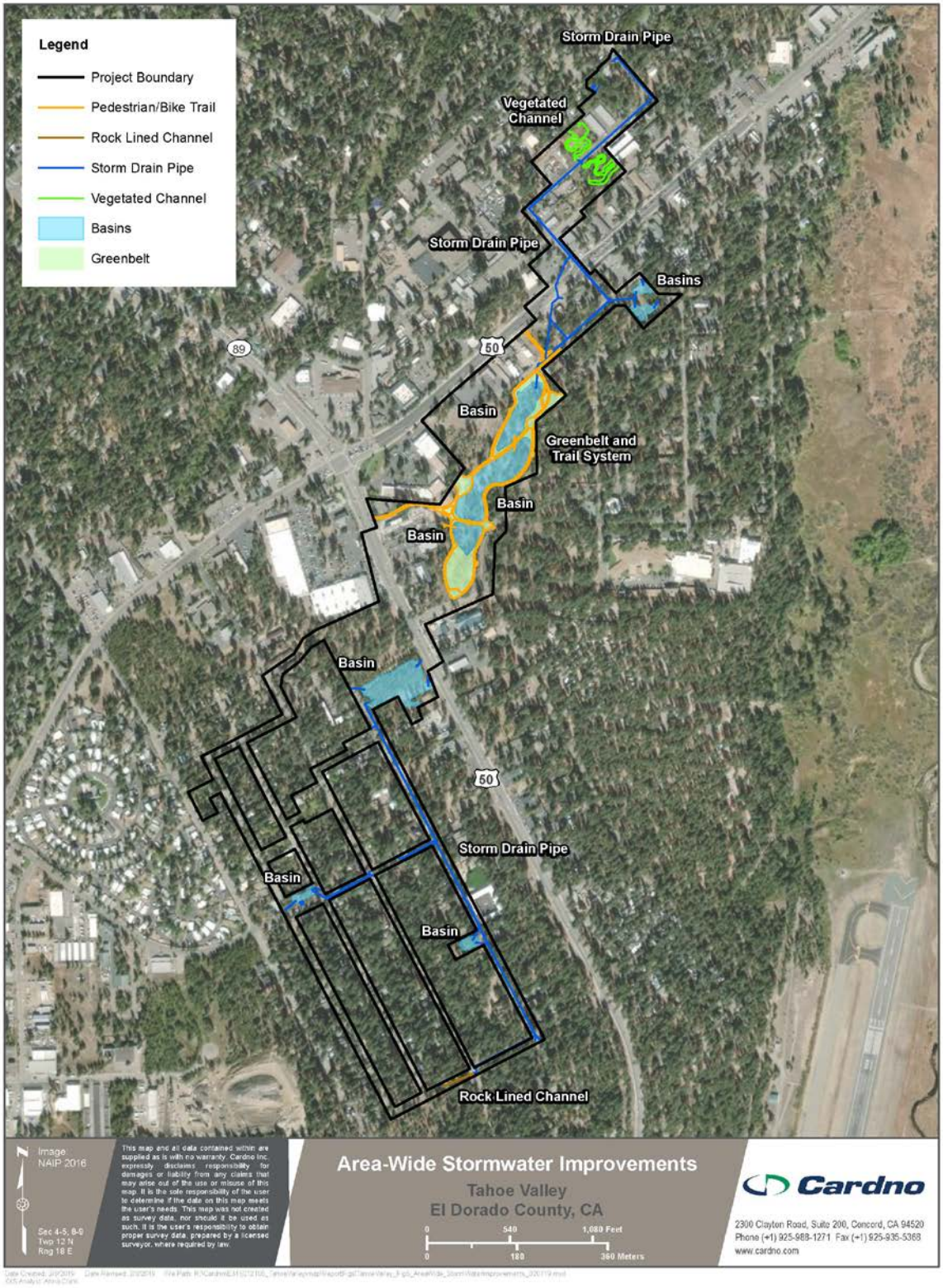

Figure 6 Area-wide Stormwater Improvements.

Figure 7 Greenbelt Conceptual Plan.

1.9.3 Stream Environment Zone Enhancement and Restoration

SEZs provide a variety of environmental services and benefits, including water quality maintenance, flood attenuation, infiltration and groundwater recharge, wildlife habitat, and scenic and recreation enjoyment, among others. SEZs are recognized by TRPA's Land Capability District (LCD) classification system as not generally suited for urbanization or intensive forestry use, but can be considered for open space, conservation areas, and low-intensity recreation (City and TRPA 2015). The Project will increase the acreage of existing SEZs in the Project Area, and through the Project design will enhance SEZ functions, restoring SEZ habitat and functions when possible. SEZ improvements on City-owned parcels are anticipated to contribute towards TRPA environmental threshold attainment for Soil Conservation: *Preserve natural stream environment zones (SEZ), restore 25% of disturbed urban SEZ areas (1,100 acres), and reduce total land coverage.*

The Project will protect existing SEZs from development and will increase the area of naturally functioning SEZ by expanding the depression basin areas, allowing for greater catchment of stormwater runoff and infiltration. Specifically, the Bonanza Avenue, Helen Avenue, James/Eloise Avenue and Greenbelt stormwater treatment basins and contributing drainages will be modified to expand the capacity for stormwater treatment, flood control, pollutant load reduction. SEZ enhancement will result with increased detention, slowing and spreading of surface flows and by infiltration created by revegetation with native grass and plant species that are targeted for soil stabilization and nutrient uptake.

1.9.4 Vegetation Management and Select Tree Removal

Selection of plant species and seed mixes will be based on site-specific conditions (e.g., soil types, uplands vs SEZs, slope, existing soil cover, etc.) and the function of the associated improvement (e.g., retention, infiltration, nutrient uptake, erosion control, expansion of naturally functioning SEZ corridors, source control along trails, etc.). Revegetation of upland stormwater treatment basins will differ from revegetation efforts within lowland SEZ corridors. Greenbelt open space areas will be revegetated with meadow grasses, while areas along the commercial center may include landscaping shrubs or trees.

Select areas for recreation amenities, such as trails and natural play areas within the Greenbelt area, may require tree removal to facilitate grade changes that are necessary to comply with accessibility requirements. Existing vegetation within the Project Area will be retained and incorporated into final designs when feasible, except where Project improvements require vegetation removal for stormwater basin construction and expansion. Basins will be revegetated with site-specific, native seed mix. Additionally, willow removal may be necessary to expand existing stormwater treatment basins within the Greenbelt area; if so, willows will be salvaged and cuttings will be replanted as part of post-construction revegetation.

Table 2 presents the tree removal estimates, as based on the 30 percent Project design (**Appendix A**). Approximately 189 trees greater than 14-inch diameter at breast height (dbh) have been identified for removal, with 20 of those trees being 30-inch dbh or greater.

Table 2. Tree Removal Estimates

Project Component	Approx. Removal (#)	Diameter at Breast Height (dbh)	Species
Bonanza Ave/B St stormwater treatment basin	174	0 to14 inches	Pine/Fir
	30	>14 to <30 inches	
	2	30 inches and greater	
D Street/Margaret Ave stormwater treatment basin	5	0 to14 inches	Pine/Fir
	5	>14 to <30 inches	

Project Component	Approx. Removal (#)	Diameter at Breast Height (dbh)	Species
Mid-block Bonanza Ave stormwater treatment basin	5	>14 to <30 inches	Pine/Fir
James & Eloise Ave meandering channel/basin sites	10	0 to 14 inches	Pine/Fir
	5	>14 to <30 inches	
Third St/Barton/Helen Ave stormwater treatment basins	42	0-14 inches	Pine/Fir
	42	>14 to <30 inches	
	5	30 inches and greater	
Greenbelt stormwater treatment basins, open space, multi-use paths, and other improvements	153	0 to 14 inches	Pine/Fir
	82	>14 to <30 inches	
	13	30 inches and greater	

1.9.5 Staging Areas

City and Conservancy parcels within the Project Area, and particularly stormwater basin sites, will be used as temporary construction staging and storage areas. Plan Sheets detailing the staging and storage areas are included in **Appendix A** as follows:

- Sheet C4 – Basin and potential staging area at Conservancy parcel 032-152-20;
- Sheet X3 – Greenbelt potential staging area, at City parcels 023-241-46 and 023-241-48; and
- Sheet C24 – Eloise Avenue basin and potential staging area, City parcel 023-211-04.

1.9.6 Construction Phasing and Schedule

The development of the detailed construction staging and phasing plan will be the responsibility of the City's contractor that is selected through the public bidding process. The Project schedule, including phasing, key milestone dates and timeline will be developed as part of the final design/bid package for the Project. Due to the volume of work and limited construction season within the Lake Tahoe Basin (typical May 1 to Oct 15), Project construction is anticipated to occur over two consecutive years, for the purpose of estimating air quality and GHG emission associated with construction of the Project.

Table 3 identifies construction activities that are associated with the propose improvements, although the actual order of work may vary. The typical construction sequence for stormwater systems starts at the low point or outfall and progresses up-gradient to its starting point. Contract requirements will include controls to limit areas of disturbance and require construction phasing to be contiguous or grouped to avoid a hopscotch effect that results in significant areas of disturbed soils.

Table 3. General Task List and Durations

Year	Work Task / Major Elements (seasonal May 1 to Oct 15)	Duration (months)
1 (May)	Mobilization, survey, staging areas, BMPs	0.25
1 ↓	Clearing and grubbing, tree removals	0.50
1 ↓	Public utility relocations (north of US 50 – Third St, James Ave, Eloise Ave, Tahoe Keys Blvd)	0.50

Year	Work Task / Major Elements (seasonal May 1 to Oct 15)	Duration (months)
1 ↓	Tahoe Keys Blvd culvert crossing, stormwater outfall	0.50
1 ↓	James and Eloise Ave stormwater basin improvements, and Eloise Ave culvert	1
1 ↓	3rd St, US 50 crossing, Barton Ave culverts, and Greenbelt storm outfall	1
1 ↓	Greenbelt mass grading and excavations - meadow/basins/trails	1
1 ↓	Third St/Barton Ave/Helen Ave stormwater basin improvements	0.50
1 ↓	Existing stormwater facility rehabilitation (inlets/culverts/swales) – Third St, James Ave, Eloise Ave, Council Rock Dr	0.25
1 ↓	Roadway asphalt paving/patching, signage and striping	0.25
1 (Oct)	Project site winterization, seasonal demobilization	0.25
2 (May)	Mobilization, survey, staging areas, BMPs	0.25
2 ↓	Clearing and grubbing, tree removal	0.50
2 ↓	Public utility relocations - west of US 50 – Bonanza Ave, D St, F St	0.50
2 ↓	Greenbelt stormwater facilities, trails, finish grading, surface pavements	1
2 ↓	Bonanza and Margaret Aves stormwater basin improvements	1
2 ↓	Bonanza Ave, D St, and F St stormwater improvements (inlets, culverts, swales)	1
2 ↓	Greenbelt site furnishings, specialty landscape elements, signage	0.50
2 ↓	Existing stormwater facility rehabilitation (inlets, culverts, swales) – Margaret Ave, Dedi Ave, B St, Tata Ln	0.50
2 ↓	Roadway asphalt paving/patching, signage and striping	0.25
2 (Oct)	Site stabilization and revegetation, cleanup, and demobilization	0.50
	Project Work/Task Duration (total over 2 construction years/seasons)*:	**12 months**

* With a multi-year construction schedule, stabilization and temporary BMP controls for "winterization" of the Project site would be required.

1.9.7 Equipment and Labor Forces

The use of local labor forces and material suppliers is encouraged by the City. The labor force and type of equipment used will vary according to the construction activities and work elements. **Table 4** details the assumptions that have been made, as based on the 30 percent design, for Project construction.

Clearing and grubbing, tree felling, and earthwork grading operations typically require large tractor trailers and dump trucks for hauling and heavy mechanical equipment with blades (graders, dozers) and buckets (excavators, backhoes) for earth-moving and excavating. Underground utility relocations and installation of stormwater infrastructure typically require heavy mechanical equipment and trucks for excavating, hauling, and placing/compacting backfill. Trucks and equipment for hauling and placement of concrete and asphalt pavements are required for construction of concrete structures and surface pavements. Import of piping, concrete, and asphaltic materials will be sourced from nearby material suppliers and batch plants. General use pick-ups, utility trucks, trailers, compressors, generators, and various small tools will be used throughout construction.

Table 4. Equipment and Labor Force Summary

Seasonal Work Elements / Equipment and Labor	Crew Size (approx.)*
Mobilization, survey, traffic control, BMPs, seasonal demobilization • Office trailer, generator, temporary utility connections, sani-huts, dumpsters • Small tools, survey equipment, traffic control signage • Work trucks, dump trucks, trailers, oil/fuel truck • Water truck, sweeper • Backhoe, small loader, small excavator	5-10
Clearing & grubbing, tree removals • Chainsaw, small tools, wood chipper • Work trucks, dump trucks, log trailers, oil/fuel truck • Backhoe, small dozer, medium excavator	5-10
Public utility relocations • Small tools, generator, compressor, hydraulic hammers/breakers • Work trucks, dump trucks, oil/fuel truck • Backhoe, small/medium excavators, small loader, compactor	5-10
Stormwater infrastructure (e.g., pipe, inlets, manholes, curb and gutter) • Small tools, generator, compressor, hydraulic hammers/breakers • Work trucks, dump trucks, oil/fuel truck • Backhoe, small/medium excavators, medium loader, compactor	5-10
Earthwork and grading (e.g., stormwater basin, drainage ditch, trails, roads) • Small tools, generator, compressor • Work trucks, dump trucks, oil/fuel truck • Small dozer, motor grader, medium/large excavators, medium loader, compactor, vibratory roller	10-15
Roadway, trail, walkway, surface improvements (e.g., asphalt, concrete, aggregate) • Small tools, generator, compressor • Work trucks, dump trucks, concrete truck, oil/fuel truck • Backhoe, small loader, rollers, asphalt paver	10-15
Greenbelt site furnishings, lighting, irrigation, landscape elements, signage • Small tools, generator, compressor • Work trucks, dump trucks, delivery trucks, oil/fuel truck • Backhoe, small excavator, small loader	5-10
Permanent revegetation, cleanup and demobilization • Small tools, generator, compressor • Work trucks, dump trucks, oil/fuel truck • Backhoe, small loader	5-10

* Crew size estimates are not cumulative, only work element-specific. Overlap of labor between work elements is expected. Maximum crew size at peak of work may range from 30-40.

1.10 Compliance Measures (Construction Controls, Best Management Practices and Resource Protection Measures)

The Project will be required to comply with Policy NCR-5.3 from the TVAP, to "ensure installation and maintenance of best management practices as required by the City's NPDES Permit and memorandums of understanding with the TRPA" (City and TRPA 2015). Best management practices (BMPs) will be used to minimize impacts on the environment and human health during construction, operations, and maintenance.

The following construction controls, BMPs, and resource protection measures will be implemented and maintained, as appropriate, to avoid, reduce, minimize, or otherwise mitigate potential environmental impacts prior to, during, and following Project construction. The TRPA RPU defines these measures as compliance measures, which are "A program, regulation, or measure including, but not limited to, capital improvements, operational improvements, or controls on additional development to reduce, avoid, or remedy an environmental impact of activities within the Tahoe region or to promote attainment or maintenance of any threshold or standard" (TRPA Code Section 16.3.2).

1.10.1 Compliance with State and Local Requirements

Work will be performed in compliance with City, TRPA, and Lahontan requirements. These include, without limitation, use of a City-approved Traffic Control Plan (TCP), a State of California–approved Stormwater Pollution Prevention Plan (SWPPP), implementation of City Design Standards, and compliance with TRPA Code Chapter 60, Water Quality, for drainage treatment, paved parking and drives, slope stabilization, revegetation, and provision of snow storage areas (City and TRPA 2015).

The TRPA Code also requires property owners to infiltrate the volume of a 20-year/1-hour storm on their property or meet alternative standards in instances where special circumstances limit infiltration. The Project has been designed to meet the requirements of TRPA Code Chapter 60, Water Quality, and to ensure that the Project captures, conveys, and infiltrates the 20-year/1-hour stormwater runoff volume on-site.

The State anti-degradation policy (Resolution No. 68-16) is incorporated into regional water quality control plans, including the Lahontan Basin Plan. The policy applies to high quality waters only (i.e., Lake Tahoe and tributaries) and requires that existing high quality be maintained to the maximum extent possible. The Project will implement reasonable and appropriate measures for the protection of surface water quality and beneficial uses and complies with conditions set forth in Board Orders No. R6T-2017-0010 (Tahoe Stormwater Permit) and R6T-2016-0010 (Tahoe General Construction Permit).

The TVAP also includes mitigation measures that subsequent projects are required to implement (where applicable). The TVAP identified potentially significant impacts to the following resources: Hazards and Hazardous Materials, Public Services, and Hydrology and Water Quality. As such the following mitigation measures were developed for the TVAP and are therefore required measures for any subsequent project. The following compliance measures are incorporated into the Project to avoid and reduce potential Project-level impacts to levels of less than significant:

HAZ-1: Require all subsequent projects that would be located on sites suspected or known to contain hazardous materials and/or are identified in a hazardous material/waste search to be reviewed, tested, and remediated for potential hazardous materials in accordance with all local, state, and federal regulations. The City and TRPA shall require written confirmation from applicable local, regional, state, and federal agencies that known contaminated sites have been deemed remediated to a level appropriate for land uses proposed prior to the City and TRPA approving site development or provide an approved remediation plan that demonstrates how contamination will be remediated prior to site occupancy. This documentation will specify the extent of development allowed on the remediated site as well as any special conditions and/or restrictions on future land uses.

HAZ-2: Subsequent projects that meet the definition of a "Possible Contaminating Activity" under Section 60.3.5 of the TRPA Code of Ordinances shall demonstrate compliance with the findings and requirements under Section 60.3.3.D of the TRPA Code of Ordinances and demonstrate that adequate protections are in place to avoid soil and groundwater contamination and protect public health of area residents. This demonstration shall be required prior to subsequent project approvals and implemented as part of project design.

HYD-1: As part of soil/hydrologic investigations for subsequent development and activities in the Tahoe Valley plan area, TRPA and the City will require that a determination of the potential to encounter groundwater from site development may occur. Subsequent project SWPPPs will include a dewatering program and measures to mitigate potential contamination of groundwater as well as design provisions to allow groundwater to flow through or around underground structures. Measures to control water quality may include use of settling tanks and Active Treatment Systems for treatment of dewatering as well as contamination prevention measures such as proper material storage, secondary containment systems, vehicle fluid drip pans, temporary berms or dikes to isolate construction activities, use of vacuum trucks, and other measures to capture contamination releases.

HYD-2: The City and TRPA shall consult with Lahontan and the online Geotracker Database to determine the potential for hazardous material releases on property where BMP installation is proposed prior to issuance of permits approving the installation of BMPs. Where City and/or TRPA staff determines a potential to exist, the property is required to tie in to an existing area-wide system if one is available in lieu of parcel-specific BMPs. Where an area-wide system is not available, the site shall be deemed constrained, per TRPA Code 60.4.8.B, until the time that an area-wide system is available or the site has been remediated and closed by the State Water Board.

HAZ-3: Subsequent projects shall incorporate all fire protection and design provisions identified by the South Lake Tahoe Fire Department intended to improve access point(s) and circulation of the subsequent project sites and the overall area in combination with other fire protection requirements (defensible space, fire flow improvements, fire resistant building materials, landscape treatments, placement of hydrants, and installation of sprinklers). The South Lake Tahoe Fire Department shall review and approve the subsequent project site design prior to commencement of project construction.

HAZ-4: Subsequent projects shall be required to prepare and receive approval of a Traffic Management Plan in accordance with local and state guidelines and standards, including Caltrans Guidelines for Projects Located on the California State Highways in the Lake Tahoe Basin (as applicable). Approval of the Traffic Management Plan shall be obtained from the City and Caltrans (if the Traffic Management Plan impacts US 50 or SR 89) prior to site disturbance. Provisions in the Traffic Management Plan shall include, but are not limited to:

- Reduction, to the extent feasible, the number of vehicles (construction and other) on the roadways adjacent to construction sites during project construction.
- Reduction, to the extent feasible, the interaction between construction equipment and other vehicles.
- Improvement and maintenance of public safety aimed at driver and roadway safety.
- Establishment and/or maintenance of safe routes through the Project Area for bicycles and pedestrians.
- Establishment and/or maintenance of adequate emergency access for police, fire, ambulance, and other emergency service vehicles—as determined through direct consultation with those service providers.

1.10.2 Dust Control/Air Emissions

Construction activities will comply with the El Dorado County Air Quality Management District (AQMD) Construction Fugitive Dust Control and Emission Requirements and TVAP Policy NCR-which require that the Project meet concentration and visible emission limits; implement a Fugitive Dust Control Plan, in accordance with AQMD Plan requirements (Rule 223-1.5.B); control track out; and implement the construction BMPs outlined in AQMD Rule 223-1 and detailed in Appendix C-1 of the AQMD's Tables 1-3 of Rule 223-1.

These measures include, but are not limited to: using water to stabilize soils prior to disturbance, during construction, and to create a crust at the end of each day's activities and after cut and fill activities to minimize dust during construction activities; keeping soils damp to ensure visible emissions do not exceed 50 feet or beyond the property line in any direction; stabilizing materials while unloading; stabilizing sloping surfaces using soil binders until vegetation or ground cover effectively stabilize the slopes; limiting vehicular traffic and disturbances on soil where possible; and dedicating a staging area (to be kept stabilized). A Fugitive Dust Control Plan specifying methods for the control of dust potentially generated by construction activities will be included as part of the SWPPP.

Additionally, the Project will implement the following air quality construction measures from TVAP Policy NCR-8.1:

- Implement measures recommended by the AQMD.
- Prohibit open burning of debris from site clearing unless involved with a fuels reduction project.
- Utilize low-emission construction equipment and/or fuels and use existing power sources wherever feasible.
- Restrict idling time for construction equipment and vehicles.
- Apply water to control dust as needed to prevent dust impacts.

1.10.3 Water Quality and Soil Protection Measures

The Project will be required to prepare a SWPPP compliant with the Tahoe General Construction Permit. The SWPPP will outline BMPs and other measures that will minimize impacts on water quality during construction and maintenance activities. The SWPPP is mandated as part of the NPDES permit regulated by the US Environmental Protection Agency (EPA) and implemented by Lahontan and will be required prior to obtaining any applicable permits for Project implementation. The Project will be required to prepare an Erosion and Sediment Control Plan (ESCP) compliant with TRPA requirements. Typical measures include preservation of existing vegetation to the extent feasible, use of native vegetation for landscaping, and implementation of construction pollutant source controls such as installation of silt fences, use of wind erosion control (e.g., geotextile or plastic covers on stockpiled soil), and stabilization of site ingress/egress locations to minimize erosion.

A variety of good housekeeping, source control, and erosion and sediment control BMPs will be implemented to avoid impacts on soil and water resources. The Project BMPs will be specified from standard documents applicable to the Project location including the current *TRPA Best Management Practices Handbook*, the *Caltrans Construction Site Best Management Practices (BMP) Manual* (Caltrans 2017a), and other regulatory agency sources. Detailed specification for these BMPs will be incorporated into the final design plans and contract documents for the approved Project.

At a minimum, the following water quality protection measures, sediment and erosion control BMPs, and construction control measures will be implemented to reduce impacts to soil and water quality:

1. Create a working SWPPP as part of the NPDES requirements for projects larger than 1-acre of disturbance. BMPs and the ESCP described in the approved SWPPP will be implemented during Project activities. These measures may include, but will not be limited to, silt fences, straw wattles, water-filled berms, mulching, dewatering pumps, gravel/sand bags, stormwater drainage systems, construction fencing, and revegetation. The SWPPP will also include a Fugitive Dust Control Plan, specifying the methods for the control of dust potentially generated by construction activities.
2. Cover stockpiled and transported material or water to control fugitive dust emissions and avoid wind erosion.
3. Construction equipment will be cleaned to remove any loose dirt or sediment prior to entering or exiting the site.
4. Stabilize disturbed areas, including staging and storage sites, and either revegetate following construction or repave.
5. Implement erosion and sediment control BMPs (e.g., filter fences, sediment check dams, and storm drain inlet protection), as specified in the SWPPP prior to construction in each phased construction area.
6. Winterize disturbed areas on or before October 15 of each year of construction (unless extensions are granted by the permitting agencies). The winterization will be in compliance with TRPA and Lahontan standards and BMPs designed to meet permit requirements for capture and infiltration of the 20-year, 1-hour storm volume will be used.

1.10.4 Traffic Control Plan

Temporary traffic control measures will be implemented for both City and Caltrans roadways where Project improvements are proposed in the respective ROWs, and appropriate standards applied. Project actions will conform to the *Work Area Traffic Control Handbook* (Watch Committee of Public Works Standards, Inc. 2016) and the *California Manual of Uniform Traffic Control Devices* (Caltrans 2014). Controls within the ROWs will include varying lane and shoulder closures using standard signage, delineators, barricades, and flagger personnel.

The BMPs for traffic control during construction will include preparation of a Project-specific TCP by the City's contractor. The TCP includes measures to provide safe emergency, business, residential, bicycle, and pedestrian access through the Project Area during construction. At a minimum, the TCP will include the following measures:

- TC-1: The temporary traffic control measures will be implemented during approved construction periods (Monday through Friday) and the Tahoe Valley work areas will be opened to their original configurations at the end of the day, during weekends and holidays.
- TC-2: Access to driveways and parking lots within the Project Area will be maintained during the course of construction, unless work is being performed in the vicinity of, or for, the driveway or parking lot area.
- TC-3: If a driveway or parking lot closure is necessary to facilitate construction activities, the City's contractor will hand deliver notices to the affected property owners at least 48 hours prior to closure.
- TC-4: During construction, temporary parking will be provided for construction personnel within designated staging areas.

1.10.5 Hazardous Materials Storage and Use

Staging, equipment refueling, and materials storage will take place in one central portion of the Project Area in accordance with City standard contract requirements and the provisions of the Caltrans

Construction Site BMPs WM-1, Material Delivery and Storage; WM-2, Material Use; WM-3, Stockpile Management; WM-5, Solid Waste Management; WM-6, Hazardous Waste Management; NS-8, Vehicle and Equipment Fueling; and NS-10, Vehicle and Equipment Management.

The material delivery and storage area may change throughout construction, depending on where activities take place, but it would not be located near a storm drain inlet or drainage swale or adjacent to a fill slope.

In addition, a Spill Prevention Plan will be developed and implemented to protect construction workers and the public from construction-related health hazards. The plan will outline BMPs to ensure impacts on human and environmental health are avoided. Work will stop immediately if suspected contamination is encountered during construction, and the Project Engineer will be notified immediately. Upon confirmation of contamination, the Project Engineer will assess the Project design and obtain the required approvals to remove contaminated material or modify the design to avoid conflicts with the contaminated material and/or any ongoing or future remediation projects. Soil and groundwater materials removed during construction activities that have been deemed hazardous will be segregated and disposed of appropriately. The City's contractor are responsible for familiarizing their personnel with the information contained in the SWPPP. Contractors will train/instruct on-site construction personnel in spill prevention practices and provide spill containment materials near staging areas. Further information regarding spills will be available in the Spill Response section of the SWPPP.

The Project will also implement Caltrans's BMPs regarding spill prevention and waste management measures and comply with the requirements of General Plan Policy HS-6.2: Construction Stoppage Due to Contamination.

Additionally, the City's contractor will prepare a Soil Management Plan, which will address issues such as handing, transportation, and disposal of petroleum hydrocarbon-impacted soil, if encountered during construction.

1.10.6 Solid Waste Disposal

The Project will be subject to City Code Chapter 4.150, Refuse and Garbage; City Code Title 6, Article VII, Construction and Demolition Debris Recycling, TRPA RPU Land Use Element Goal 5, Policy 1 and Public Services Element Goal 3, Policy 2; and the City General Plan Policy PQP-3.3, requiring the transport of solid waste outside the Lake Tahoe Basin in compliance with California state laws.

Consistent with TRPA Code Section 33.3.4, Disposal of Materials, the Project will be required to implement the following controls to limit impact from solid waste generation and disposal:

1. Temporary stockpiling of the topsoil on the site for use in areas to be revegetated,
2. Disposal of material at a location approved by TRPA, and
3. Export of the materials outside of the region.

The Project will also implement Caltrans Construction Site BMPs that address solid waste, such as WM-5, Solid Waste Management, and will comply with federal and state regulations related to the storage and transportation of hazardous materials.

1.10.7 Biological Resource Protection Measures

1.10.7.1 Wildlife Protection Measures

The Project will implement wildlife protection measures to comply with Section 7 of the Endangered Species Act; Migratory Bird Treaty Act (MBTA); and TRPA Code Chapter 62, Wildlife for protection of sensitive species and their habitats. Construction measures incorporated into the Project for the protection of wildlife in the Project Area will, at a minimum, include the following:

1. For construction activities occurring during the nesting season (i.e., March 15 through August 15), and outside of paved areas, the City and City's contractor will conduct pre-construction nest surveys, including a 100-foot buffer, to identify any willow flycatcher and MBTA protected migratory bird nest sites that may be present. The preconstruction nest survey will occur no more than 14 days prior to Project mobilization. If a nest is present in the immediate vicinity, a qualified biological monitor will be contacted to evaluate whether any migratory birds are impacted by the Project. The biological monitor will have the authority to stop construction near occupied sites if construction activities appear to be having a negative or adverse impact on nesting migratory birds or their young. If construction must be stopped, the biological monitor must consult with US Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) staff within 24 hours to determine appropriate actions to restart construction while reducing impacts to identified migratory bird nests.
2. Should special-status species be observed within the Project Area before or during construction, the City's contractor or other project personnel will report the observation immediately to the Resident Engineer or equivalent representative. In response, the City or approved construction contractor will retain a qualified biological monitor to immediately (within 24 hours) implement adequate protections of special status species.
3. Tree and snag removal will be minimized to what is necessary for treatment basin construction, trail improvements, and the stormwater improvements. Construction access routes will be positioned around existing trees and snags to avoid tree removal to the extent practical. Logs and brush piles will be left within the Project Area to provide wildlife cover when they will not constitute a hazard to people or property. When not a hazard to people or property, larger logs and snags will be purposely retained in the Project Area to provide habitat for wildlife that depend on them for perches, nesting, or cover, consistent with TRPA Tree Removal standards (TRPA Code Chapter 61.1 Tree Removal and Chapter 62: Wildlife Resources subsection 62.3.4).

1.10.7.2 Vegetation Protection Measures

At a minimum, the following BMPs, design features, and construction measures will be implemented to reduce impacts to vegetation:

1. The amount of ground and vegetation disturbance in construction areas will be minimized. Vegetation outside of the construction boundary, as well as other vegetation designated on the approved plans, is required to be protected with temporary fencing, pursuant to Subsections 33.6.9 and 33.6.10 of the TRPA Code.
2. Where disturbance cannot be avoided, prune or cut riparian vegetation at the ground to protect root structures and soil integrity. Clean pruning equipment will be used to ensure that no disease or pests are introduced into the stems. Shoots, if viable, may be used for replanting. During construction, any removed native riparian vegetation of good quality may be stockpiled and replanted. Specifications for this work will be included in a Revegetation Plan, pursuant to TRPA Code Chapter 61.4.5, Revegetation.
3. Disturbed areas, such as stormwater pipeline alignments, treatment basins, and staging areas will be revegetated or stabilized as needed once construction is complete, consistent with TRPA revegetation standards (TRPA Code Chapter 61.4, Revegetation) and City Landscaping Standards for use of species on TRPA recommended native and adapted plant list (City Code Chapter 6.10.150.2, Landscaping).
4. The vegetation will be irrigated and soil amendments will be added while it is being stockpiled. Soil amendments and irrigation also may be used to help with plant establishment after replanting consistent with City Landscaping Standards for efficient irrigation (City Code Chapter 6.10.150d) and will conform to water conservation standards contained within the landscaping standards (City Code Chapter 6.10.170).

5. Tree removal within SEZ boundaries will follow guidelines of TRPA Code Chapter 61.1.6C (Tree Cutting within Stream Environment Zones); including but not limited to vehicle restrictions within SEZs, and limiting work within SEZs to times of the year when soil conditions are dry and stable.
6. The City or its contractor will conduct inspections for and remove invasive plants and noxious weed species from within the Project Area, along travel routes near Project Area egress and ingress points, and in off-site areas identified storage and staging. Such areas will be hand-treated or flagged and avoided, depending on the risk presented by the species present.
7. Construction vehicles, including off-road vehicles, will be inspected and must be clean when equipment comes into the Basin or comes from a known invasive plant infested area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material, or other such debris.
8. Equipment will be staged in weed-free areas to prevent vehicles from introducing or spreading invasive species.

1. Earth-moving equipment, gravel, fills, or other materials are required to be weed-free. On-site sand, gravel, rock, or organic matter will be used when possible or weed-free materials from gravel pits and fill sources that have been surveyed and approved will be used.
2. The amount of ground and vegetation disturbance in construction areas will be minimized. Vegetation outside of the construction boundary, as well as other vegetation designated on the approved plans, is required to be protected with temporary fencing, pursuant to Subsections 33.6.9 and 33.6.10 of the TRPA Code. Vegetation will be re-established where feasible on disturbed bare ground at the end of Project implementation to minimize weed establishment and infestation, especially in staging areas.
3. Weed-free mulches and seed sources will be used. Topsoil will be salvaged from the Project Area for use in on-site revegetation, unless contaminated with noxious weeds. Activities that require seeding or plantings will use locally collected native seed sources when possible.

1.10.8 Cultural Resource Protection Measures

Although the Project Area has been subject to systematic surface archaeological investigations, it is possible that buried or concealed cultural resources could be present and detected during Project ground disturbance activities. Cultural resource protection measures will be incorporated into demolition and construction contract documentation. In accordance with the National Historic Preservation Act of 1966 (16 USC 470) and City General Plan Policies NCR 4.3 and 4.4, the following procedures will be implemented to ensure historic preservation. In the event previously unknown potential historical, architectural, archaeological, or cultural resources (hereinafter cultural resources) are discovered during Project construction, the following procedures will be initiated:

1. The Project Engineer will issue a “Stop Work Order” directing the City’s contractor to cease construction operations at the location of the potential cultural resources find.
2. The “Stop Work Order” will be effective in the area of and within a 50 foot radius of the potential discovery until a qualified archaeologist assesses the value of the potential cultural resources and makes recommendations to the State Office of Historic Preservation.
3. If the qualified archaeologist determines that the potential find qualifies for inclusion in the National Register of Historic Places and the California Register of Historic Resources, at the direction of the State Office of Historic Preservation, the Engineer will extend the duration of the “Stop Work Order” in writing, and the City’s contractor will suspend work at the location of the find. Resources that are considered significant will be avoided or subject to a data recovery program or other appropriate measures.

4. In the unlikely event that human remains are encountered, the City's contractor will suspend construction activities immediately and a qualified cultural resource specialist will be contacted to provide an initial evaluation of the remains. If the remains are found to be human or potentially human, the El Dorado County Sheriff/Coroner will be notified within 24 hours of the discovery to conduct proper evaluation and treatment of remains in accordance with Public Resources Code (PRC) Section 5097.98 and Section 7050.5 of California Health and Safety Code. The sheriff/coroner will evaluate the find to determine whether it is a crime scene or of Native American origin. If human remains are determined to be Native American in origin, the sheriff/coroner must contact the Native American Heritage Commission (NAHC). The NAHC will assign a Most Likely Descendent who, in collaboration with the Project proponent and landowner, will determine the ultimate treatment and disposition of the remains.

1.10.9 Noise Reduction Measures

To reduce construction related noise and vibration, the following measures will be implemented:

1. If there is a potential for activities that use impact equipment to occur within 200 feet of existing structures, measures will be designed and implemented to ensure that construction activities avoid or mitigate for vibrations above 0.02 inches/second (0.5 millimeters/second) at nearby structures (City 2011). The analysis will address the potential for adverse vibration levels based on the criteria contained in Table 4.6-12 of the General Plan Draft EIR.
2. Equipment will be adequately muffled and maintained.
3. Construction activities will be performed between 8:00 AM and 6:30 PM pursuant to TRPA Code Chapter 68, Noise Limitations.
4. No piece of equipment that generates maximum noise levels greater than 85 A-weighted decibel (dBA) measured at 50 feet, will be allowed on-site.
5. In inhabited areas, particularly residential, District's contractor's operations will be performed in a manner to minimize unnecessary noise.
6. In residential areas, special measures will be taken to suppress noise generated by repair and service activities during the night hours.
7. The more stringent of either California Occupational Safety and Health Administration limits or the limits established by local ordinance will be implemented.

1.10.10 Recreational Use Protection Measures

To avoid potential conflicts with pedestrians and bicyclists, the following measures will be implemented:

1. Public notices describing the nature and duration of construction will be posted at public access points to the Project Area.
2. Construction fencing will be placed around the construction and staging area perimeters to deter continued use of the pilot project bike paths leading into the construction area during construction. Following construction, the fencing will be removed to restore access to the areas.
3. The TCP will include actions for controlled passage of pedestrians and bicyclists through the linear Project Area during the construction period.

1.11 Required Permit Approvals

The City's retained design consultant will develop the appropriate permit application submittal packages that will be required for Project construction. The applications will combine the resource analysis that was conducted for the Project-level IS/MND/IEC with the design information developed for Project

construction (e.g., 60 percent and 90 percent design plan sets). The permits that are anticipated for the Project include:

- TRPA EIP Project Permit;
- TRPA Soils/Hydro Report and Findings;
- Lahontan Notice of Intent (NOI) for Coverage under the Tahoe General Construction Permit (Board Order No. R6T-2016-0010);
- SWPPP, as required by the Tahoe General Construction Permit.
- State Water Board Section 401 Water Quality Certification;
- US Army Corps of Engineers (USACE) Section 404 Authorization (Note that the forthcoming USACE Jurisdictional Wetland Determination/Delineation will inform the Project location and design and ultimately dictate whether authorization can be pursued under the authority of a Nationwide Permit or if a Letter of Permission granting Individual Permit authorization must be obtained); and
- Caltrans Encroachment Permit.

During the development of the 60 percent design plans, the City's design consultant will review the prior plan sets and coordinate with the appropriate agencies to obtain written documentation confirming the required permits and submittal timelines that will be necessary to meet the Project construction schedule. While the permits listed above are anticipated, USACE authorization may not be required, depending on existing conditions and the final Project location and design.

One of the first efforts associated with the Project will be the completion of the Preliminary Wetland Determination/Delineation and prompt submittal to USACE. A wetland delineation will be conducted within the Area of Potential Effects (APE) established for the Project Area. The field delineations for the identification of wetlands and other waters of the US within the Project Area will be conducted during a one-day site visit. Prior to the field survey, Cardno staff will review relevant topographical base maps and aerial imagery, soils maps, streamflow data, and vegetation community information, as appropriate. Field surveys will be conducted within the APE using the routine on-site method outlined in the 1987 Corps of Engineers Wetlands Delineation Manual (USACE Environmental Laboratory 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valley and Coast Region (Version 2.0) (USACE 2010) to identify potentially jurisdictional features. This method employs a three-parameter approach to delineating wetlands that examines hydrophytic vegetation, hydric soils, and wetland hydrology. For most circumstances, all three indicators must be present for the area to be a jurisdictional wetland. Hydrophytic vegetation will be determined according to the 2016 update of the National Wetland Plant List (Lichvar et al. 2016). The extent of other waters of the US will be delineated based on the ordinary high water mark, as defined by the Corps Regulatory Guidance Letter No. 05-05 Ordinary High Water Mark Identification and other relevant guidance documents.

Permit applications and the Project-level SWPPP will be prepared during the 90 percent design phase. Permit application submittal packages will include the Project's 90 percent design plan set. Agency requests and permit conditions will then be incorporated into the 100 percent design.

2.0 AESTHETICS (CEQA) AND SCENIC RESOURCES/COMMUNITY DESIGN & LIGHT AND GLARE (TRPA)

This section analyzes Project impacts on aesthetics, scenic resources, and light and glare during construction and operations. Potential impacts were evaluated based on information developed through site visits; review of existing published documents, including TRPA mapping of scenic travel route roadway unit ratings and bicycle trail viewshed protection area scenic quality ratings; and review of temporary and permanent Project design features.

Table 5 identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 5. Aesthetics, Scenic Resources/Community Design, and Light and Glare Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Have a substantial adverse effect on a scenic vista? (CEQA Ia)	☐	☐	☒	☐
Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? (CEQA Ib)	☐	☐	☒	☐
Substantially degrade the existing visual character or quality of the site and its surroundings? (CEQA Ic)	☐	☐	☒	☐
Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (CEQA Id)	☐	☐	☒	☐
Will the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist Item				
Include new or modified sources of exterior lighting? (TRPA 7a)	☒	☐	☐	☐
Create new illumination which is more substantial than other lighting, if any, within the surrounding area? (TRPA 7b)	☐	☐	☐	☒
Cause light from exterior sources to be cast off-site or onto public lands? (TRPA 7c)	☐	☐	☐	☒
Create new sources of glare through the siting of the improvements or through the use of reflective materials? (TRPA 7d)	☐	☐	☐	☒

Will the proposal:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Initial Environmental Checklist Item				
Be visible from any state or federal highway, Pioneer Trail, or Lake Tahoe? (TRPA 18a)	☒	☐	☐	☐
Be visible from any public recreation area or TRPA designated bicycle trail? (TRPA 18b)	☒	☐	☐	☐
Block or modify an existing view of Lake Tahoe or other scenic vista seen from a public road or other public area? (TRPA 18c)	☐	☐	☐	☒
Be inconsistent with the height and design standards required by the applicable ordinance or Community Plan? (TRPA 18d)	☐	☐	☐	☒
Be inconsistent with the TRPA Scenic Quality Improvement Program (SQIP) or Design Review Guidelines? (TRPA 18e)	☐	☐	☐	☒

2.1 CEQA Checklist Analysis

CEQA Ia. Would the Project have a substantial adverse effect on a scenic vista?

Standard of Significance. CEQA defines scenic vistas as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public as defined by local plans or policies (e.g., City General Plan or TRPA Scenic Guidelines). Creating visually dominant features that are out of scale with the surrounding landscape constitutes a significant impact to scenic vistas under CEQA (note: Project effects associated with TRPA scenic features are discussed below and not repeated here). Points of significance include: 1) creation of strong visual contrast; 2) reduction in scenic vista area viewed from foreground or middleground; and/or 3) non-compliance with scenic resource goals, policies or standards of federal, state of local agencies. CEQA relies on local policies to define scenic vistas.

Both the City's General Plan and the TRPA RPU describe Lake Tahoe and the forested Sierra Nevada Mountains as among the region's scenic resources. No scenic viewpoints have been formally designated at the Project site. There is only one designated scenic resource located within the Project Area. Scenic Resource #35.1 is a view of the natural landscape as seen from US 50 (City and TRPA 2015). The resource is in attainment but rated low because of the dominance of the surrounding built environment (City and TRPA 2015). Project impacts to this roadway unit would be associated with installation of underground storm drainage piping for conveyance of stormwater at the Third St/US 50 crossing and with providing pedestrian path connectivity and an open space corridor within a public parcel located between US 50 and Barton Avenue and adjacent to the Greenbelt area. In addition, there are two (2) non-designated scenic views from within the Project Area:

1. Views of the Sierra Nevada Mountains, which are generally located to the south and east; and
2. Distant open SEZ associated with the Upper Truckee River and Freel Peak in the background view.

The Project would not affect views of the mountains because improvements would be below or at-grade, constructed along existing roadways, and would comply with Citywide Design Standards. **Figure 8** below, from the TVAP IS/IEC (City and TRPA 2015), identifies Roadway Unit #35 for scenic quality improvement by the TRPA. While the 2011 *TRPA Threshold Evaluation Report* (TRPA 2012b: Chapter 8) identifies that Roadway Unit #35 is in non-attainment, recent development addressing stormwater runoff

and drainage with curb and gutters has improved the score for Roadway Unit #35 (City and TRPA 2015). As such, the improvements associated with the Project would similarly improve the scenic quality rating of the unit. Due to the Project's requirement to comply with the TVAP standards for site, building, landscaping, and development specifics that are intended to preserve the Lake Tahoe Basin's scenic resources and enhance the built environment, and compliance of any subsequent project within the TVAP area would be consistent with the scenic quality goals, the scenic quality of the area would continue. As there are no other impacts to scenic resources identified, impacts will be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

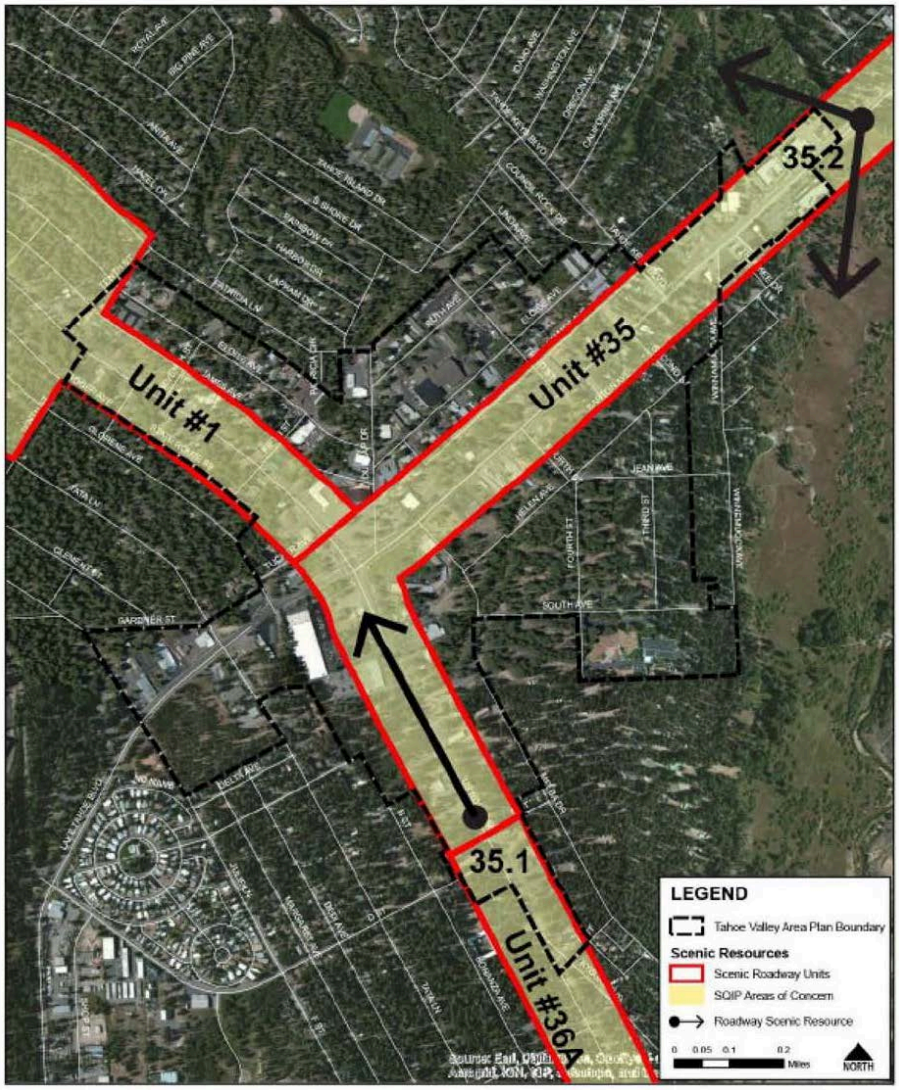

Figure 8 Scenic Roadway Unit #35.

CEQA Ib. Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Standard of Significance. The significance criteria outlined above for CEQA Ia also apply to CEQA Ib: CEQA defines a scenic vista as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public as defined by local plans or policies (e.g., City General Plan or TRPA Scenic Guidelines). Creating visually dominant features that are out of scale with the surrounding landscape constitutes a significant impact to scenic vistas under CEQA (note: Project effects associated with TRPA scenic features are discussed below and not repeated here). Points of significance include: 1) creation of strong visual contrast; 2) reduction in scenic vista area viewed from foreground or middleground; and/or 3) non-compliance with scenic resource goals, policies, or standards of federal, state, or local agencies. CEQA relies on local policies to define scenic vistas.

TRPA has designated major highways and roadways in the Lake Tahoe Basin as scenic roadway travel routes (scenic roadway units) (TRPA 2015a). US 50, which runs through the western portion of the Project Area, is designated as such. Although US 50 is designated as a State Scenic Highway from Placerville to the City of South Lake Tahoe limits, it is not designated as such within the City limits. State Route 89 (SR 89) is designated a state scenic highway from the Placer County line through El Dorado County and to the Alpine County line.

TRPA conducted a scenic study in 1982 that established threshold standards for the protection of scenic quality and developed a methodology for measuring change in scenic quality over time (TRPA 2016b). This methodology included numerical standards for roadway travel units consisting of a numeric composite score that represents the relative scenic quality throughout the entire travel unit. The following aspects were considered and rated according to their effect on scenic quality:

1. Human-made features along the roadway and shoreline
2. Physical distractions to driving along the roadway
3. Roadway characteristics
4. View of the lake from the roadway
5. General landscape views from the roadways and shoreline
6. Variety of scenery from the roadways and shoreline

Roadway ratings initially were developed in 1982 and reviewed in 2015 to determine whether changes occurred. Each travel unit must achieve a minimum composite score of 15.5 to be in attainment with the threshold standard, and must equal or exceed the rating originally assigned in 1982. Scenic quality should be restored in roadway units rated 15 or below.

Project construction would require the removal of approximately 630 trees during construction. The Project will implement TRPA standards for revegetation and tree removal (TRPA Code Sections 61.4-Revegetation and 61.1- Tree Removal). Revegetation of disturbed areas will be accomplished using an appropriate high-elevation native species mix. Areas specified for landscaping would comply with the TRPA Code Section 36.7, which requires landscaping consistent with the recommended native and adapted plant list. Given the Project's compliance with the TRPA Code standards for revegetation and landscaping, the level of impact from tree removal would be less than significant.

As discussed in CEQA Ia above, potential impacts to the US 50 corridor, a portion of which confluences with SR 89, for the purposes of stormwater quality and drainage improvements, pedestrian connectivity, and open space are beneficial and would help the City implement improvements that are consistent with the Scenic Quality Improvement Program (SQIP) recommendations from the TRPA. The SQIP-developed

recommendations that have been incorporated into Project design include new curb, gutter, connecting bike trail, pedestrian facilities, lighting, and landscaping to provide a natural edge along the roadway. Implementation of these features would help restore the scenic quality of US 50 roadway units within the Project Area. In addition, implementation of the Project would help the City meet General Plan scenic resource goal NCR-1 and implement applicable scenic resource policies (i.e., Policy NCR-1.2: Scenic Resource Design Policy, NCR-1.3: Class I Bike Trail Design Standards). Development within the TVAP area would be subject to the design standards that protect existing viewsheds (Policy NCR-3.3: Viewshed Protection), improve the existing built environment, improve visual quality of the scenic roadway corridors, avoid further degradation of the visual quality of the TVAP, and minimize impacts to existing views and identified scenic resources (TRPA 2015b). The Project would not damage scenic resources within a state scenic highway, but would instead improve visual quality of scenic roadway corridors. The resulting level of impact would be considered less than significant and beneficial.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA Ic. Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?

Standard of Significance. Degradation in visual quality or elimination of a specific scenic resource results in a significant impact to scenic resources.

The Project would result in temporary degradation of the visual character and quality of the Project site during construction. Construction would last for a total of 12 months (over two 6-month construction seasons), however, and impacts from typical construction activities would not be considered substantial. Construction would require the removal of trees as presented in **Table 2**, but as discussed under CEQA Ib, the Project Area would be landscaped/revegetated in accordance with the TRPA provisions for revegetation, as set forth in Code Section 61.4.

Through the Project's compliance with the TVAP standards for site, building, landscaping, and development specifics that are intended to preserve the Lake Tahoe Basin's scenic resources and enhance the built environment and compliance of subsequent projects within the TVAP area with the scenic quality goals, improvements to the scenic quality of the area would continue (TRPA 2015b). The resulting impact of the Project would be a beneficial improvement to scenic quality and the level of potential impact would be considered less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA Id. Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Standard of Significance. An increase in night lighting or glare sufficient to enter adjacent residences constitutes a significant impact to day or nighttime views in the Project Area.

New pedestrian-oriented trail-specific lighting would be installed along the Greenbelt multi-use trail system, for the safety of cyclists and pedestrians. Pedestrian lighting sources within recreational trail systems are known to discourage loitering and associated nuisances and public safety concerns.

This development would be subject to the City's exterior lighting standards in City Code Section 6.10.160, Exterior Lighting, and TRPA Code Section 36.8, Exterior Lighting General Standards. These standards

include (but are not limited to) the following provisions that would ensure that subsequent development does not result in significant adverse lighting impacts:

1. Outdoor lights will not blink, flash, or change intensity or give the illusion of movement.
2. Illumination utilizing exterior light fixtures is permitted, provided the following criteria are met:
    a. Lighting will only be directed downward (not above the horizontal plane) to avoid sky-lighting. Up-lighting for any purpose including the lighting of architecture or landscape architecture is not permitted except with overhead shields to prevent nighttime sky-lighting.
    b. The light source (bulbs), within a fixture as seen in elevation, will not be visible, including the cobra head fixture style.
    c. No light (freestanding or building mounted) will spray off-site. The use of cutoff shields or other devices as approved by staff will be required, including parking garages. (Note: parking garages will not have fluorescent lighting.)
    d. The maximum height of exterior architectural building lighting and landscape lighting will be 26 feet and the light source is shielded from view

Additionally, the TVAP design standards require the use of natural, appealing materials and colors that blend in with natural surroundings, and prohibit use of flood-lighting, reflective materials, or lighting strips, including florescent tubing, to minimize reflectivity and glare (City and TRPA 2015). The Project proposes no new sources of substantial light or glare that would adversely affect day or nighttime views in the area. The level of impact to day or nighttime views would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

2.2 TRPA Checklist Analysis – Light and Glare

TRPA 7a. Will the proposal include new or modified sources of exterior lighting?

☒ Yes ☐ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. An increase in night lighting or glare sufficient to enter adjacent residences constitutes a significant impact to day or nighttime views in the Project Area.

Refer to the analysis for CEQA Id, which concludes that the level of potential impact related to new or modified sources of lighting would be less than significant. Lighting would comply with applicable City and TRPA requirements for new exterior light sources, which would avoid adverse effects on nighttime views. The level of impact would be less than significant.

Environmental Analysis: **Yes; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 7b. Will the proposal create new illumination which is more substantial than other lighting, if any, within the surrounding area?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. An increase in night lighting or glare sufficient to enter adjacent residences constitutes a significant impact to day or nighttime views in the Project Area.

Refer to the analysis for CEQA Id, which concludes that the level of potential impact related to new sources of light or glare would be less than significant. Within the Project Area, existing pedestrian-level lighting along sidewalks and typical overhead roadway intersection lighting are present along the US 50 corridor. Additional overhead parking lot lighting and typical exterior light sources are present throughout private commercial properties within the Project Area.

The new pathway lighting to be installed would be consistent with the City Code Section 6.10.160, Exterior Lighting, and TRPA Code Section 36.8, Exterior Lighting Standards, and would provide the minimum lighting necessary to meet performance standards and prevent light spilling on to neighboring properties or night sky impacts. Given compliance with these code provisions, new Project lighting would not be more substantial than the existing lighting in the area.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 7c. Will the proposal cause light from exterior sources to be cast off-site or onto public lands?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. An increase in night lighting or glare sufficient to enter adjacent residences constitutes a significant impact to day or nighttime views in the Project Area.

Refer to the analysis for CEQA Id, which concludes that the level of potential impact related to new sources of light or glare would be less than significant.

As required by TRPA Code Section 36.8, Exterior Lighting Standards, exterior light fixtures would be equipped with full cutoff fixtures and would not adversely affect day or nighttime views in the area or allow light spilling beyond Project Area boundaries.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 7d. Will the proposal create new sources of glare through the siting of the improvements or through the use of reflective materials?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. An increase in night lighting or glare sufficient to enter adjacent residences constitutes a significant impact to day or nighttime views in the Project Area.

Refer to the analysis for CEQA Id, which concludes that the level of potential impact related to new sources of light or glare would be less than significant. No new sources of glare would result from the Project. The Project would conform to TRPA Code Section 36.8, Exterior Lighting Standards and Chapter 38, Signs, which prohibits reflective materials.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

2.3 TRPA Checklist Analysis – Scenic Resources/Community Design

TRPA 18a. Will the proposal be visible from any state or federal highway, Pioneer Trail, or Lake Tahoe?

☒ Yes ☐ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A degradation of adopted TRPA scenic thresholds including scenic travel route or scenic quality ratings constitutes a significant impact on scenic resources.

Refer to the analysis for CEQA Ib, which concludes that the level of potential impact related to new sources of light or glare would be less than significant. The Project would be visible from US 50/SR89 because the Project boundary encompasses and proposes improvements to US 50/SR 89. This section of US 50 is in "non-attainment" for TRPA scenic quality thresholds. The scenic quality of this area would be temporarily degraded during construction; however, the completed Project would have a long-term benefit to the aesthetics of the area and would improve scenic quality due to the varied improvements that would be implemented, consistent with the TRPA SQIP for roadway units not in attainment. SQIP recommendations that are part of the Project include stormwater quality and drainage improvements, pedestrian connectivity, and open space. Implementation of these features would help restore the scenic quality of the US 50/SR 89 roadway unit within the Project Area and the level of impact would be less than significant.

Environmental Analysis: **Yes; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 18b. Will the proposal be visible from any public recreation area or TRPA designated bicycle trail?

☒ Yes ☐ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A reduction in scenic vista area viewed from foreground or middleground from a public recreation area or degradation in visual quality or elimination of a TRPA designated scenic resource constitutes a significant impact to scenic resources.

The Project would be visible from the Tahoe Valley bike route. The route, which includes both Class I and Class II sections, runs along Helen Avenue from Winnemucca Avenue toward the "Y" intersection. The route runs primarily through residential neighborhoods and connects users to the "Y" commercial area. This segment of bike route is not of high scenic value, with both views rated as "fair." The primary purpose of this bike route is to provide alternative transportation for visitors and residents.

In compliance with TVAP Policy REC-1.4 (Access), improvements associated with the Project would realign the trail system to accommodate Greenbelt expansion and additional trail area. The improvements would provide additional connectivity from the existing Class I segment to the Greenbelt corridor and the commercial area at the "Y" intersection, and connectivity to US 50 near Barton Avenue, north of the Greenbelt. The resulting impact to this bike trail is anticipated to be a benefit to the trail system for both recreation and alternative transportation purposes.

Environmental Analysis: **Yes; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 18c. Will the proposal block or modify an existing view of Lake Tahoe or other scenic vista seen from a public road or other public area?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Creating visually dominant features that are out of scale with the surrounding landscape constituents a significant impact to Lake Tahoe or other scenic vistas. Significant impacts include: 1) creation of strong visual contrast; 2) reduction in scenic vista area viewed from foreground or middleground; and/or 3) non-compliance with scenic resource goals, policies or standards of federal, state of local agencies.

Refer to the analysis for CEQA Ia, which concludes that the level of potential impact related to scenic vistas would be less than significant. The Project would not block or modify existing views of Lake Tahoe or other scenic vistas. The Project Area contains no views of Lake Tahoe. As discussed above for CEQA Ia, the Project Area also contains no scenic vistas visible from public roadways or recreational areas. As documented in the analysis for CEQA Ia above, the Project does not create a new visibly dominant man-made feature that is out of scale with the surrounding landscape.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 18d. Will the proposal be inconsistent with the height and design standards required by the applicable ordinance or Community Plan?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The TRPA RPU and Code provide standards that are applicable to the Project. TRPA Code Chapter 37 sets forth standards for building height and are not applicable to the Project. TRPA Code Chapters 36 (Design Standards) and 66 (Scenic Quality) set forth standards to ensure projects are designed and constructed consistent with Community Design Subelement of the RPU Land Use Element. An inconsistency with these standards would result in a significant impact.

Appendix C, Development and Design Standards, of the TVAP, specifies the TRPA Code standards that were adopted by TRPA and the City for the Tahoe Valley area. The Project design incorporates these design and scenic quality standards.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 18e. Will the proposal be inconsistent with the TRPA Scenic Quality Improvement Program (SQIP) or Design Review Guidelines?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The SQIP requires that scenic roadway unit ratings be maintained or improved. A reduction in the rating of a scenic roadway unit constitutes a significant impact. Six criteria define the ratings: 1) manmade features, 2) roadway physical distractions; 3) road structure; 4) views of Lake Tahoe; 5) landscape views and 6) variety. Impacts to these criteria may decrease scenic quality ratings. The TRPA SQIP presents the prescriptions for scenic restoration required to attain and maintain the scenic quality thresholds. The program includes design review guidelines and development standards for different visual environments, assigns implementation responsibilities, and identifies potential funding sources.

Refer to the analyses for CEQA Ib, CEQA Ic and TRPA 18a, which conclude that the level of potential impact related to scenic resources and aesthetics would be less than significant. The Project improvements at crossings of US 50 implement the recommendations of the TRPA SQIP for this non-attainment area of US 50, including stormwater quality and drainage improvements, pedestrian connectivity, and open space. Implementation of these features would improve the scenic quality of US 50 roadway unit within the TVAP area. The Project would result in improvements consistent with TRPA SQIP and Design Review Guidelines.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

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3.0 AGRICULTURE & FOREST RESOURCES

This section evaluates the Project's agriculture and forest resource impacts during construction and operations. **Table 6** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant. The TRPA IEC does not directly address agricultural resources and farmland, but does address potential effects to wildlife habitat, trees, and vegetation, which are addressed in Section 5.0, Biological Resources.

Table 6. Agriculture and Forest Resources Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? (CEQA IIa)	☐	☐	☐	☒
Conflict with existing zoning for agricultural use, or a Williamson Act contract? (CEQA IIb)	☐	☐	☐	☒
Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? (CEQA IIc)	☐	☐	☐	☒
Result in the loss of forest land or conversion of forest land to non-forest use? (CEQA IId)	☐	☒	☐	☐
Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? (CEQA IIe)	☐	☐	☐	☒

3.1 CEQA Checklist Analysis

CEQA IIa. Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Standard of Significance. A significant impact on agricultural resources may result from a project that involves the conversion of Prime Farmland, Unique Farmland or Farmland of Statewide importance, as defined by the State of California on the Important Farmlands Map, to a non-agricultural use.

The Project lies within the City and there is no agricultural activity or use within the Project Area or in the vicinity of the Project Area. The Project Area does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Because no lands designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance exist within the Project Area, the Project would result in no impact to these resources.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA IIb. Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Standard of Significance. A conflict with areas zoned for agricultural use under a Williamson Act contract constitutes a significant impact.

The TVAP designates the Project Area as Town Center Core, Town Center Gateway, Commercial Mixed-Use, and Open Space. The Project Area is not zoned for agricultural use, and does not contain Williamson Act contracts. Because no such zoning exists within the Project Area, the Project would result in no impact to these resources.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA IIc. Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

Standard of Significance. A conflict with existing zoning for forest land or timberland creates a significant impact. PRC Section 12220, Article 3 (g) defines "Forest land" as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. PRC Section 4526 defines "Timberland" as land, other than land owned by the federal government and land designated by the board as experimental forestland, which is available for, and capable of, growing a crop of tree of any commercial species used to produce lumber and other forest products, including Christmas trees.

Refer to the analysis for CEQA IIb. The Project Area is zoned Town Center Core, Town Center Gateway, Commercial Mixed-Use, and Open Space and, therefore, would not conflict with or cause rezoning of forest land, timberland, or land zoned as Timberland Production Zone (TPZ). The Project Area does not meet the zoning designations of forest land (as defined by PRC Section 4526) or timberland zoned TPZ (as defined by Government Code Section 51104(g)). The Project conflicts with no zoning of and causes no rezoning of forest land, timberland, or timberland zoned TPZ because the portion of the Project requiring tree removal is a small subset of the total Project Area and tree removal is not concentrated, but instead spread out along the Project Area and trail corridor.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA IId. Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

Standard of Significance. The loss of substantial forest land, defined above for CEQA IIc, or conversion of forest land to non-forest use creates a significant impact if appropriate permits, ensuring minimal impact to the overall forest resource, are not obtained.

The Project would not result in loss of forest land. The Project Area does not contain land designated as forest land or Timberland Production Zone (TPZ).

The Project transects forested lands and provides access, but results in no loss of areas designated as forest land or conversion of forest land to non-forest use by nature of passing through such areas. The analysis for CEQA IVa (Biological resources) provides the analysis of tree removal from areas zoned Mixed Use, Town Center, and TVAP Open Space within the Project Area. The Project would require the timber operations for the removal of trees across than three (3) acres and changing three acres or more of non-TPZ timberland to a nontimber growing use when timber operations are involved would require the City to apply for a Timberland Conversion Permit form RM-56 from the Director of the California Department of Forestry and Fire Protection (CalFire).

Issuance of a Timberland Conversion Permit exempts the owner from forest practice cutting and stocking requirements in order to allow a nontimber growing land use. Constructive noticing includes clear statements of the landowner or other parties involved, documents filed with local and other government agencies, and other means that show the landowner's clear intent to use the land for a nontimber growing use following completion of timber operations (see Sections 5471 and 5471.5). As described below in mitigation measure AGR-1, compliance with CalFire exemption requirements will be necessary to ensure minimal impact to overall forest resources, reducing potential impacts to a level of less than significant.

Environmental Analysis: **Less than Significant Impact with Mitigation Incorporated**.

Required Mitigation:

AGR-1. Public Agency Right-of-Way Exemption with CalFire. A Timberland Conversion Permit shall not be required for noncommercial removal of solid wood products from non-TPZ land and a waiver shall be applied for prior to construction. The Project Applicant shall file for a Public Agency Right-of-Way exemption with CalFire to comply with requirements for conversion of Timberland for installation of public service projects. Tree removal shall occur along the Greenbelt corridor and in association with expansion of existing and construction of new trail and stormwater infrastructure improvements. Tree removal operations shall be completed within one year of filing by a Licensed Timber Operator. The Project shall implement noncommercial removal, which means that the products are neither sold nor exchanged for other goods or services. Noncommercial disposal includes the owner's personal use of the products, disposal by piling and burning, and hauling away and dumping without processing. These operations are not timber operations under the Forest Practice Act definition.

Timing/Implementation: Prior to Construction

Enforcement/Monitoring: City of South Lake Tahoe

CEQA IIe. Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Standard of Significance. Refer to the analyses for CEQA IIa and CEQA IIb, which conclude no impacts would result to farmland, and the analysis for CEQA IIc, which concludes no impact to forest land or timberland would result.

Environmental Analysis: **No Impact**.

Required Mitigation: **None.**

4.0 AIR QUALITY

This section evaluates the Project's air quality impacts during construction and operations. **Table 7** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 7. Air Quality Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist				
Conflict with or obstruct implementation of the applicable air quality plan? (CEQA IIIa)	☐	☐	☒	☐
Violate any air quality standard or contribute substantially to an existing or projected air quality violation? (CEQA IIIb)	☐	☐	☒	☐
Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? (CEQA IIIc)	☐	☐	☒	☐
Expose sensitive receptors to substantial pollutant concentrations? (CEQA IIId)	☐	☐	☒	☐
Create objectionable odors affecting a substantial number of people? (CEQA IIIe)	☐	☐	☒	☐
Will the Proposal result in:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist				
Substantial air pollutant emissions? (TRPA2a)	☐	☐	☐	☒
Deterioration of ambient (existing) air quality? (TRPA 2b)	☐	☐	☐	☒
The creation of objectionable odors? (TRPA 2c)	☐	☐	☐	☒
Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally? (TRPA 2d)	☐	☐	☐	☒
Increased use of diesel fuel? (TRPA 2e)	☒	☐	☐	☐

4.1 CEQA Checklist Analysis

CEQA IIIa. Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Standard of Significance. The federal Clean Air Act (CAA) was passed by Congress in 1970 and last amended in 1990. The CAA gives the federal government (the EPA) authority to establish air quality standards, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants. States with areas that exceed the NAAQS must prepare a State Implementation Plan (SIP) that demonstrates how those areas will attain the standards within mandated time frames. In California, the EPA has delegated the authority to prepare SIPs to the California Air Resources Board (CARB), which, in turn, has delegated that authority to individual air districts. The Project Area is under the jurisdiction of the El Dorado AQMD and lies within the boundaries of the Lake Tahoe Air Basin, which is in attainment with federal air quality standards. As such, the AQMD is not required to prepare a SIP. **Table 8** below is a summary of the ambient air quality standards for local, state, and federal standards.

Table 8. Summary of Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	TRPA	National Standards	
				Primary(1)	Secondary (2)
Ozone (O_3)	1 Hour	0.09 ppm	0.08 ppm	--	Same as Primary
	8 Hour	0.070 ppm	--	0.070 ppm	
Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	Shall not exceed CAAQS/NAAQS	150 µg/m^3	
	AAM	20 µg/m^3		--	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	--	--	35 µg/m^3	
	AAM	12 µg/m^3		12.0 µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	1 Hour	20 ppm	--	35 ppm	--
	8 Hour	9.0 ppm	6.0 ppm	9 ppm	
	8 Hour (Lake Tahoe)(3)	6 ppm	--	--	
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm	--	100 ppb	--
	AAM	0.030 ppm		0.053 ppm	Same as Primary
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	--	75 ppb	--
	3 Hour	--		--	0.5 ppm
	24 Hour	0.04 ppm		0.14 ppm	--
	AAM	--		0.030 ppm	--
Lead	30 Day Average	1.5 µg/m^3	--	--	--
	Calendar Quarter	--		1.5 µg/m^3 (For Certain Areas)	Same as Primary
	Rolling 3-Month Average	--		0.15 µg/m^3	

Pollutant	Averaging Time	California Standards	TRPA	National Standards	
				Primary[1]	Secondary [2]
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer	[4]	No National Standards	No National Standards
	8 Hour (Lake Tahoe)	Extinction coefficient of 0.07 per kilometer			
Sulfates	24 Hour	25 µg/m^3	--		
Hydrogen Sulfide	1 Hour	0.3 ppm	--		
Vinyl Chloride	24 Hour	pm	--		

[1] Levels necessary to protect the public health.

[2] Levels necessary to protect the public welfare from known or anticipated adverse effects.

[3] State 8-hour CO standard of 6 ppm is specific to the Lake Tahoe Air Basin

[4] Regional Visibility - Achieve an extinction coefficient of 25 Mm^{-1} at least 50 percent of the time as calculated from aerosol species concentrations measured at the Bliss State Park monitoring site (visual range of 156 km, 97 miles). Achieve an extinction coefficient of 34 Mm-1 at least 90 percent of time as calculated from aerosol species concentrations measured at the Bliss State Park monitoring site (visual range of 115 km, 71 miles). Calculations will be made on three year running periods using the existing 1991-1993 monitoring data as the performance standards to be met or exceeded.

Sub-Regional Visibility - Achieve an extinction coefficient of 50 Mm^{-1} at least 50 percent of the time as calculated from aerosol species concentrations measured at the South Lake Tahoe monitoring site (visual range of 78 km, 97 miles). Achieve an extinction coefficient of 125 Mm-1 at least 90 percent of time as calculated from aerosol species concentrations measured at the Bliss State Park monitoring site (visual range of 31 km, 19 miles). Calculations will be made on three year running periods using the existing 1991-1993 monitoring data as the performance standards to be met or exceeded

AAM: Annual Arithmetic Mean

µg/m^3: Micrograms per cubic meter

CAAQS: California Ambient Air Quality Standards

ppm: Parts Per Million

ppb: Parts Per Billion

Sources: CARB May 4, 2016; TRPA 2004

Because TRPA's authority is granted directly from Congress, TRPA has the authority to adopt air quality and other environmental quality thresholds, and to enforce ordinances designed to achieve the thresholds. TRPA takes air quality into consideration in its planning and permitting activities to ensure compliance with State and AQMD air quality standards for projects in the Lake Tahoe Air Basin. TRPA has established a number of thresholds and policies regarding local air quality through its RPU (TRPA 2012a), 2015 Thresholds Evaluation (TRPA 2016), and 2017 RTP (TRPA 2017). The RPU's goals and policies are designed to achieve and maintain adopted environmental threshold standards and are implemented through the TRPA Code. The RPU includes Policy AQ-1.7, "Promote the reduction of air quality impacts from construction and property maintenance activities in the region," but the TRPA's regulations and thresholds are oriented more toward long-term development rather than short-term construction activities.

The Project would comply with the applicable AQMD and TRPA rules and regulations during construction to result in less than significant impacts to air quality. The Project would be consistent with the RPU because it does not require a change in the existing land use designation (e.g., a general plan amendment or rezone), nor would it result in emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_x) from the operations and maintenance of the improvements. The Project would be consistent with the RTP because the plan's goals and policies encourage walking and cycling as modes of transportation within the Lake Tahoe Air Basin.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IIIb. Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Standard of Significance. A significant long-term (e.g., operational) impact results if the Project causes violations of air quality standards listed in **Table 8** or contributes substantially to an existing or projected air quality violation. As identified by CARB, AQMD, and TRPA, a significant short-term (e.g., construction related) air quality impact results if construction-generated emissions of ROG, NO_X, particulate matter less than 10 microns in size (PM_{10}), or sulfur dioxide (SO_2) exceed mass emissions of 82 lb/day, or construction-generated emissions of carbon monoxide (CO) exceed mass emissions of 550 lb/day.

The Lake Tahoe Air Basin is in attainment or unclassified for NAAQS, although it is designated a non-attainment area for PM_{10} under the California Ambient Air Quality Standards and non-attainment-transitional for ozone. Construction activities would generate combustive emissions and fugitive dust. Pollutants such as ROG, NO_x, CO, SO_2, and PM_{10} would be emitted from the use of diesel and gasoline-powered equipment and vehicles during activities such as vegetation removal, excavation and grading, material hauling, and site restoration and from worker vehicles. Fugitive dust (PM_{10}) would result from soil disturbance and demolition.

The AQMD, which is the primary agency with air quality management authority over the Project, has produced a *Guide to Air Quality Assessment* (El Dorado County Air Pollution Control District [APCD] 2002) to be used in assessing air quality impacts for projects that are subject to CEQA. The guide identifies two alternative methods for determining the significance of combustive emissions: the first involves quantifying fuel use and comparing it to an AQMD threshold, and the second is based on the incorporation of mitigation measures into project design. This IS uses the first method. If exhaust emissions are determined to be less than significant under either approach, then further calculations to determine construction equipment exhaust emissions is not required. For fugitive dust (PM_{10}) emissions, the screening approach is based on use of specific dust suppression measures that the AQMD has determined would prevent visible emissions beyond the boundaries of a project. If those measures are incorporated into the project design, then further calculations to determine PM_{10} emissions are not required.

The AQMD has established a significance threshold of 82 pounds per day (lbs/day) for ROG and NO_x on a quarterly basis (total ROG plus NO_x emissions are to remain below 164 lbs/day). Diesel-powered equipment used during construction would include an excavator, loader, water trucks and pumps, haul trucks, backhoes, and dump trucks. Daily construction emissions for these and other pollutants were calculated using the Road Construction Emissions Model (RCEM), Version (8.1.0) (Sacramento Metropolitan AQMD [SMAQMD] 2016) based on 12 months of construction (over two construction seasons). The spreadsheet model (contained in **Appendix B**, Emissions Model Spreadsheet) uses CARB and EPA fugitive dust algorithms.

As shown in **Table 9**, Project construction would result in maximum daily emissions of approximately 4.16 lbs/day of ROG, 16.85 lbs/day of NO_X, 94.37 lbs/day of CO, 30.84 lbs/day of total (dust and emission) PM_{10}, and 6.82 lbs/day of total (dust and emission) particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Thus, estimated emissions of ROG and NO_X are less than the AQMD construction significance thresholds. The AQMD has determined that if ROG and NO_x emissions are not deemed significant, then exhaust emissions of CO and PM_{10} from construction equipment and exhaust emissions from worker commute vehicles also would not be significant.

Table 9. Estimated Daily Construction Emissions for the Project (lbs/day)

	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Project	4.16	16.85	94.37	30.84	6.82
AQMD Threshold	82	82	None	None	None
Significant?	No	No	No	No	No

Source: Cardno modeling using Road Construction Emissions Model, Version 8.1.0 (SMQAMD 2016); El Dorado County APCD 2002

As discussed in Section 1.10.2, the Project will incorporate the applicable fugitive dust control measures. A Fugitive Dust Control Plan will be prepared that will incorporate the relevant BMPs established in AQMD Rules 223 and 223-1, including the measures shown in Appendix C-1 of the AQMD's Tables 1-3 of Rule 223-1, as appropriate. Potential impacts from fugitive dust would be reduced to a level of less than significant.

As detailed above, the Project would not violate the construction-generated emissions standards for ROG, NO_X, PM_{10}, or SO_2, or CO. The Project would not generate new vehicle trips and therefore would not result in increased air emissions during operations. Through implementation of new bicycle trail and pedestrian pathways and improved connectivity, bike and pedestrian transportation are expected to increase, which would benefit overall air quality in the region. In summary, Project long-term impacts may result in a reduction of vehicle emissions by enhancing opportunities for bicycling and walking.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IIIc. Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Standard of Significance. The AQMD has established methods for determining the significance of cumulative impacts (El Dorado County APCD 2002). A primary criterion for determining if a project has significant cumulative impacts is whether the project is consistent with an approved plan or mitigation program of district-wide or regional application in place for the pollutants emitted by the project. This criterion is applicable to both the construction and operation phases of a project.

ROG and NO_x. For projects in the Lake Tahoe Air Basin to be determined as not having a significant cumulative air quality impact, consistency with the applicable TRPA air quality plans and mitigation requirements must be shown, as set forth in the RPU for the Lake Tahoe Basin, the RTP, and TRPA Code s relating to air quality. As discussed under CEQA IIIa, the Project would be consistent with applicable regional and local plans. Thus, impacts from ROG and NO_x would not be cumulatively considerable and would be less than significant.

Other Pollutants. For other pollutants such as CO, PM_{10}, SO_2, nitrogen dioxide (NO_2), and toxic air contaminants (TACs), there is no applicable air quality plan. Accordingly, the AQMD applies the following pollutant-specific criteria for determining the significance of cumulative impacts:

1. **CO**: The Lake Tahoe Air Basin is in attainment for CO, and local CO concentrations are expected to decline even further in the future as more stringent CO standards for motor vehicles take effect. The

AQMD does not consider CO to be an area-wide or regional pollutant that is likely to have cumulative effects. Accordingly, CO emissions for a project will ordinarily be considered not cumulatively significant as long as "project alone" emissions are not significant, and they are not.

2. **PM_{10}, SO_2, and NO_2**: The Lake Tahoe Air Basin is in non-attainment for the state 24-hour PM_{10} standard, which dictates the use of a relatively sensitive criterion for identifying cumulative effects on PM_{10} ambient concentrations. PM_{10} directly emitted from a project can have area-wide impacts and can be cumulatively significant even if not significant on a project-alone basis. The County is in attainment for the SO_2 and NO_2 ambient air quality standards, but SO_2 and NO_2 can also contribute to area-wide PM_{10} impacts through their transformation into sulfate and nitrate particulate aerosols. There is no approved regional plan for attainment of the PM_{10} standard, and there is no readily available model for predicting the combined ambient effects of directly emitted PM_{10}, SO_2, or NO_2 from individual projects. Accordingly, the AQMD applies alternative "de minimis" criteria, but these are relevant only to projects that are principally industrial or where most emissions are from stationary sources or that are principally development projects, or where the majority of the emissions of these pollutants is attributable to motor vehicle sources. Thus, these criteria are not applicable to the Project, which would only generate short-term construction emissions of PM_{10}, SO_2, and NO_2. With implementation of air quality emissions measures outlined in Section 1.10.2, short-term impacts on emissions would be minimized during construction and would not have a cumulatively considerable impact.

TACs: Emissions of TACs are typically localized and not region-wide. Except in cases where there is information indicating the possible commingling of toxic pollutants from projects that are contiguous or nearby, the AQMD considers implementation of the "project alone" mitigation requirements and compliance with the applicable emission limits and mitigation measures required by EPA, CARB, district rules and regulations, and local ordinances sufficient for a finding of not significant for cumulative impacts of TACs. The Project would comply with the applicable requirements, and the emission of TACs from this short-term construction Project would be less than significant. Project operations would not generate new vehicle trips or create new sources of long term emissions.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IIId. Would the Project expose sensitive receptors to substantial pollutant concentrations?

Standard of Significance. A sensitive receptor defines a location where human populations, especially children, seniors, and sick persons are found with a reasonable expectation of continuous human exposure according to the averaging period for ambient air quality standards. A significant impact results from increases in CO that cause exceedance of NAAQS and California Ambient Air Quality Standards and diesel particulate matter (DPM) (note that there is no quantitative threshold for DPM).

Sensitive receptors are facilities including schools, parks, playgrounds, nursing homes, hospitals, and residential dwellings where the public could be adversely affected by continued exposure to air emissions. The Project Area contains a number of sensitive receptors, including residential neighborhoods, open space (Greenbelt area), and multi-use paths. There are no schools within the Project Area; however, four schools are located within a mile of the TVAP area, and one hospital located within a quarter-mile of the Project boundary.

The AQMD has determined that keeping total construction-phase fuel use under the limits shown in **Table 9** would result in no health risk from DPM (El Dorado County APCD 2002). Additionally, as discussed in Section 1.10.2, the required site-specific BMPs would be implemented to limit fugitive dust emissions, including TVAP Policy NCR-8.1 (City and TRPA 2015:71), which addresses short-term construction

emissions, including measures to reduce construction-generated emissions to the extent feasible on a project-specific basis. Such measures include, but are not limited to, the following:

1. Implement measures recommended by the El Dorado County AQMD;
2. Prohibit open burning of debris from site clearing unless involved with fuels reduction project;
3. Restriction of idling of construction equipment and vehicles;
4. Apply water to control dust as needed to prevent dust impacts off-site; and
5. Utilize low emission construction equipment and/or fuels and use existing power sources (e.g., power poles), wherever feasible.

Thus, sensitive receptors would not be exposed to substantial pollutant concentrations. Once operational, the Project would not result in increased emissions and could result in reduced emissions by providing increased opportunities for walking and bicycling.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IIIe. Would the Project create objectionable odors affecting a substantial number of people?

Standard of Significance. A significant impact results if Project construction or operation creates objectionable odors affecting a substantial number of people.

Nuisance odors resulting from the following Project construction sources may be noticeable to some individuals for short periods of time: (1) combustive emissions from the use of diesel fuel in construction equipment and (2) hydrocarbon emissions from the use of asphalt during paving activities. Individuals most susceptible to Project odor emissions would include nearby residents and public passing through the Project Area near US 50. However, the transitory nature of these emissions would not produce substantial odor impacts on the public. Therefore, emissions from Project construction would not create objectionable odors that would affect a substantial number of people and would produce less-than-significant air quality impacts. The Project, once complete, would not create objectionable odors.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

4.2 TRPA Checklist Analysis

TRPA 2a. Will the proposal result in substantial air pollutant emissions?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA IIIb, which concludes that the potential for the Project to violate any air quality standard or contribute substantially to an existing or projected air quality violation would be less than significant.

The Project would only generate air pollutant emissions during the two phases of construction (12 months total) and these emissions would be well under the established AQMD thresholds. Thus, it would not generate substantial air pollutant emissions.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 2b. Will the proposal result in deterioration of ambient air quality?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA IIIb, which concludes that the level of potential impact to air quality would be less than significant.

As discussed in the analysis for CEQA IIIb, the Project would only generate air pollutant emissions during 12 months of construction, and these emissions would be well under the established AQMD thresholds. Thus, it would not lead to a deterioration of ambient air quality. Once operational, the Project would not result in increased emissions and could result in reduced emissions by providing increased opportunities for walking and bicycling.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 2c. Will the proposal result in the creation of objectionable odors?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA IIIe, which concludes that the level of potential impact from nuisance odors would be less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 2d. Will the proposal result in alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact occurs if the Project CO_2 or methane emissions, the current primary indicators of climate change for California, exceed 500 tons/year and/or the concentration of resultant tree removal changes habitat categorization.

GHG emissions associated with Project construction and operations were modeled with CalEEMod, as detailed in **Appendix B**. Construction equipment, haul trucks, and worker vehicles generate GHGs. Model results estimate a maximum annual GHGs of approximately 475 metric tons of CO_2e emitted during the 12 total months of construction.

As recommended by the El Dorado County AQMD for long-term operations, the threshold of 1,100 metric tons per year CO_2e from sources other than permitted stationary sources (SMAQMD 2016) was applied to this Project. As shown in **Appendix B**, GHG emissions generated by on-road mobile sources associated with worker vehicle trips, construction equipment trips, and water truck vehicle trips equate to approximately 519 metric tons of CO_2 total over the 12 months of construction. Project operations would not exceed the applied GHG threshold and would be less than significant.

The Project includes no activities or facilities that generate heat or moisture.

Refer to the analysis for CEQA IVa, which addresses tree removal as an effect to habitat alterations and concludes that tree removal within the Project Area creates no impact to habitat categorization. The removal

of select trees along the Greenbelt area and trails do not create reductions in forest canopy sufficient to increase local solar gain, raise temperatures or create microclimate changes.

The Project features (multi-use path and stormwater improvements) would not alter air movement, moisture, or temperature, or cause any change in climate (also refer to Section 8.0, Greenhouse Gas Emissions).

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 2e. Will the proposal result in increased use of diesel fuel?

☒ Yes ☐ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The increased use of diesel fuel that results in objectionable odors results in a significant impact to sensitive receptors within and downwind of the Project Area. Refer to the analysis for CEQA IIIe, which concludes that the level of potential impact would be less than significant.

The Project would not result in a permanent increased use of diesel fuel. Temporary use of diesel would be required during construction for equipment and vehicle fuel use, but the use would be minimal, lasting only over two 6-month periods of construction. The increased use of diesel fuel would be intermittent and short term during Project construction, and the level of impact would therefore be less than significant.

Environmental Analysis: **Yes; Less than Significant Impact**.

Required Mitigation: **None.**

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5.0 BIOLOGICAL RESOURCES (SEZs, WETLANDS, WILDLIFE & VEGETATION)

This section evaluates the Project's potential impacts on biological resources during construction and operations. **Table 10** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 10. Biological Resources Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist				
Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (CEQA IVa)	☐	☐	☒	☐
Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? (CEQA IVb)	☐	☐	☒	☐
Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (CEQA IVc)	☐	☒	☐	☐
Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (CEQA IVd)	☐	☐	☒	☐
Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (CEQA IVe)	☐	☒	☐	☐
Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (CEQA IVf)	☐	☐	☐	☒

Will the Proposal result in:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist - Vegetation				
Removal of native vegetation in excess of the area utilized for the actual development permitted by the land capability/IPES system? (TRPA 4a)	☐	☐	☐	☒
Removal of riparian vegetation or other vegetation associated with critical wildlife habitat, either through direct removal or indirect lowering of the groundwater table? (TRPA 4b)	☐	☐	☐	☒
Introduction of new vegetation that will require excessive fertilizer or water, or will provide a barrier to the normal replenishment of existing species? (TRPA 4c)	☐	☐	☐	☒
Change in the diversity or distribution of species, or number of any species of plants (including trees, shrubs, grass, crops, micro flora and aquatic plants)? (TRPA 4d)	☐	☐	☐	☒
Reduction of the numbers of any unique, rare or endangered species of plants? (TRPA 4e)	☐	☐	☐	☒
Removal of stream bank and/or backshore vegetation, including woody vegetation such as willows? (TRPA 4f)	☒	☐	☐	☐
Removal of any native live, dead or dying trees 30 inches or greater in diameter at breast height (dbh) within TRPA's Conservation or Recreation land use classifications? (TRPA 4g)	☐	☐	☐	☒
A change in the natural functioning of an old growth ecosystem?	☐	☐	☐	☒
TRPA Initial Environmental Checklist - Wildlife	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
Change in the diversity or distribution of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects, mammals, amphibians or microfauna)? (TRPA 5a)	☐	☐	☐	☒
Reduction of the number of any unique, rare or endangered species of animals? (TRPA 5b)	☐	☐	☐	☒
Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals? (TRPA 5c)	☐	☐	☐	☒
Deterioration of existing fish or wildlife habitat quantity or quality? (TRPA 5d)	☐	☐	☐	☒

5.1 CEQA Checklist Analysis

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

Standard of Significance. The loss of greater than zero endangered, threatened, or rare fish or wildlife individuals or disturbance of greater than zero acres of occupied or designed critical habitat constitute a significant impact as defined by CEQA Article 5, Section 15065, California Endangered Species Act (CESA) Sections 2062 and 2067, California Department of Fish and Game (CDFG) Code Sections 1900-1913, and TRPA Thresholds.

Special-status wildlife and fish species are species that have been afforded special recognition and protection by federal, State, or local resource conservation agencies and organizations. These species are generally considered rare, threatened, or endangered due to declining or limited populations. Special-status species include:

- Animals that are legally protected or proposed for protection under the CESA or Federal Endangered Species Act (FESA);
- Animals defined as endangered or rare under CEQA;
- Animals designated as species of special concern by the CDFG;
- Animals designated as species of concern by the USFWS;
- Animals listed as "fully protected" in the Fish and Game Code of California (Sections 3511, 4700, 5050 and 5515);
- Animals designated as special interest species by the TRPA;
- Plants that are legally protected or proposed for protection under the CESA or FESA;
- Plants defined as endangered or rare under CEQA;
- Plants designated as species of concern by the USFWS;
- Plants listed in the California Native Plant Society's Inventory of Rare and Endangered Plants of California (2001); and
- Plants designated as special interest species by the TRPA.

5.1.1 Candidate, Sensitive, or Special-Status Species

Information on the potential presence of candidate, sensitive, or special-status species or their habitat in the vicinity of the Project Area was obtained through a number of sources, including the USFWS, CDFW, California Natural Diversity Database (CNDDB), and a biological survey of the Project Area. **Appendix C**, Biological Resource Data, contains the biological resource data from CDFW, CNDDB, and USFWS.

A request for a species list from the USFWS's Information for Planning and Conservation (IPaC) for this Project was generated on April 17, 2018. The IPaC report provides a list of federal special-status species that may be present within El Dorado County, shown in **Table 11**. A copy of the official species list is included in **Appendix C**.

Table 11. USFWS FESA-listed Species Occurring in El Dorado County, Habitat Characteristics, and Potential to Occur in the Project Area

Species	Status	Habitat Characteristics	Potential to Occur, or Have Suitable Habitat, Within or Near the Project Area
Rana sierra Sierra Nevada yellow-legged frog	Federally endangered	Ponds, tarns, lakes, and streams at moderate to high elevation.	No critical habitat in or near the Project Area. No suitable habitat in the Project Area.
Gulo gulo luscus North American wolverine	Federally threatened	Montane conifer, subalpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian habitats. Prefers areas with low human disturbance.	Project Area has high levels of human disturbance and the Lake Tahoe Basin is outside of the current known range.
Oncorhynchus clarkii henshawi Lahontan cutthroat trout	Federally threatened	Lakes and streams of the Lahontan basin.	No suitable habitat in Project Area.

The Project Area was surveyed on June 23 and November 2, 2016, by Western Botanical Services (WBS) for special-status plants, habitat composition, noxious and invasive weeds, and jurisdictional wetlands or waters of the US. No special-status plant species, or noxious or invasive weeds, as defined by El Dorado County Department of Agriculture (El Dorado County 2018) and the Lake Tahoe Basin Weed Coordinating Group (2018), were found within the Project Area. Although non-natives were purposefully seeded and some invasive species such as cheatgrass do occur, these populations are not significant (WBS 2016).

5.1.2 Avian Species

Table 12 details the tree removal estimates for the Project. The Project Area contains conifer tree species and willow species that would be removed as necessary for implementation of the stormwater and trail improvements. Tree and willows would be removed as necessary within the Greenbelt area for expansion of the existing facilities and trail system. Tree removal would also be necessary for construction of the stormwater treatment basins and meandering vegetated channel.

Table 12. Tree Removal Estimates

Project Feature	Approx. Removal (#)	Diameter at Breast Height (dbh)	Species
Bonanza Ave/B St stormwater treatment basin	174	0 to14 inches	Pine/Fir
	30	>14 to <30 inches	
	2	30 inches and greater	
D Street/Margaret Ave stormwater treatment basin	5	0 to14 inches	Pine/Fir
	5	>14 to <30 inches	
Mid-block Bonanza Ave stormwater treatment basin	5	>14 to <30 inches	Pine/Fir
	10	0 to 14 inches	Pine/Fir

Project Feature	Approx. Removal (#)	Diameter at Breast Height (dbh)	Species
James & Eloise Ave meandering channel/basin sites	5	>14 to <30 inches	
Third St/Barton/Helen Ave stormwater treatment basins	42	0-14 inches	Pine/Fir
	42	>14 to <30 inches	
	5	30 inches and greater	
Greenbelt stormwater treatment basins, open space, multi-use paths, and other improvements	153	0 to 14 inches	Pine/Fir
	82	>14 to <30 inches	
	13	30 inches and greater	

Construction is expected to take place from May to October and thus would occur during the bird nesting season. Noise and human presence associated with construction-related activities would have the potential to directly and indirectly affect any adjacent nests present through nest failure or abandonment. Tree removal also would be necessary in the locations listed in **Table 12**, which further would affect nesting birds through loss of habitat. Such birds are protected under the MBTA. The Project would avoid potentially significant impacts to special-status species through implementation of the biological resource protection measures that are detailed in Section 1.10.7 of the Project description.

Although the agency species lists do not show willow flycatcher habitat or occurrences within the Project Area (due to lack of riparian habitat present), the presence and subsequent removal of willows could potentially affect the protected species. The willow flycatcher is a United States Department of Agriculture Forest Service (Forest Service) “sensitive” species, USFWS “species of concern” and State of California “endangered” species. Direct or indirect impacts to willow flycatcher would be significant due to its listing status. The Project would be required to implement the following regulatory measures associated with impact to special status species, as detailed in Section 1.10.7, Biological Resource Protection Measures:

1. For construction activities proposed to occur during the nesting season (i.e., March 15 through August 15), and outside of existing paved areas, the City and contractor will review the Project Area, including a 100-foot buffer around the Project Area, to identify any willow flycatcher and MBTA protected migratory bird nest sites that may be present. The preconstruction nest survey will occur no more than 14 days prior to Project mobilization. If a nest is present in the immediate vicinity, a qualified biological monitor will be contacted to evaluate whether any migratory birds are impacted by the Project. The biological monitor will have the authority to stop construction near occupied sites if construction activities appear to be having a negative or adverse impact on nesting migratory birds or their young. If construction must be stopped, the biological monitor must consult with USFWS and CDFW staff within 24 hours to determine appropriate actions to restart construction while reducing impacts to identified migratory bird nests.
2. Should special status species be observed within the Project Area before or during construction, the construction contractor, project engineer, or other project personnel will report the observation immediately to the Project Engineer or equivalent representative. In response, the City or approved construction contractor will retain a qualified biological monitor to immediately (within 24 hours) implement adequate protections of special status species.
3. Tree and snag removal will be minimized to what is necessary for basin expansion, trail improvements, and the stormwater improvements. Construction access routes will be positioned around existing trees and snags to avoid tree removal to the extent practical. Logs and brush piles will be left within the Project Area to provide wildlife cover when they would not constitute a hazard to people or property.

When not a hazard to people or property, larger logs and snags will be purposely retained in the Project Area to provide habitat for wildlife that depend on them for perches, nesting, or cover, consistent with TRPA Tree Removal standards (TRPA Code Chapter 61.1 Tree Removal and Chapter 62: Wildlife Resources subsection 62.3.4).

Project impact will be less than significant as the Project is required to comply with local, state, and federal laws such that the Project would not result in the loss of greater than zero endangered, threatened or rare fish or wildlife individuals or disturbance of greater than zero acres of occupied or designed critical habitat. The Project would avoid potentially significant impacts to special-status species through implementation of biological resource protection measures detailed in Section 1.10.7.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IVb. Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Standard of Significance. A direct or indirect impact greater than zero acres for State or Federal sensitive natural communities, direct or indirect impact greater than zero acres to SEZ including riparian habitat constitutes a significant impact.

Sensitive Natural Communities. The Project impacts no listed sensitive natural communities because the Project Area contains no such communities. Database searches covering the Project Area include the CDFG's CNDDB and USFWS (species list dated April 17, 2018) for the South Lake Tahoe 7.5-minute US Geological Survey (USGS) quadrangle map. The USFWS identifies no critical habitat within the Project Area.

TRPA designates uncommon plant communities in TRPA Code Subsection 61.3.6.C, which are as follows: the deepwater plants of Lake Tahoe, Grass Lake (sphagnum fen), Osgood Swamp, Hell Hole (sphagnum fen), Pope Marsh, Taylor Creek Marsh, Upper Truckee Marsh, and the Freel Peak cushion plant community. These communities lie outside of and distant from the Project Area.

Stream Environmental Zones. As discussed in Section 1.4, the Project contains SEZs, which is a term unique to the Lake Tahoe region. TRPA Code Chapter 90, Definitions, defines an SEZ as "Generally an area that owes its biological and physical characteristics to the presence of surface or ground water." SEZs provide a variety of environmental services, including water quality maintenance, flood attenuation, infiltration and groundwater recharge, wildlife habitat, and scenic and recreation enjoyment, among others. SEZs are recognized by TRPA's LCD system as Class 1b. LCDs 1a, 1b, 1c, and 2 are not generally suited for urbanization or intensive forestry use, but can be considered for open space, conservation areas, and low-intensity recreation (City and TRPA 2015).

TRPA maintains the RPU elements that establish SEZ as a sensitive natural community protected by standards and regulations. Lahontan also maintains standards in the Lahontan Basin Plan related to activities in SEZ. Construction of the Project may result in direct and indirect impacts to SEZs. Direct impacts to SEZs include trimming of riparian vegetation. Trimming of vegetation in SEZs directly impacts the quality and functionality of the riparian system and threatens temporary degradation to surface water quality. Riparian vegetation provides modifications to SEZs by regulating microclimates and water temperature of adjacent water bodies. Removal of vegetation can result in changes in the microclimate by reducing the shading abilities of plants. Moisture retention ability of soils decreases after vegetation removal and often results in dry conditions, thereby creating an inhospitable environment for adjacent riparian vegetation.

Removal of riparian vegetation increases sun exposure to shallow surface water areas to increase water temperatures, which can decrease habitat suitability.

Figure 7 shows the SEZ boundary, as delineated by Terra Science in 2014 for the TVAP planning area. Terra Science examined and documented SEZs within TVAP boundaries at the request of the City and TRPA. The revised SEZ mapping represents best available information regarding SEZs within the Project Area, which is contained within the larger TVAP planning area. The full TVAP SEZ report is included in **Appendix D**.

Temporary impacts to SEZs would occur during construction to construct trail crossings and to implement the stormwater infrastructure and recreation amenities proposed by the Project. The resulting Project would be beneficial in the long term because the SEZs acreage would be increased and SEZ functions would be restored. Restoration of SEZs is important to the water quality and habitat around Lake Tahoe, since SEZs provide for sediment trapping, nutrient uptake, carbon sequestration, aquatic and terrestrial habitat, wildlife feeding and nesting areas, flood storage and desynchronization, and open space (**Appendix D**).

Specifically, the Bonanza Avenue, Helen Avenue, James/Eloise Avenue and Greenbelt stormwater treatment basins and contributing drainages would be modified to expand the capacity for stormwater treatment, flood control and pollutant load reduction. SEZ functions would be enhanced through increased detention, slowing and spreading of surface flows, and improved infiltration created by revegetation with native grass and plant species that are targeted for soil stabilization and nutrient uptake. The outer margins or transitional slope areas adjacent to the multi-use trails in the Greenbelt area would be revegetated with grasses and low shrubs that can be sustained in a drier setting. The upland interface with urban, commercial, and/or residential areas would use a mixture of native and/or ornamental trees for appropriate transition to adjacent landscaped areas.

The Project would implement the following regulatory measures associated with impact to vegetation:

- TRPA Code Section 33.6, Vegetation Protection During Construction, which outlines measures that must be taken during construction to protect vegetation;
- TRPA Code Section 61.3, Vegetation Protection and Management, which protects vegetation by managing and maintaining vegetation health and diversity including common, rare, and sensitive plant species; and
- TRPA Code Ordinances Section 61.4, Revegetation, which sets forth standards for revegetation.

Additionally, the Project would implement a vegetation/SEZ protection measure that defines work limitations for tree removal within SEZs (Section 1.10.7).

<u>TRPA SEZ Encroachment Findings</u>. Refer to the analysis for TRPA 1a, which addresses new encroachment in LCD 1b. The Project would require some temporary encroachment in SEZ but would result in no new permanent encroachment in SEZ.

<u>Lahontan Basin Plan Findings.</u> Lahontan implements provisions of the Lahontan Basin Plan, including waste discharge prohibitions applicable to SEZs. Exceptions to waste discharge prohibitions for permanent disturbance in SEZ exist for public outdoor recreation and public health and safety facilities if (Lahontan Basin Plan 5.8):

(a) the project by its nature must be sited in a SEZ;

By their very nature, roads, trails, and utilities traverse large areas of the landscape, following an alignment chosen to connect different locations (Siller Ranch Resolution No. R6T-2006-0021, page 6). The bowl-like

nature of the Tahoe Region, which includes the Upper Truckee River watershed that contains the Project Area, creates drainages with attendant soil types that travel from the surrounding mountains to Lake Tahoe; creating a non-motorized transportation network within this context cannot avoid surface waters and associated SEZ. Therefore, such features by their very nature interact with SEZs in areas where crossings are necessary.

or (a) for public health and safety;

As described for the analysis of TRPA 1a, related to SEZ encroachment findings, the Project is necessary to protect public health and safety by: 1) providing Class I and Americans with Disabilities Act (ADA)–certified shared-use trails, Class III bike lanes, and pedestrian footpaths as an alternative to existing roadways; and 2) providing an essential connection in the non-auto public transportation network that is capable of providing access for the broadest spectrum and diversity of user groups. The Project provides environmental protection by: 1) reducing use of private automobiles and improving related air quality; 2) consolidating public access on a protected surface trail through sensitive lands, reducing erosion associated with unpaved trails; and 3) constructing asphalt concrete pavement over permeable fill/vented trail, or other comparable trail design and materials, in some locations to protect surface and subsurface hydrologic connections. TRPA recognized these facility features when incorporating the Project in elements of the Regional Plan. Specifically related to public service projects that provide for essential public transportation services, TRPA incorporates the Project as EIP project 01.01.01.0012; on the TRPA Air Quality Transportation Program list; and in the Linking Tahoe, Regional Transportation Plan (TRPA 2017), Lake Tahoe Region Bike and Pedestrian Plan (BPMP) (TMPO 2010) and TRPA EIP, Planning Horizon 2008-2018 (TRPA 2009).

(b) there is no feasible alternative which would reduce the extent of SEZ encroachment;

The evaluation for reasonable alternatives provided for TRPA LCD 1a concludes no location alternatives reduce SEZ encroachment; although use of permeable fill base, or other comparable materials, for paths that must cross SEZ minimizes the effects of this encroachment.

(c) impacts are fully mitigated;

The evaluation for offsetting mitigation for SEZ disturbance presented in the analysis for TRPA LCD 1b concludes that the permanent and temporary BMPs incorporated into the Project are appropriate and adequate to avoid and minimize SEZ impacts. The Project would result in no new permanent encroachment (i.e., new permanent land coverage) and proposes use of both temporary and permanent BMPs to offset temporary encroachment (i.e., temporary disturbance during construction). The Project itself is self-mitigating and implements an area-wide stormwater system, which will construct new stormwater treatment basins and expand existing facilities and SEZs. The benefits of SEZ restoration far exceed the temporary effects of construction. Section 1.10 of the Project description describes the Project provisions for temporary BMPs to reduce construction-related impacts and provisions for site protection and revegetation and restoration to offset temporary disturbance, including limiting overall encroachment with use of Project fencing and avoidance of SEZ vegetation. Permanent BMPs for erosion and sediment control would include slope stabilization, revegetation, and drainage controls.

On-site SEZ restoration areas lie in close proximity to areas of new disturbance, and sufficient on-site restoration of SEZ is proposed to meet mitigation responsibilities and result in a net environmental benefit.

(d) SEZs are restored in an amount 1.5 times the area of SEZ disturbed or developed for the project.

The land coverage valuation presented for TRPA 1a demonstrates compliance with the requirements of 1.5:1 restoration.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IVc. Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Standard of Significance. Greater than zero acres and/or zero linear feet of disturbance or discharge to wetlands as defined by Section 404 of the Clean Water Act (CWA) through direct removal, filling, hydrologic interruption or other means constitutes a significant impact as defined by the USACE jurisdictional waters regulations, 404 Code of Federal Regulations (CFR) 230 Section 404(b)(1), CDFG Section 1600 et seq., and EPA and State of California no net loss policies.

The USACE reviews projects that may have impacts on the waters of the US under the provisions of Section 404 of the CWA. Permanent discharges that exceed 0.1 acre require review under the provisions of the applicable Nationwide Permits (e.g., Nationwide Permit 43, Stormwater Management Facilities). Discharges over 0.5 acres require consideration under the provisions of an Individual Permit. In all cases, activities that result in discharge over 0.1 acres must follow the required mitigation sequence of avoid, minimize, and compensate. Concurrently or prior to obtaining a 404 permit issued by USACE (if deemed necessary), the Project must receive a Section 401 Water Quality Certification issued by Lahontan. Receipt of this certification demonstrates that the Project proposal meets applicable statewide water quality standards. Other sections of this IS/IEC identify compliance with elements of the Lahontan Basin Plan and Board orders needed for Section 401 Water Quality Certification consideration, should coverage be necessary, including land capability and coverage and water quality standards and beneficial uses.

There were no mapped USFWS National Wetlands Inventory wetlands documented within the Project Area (**Figure 9**). The WBS survey report (**Appendix C**) identified the existing Helen Avenue basin and adjacent SEZ as an area where wetlands may be present, based on the vegetation encountered during the site visit (WBS 2016). A full vegetation species list with wetland status is located within the WBS's technical memorandum. Construction within an unknown wetland area would be considered a significant impact.

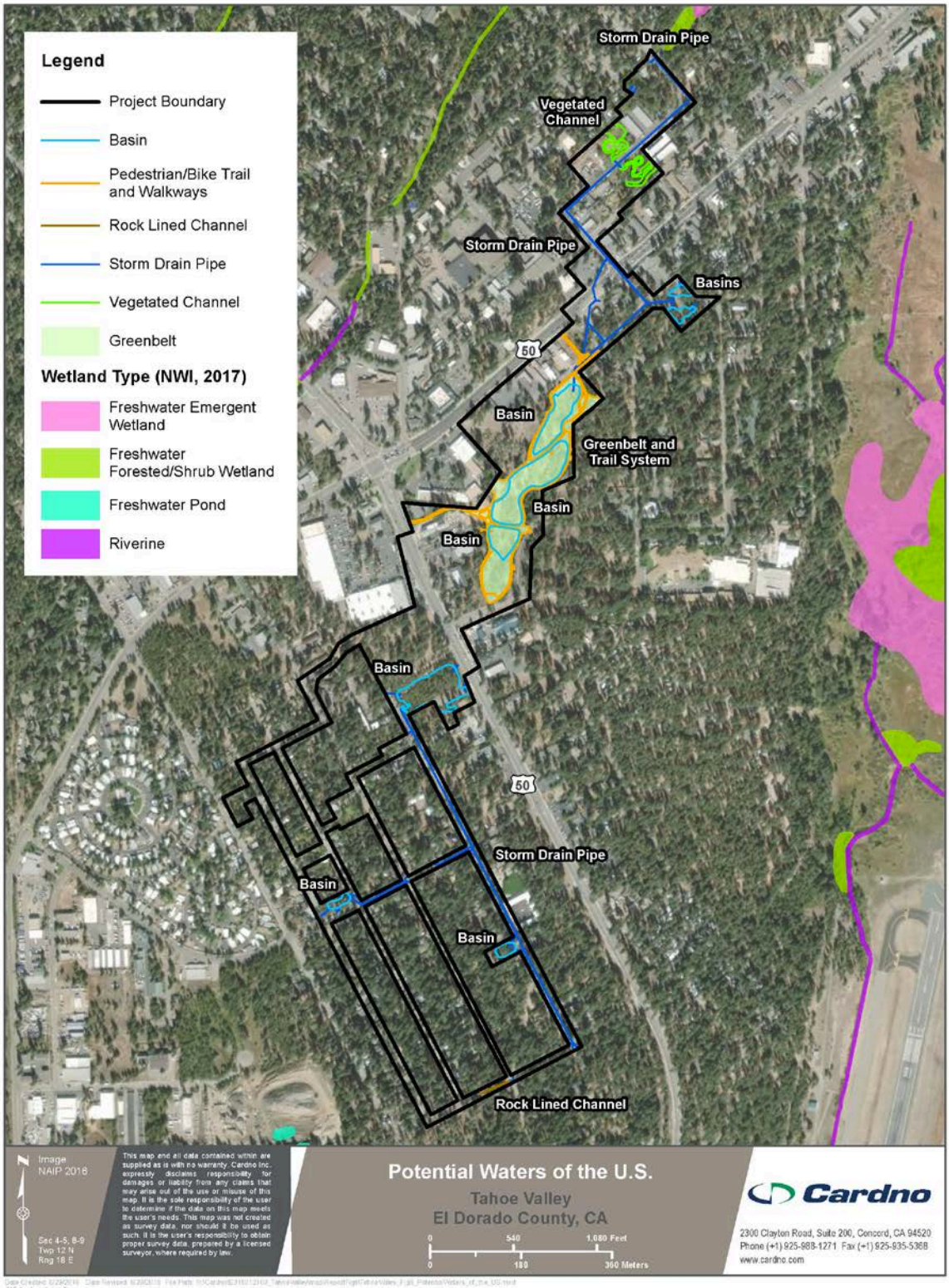

Figure 9 Potential Waters of the US within the Project Area.

Implementation of Mitigation Measure BIO-1 is necessary to identify the extent of jurisdictional waters of the US and wetlands and is necessary to inform the Project design when reducing the potential impacts to wetlands to a level of less than significant.

Environmental Analysis: **Less than Significant Impact with Mitigation Incorporated**.

Required Mitigation:

Mitigation Measure BIO-1. Prior to completion of final design of the Project, a qualified biologist retained by the City would perform a wetland delineation for the Project Area. The delineation would conform to the USACE *Wetlands Delineation Manual* and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0). If the delineation identifies jurisdictional wetlands within the Project Area that would be impacted by the Project the Project design and/or location will be modified to avoid impacts to the delineated wetland or the City will be required to comply with the permitting regulations of Section 404 of the CWA to minimize and mitigate for the loss of jurisdictional wetlands.

Timing/Implementation: Prior to Construction

Enforcement/Monitoring: City of South Lake Tahoe

CEQA IVd. Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Standard of Significance. A significant impact results from the blockage, disruption or impedance of use of greater than zero wildlife or fish corridors or native wildlife nursery sites, as defined by TRPA Code Chapters 62 and 63.

As discussed in the analysis for CEQA IVa, vegetation removal (conifer tree species and willow) would have potential to impact avian species, including migratory birds. There were no other potential wildlife corridors identified within the Project Area.

Construction is expected to take place from May to August and thus would occur during the bird nesting season. Noise and human presence associated with construction-related activities would have the potential to directly and indirectly affect any adjacent nests present through nest failure or abandonment. Tree removal also would be necessary in the locations listed in **Table 12**, which further would affect nesting birds through loss of habitat. Although these impacts could be significant because these birds are protected under the MBTA, the Project would avoid effects to species protected under the MBTA through implementation of biological resource protection measures that are detailed in Section 1.10.7 of the Project description.

If special-status wildlife species with agency-mandated protected activity centers and Limited Operating Periods are found breeding in the Project Area, a Forest Service Lake Tahoe Basin Management Unit (LTBMU) or TRPA wildlife biologist would implement appropriate Limited Operating Period around the protected activity center. Nests of species covered by the MBTA would be protected in place via a 100-foot construction buffer until the young fledge. As a result the Project's potential impact to MBTA species and willow flycatcher nursery sites would be reduced to a level of less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

CEQA IVe. Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Standard of Significance. If the Project conflicts with goals and policies outlined in the conservation element of the TRPA RPU for vegetation, wildlife and/or fisheries a significant impact to biological resources results.

As discussed for CEQA IVa, the Project would require removal of trees across more than three (3) acres and changing three acres or more of non-TPZ timberland to a nontimber growing use. The Project also proposes the removal of over 100 trees greater than 14 inches dbh. Where timber operations are involved, the City would be required to apply for a Timberland Conversion Permit form RM-56 from the Director of CalFire.

Issuance of a Timberland Conversion Permit exempts the owner from forest practice cutting and stocking requirements in order to allow a nontimber growing land use. Constructive notice includes clear statements of the landowner or other parties involved, documents filed with local and other government agencies, and other means that show the landowner's clear intent to use the land for a nontimber growing use following completion of timber operations (see Sections 5471 and 5471.5).

Pursuant to TRPA Code Section 61.1.5C, if the Project is determined to cause 'substantial' tree removal, as set forth in subparagraph 61.1.8, the City will submit a harvest plan or tree removal plan prepared by a qualified forester. The plan sets forth prescriptions for tree removal, water quality protection, vegetation protection, residual stocking levels, reforestation, slash disposal, fire protection, and other appropriate considerations. The plan, as approved by TRPA, would become a part of the Project and prescriptions contained in the plan would be conditions of approval. Compliance with TRPA findings for tree removal and associated tree removal plan would reduce potential impacts of tree removal to a level of less than significant impacts. The Project would also comply with TRPA Code Section 61.1.6, Minimum Standards for Tree Removal. The Project proposal is consistent with the TRPA RPU Conservation Element Goals and Policies for biological resources.

Consistent with TRPA Code standards for tree removal within SEZs (Section 61.1.4.A7, EIP Projects), removal of trees with dbh greater than 30 inches would be allowed for EIP projects when it is demonstrated the removal is necessary for the activity. Tree removal within SEZs in the Project Area would be necessary to construct the stormwater features. For other areas of the Project (non-SEZ) where tree removal is necessary, the Project would conform to TRPA Code Section 61.1.4 B, Standards for Non-SEZ Urban Lands: *Within non-SEZ urban areas, individual trees larger than 30 inches dbh that are healthy and structurally sound shall be retained as desirable specimen trees having aesthetic and wildlife value, unless no reasonable alternative exists to retain the tree, including reduction of parking areas or modification of the original design.*

As described below in mitigation measure AGR-1, compliance with CalFire exemption requirements will be necessary to reduce potential impacts to tree removal and forest land to a level of less than significant. The Project would not conflict with other local policies or ordinances protecting biological resources such as TRPA Code Section 33.6, Vegetation Protection During Construction; Chapter 60, Water Quality; Chapter 61, Vegetation and Forest Health; Chapter 62, and Wildlife Resources.

Additionally, the Project would revegetate with native species to improve wildlife habitat (consistent with General Plan Policy NCR-3.13: Improving Wildlife Habitat Values), preserve as much vegetation as possible, and revegetate where impacts are avoidable (consistent with General Plan Policy NCR-3.3: Vegetation Preservation).

Environmental Analysis: **Less than Significant Impact with Mitigation Incorporated**.

Required Mitigation:

AGR-1. Public Agency Right-of-Way Exemption with CalFire. A Timberland Conversion Permit shall not be required for noncommercial removal of solid wood products from non-TPZ land and a waiver shall be applied for prior to construction. The Project Applicant shall file for a Public Agency Right-of-Way exemption with CalFire to comply with requirements for conversion of Timberland for installation of public service projects. Tree removal shall occur along the Greenbelt corridor and in association with expansion of existing and construction of new trail and stormwater infrastructure improvements. Tree removal operations shall be completed within one year of filing by a Licensed Timber Operator. The Project shall implement noncommercial removal, which means that the products are neither sold nor exchanged for other goods or services. Noncommercial disposal includes the owner's personal use of the products, disposal by piling and burning, and hauling away and dumping without processing. These operations are not timber operations under the Forest Practice Act definition.

Timing/Implementation: Prior to Construction

Enforcement/Monitoring: City of South Lake Tahoe

CEQA IVf. Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Standard of Significance. If the Project conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved habitat conservation plan, a significant impact results.

The Project does not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan because no such plans exist for the Project Area. Thus, there would be no impact.

Environmental Analysis: **No Impact.**

Required Mitigation: **None**.

5.2 TRPA Checklist Analysis – Vegetation

TRPA 4a. Will the proposal result in the removal of native vegetation in excess of the area utilized for the actual development permitted by the land capability/IPES system?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Removal of greater than zero acres of native vegetation in excess of the area utilized for the actual development permitted by the TRPA LCD system results in a significant impact as defined by TRPA Code Chapters 30 and 33. TRPA-verified LCDs reflect the amount of development a site can support without experiencing soil or water quality degradation (**Appendix E**, TRPA Land Capability Verification Application). LCDs range from 1 to 7, with LCD 1a, 1b and 1c being the most environmentally sensitive and LCD 7 being the most suitable for supporting development.

Land coverage and land capability was mapped and verified by TRPA as part of the TVAP planning process. Based on the LCD boundaries that were verified for the TVAP, LCDs 1b, 5 and 7 comprise the Project Area. **Figure 3** illustrates the LCDs mapped within the Project Area. Refer to the analysis for TRPA 1a, which analyzes land coverage by LCD.

The Project would result in land coverage associated with the physical shared-use trail surfaces and paths and land disturbance associated with adjacent clear zones that infiltrate runoff and cut and fill slopes necessary to control trail grades for compliance with AASHTO and ADA design standards. Stormwater facilities would result in temporary disturbance during construction but no permanent land coverage or disturbance during operations.

Project construction would remove native vegetation during soil disturbance activities; however, the Project would comply with TRPA regulations for restoration and revegetation of disturbance areas. The Project proposal minimizes the extent of disturbance through trail location by utilizing existing slopes and grades and would include reestablishment of native vegetation. The disturbance necessary for Project implementation is in accordance with the requirements outlined for each LCD for restoration of temporary disturbance, as detailed in the analysis for TRPA 1a. The Project would also comply with the grading and construction standards of TRPA Code Chapter 33, Grading and Construction, which protects the environment against significant adverse effects from excavation, clearing, and filling, and outlines requirements for protection of vegetation during construction. Vegetation located outside the construction site boundary, as well as other vegetation designated on the approved plans, would be protected by installing temporary fencing, pursuant to TRPA Code Section 33.6.9, Standards for Soil and Vegetation Protection, and Section 33.6.10, Standards for Retained Tree Protection.

The Project proposal limits vegetation removal to the area utilized only for construction and operation; therefore this impact is considered less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 4b. Will the proposal result in the removal of riparian vegetation or other vegetation associated with critical wildlife habitat, either through direct removal or indirect lowering of the groundwater table?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The direct removal or lowering of the groundwater table during Project construction or long-term operations that causes indirect loss of riparian vegetation or other vegetation associated with critical wildlife habitat constitutes a significant impact as defined by TRPA Code Chapter 61.

As discussed in CEQA IVa, direct removal of vegetation, including conifer tree species and willow, is necessary for Project implementation. Vegetation removal (conifer tree species and willow) would have potential to impact avian species, including migratory birds.

Construction is expected to take place from May to August and thus would occur during the bird nesting season. Noise and human presence associated with construction-related activities would have the potential to directly and indirectly affect any adjacent nests present through nest failure or abandonment. Tree removal also would be necessary in the locations listed in **Table 12**, which further would affect nesting birds through loss of habitat. These impacts would be significant because these birds are protected under the MBTA.

With Project compliance with the TRPA Code provisions for revegetation (Section 61.4, Revegetation) and tree removal (Section 61.1.5, General Tree Removal Standards; Section 61.1.6, Minimum Standards for Tree Removal; and Section 33.6, Vegetation Protection during Construction), potentially significant impacts to critical wildlife habitat from vegetation removal would be avoided.

The Project does not propose activities or features that would have potential to lower the groundwater table.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 4c. Will the proposal result in the introduction of new vegetation that will require excessive fertilizer or water, or will provide a barrier to the normal replenishment of existing species?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The introduction of noxious species or the introduction of new vegetation that requires excessive fertilizer or water constitutes a significant impact as defined by TRPA Code Chapter 61. Refer to the analysis for CEQA IVb, which concludes that the level of potential impact related to riparian habitat and sensitive natural communities would be less than significant.

The Project would revegetate disturbed areas with native species. An appropriate high-elevation native species mix would be used for revegetation activities and would not require fertilizer or excessive water to establish. Native species typically require less water than non-native species.

The Project would comply with the City-wide design standards for landscaping (City Code Section 6.10.150, Landscaping) and the landscaping standards of the TVAP for the use of landscaping species listed in the TRPA-recommended and approved *Native and Adapted Plants for the Tahoe Basin*, with the exception of accent plantings. The proposed Project would comply with the TRPA Code provisions for revegetation (Section 61.4, Revegetation). Project compliance with the TRPA Code and City-wide design standards for revegetation would reduce the potential impact to a level of less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 4d. Will the proposal result in the change in the diversity or distribution of species, or number of any species of plants (including trees, shrubs, grass, crops, micro flora and aquatic plants)?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A change in diversity or distribution of species or number of species of plants resulting from Project construction or operations constitutes a significant impact as defined by TRPA Code Chapter 33 and 62 and 63. Refer to the analysis for TRPA 4a, which concludes that the level of potential impact related to the removal of native vegetation would be less than significant.

With Project compliance with the TRPA Code provisions for revegetation and tree removal (Section 61.4, Revegetation; Section 61.1.5, General Tree Removal Standards; Section 61.1.6, Minimum Standards for Tree Removal; and Section 33.6, Vegetation Protection During Construction), the Project would avoid the potential to change the diversity, distribution, or number of any species of plants and the level of impact would be reduced to a level of less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 4e. Will the proposal result in a reduction of the numbers of any unique, rare or endangered species of plants?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The reduction of the number of any unique, rare or endangered species of plants as a result of Project construction and operations constitutes a significant impact as defined by TRPA Code Chapter 61.

Rare, unique, or endangered plant species were not encountered during the botanical field survey (WBS 2016).

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 4f. Will the proposal result in the removal of streambank and/or backshore vegetation, including woody vegetation such as willows?

☒ Yes ☐ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. TRPA Code Subsection 61.3.3 prohibits the removal of SEZ vegetation except as allowed by other Code provisions. Loss of riparian vegetation constitutes a significant impact.

TRPA Code Subsection 61.3.3 prohibits the removal of SEZ vegetation except as allowed by other Code provisions. Willow removal may be necessary during basin expansion activities within the Greenbelt area; if so, willows would be salvaged and replanted during Project revegetation.

Environmental Analysis: **Yes; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 4g. Willthe proposal result in the removal of any native live, dead, or dying trees 30 inches or greater in diameter at breast height (dbh) within TRPAs Conservation or Recreation land use classifications?

☐Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. TRPA Code Subsection 61.1.4 prohibits the removal of trees larger than 30-inches dbh for west side forest types in lands that are in conservation or recreation plan areas. Except under specific project conditions, tree removal that does not meet findings outlined in Code Subsection 61.1.4 results in a significant impact within TRPA Conservation or Recreation land use areas.

Approximately 189 trees greater than 14-inch diameter at breast height (dbh) have been identified for removal, with 20 of those trees being 30-inch dbh or greater. Project development to date does not include a survey providing precise tree location in relation to Project features or a hazard or tree health survey completed by a qualified forester. During construction plan development, additional data will confirm the size, location, and condition of trees. Approximate proposed tree removal amounts are included in **Table 12**. Mixed-use and Residential land uses comprise the Project Area. Based on the absence of TRPA Conservation or Recreation land use areas, the Project would not remove any native live, dead, or dying trees 30 inches or greater dbh within such land use classifications and no impact would result.

Tree removal within SEZ boundaries will follow guidelines of TRPA Code of Ordinance Chapter 61.1.6C (Tree cutting within Stream Environment Zones), including but not limited to vehicle restrictions within SEZs and limiting work within SEZs to times of the year when soil conditions are dry and stable.

Environmental Analysis: **No; NoImpact**.

Required Mitigation: **None**.

TRPA 4h. Willthe proposal result in a change in the natural functioning of an old growth ecosystem?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A change in the natural functioning of an old growth ecosystem constitutes a significant impact as determined by TRPA Code Chapter 61 and Goals and Policies.

Old growth ecosystems, as defined by TRPA Code, are not mapped within the Project Area. Refer to analyses for TRPA 4a and TRPA 4g. The Project would comply with TRPA Code requirements for tree removal; thus, impact would be less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

5.3 TRPA Checklist Analysis – Wildlife

TRPA 5a. Will the proposal result in a change in the biodiversity or distribution of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects, mammals, amphibians or microfauna)?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A change in the diversity or distribution of species, or numbers of any species of animals resulting from Project construction or operations constitutes a significant impact to TRPA Thresholds, as cited in TRPA Resolution 82-11 Exhibit A, and TRPA goals and policies pertaining to wildlife fisheries.

The Project site is located in a developed urban area and would have temporary, localized effects during construction. Although some common species, including nesting birds, may experience disturbance during construction, the limited impacts that would occur would not affect the biodiversity or distribution of any species of animals.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 5b. Will the proposal result in a reduction of the number of any unique, rare, or endangered species of animals?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The loss of greater than zero endangered, threatened or rare fish or wildlife individuals or disturbance of greater than zero acres of occupied or designed critical habitat constitute a significant impact as defined by CEQA Article 5, Section 15065, CESA Sections 2062 and 2067, CDFG Code Sections 1900-1913, and TRPA Thresholds.

Refer to the analysis for CEQA IVa, which concludes that the level of potential impact to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS would be less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 5c. Will the proposal result in the introduction of new species of animals into an open area, or result in a barrier to the migration or movement of animals?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The introduction of new species into the Project Area or the blockage or disruption of fish or wildlife corridors constitutes a significant impact by the Project to the migration or movement of animals.

The Project would not introduce a new species of animals into an open area, and the improvements would be installed at-grade. Thus, it would not result in a barrier to migration or movement of animals.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 5d. Will the proposal result in the deterioration of existing fish or wildlife habitat quantity or quality?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Deterioration of existing fish or wildlife habitat quantity or quality from construction and operations of the Project constitutes a significant impact to these habitats as defined in TRPA Code Chapters 62 and 63.

Refer to the analysis for CEQA IVa, which concludes that Project impact on wildlife and sensitive species will be less than significant as the Project is required to comply with local, state, and federal laws such that the Project would not result in the loss of endangered, threatened or rare fish or wildlife individuals or disturbance of occupied or designed critical habitat. The Project would avoid potentially significant impacts to wildlife habitat quantity or quality through implementation of biological resource protection measures detailed in Section 1.10.7.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

6.0 CULTURAL & TRIBAL RESOURCES (CEQA) AND ARCHAEOLOGICAL & HISTORICAL RESOURCES (TRPA)

This section addresses the cultural resources criteria in the CEQA Guidelines as well as the tribal cultural resources criteria. **Tables 13 and 14** identify the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 13. Cultural Resources and Archaeological/Historical Impacts

Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
CEQA Environmental Checklist				
Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? (CEQA Va)	☐	☐	☒	☐
Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? (CEQA Vb)	☐	☐	☒	☐
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (CEQA Vc)	☐	☐	☒	☐
Disturb any human remains, including those interred outside of formal cemeteries? (CEQA Vd)	☐	☐	☒	☐
Will the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist				
Will the proposal result in an alteration of or adverse physical or aesthetic effect to a significant archaeological or historical site, structure, object or building? (TRPA 20a)	☐	☐	☐	☒
Is the proposed project located on a property with any known cultural, historical, and/or archaeological resources, including resources on TRPA or other regulatory official maps or records? (TRPA 20b)	☐	☐	☐	☒
Is the property associated with any historically significant events and/or sites or persons? (TRPA 20c)	☐	☐	☐	☒
Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values? (TRPA 20d)	☐	☐	☐	☒
Will the proposal restrict historic or pre-historic religious or sacred uses within the potential impact area? (TRPA 20e)	☐	☐	☐	☒

6.1 CEQA Checklist Analysis – Cultural Resources

CEQA Va and CEQA Vb. Would the Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5, or cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Standard of Significance. If the Project adversely affects important examples of major periods of California history or pre-history, a significant impact results to historical resources. Impacts to eligible or potentially eligible resources include those resulting from construction, operation, or maintenance activities that adversely impact the integrity of prehistoric or historic archaeological resources and are unavoidable based on the Project trail placement. If the Project causes "a substantial adverse change in the significance of an historical or archaeological resource" (i.e. physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings) pursuant to PRC Section 15064.5, a significant impact results to archaeological resources.

Pursuant to General Plan Policy NCR 4.3, Cardno staff conducted a cultural resources field investigation to (1) confirm the location of previously recorded archaeological sites and/or historic structures and update site forms as necessary; (2) formally record any previously undiscovered archaeological and/or historical resources; and (3) identify and characterize areas with a higher probability for encountering cultural resources should the Project call for construction in such areas. The results of this study are included in **Appendix F**, Cultural Resources Report.

Archival research and coordination with the Native American community (including Assembly Bill [AB] 52 consultation) were conducted for the purpose of identifying potentially significant cultural resources within and immediately adjacent to the Project Area that could be subject to Project impacts. Consultation has been conducted with several tribes who requested notification of City projects. These tribes consist of the Washoe Tribe of Nevada and California, the United Auburn Indian Community (UAIC), and the Ione Band of Miwok Indians.

One historic-era cultural resource was identified in the Project Area; two segments of US 50. This roadway has been extensively modified from its historic-era character, and the installation of stormwater piping would not constitute significant impact on this resource. Additionally, the segments of US 50 within the Project Area do not appear to be associated with any specific historical event or person. As such, Cardno does not recommend the segments of US 50 as eligible for California Register of Historical Resources (CRHR) listing.

One isolated historic artifact, a ceramic insulator, was located within the Project Area. As the isolated artifact retains no historical associations or data potential, Cardno recommends that this artifact is not eligible for CRHR listing.

Although the Project Area consists mainly of developed areas, the possibility for Project construction activities to expose previously undiscovered resources still remains. Implementation of the cultural resource protection measures that are detailed in Section 1.10.8 of the Project description would allow for the timely response to the identification of unanticipated or inadvertent impacts to historical resources and reduces potential impacts to unknown historical resources to a level of less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

CEQA Vc. Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Standard of Significance. A significant effect on the environment occurs if the Project has the potential to pose a significant impact to paleontological resources identified during construction related ground disturbing activities, if any paleontological resources are identified during construction, as provided in PRC Section 5097.98, or if the Project directly or indirectly destroys a unique paleontological resource or site or unique geologic feature. The significance of paleontological resources is determined in part by compliance with the Antiquities Act of 1906. Fossil remains of vertebrates are considered significant resources.

The Project site is located in primarily developed areas and contains no unique geologic features.

To determine if any potentially significant paleontological resources are located within or near the Project site, a detailed search of the University of California Museum of Paleontology (UCMP) online collections and specimen database was conducted. The UCMP files contain information on documented paleontological finds and locational data. According to the UCMP records search, no floral or paleontological remains have been found within or immediately adjacent to the Project Area. In general, most areas of El Dorado County are not highly sensitive for paleontological resources with several notable exceptions. These include Hawver Cave, and the "Cool Quarry" near the town of Cool, and Crystal Cave in the Sierra Nevada foothills near Placerville.

The UCMP collections contain several specimens that were collected in the Lake Tahoe Basin in the nineteenth century (UCMP 2018). These include a single Glabrum (a species of small deciduous tree) leaf (Seward 1919), and three examples of gastropods recovered from the Lake Tahoe area (no refined locational data are available). These consist of two examples of *Helix whitneyi* (a species of land snail), and a single example of *Hyaline breweri* (also a land snail) (see Turgeon et al. 1998). Regardless of the specific locations of the Tahoe Basin paleontological finds documented in the UCMP database, the Glabrum leaf and gastropods are common fossil species, and there are no indications that significant deposits of these or other fossils are present in or near the Project Area. However, in the event previously unknown paleontological resources are encountered during construction, implementation of the cultural resource protection measures that are detailed in Section 1.10.8 of the Project description would reduce potentially significant impacts to a level of less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

CEQA Vd. Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Standard of Significance. The potential exists to pose a significant impact to human remains identified during construction-related ground-disturbing activities. A significant impact results if the Project affects human remains.

There are no known cemetery or burial areas within the Project Area; however, there is a potential for inadvertent discoveries of human remains during construction. The Project would avoid potentially significant impacts to human remains through compliance with PRC Section 5097.98 and Section 7050.5 of California Health and Safety Code, and implementation of the cultural resource protection measures (detailed in Section 1.10.8 of the Project description), which require that if remains are found, a cultural resources specialist would be contacted to provide an initial evaluation of the remains. If the remains are found to be human or potentially human, the El Dorado County Sheriff/Coroner shall be notified within 24 hours of the discovery to conduct proper evaluation and treatment of remains. If the Sheriff/Coroner determines the remains to be of early Native American origin, the NAHC must be contacted. The NAHC

will assign a Most Likely Descendent to the project who, in collaboration with the City and any landowner(s), will determine the ultimate treatment and disposition of the remains.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

6.2 TRPA Checklist Analysis – Historical Resources

TRPA 20a. Will the proposal result in an alteration of or adverse physical or aesthetic effect to a significant archaeological or historical site, structure, object or building?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analyses for CEQA checklist items Va and Vb, respectively, which conclude that the level of impact to historical and archaeological resources is less than significant.

As discussed in CEQA Va-b, one isolated artifact, a porcelain electrical line insulator and one historic-era resource, two segments of US 50, were identified and recorded within the Project APE during Cardno's survey. None of these cultural resources are recommended as eligible for CRHR listing. However, the possibility for Project construction activities to expose previously undiscovered resources still remains. Implementation of the cultural resource protection measures that are detailed in Section 1.10.8 of the Project description would reduce potentially significant impacts to a level of less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 20b. Is the proposed project located on a property with any known cultural, historical, and/or archaeological resources, including resources on TRPA or other regulatory official maps or records?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analyses for CEQA checklist items Va and Vb, respectively, which conclude that the level of impact to historical and archaeological resources is less than significant.

As part of the cultural resources survey, additional map sources including historic topographic maps were analyzed for the presence of resources; none were found. A complete list of the maps analyzed is included in the Cultural Resources Report, attached as **Appendix F**. Implementation of the cultural resource protection measures that are detailed in Section 1.10.8 of the Project description would reduce potentially significant impacts to a level of less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 20c. Is the property associated with any historically significant events and/or sites or persons?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analysis for CEQA checklist item Va, which concludes that the level of impact to historical resources is less than significant.

No historically significant events and/or sites or persons are known to be associated with the Project Area (Refer to **Appendix F**).

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 20d. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analysis for CEQA checklist item Va, which concludes that the level of impact to historical resources is less than significant.

In accordance with AB 52, the Washoe Tribe of Nevada and California (Washoe Tribe), Ione Band of Miwok Indians, and UAIC were contacted to request any additional information that would help the Project avoid impacts on potential tribal cultural resources.

Cardno sent a letter and email to Darrel Cruz, Tribal Historic Preservation Officer for the Washoe Tribe, detailing the Project and requesting any information regarding the cultural resources in the vicinity of the Project Area. Mr. Cruz replied, stating that he was not aware of any cultural resources in the area and that he would like to be kept informed if any resources are discovered.

The Ione Miwok and UAIC tribes responded to the City requesting formal notification of the Project. The City prepared formal notifications for the Project and provided these to the Ione Miwok and UAIC tribes on February 21, 2018. The response letters from the City detailed the Project and anticipated impacts, and requested any information the tribes had pertaining to tribal cultural resources in the Project Area. The City, as the lead agency, pursuant to AB 52, requested input within 30 days of the date of the letter.

At present, no additional responses to these outreach letters had been received although Cardno has expanded the outreach effort to include the NAHC, and other tribes and tribal representatives noted by the NAHC. Based on the findings of the archaeological survey and Native American tribal consultation, no known unique ethnic cultural resources or values would be impacted by the Project.

Based on the findings of the archaeological survey and Native American tribal consultation, no known unique ethnic cultural resources or values would be impacted by the Project.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 20e. Will the proposal restrict historic or pre-historic religious or sacred uses within the potential impact area?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analysis for CEQA checklist item Vb, which concludes that the level of impact to archaeological resources is less than significant.

There are no known uses that would be impacted by the Project.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

6.3 CEQA Checklist Analysis – Tribal Cultural Resources

Table 14. Tribal Resources Impacts

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resource Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)? (CEQA Va-1) or	☐	☐	☐	☒
A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe? (CEQA Va-2)	☐	☐	☐	☒

CEQA Va-1 and CEQA Va-2. Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resource Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1?

Standard of Significance. A substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074, would constitute a significant impact.

As of the date of publication of this document, no responses to Tribal outreach letters have been received. At this point, based on cultural resource investigations for the APE, the assumption is made that no known tribal cultural resources are sited with the Project Area. Tribal representatives will be sent the Notice of Availability (NOA) during the public review process to again solicit comments on the Project.

Environmental Analysis: **No Impact.**

Required Mitigation: **None**.

7.0 GEOLOGY & SOILS (CEQA) AND LAND (TRPA)

This section evaluates the Project's impacts on geological and soil resources during construction and operations. **Table 15** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 15. Geology, Soils, and Land Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides? (CEQA VIa)	☐	☐	☒	☐
Result in substantial soil erosion or the loss of topsoil? (CEQA VIb)	☐	☐	☒	☐
Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? (CEQA VIc)	☐	☐	☒	☐
Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? (CEQA VId)	☐	☐	☒	☐
Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? (CEQA VIe)	☐	☐	☐	☒

Will the Proposal result in:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Initial Environmental Checklist Item				
Compaction or covering of the soil beyond the limits allowed in the land capability or Individual Parcel Evaluation System (IPES)? (TRPA 1a)	☐	☐	☐	☒
A change in the topography or ground surface relief features of site inconsistent with the natural surrounding conditions? (TRPA 1b)	☐	☐	☐	☒
Unstable soil conditions during or after completion of the proposal? (TRPA 1c)	☒	☐	☐	☒
Changes in the undisturbed soil or native geologic substructures or grading in excess of 5 feet? (TRPA 1d)	☐	☐	☐	☒
The continuation of or increase in wind or water erosion of soils, either on or off the site? (TRPA 1e)	☐	☐	☐	☒
Changes in deposition or erosion of beach sand, or changes in siltation, deposition or erosion, including natural littoral processes, which may modify the channel of a river or stream or the bed of a lake? (TRPA 1f)	☐	☐	☐	☒
Exposure of people or property to geologic hazards such as earthquakes, landslides, backshore erosion, avalanches, mud slides, ground failure, or similar hazards? (TRPA 1g)	☐	☐	☐	☒

7.1 CEQA Checklist Analysis

CEQA VIa. Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides?

Standard of Significance. For CEQA VIa-i through VIa-iv, the location of facilities within an Alquist-Priolo earthquake fault zone or known active fault zone or the location of facilities within areas of unstable soil without appropriate design features or construction controls constitutes a significant impact.

Potential geologic hazards within and in the vicinity of the Project Area have been assessed in accordance with the requirements of the California Board for Geologists and Geophysicists (Board) Geologic Guidelines for Earthquake and/or Fault Hazard Reports; the Board Guidelines for Engineering Geologic Reports; California Geological Survey Special Publication 42, Fault-Rupture Hazard Zones in California: Alquist-Priolo Earthquake Fault Zoning Act with index to Earthquake Fault Zone Maps (Hart and Bryant 1997); and California Geological Survey Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California (California Division of Mines and Geology 1997).

The Project Area is located in Uniform Building Code Seismic Hazard Zone 3. Potential geologic hazards for the Project Area would include proximity to potentially active faults and liquefaction resulting from subsurface soil conditions. Project Area conditions do not contribute to increased risk from debris flows,

flooding, rock fall or avalanche. A common effect of earthquakes that could occur in the Project Area is ground shaking along a fault.

The most significant geologic hazards associated with the Project Area are from earthquakes and their associated effects. Earthquakes present direct (primary) and indirect (secondary) hazards; both of which can occur locally or at locations distant from the earthquake source. Direct, local earthquake hazards include damage caused by fault displacements either by ground surface rupture or gradual fault creep. The damage caused by ground shaking is also a direct effect; however, shaking can occur locally or at remote locations. Indirect hazards presented by earthquakes include liquefaction and earthquake-induced landslides, both of which are triggered by ground shaking. The portions of the Project Area that are located on or near steep terrain could be subject to slope instability (e.g., landsliding, either gravitational or earthquake-induced) hazards, but slopes within the Project Area are less than 30 percent. Roads, stormwater infrastructure, pipelines, utilities lines, embankments in the Project Area vicinity may also be subject to this hazard. The analysis of these hazards is based on an understanding of the potential for these events to occur in the Project Area.

The Project Area is not traversed by faults identified by the California Geological Survey as active (i.e., identified under the Alquist-Priolo Earthquake Fault Zoning Act). Data have been obtained from the California Geological Survey and compared against the Project boundaries. Project design has incorporated review of topography, soils, and suitability of materials to ensure safety and risk of loss; based on the soils and type of improvements. Implementation of the Project would not increase the exposure of structures or people to soil instability. The Project would not involve construction of homes or other building structures for human habitation that would expose people to risk of loss, injury, or death from earthquake faults, ground shaking, liquefaction, or landslides during strong seismic shaking events.

Fault Rupture. The Project Area is located within the Sierra Nevada-Great Basin seismic belt. Based on the Division of Mines and Geology Special Publication 42 and the Index to Official Maps of Earthquake Fault Zones (Hart and Bryant 1997), the Project Area is not located in the Alquist-Priolo Earthquake Fault Zone.

The risk of fault rupture is a less than significant impact based on existing published data of officially recognized faults and proximity of the Project Area to such faults. The Project would not increase the present surface rupture hazard nor constructs habitable structures in these areas.

Strong Seismic Groundshaking. The Project Area is located in a region traditionally characterized by moderate seismic activity. A large earthquake in the Project Area vicinity could cause moderate to high ground shaking in the Project Area. Anticipated ground acceleration at the Project Area is great enough to cause structural damage to trail features, such as warping or cracking of trail surfaces.

Implementation of design features and construction controls appropriate to seismic coefficients minimizes the potential ground shaking hazards on features in the Project Area. As engineering details develop, additional investigations will direct engineering specifications for stormwater infrastructure. These details would include appropriate site preparation, excavation of unstable materials, structural fill, compacted fill, subsurface drainage, subgrade and aggregate base for paved trail surfaces to minimize the adverse effects from ground shaking.

The Project would construct no occupied structures and thus exposes no new occupants to ground shaking or injury resulting from seismically induced structural damage.

Through conformance to federal, regional, State and local codes and requirements, design specifications, and construction controls, the potential impact from ground shaking is avoided, minimized and reduced to a level of less than significant

Seismic-related Ground Failure, including Liquefaction. Review of available literature and Project Area soil maps indicates that the sandy soils below the groundwater table are dense in nature and thus not as susceptible to liquefaction. Liquefaction associated with earthquake activity is not likely to occur within the majority of the Project Area due to the high rock content of the soils. With such high rock content, the saturation levels of the soils do not reach a state of liquefaction readily.

Locations with shallow groundwater and less dense sandy soil could be more susceptible to liquefaction. Because shallow groundwater may be encountered at existing treatment basins, a potential for liquefaction exists in these portions of the Project Area. The Project would install design features and construction controls appropriate to seismic coefficients (e.g., 0.3g) to minimize the potential effects from liquefaction to a level of less than significant.

Landslides. The possibility of landslides and seismically induced slope instability is considered low because of the topography within and adjacent to the Project Area. The impact level is less than significant because most locations along the Project Area that are adjacent to steep slopes support existing development and private residences. The construction and operation of the Project would not increase the potential for landslides or seismically induced slope instability. Facility features and construction controls would be built into the 60 percent design proposal for avoidance, reduction and minimization of potential impacts from landslides and seismically induced slope instability. These features would include use of retaining walls in areas with steep side slopes to reduce earthwork requirements and to stabilize adjacent slopes. Revegetation of slopes that are disturbed during Project construction would correspond to the type of disturbance and would comply with State, County, and TRPA codified regulations

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA VIb. Would the Project result in substantial soil erosion or the loss of topsoil?

Standard of Significance. Significant impacts result from non-compliance with TRPA Code Chapters 30, 33 and 60, the 208 Plan, the Lahontan Basin Plan (Chapter 5), or construction permit conditions requirements for the control of erosion on and off-site and the stabilization of soils during and upon completion of excavation, grading and fill activities.

Short-term Construction. The potential for erosion is greatest during the construction period and prior to establishment of revegetation plantings. Construction of the Project would involve clearing and grubbing activities, grading for cut and fill slopes, and excavation and trenching. These construction activities result in soil disturbance and vegetation trimming and removal, which can cause temporary, short-term increases in runoff, soil erosion, wind erosion, and sedimentation within and down gradient of the Project Area. When disturbed areas are not adequately stabilized and revegetated, wind can dislodge soil particles and make them airborne. When runoff bypasses natural processes, this water is not infiltrated and filtered by soils to provide contribution to local groundwater supplies. Excess runoff can overwhelm stream channels with increased water volumes and pollutant concentrations and result in stream bank erosion, loss of vegetation, and reductions in functional aquatic habitat and SEZ.

The design features, construction controls, and BMPs that are incorporated into the Project proposal to reduce short-term erosion potential would include construction phasing to limit the duration of construction and extent of disturbance present at one time. Temporary BMPs provide dust control, protect and stabilize stored materials, define work zones, staging and access areas to limit disturbance, slow runoff velocity and intercept sediment during storm events, and stabilize slopes during Project construction and initial vegetation establishment periods. Design features and construction control measures for these plans would include, but are not limited to:

- Construction phasing that minimizes the extent of disturbance areas and duration of disturbance;
- Clearly marked staging hammerhead (i.e., designated turnarounds) and access areas;
- Armoring of staging, access, and hammerhead areas;
- Construction equipment and vehicle restrictions;
- Temporary BMPs that are effective in containing the 20-year, 1-hour TRPA design storm;
- Topsoil salvaging and pile protection;
- Stabilization of slopes during Project construction and initial vegetation establishment periods;
- Qualified SWPPP Practitioner (QSP) present during construction to ensure BMP effectiveness and conduct remedial actions.

Section 1.10.3 of the Project description provides additional details of the provisions that would be implemented to prevent short-term soil erosion from construction actions. Compliance with NPDES general construction permit conditions, the TRPA ESCP requirements and the TRPA grading ordinance ensure that runoff, wind and water erosion, and sedimentation are contained on-site during construction of the Project and that actions comply with grading restrictions. The ESCP determines the site-specific temporary BMPs for installation during construction activities. The SWPPP developed by a qualified engineer or erosion and sediment control specialist (QSD) is submitted concurrently with the NOI to Lahontan 30 days prior to the start of construction for review and approval. As detailed in Section 1.10.3, the Project's site-specific SWPPP would be employed during construction to minimize risk of soil erosion or loss of topsoil from disturbed areas. As preparation of the 60 percent and final design plans and associated construction documents progress, details for the Lahontan-required SWPPP and the TRPA-required ESCP will refine the final Project proposals.

The Project would be required to comply with the provisions of TRPA Code Chapter 33, Grading and Construction, and City Code Section 7.15, Urban Runoff and Storm Water Quality Management, and Section 7.20, Grading, Erosion, and Sediment Control. Chapter 33 includes specific provisions for timing of grading, winterization of construction sites, specifications for cut and fills areas, and protection of vegetation during construction. Plan Set Sheets T2, D1, and D3 in **Appendix A** provides additional details, as based on the 30 percent design submittal.

Long-term Operational. The Project will include hydrologic source controls to infiltrate runoff from trail surfaces into the adjacent clear zones and avoid off-site impacts to soils. The stormwater infrastructure by its very nature is designed to include source controls and improve infiltration to avoid accelerated erosion or loss of topsoil. The Project would stabilize and revegetate areas that are disturbed during construction and would maintain these areas as part of the City's ongoing facilities operations and maintenance program. Long-term maintenance of these areas minimizes long-term effects to soils. The Project proposal minimizes soil disturbance and loss of topsoil through:

- Revegetation specifications that respond to site-specific conditions;
- Stabilization of cut and fill slopes;
- Adequate cross drainage;
- Installation of culverts in areas with evidence of surface drainage;
- Protection and restoration of SEZs;
- Installation of asphalt concrete trail on permeable fill/vented trail or other comparable trail design and materials in areas with evidence of seasonal surface hydrology; and

- Long-term monitoring and adaptive management strategies to limit new disturbance from user created unpaved trails.

This evaluation concludes that the Project would include design features, construction controls and BMPs that are appropriate and adequate to minimize erosion on and off-site and stabilize soils during and upon completion of excavation, grading and fill activities. The Final Project proposal would conform to federal, regional, State and local codified regulations for the control of soil erosion, thereby reducing potential impacts to a level of less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

CEQA VIc. Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Standards of Significance. The location of new structures of facilities within areas subject to unstable soil conditions resulting from grading, excavation or fill constitutes a significant impact. Refer to the analysis for CEQA VIa, which analyzes the potential for landslides, lateral spreading and liquefaction and determines the level of impact would be less than significant.

Liquefaction occurs in water-saturated sediments that are shaken by moderate to large earthquakes. Liquefaction hazard analysis involves understanding the potential for ground shaking combined with the physical properties and conditions of the soil. Soils most susceptible to liquefaction are saturated, loose, clean, uniformly graded, and fine-grained sand deposits. Geologic age also influences the potential for liquefaction. Sediments deposited within the past few thousand years are generally much more susceptible to liquefaction than older Holocene age sediments; Pleistocene age sediments, which are between 12,000 and 2.5 million years, are even more resistant; and pre-Pleistocene age sediments (more than 2.5 million years) are generally immune to liquefaction (California Division of Mines and Geology 1997). The Project Area is mapped as Qlt [Quaternary Lacustrine terrace deposits (Pleistocene)] and consists of poorly to moderately sorted silt, sand, and gravel forming broad low terraces 5 to 10 meters above lake level, which locally includes delta deposits (Saucedo 2005). The liquefaction potential within the Project Area is low.

Landslides and debris flows triggered by earthquake ground shaking have historically been the cause for a great deal of property damage and loss of life. Areas most susceptible to earthquake-induced landslides are generally on steep slopes or adjacent to existing landslide deposits. The possibility of landslides and seismically induced slope instability is considered low due to topography within and upslope of the Project Area. The Project location and design would generally avoid areas of steep slopes.

Moderate or large avalanches can generate enough force to destroy most man-made objects and structures. Restricting the intensity of development in areas of high avalanche potential reduces the possibility of loss of life and property. Therefore, avalanche risk areas are taken into consideration during development review. Substantial potential for avalanche within the Project Area does not exist due to the flat and gradually sloping topography.

Depending on the characteristics of the preceding water year, shallow or seasonally high groundwater may be encountered at the Project Area during construction, but seepage would not be substantial enough to initiate debris flow mobilization and shallow landslides.

The Project entails construction of surface improvements and subsurface stormwater collection and conveyance facilities. A majority of the surface excavation/grading associated with the Project would be minor surface grading for the construction of stormwater collection and conveyance facilities, roadway

improvements, and surface pavements and aggregates for trails and open space recreation areas, with general grading elevation changes of less than 2 feet. Additional excavations would be associated with modifications to existing storm drainage systems and construction of new stormwater pipelines and treatment basins. These excavations would be localized to drainage inlet sumps with maximum depths of 8 feet and storm drainage pipelines for conveyance and connection of drainage facilities with average depths of 3 to 5 feet over its length. New treatment basin excavations would include cut/fill balancing with average finished basin depths of 3 feet from original grade. The surface improvements and storm drainage facility improvements are similar in nature to existing infrastructure throughout the developed Project Area.

The TVAP SEZ Report in **Appendix D** (TerraScience 2014) and Tahoe Basin Soil Survey (NRCS 2007) identify no areas of unstable soil conditions that are susceptible to collapse or subsidence. Standard design features and construction controls such as selective site grading and revegetation of disturbed areas would be part of the Project for stabilization of disturbed soils and cut and fill slopes created by the Project. The Project minimizes grading and cut and fill slopes. As discussed below in the analysis for TRPA 1a, the Project would avoid significant encroachment in mapped areas of LCD 1b. TRPA identifies these LCDs as sensitive to disturbance. The Project proposal includes provisions for short-term and long-term stabilization that recognize this sensitivity including: construction controls to limit disturbed soil erosion, use of retaining walls to limit site grading, and a revegetation planting plan suited to site-specific soil type and condition.

Soil units within the Project Area are not considered unstable and would not become unstable as a result of Project construction or operations, nor would on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse result. The level of impact from unstable soil conditions would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

CEQA VId. Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Standard of Significance. Significant impacts result if the Project locates facilities within areas of moderate to high soil risk, of unstable soils, or of expansive or corrosive soils without appropriate geotechnical and engineering measures.

Soil map units within the Project Area are not considered expansive soils, as defined in the Uniform Building Code of 1994. Additionally, according to the Swelling Clays Map (USGS 1989), the Lake Tahoe Basin is in an area with little to no clays with swelling potential. The level of impact from expansive soils would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

CEQA VIe. Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Standard of Significance. The development of septic systems or alternative wastewater disposal systems in areas of soils that are inadequate to support such a use results in a significant impact.

The Project proposes no septic tanks or alternative wastewater disposal systems, and therefore, would create no impact to this resource.

Environmental Analysis: **No Impact.**

Required Mitigation: **None**.

7.2 TRPA Checklist Analysis – Land

TRPA 1a. Will the proposal result in compaction or covering of the soil beyond the limits allowed in the land capability or Individual Parcel Evaluation System (IPES)?

☐Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Project proposals that do not comply with provisions of TRPA Code Section 30.4 for maximum coverage (note: maximum land coverage for linear public facilities equals the minimum amount necessary to achieve the public purpose), Section 30.5 for additional coverage in low capability lands, or Section 30.6 for existing excess coverage create a significant impact.

Refer to discussion in CEQA IVb, which concludes that the Project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. The Project proposal would minimize additional land coverage in SEZs (LCD 1b) (Refer to the analysis for CEQA IVb) and would not affect floodplains (Refer to the analysis for CEQA IXd). These analyses are not repeated in this section.

TRPA Code Chapter 30 contains the criteria pertinent to land coverage for the Project Area. New land coverage would only occur with the Greenbelt portion of the larger linear Project Area. Therefore, the following analysis evaluates the Project proposal in the Greenbelt in relation to: 1) existing land coverage and base allowable land coverage (BAL) and 2) the effects of additional land coverage in both high and low LCDs. For purposes of quantifying BAL, determination of the Project Area followed TRPA Code subparagraph 30.4.1.C.2(a)(iii) for a project on or comprising two or more contiguous parcels. Land coverage associated with highways, streets, and roads is excluded from the BAL calculation. Non-motorized public trails are exempt from the calculation of land coverage as long as they are designed in accordance with TRPA Code Section 30.4.6(D)(3).

The Project implements TRPA EIP projects and will attain environment thresholds, so it is not subject to the excess land coverage mitigation program per TRPA code section 30.6.2.D. TRPA Code Section 30.4 details land coverage limitations and states the maximum land coverage (i.e., BAL plus transferred land coverage) for public service projects is limited to the minimum amount needed to achieve their public purpose. In instances where proposed land coverage exceeds the BAL, land coverage must be relocated from other portions of the Project Area in conformance with TRPA Code Section 30.6. If relocation of land coverage within the Project Area cannot fully offset the proposed land coverage, then land coverage must be transferred into the Project Area following the process outlined in TRPA Code Section 30.4.3.

Proposed land coverage within the Greenbelt area would be located within LCDs 1b and 7. LCD 7 is classified as “non-sensitive” and 1b is classified as SEZ (**Figure 10**). Existing land coverage within the Greenbelt area is related to soft coverage, footpaths, and bike trails. New land coverage would be associated with improved sections of existing footpaths and bike trails and new sections of footpaths and bike trails that improve connectivity with the existing regional trail system. Stormwater improvements and recreational amenities may result in temporary disturbance but would not result in new permanent disturbance or land coverage in SEZ. Land coverage associated with the expansion of the public plaza would be located in LCD 7.

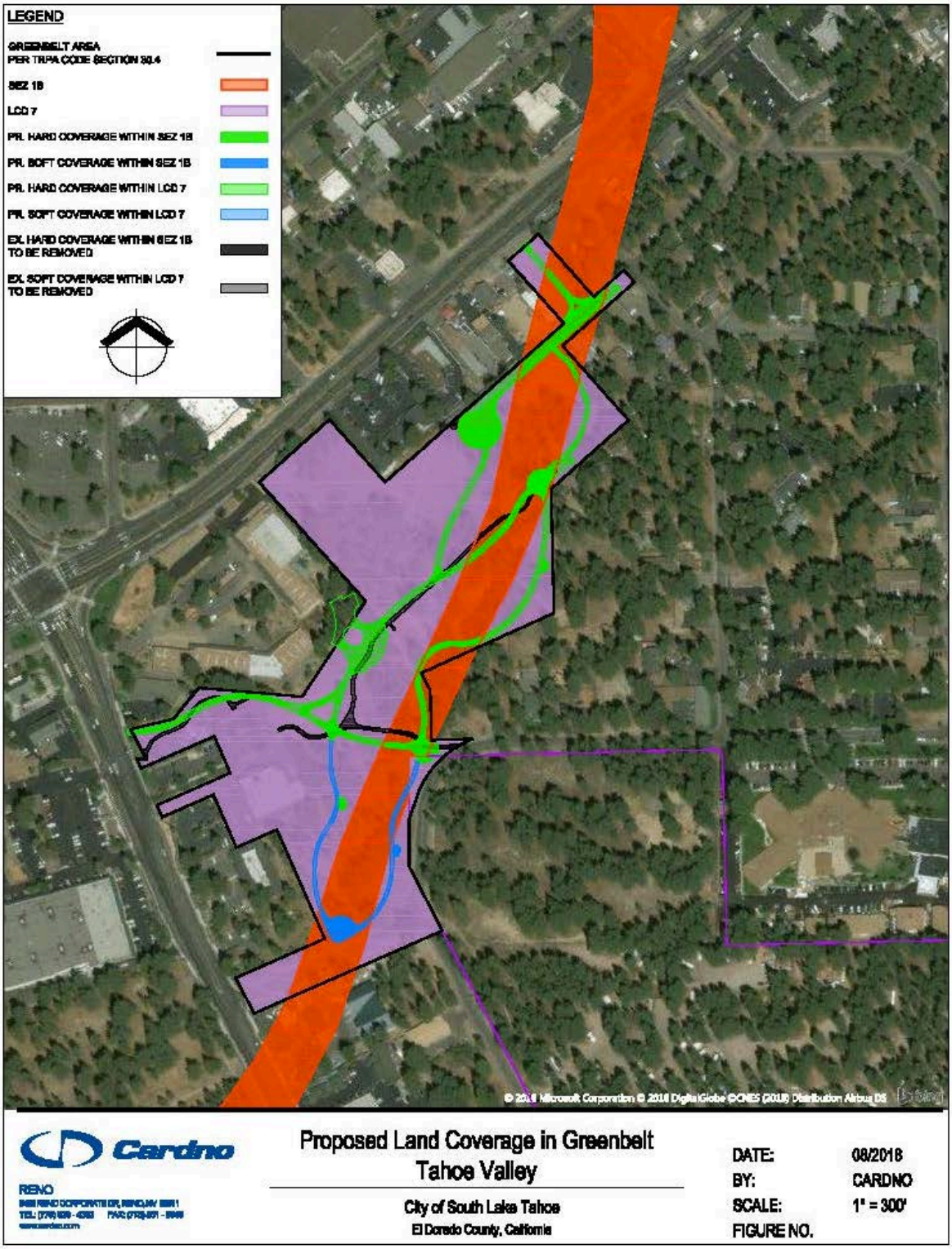

Figure 10 Proposed Land Coverage by Land Capability District.

Table 16 presents the land coverage calculations upon which the evaluation of the land capability limitations rests. **Table 16** provides data segregated by LCD 1b and LCD 7 and then totaled for the Project Area. The table column titles are defined as follows:

- Land Capability District – Land capability, as mapped in **Figures 3 and 10**, reflects the LCDs that were verified for TVAP approvals. As applicable to the Project Area, lands in LCD 1b are treated as SEZ, while lands in LCD 7 are defined as high capability.
- Greenbelt Project Area – The determination of Greenbelt Project Area follows the boundaries of the area of land involved for a project on two or more contiguous parcels and is the total combined square footage of the multiple contiguous parcels, which equates 755,938 square feet.
- Land Coverage - A man-made structure, improvement, or covering, either created before February 10, 1972, or created after February 10, 1972, pursuant to either TRPA Ordinance No. 4, as amended, or other TRPA approval, that prevents normal precipitation from directly reaching the surface of the land underlying the structure, improvement, or covering. Such structures, improvements, and coverings include, but are not limited to, roofs, decks, surfaces that are paved with asphalt, concrete, or stone, roads, streets, sidewalks, driveways, parking lots, tennis courts, patios; and 2) lands so used before February 10, 1972, for such uses as for the parking of cars and heavy and repeated pedestrian traffic that the soil is compacted so as to prevent substantial infiltration. A structure, improvement or covering shall not be considered as land coverage if it permits at least 75 percent of normal precipitation directly to reach the ground and permits growth of vegetation on the approved species list. See also "Potential Land Coverage." Common terms related to land coverage are: Hard Coverage—man-made structures as defined above and Soft Coverage—compacted areas without structures as defined above.
- TRPA BAL – The maximum amount of BAL on a parcel or project area is equal to the cumulative allowed base coverage of all LCDs, as determined by applying the land coverage percentage for each district set forth in TRPA Code subsection 30.4.1 to the parcel or project area. BAL for the Project Area is 164,315 square feet, of which 162,161 square is allowable in LCD 7 and 2,154 square feet is allowable in LCD 1b.
- TRPA Verified Existing Land Coverage – Land coverage, hard or soft, that has been field verified by TRPA staff. Existing land coverage in the Greenbelt portion of the Project Area was verified for TVAP approvals and totals 162,148 square feet. Because lands underlying covered surfaces associated with existing linear public facilities, highways, streets, and roads referred to in TRPA Code subparagraph 30.4.2.A.3, and easements or ROWs allowing potential land coverage for linear public facilities, highways, streets, and roads are not included in the Project Area, the associated land coverage in these areas (36,178 square feet) is not attributable to verified existing land coverage. The existing land coverage in the Project Area that is attributable to BAL is associated with existing parking areas, structures and buildings that are located on the commercial parcels.
- Proposed Land Coverage/New Land Coverage –This is land coverage that would result from the Project, is not considered exempt, is not accounted for by relocated land coverage, and is not proposed over existing land coverage. New non-motorized trails (64,094 square feet) and public roadways and ROWs (18,806 square feet) are exempt from the calculation of land coverage, and resultantly the Project would create no new permanent land coverage in LCD 1b. New permanent land coverage in LCD 7 would be 9,547 square feet, which is land coverage associated with expanding the public plaza and is not exempt.
- Relocated Land Coverage – Existing verified land coverage that may be relocated on the same parcel or project areas to an equal or higher capability LCD based on compliance with TRPA Code subsection 30.4.4. The Project will relocate 4,951 square feet of existing land coverage within LCD 1b and 25,875 square feet within LCD 7. This land coverage is associate with existing user-created footpaths and

portions of the existing bike trail that will be removed, restored and relocated by the Project to improve connectivity of the regional transportation system.

- Proposed Land Coverage Over Existing Land Coverage – The Project locates new exempt land coverage over existing verified land coverage to the maximum extent possible. This land coverage is deducted from the new permanent land coverage totals.
- Removed Land Coverage – TRPA verified land coverage (hard coverage and soft coverage) can be removed and restored for credit (e.g., Banking), retired pursuant to TRPA Code Section 51.6, or transferred through the method detailed in Code Section 30.4.3. The Project removes some hard coverage through the decommissioning of existing trails and most soft coverage associated with user created footpaths in the Greenbelt. This land coverage is applied towards relocated land coverage (**Table 16**) with no overage remaining for credit, retirement or transfer.
- Temporary Disturbance in LCD – Although the Project would result in no new land coverage in LCD 1b that is not exempt, up to 25,223 square feet of temporary disturbance in SEZ would occur for Project implementation and relocation of existing land coverage in LCD 1b. TRPA Code subsection 30.5.2, Exceptions to Prohibitions in Land Capability District 1b, and Lahontan Basin Plan Chapter 5.2, Waste Discharge Prohibitions, allow for disturbances in SEZs for public service facilities. This land coverage analysis presents the exemption findings below.

Table 16. Project Area Existing, Proposed, and Relocated Land Coverage

Land Capability District (LCD)	Greenbelt Project Area (sqft)	TRPA Base Allowable Land Coverage (BAL) (sqft)	TRPA Verified Existing Land Coverage (sqft)	Existing Land Coverage NOT Attributable to BAL (sqft)	Existing Land Coverage Attributable to BAL (sqft)	Proposed Land Coverage (sqft)	Proposed Land Coverage (Exempt Trails) (sqft)	Proposed Land Coverage (Exempt Roads/ROW) (sqft)	Relocated Land Coverage (sqft)	Proposed Land Coverage Over Existing Land Coverage (sqft)	Removed Land Coverage (sqft)	New Permanent Land Coverage (sqft)	Temporary Disturbance in LCD (sqft)
1b (SEZ) (1%)	215,402	2,154	29,928	14,117	15,811	30,228	24,528	5,700	4,951	9,956	N/A	-	25,223
7 (Man-Modified) (30%)	540,536	162,161	132,220	22,061	140,087	62,219	39,566	13,106	25,875	10,060	N/A	9,547	78,034
Totals	755,938	164,315	162,148	36,178	155,898	92,447	64,094	18,806	30,826	20,016	N/A	9,547	103,257

Notes:

Existing Land Coverage in LCD 1b is 19,405 sf of Hard Coverage and 10,523 sf of Soft Coverage

Proposed Land Coverage in LCD 1b is 20,640 sf of Hard Coverage and 9,588 sf of Soft Coverage

Proposed Land Coverage in LCD 1b associated with Exempt Trails and Footpaths is 14,940 sf of Hard Coverage and 9,588 sf of Soft Coverage

Relocated Land Coverage in LCD 1b is 4,536 sf of Hard Coverage and 415 sf of Soft Coverage

Existing Verified Land Coverage. TRPA-verified existing land coverage and BAL for the Project Area tier from TVAP approvals. TRPA verified 140,087 square feet of land coverage in LCD 7 and 15,811 square feet in LCD 1b. The coverage in LCD 7 is within the BAL. Land Covege in 1b exceed the BAL by 31,657 square feet.

Additional Land Coverage in LCD 7. The Project proposal maximizes the use of existing paths and trails (and thus existing verified land coverage) and maximizes the location of new paths and trails in higher capability LCDs where possible. **Table 16** calculates the effects of new construction, in some cases over existing verified land coverage and in other cases using relocated land coverage. The Project would result in new permanent land coverage in LCD 7 but resultant land coverage would not exceed BAL.

Additional Land Coverage in LCD 1b (SEZ). Existing verified land coverage in LCD 1b totals 15,811 square feet. Through the location of proposed land coverage over existing land coverage and through the relocation of existing land coverage, the Project results in no new land coverage in SEZ. The Project would encroach into SEZ in areas where existing paths and trails cross the Greenbelt SEZ and in areas where no alternative crossing is available or feasible. Encroachment (i.e., only temporary disturbance in this case) in the Greenbelt SEZ is estimated at 25,223 square feet. TRPA Code generally prohibits encroachment in LCD 1b except in limited situations when applicable findings can be met and offsetting restoration provided. As described below, the Project meets the findings for temporary disturbance allowed by both Lahontan and TRPA for public service projects.

Section 1.10 of the Project description describes the Project provisions for temporary BMPs to reduce construction-related impacts and provisions for site protection and revegetation and restoration to offset temporary disturbance, including limiting overall encroachment with use of project fencing and avoidance of SEZ vegetation. Permanent BMPs for erosion and sediment control would include slope stabilization, revegetation and drainage controls. Refer to the evaluation for CEQA VIb that presents the Lahontan Basin Plan exemption findings for disturbance in an SEZ.

Sufficient on-site restoration of SEZ is proposed to meet mitigation responsibilities and result in a net environmental benefit to stream environment zones. The Project proposal, including the provisions for BMPs and on-site SEZ restoration, meets the findings necessary to avoid significant impact from additional, yet temporary, encroachment in low capability lands.

Relocation of Existing Land Coverage within the Project Area. The Project relocates existing verified land coverage within the Project Area to accommodate the new land coverage created by the shared-use trail and footpaths in LCD 1b. TRPA Code Subsection 30.4.4 requires that land coverage relocation within the same project area meet the following findings:

A. The relocation is to an equal or superior portion of the parcel or project area, as determined by reference to the following factors:

(1) Whether the area of relocation already has been disturbed;

The Project Area is currently disturbed by existing uses, including roadways, stormwater infrastructure and trails. Land coverage relocation is proposed in LCD 1b to offset new land coverage of up to 4,951 square feet associated with improving Greenbelt trail connections and SEZ crossings. The trail alignments follow existing disturbance where the design can do so and still achieve project objectives, including compliance with allowable trail grades for ADA.

(2) The slope of and natural vegetation on the area of relocation;

Slope is a factor of land capability. As such land coverage relocated in conformance with TRPA standards requiring relocation from equal or lower capability LCDs to higher ones generally avoids greater impacts related to slope. Similar slope and vegetation communities comprise the Project Area throughout, and the Project will formalize trails, avoid unnecessary SEZ encroachment, and

revegetate disturbed areas. Therefore, the slope and natural vegetation on the area of relocation will be equal or superior compared to existing conditions.

(3) The fragility of the soil on the area of relocation;

Land capability designation generally represents soil fragility; soils more sensitive to disturbance are grouped in lower capability LCDs. Because land coverage will be relocated from one LCD 1b area to another LCD 1b area, an equal or superior relationship to fragile soils is expected.

(4) Whether the area of relocation appropriately fits the scheme of use of the property;

Section 11.0, Land Use and Planning, concludes that the Project appropriately fits the scheme of use of the Project Area. Construction of trails is a permissible use throughout the Project Area, continuing similar informal recreation and access uses found in the Project Area under existing conditions. The relocated land coverage comes from the elimination of existing land uses (i.e., existing unpaved trail and existing asphalt trail that does not provide for adequate connections), which represent uses that are similar to the Project.

(5) *The relocation does not further encroach into a stream environment zone, backshore, or the setbacks established in the Code for the protection of stream environment zones or backshore;*

The relocation minimizes encroachment into a SEZ. The setbacks established in the TRPA Code for the protection of SEZs to the greatest extent feasible by application of trail design would minimize disturbance in the SEZ by confining users to the shared-use trail surfaces particularly during wet soil conditions and by accommodating seasonal surface flows and seasonal high groundwater. The Project Area contains no backshore.

(6) The project otherwise complies with the land coverage mitigation program set forth in Section 30.6;

The Project is a public service project and is thus not subject to the excess land coverage mitigation program set forth in TRPA Code Section 30.6.

B. The area from which the land coverage was removed for relocation is restored in accordance with Subsection 30.5.3.

The Project relocates and restores LCD 1b land coverage in accordance with TRPA revised Code Subsection 30.5.3. The Project will identify and return existing land coverage to more naturally functioning conditions through the expansion of SEZ area and improvement to SEZ functions. The City will monitor and maintain these areas for vegetation cover.

C. The relocation is not to Land Capability Districts 1a, 1b, 1c, 2 or 3, from any higher numbered land capability district.

The Project Area contains adequate verified existing land coverage to achieve relocation from LCD 1b to LCD 1b. If land coverage in the Project Area cannot be restored because of existing use patterns, LCD 1b land coverage restoration will be conducted off-site and transferred into the Project Area. The Project will relocate 4,951 square feet to meet the 1.5:1 offset described in finding 30.4.5.D.2 below.

D. If the relocation is from one portion of a stream environment zone to another portion, there is a net environmental benefit to the stream environment zone. "Net environmental benefit to a stream environment zone" is defined as an improvement in the functioning of the stream environment zone and includes, but is not limited to:

(1) Relocation of coverage from a less disturbed area to a more disturbed area or to an area further away from the stream channel or water body, as applicable;

The Project Area is currently disturbed by existing uses, including paved roadways and trails, unpaved trails and paths, stormwater infrastructure, public utilities, and commercial buildings and parking area. Land coverage relocation is proposed in LCD 1b to offset 4,951 square feet of land coverage, although exempt, associated with relocated trails that must cross the Greenbelt SEZ. It is reasonable to conclude that the relocation of LCD 1b land coverage will result in a net environmental benefit given that Greenbelt SEZ crossings will be improved to promote cross drainage of surface water. Ground disturbance and removal of vegetation associated with new trail surfaces have been located and designed to minimize temporary disturbance and new land coverage within SEZs and will be stabilized, revegetated, and maintained to minimize potential operational impacts.

(2) Retirement of land coverage in the affected stream environment zone in the amount of 1.5:1 of the amount of land coverage being relocated within a stream environment zone; or

SEZ restoration amounts proposed by the Project demonstrate compliance with the requirements of restoration of 1.5 square feet of SEZ for every square foot of new encroachment.

(3) For projects involving the relocation of more than 1,000 square feet of land coverage within a stream environment zone, a finding, based on a report prepared by a qualified professional, that the relocation will improve the functioning of the stream environment zone and will not negatively affect the quality of existing habitats, considering factors such as, but not limited to, soil function, hydrologic function, vegetation, and wildlife habitat.

The Project involves relocation of 4,951 square feet of LCD 1b land coverage within the Greenbelt SEZ that was verified during TVAP approvals. **Appendix E** attaches the Stream Environment Zone Report for the TVAP (Terra Science, Inc. 2014), which considered soil function, hydrologic function, vegetation and wildlife habitat in the delineation of SEZ.

Transfer Existing Land Coverage. In addition to BAL prescribed in TRPA Code subsection 30.4.1, land coverage may be transferred to a parcel pursuant to subsection 30.4.3. For public service projects, the maximum land coverage (i.e., BAL plus transferred land coverage) is limited to the maximum amount needed to achieve the Project's public purpose and off-site land coverage transfer can meet the land coverage needs when insufficient on-site land coverage is available within the Project Area. The Project proposal first locates proposed land coverage over existing verified land coverage and secondly restores LCD 1b land coverage for relocation. As indicated in **Table 16**, the Project would result in no new permanent land coverage in LCD 1b, and would therefore, not require the transfer of land coverage.

In summary, the Project meets the findings necessary to demonstrate compliance with TRPA land capability system and avoids potentially significant impacts to land coverage.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 1b. Will the proposal result in a change in the topography or ground surface relief features of site inconsistent with the natural surrounding conditions?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Changes in topographic features of the Project Area that are inconsistent with the surrounding conditions results in a significant impact to topography or ground surface relief features.

Field evaluations identify no unique geologic or physical features within the Project Area that could be destroyed, covered or modified.

The Project complies with the TRPA Code Site Development Provisions and Grading and Construction Provisions (TMPO 2006), creates no impact to native geologic substructures, and minimizes changes in topography. The proposal locates the shared-use trail in areas of appropriate slope, but includes short portions of trail grades over 5 percent. Cut and fill slopes along the trail alignments do not exceed 5 feet in depth below existing grades, as illustrated in **Appendix A**.

Construction would involve grading within the basin areas to expand depression areas where stormwater runoff would be captured and infiltrated; however, the topography would not be changed to the extent that the surface relief features of the site are inconsistent with the natural surrounding conditions.

The Project would require minor trenching to relocate storm drainage facilities such as piping and trenches which are less than 100 feet on average, but these would be filled to grade level. The impacts associated with grading of the surface would be less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 1c. **Will the proposal result in unstable soil conditions during or after completion of the proposal?**

☒ Yes ☐ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Significant impacts result from non-compliance with TRPA Code Chapters 30, 33, and 60, the 208 Plan, and the Lahontan Basin Plan (Chapter 5), which require the control of erosion on- and off-site and the stabilization of soils during and upon completion of excavation, grading, and fill activities.

Refer to the analysis for CEQA VIb, which concludes the level of impact to soils would be less than significant and that unstable soil conditions would not occur as a result of Project construction, operations, or maintenance. There would be soil disturbance during construction, but temporary soil disturbance would be mitigated by implementation and maintenance of temporary BMPs and approval and implementation of the project-level SWPPP.

Environmental Analysis: **Yes; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 1d. Will the proposal result in changes in the undisturbed soil or native geologic substructures or grading in excess of 5 feet?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. TRPA Code Subsection 33.3.6 prohibits excavation in excess of 5 feet in depth or where there exists a reasonable possibility of interference or interception of a water table except under defined and permitted conditions. If groundwater interception or interference will occur as demonstrated by a soils hydrologic report, excavations can be approved and significant impacts avoided through inclusion of facility measures to protect groundwater flows to avoid adverse impacts to SEZ vegetation, if any would be affected, and to prevent groundwater or subsurface water from leaving the Project Area as surface flow.

Preliminary field evaluations identified no severe soil constraints that preclude grading and construction activities with the exception of areas of potential shallow groundwater. Construction of the Project would require little to no importation of fill materials, as the Project utilizes materials from cut areas within the

Project Area, with transportation of excess materials off-site to a TRPA-approved disposal site that will be identified during Project permitting.

TRPA prohibits excavations deeper than 5 feet because of the potential for groundwater interception or interference, except under defined and permitted conditions. The Project avoids cuts that exceed five (5) feet. Compliance with TRPA Code Subsection 33.3.6 reduces the potential impacts from excavations to a level of less than significant through conformance with codified regulations.

A majority of the surface excavation/grading associated with the Project would be minor surface grading with general grading elevation changes of less than 2 feet. Modifications to existing and construction of new treatment basin excavations would include cut/fill balancing with average finished basin depths of 3 feet, and no more than 5 feet from original grade. Additional excavations would be associated with modifications to existing storm drainage systems and construction of new stormwater pipelines. The storm drain system excavations would be temporary open-cut/trenching and backfilled upon completion, with work localized to installation of underground drainage inlet sumps (maximum trench depths of 8 feet) and storm drainage pipelines within existing developed road ROWs, for conveyance and connection of drainage facilities (average trench depths of 3 to 5 feet).

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 1e. Will the proposal result in the continuation of or increase in wind or water erosion of soils, either on or off the site?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact occurs if the Project causes a continuation of or increase in wind erosion or water erosion of soils, either on or off-site, creating non-compliance with TRPA Code Chapters 30, 33 and 60, the 208 Plan and the Lahontan Basin Plan (Chapter 5). These regulations require the control of erosion on and off-site and the stabilization of soils during and upon completion of excavation, grading and fill activities. Refer to analysis CEQA item VIb, which concludes the level of impact to soils would be less than significant.

The Project would be subject to TRPA Code Chapter 33, Grading and Construction, and Chapter 60, Water Quality; City Code Chapter 35, Urban Runoff and Stormwater Quality; the City's Stormwater Management Plan; and the Project's SWPPP requiring the use of BMPs for erosion control and water quality protection. Compliance with applicable regulations and permitting requirements for control of erosion on or off-site and the protection of topsoil would reduce temporary construction impacts and long-term operational impacts to Project Area soils to a level of less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

TRPA 1f. Will the proposal result in changes in deposition or erosion of beach sand, or changes in siltation, deposition or erosion, including natural littoral processes, which may modify the channel of a river or stream or the bed of a lake?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Actions that modify the channel of a river or stream or the bed of a lake could result in a significant impact.

The Project Area is approximately 1.5 miles from the beaches of Lake Tahoe and does not contain shorezone. There are no surface water features in the Project Area. The Project would not impact rivers, streams, or lake beds.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None**.

TRPA 1g. Will the proposal result in exposure of people or property to geologic hazards such as earthquakes, landslides, backshore erosion, avalanches, mud slides, ground failure, or similar hazards?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The location of facilities within an Alquist-Priolo earthquake fault zone or known active fault zone or the location of facilities within areas of unstable soil without appropriate design features or construction controls constitutes a significant impact.

Refer to analysis for CEQA checklist item VIa, which concludes the level of impact from hazardous conditions would be less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None**.

8.0 GREENHOUSE GAS EMISSIONS

The Project has been analyzed for impacts associated with GHG emissions. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (California Health and Safety Code, Section 38505[g]). The most common GHGs that result from human activity are CO_2, followed by CH_4 and N_2O (EPA 2018). **Table 17** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 17. Greenhouse Gas Emissions Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist				
Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? (CEQA VIIa)	☐	☐	☒	☐
Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs? (CEQA VIIb)	☐	☐	☒	☐
Will the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist				
Significantly alter climate, air movement, moisture, or temperature? (TRPA 2d)	☐	☐	☐	☒

8.1 CEQA Checklist Analysis

CEQA VIIa. Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Standard of Significance. El Dorado County AQMD participated in the development of GHG thresholds for air districts in the Sacramento region. The SMAQMD recommends a threshold of significance of 1,100 metric tons of carbon dioxide equivalent (CO_2e) per year for the construction phase of projects. This analysis assesses construction and long-term operational emissions as a percent of existing emissions.

The Project would temporarily generate GHG emissions from combustion of fossil fuels (i.e., diesel, gasoline) used to run construction equipment and vehicles, both on-site and off-site during construction over two summer seasons (12-months of construction total). The GHG emissions would predominantly occur as CO_2 from diesel engine exhaust. Currently, no federal or state GHG emission thresholds have been adopted. However, the SMAQMD threshold is intended to evaluate a project for consistency with GHG targets established by the California Global Warming Solutions Act of 2006 (AB 32), particularly for emissions occurring by 2020. An approach was also identified for operational emissions, but the Project would not generate emissions once construction is completed; therefore, this approach is not discussed further.

GHGs would result from engine exhaust emissions caused by operation of off-road construction equipment and on-road vehicles. Emissions were calculated using the RCEM, Version 8.1.0 (SMAQMD 2016) worksheet, which uses CARB EMFAC 2014 and OFFROAD 2011 (to be consistent with CalEEMod) exhaust emission factors. The spreadsheet model (contained in **Appendix B**) is designed to estimate construction emissions for linear projects and allows for input of project-specific information. Input parameters were based on default model settings and information provided in the Project description in Section 1. This version of RCEM was updated to calculate emissions of sulfur oxides (Sox), CH_4, and N_2O, in addition to emissions of CO_2, for determination of CO_2e. The approximate quantity of total GHG emissions generated by construction activities is shown in **Table 18**.

Table 18. Construction-Related Greenhouse Gas Emissions (Metric Tons per Year)

Construction Activities	**Metric Tons of CO_2e**
Total Project Emissions	475
AQMD Significance Threshold	1,100
Exceedance of Threshold?	No

As shown in **Table 18**, Project construction would result in CO_2e emissions of approximately 475 metric tons; therefore, emissions would not exceed AQMD significance thresholds for construction-related GHG emissions and the level of potential impact would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

CEQA VIIIb. Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

Standard of Significance. Currently, neither the TRPA, TMPO nor the El Dorado AQMD maintains local or regional plans, policies, or regulations for the purpose of reducing the emissions of GHGs. Therefore, evaluation of this effect relies on general compliance with the 2008 CARB Scoping Plan strategies to achieve GHG emissions reduction goal as directed by AB 32.

As discussed under CEQA VIIIa, the threshold established by the SMAQMD is intended to evaluate a project for consistency with GHG targets established in AB 32, particularly for emissions occurring by 2020. Project emissions would be below the threshold; therefore, the Project would not conflict with AB 32, which is one of the primary regulations intended to reduce California's GHG emissions. In addition, Project implementation would help to achieve the AB 32 goals, in part by contributing to carbon sequestration through revegetation of disturbed areas.

The Project also would help reduce daily traffic trips by providing additional connectivity of the Class I multi-use trail, thus reducing GHG emissions. These features would support an alternative mode of transportation that does not rely on the use of fossil fuels, and would help the City meet General Plan Goal NCR-5, "incorporate air quality improvements and emissions reductions directly with land use and transportation planning" by implementing Policy NCR-5.1 (*The City shall encourage the use of alternative modes of transportation by encouraging public transit, neighborhood electric vehicles, bicycle, and pedestrian modes in City transportation planning and by requiring new development to provide safe and separate pedestrian circulation and adequate bikeway circulation and facilities*). The Project also would not conflict with the City's goals and policies specifically related to climate change (e.g., Goal NCR-6, Policies NCR 6.1 through 6.2), which are focused on new development.

The TRPA RPU (TRPA 2012a) also includes goals and policies intended to reduce GHG emissions, including the following:

1. Goal 1, *Protect and enhance the environment, promote energy conservation, and reduce greenhouse gas emissions.*
2. Policy 1.3, *Mitigate the regional and cumulative traffic impacts of new, expanded, or revised developments or land uses by prioritizing projects and programs that enhance non-automobile travel modes.*
3. Policy AQ-1.3, *Encourage the reduction of emissions from motor vehicles and other motorized machinery in the region*.

TRPA's Transportation Plan (2017) includes similar provisions:

1. Goal 1, *Protect and enhance the environment, promote energy conservation, and reduce greenhouse gas emissions*.
2. Policy 1.3, *Mitigate the regional and cumulative traffic impacts of new, expanded, or revised developments or land uses by prioritizing projects and programs that enhance non-automobile travel modes*.

The Transportation Plan also indicates that the Tahoe region is required to meet GHG reduction targets of 7 percent by 2020 and 5 percent by 2035 based off 2005 emission levels.

By facilitating improvements to the existing trail system that will increase connectivity through the Tahoe Valley and surrounding areas, the Project will enhance opportunities for alternative, non-motorized transportation, such as bicycling and walking. Therefore, the Project would be consistent with TRPA plans and policies intended to reduce GHG emissions.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None**.

8.2 TRPA Checklist Analysis

TRPA 2d. Will the proposal result in the alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?

Standard of Significance: A significant impact occurs if the Project CO_2 or methane emissions exceed 500 tons/year and/or the concentration of resultant tree removal changes habitat categorization.

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

This analysis is first addressed in Section 4.0, Air Quality. The analysis concludes that Project impacts would be less than significant.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

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9.0 HAZARDS & HAZARDOUS MATERIALS (CEQA) AND RISK OF UPSET & HUMAN HEALTH (TRPA)

This section evaluates the Project's impacts associated with hazards, hazardous materials, and risk of upset during construction and operations. Impacts on public health from air emissions are discussed in Section 4. **Table 19** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 19. Hazards and Hazardous Materials Impacts and Risk of Upset and Human Health

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (CEQA VIIIa)	☐	☐	☒	☐
Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (CEQA VIIIb)	☐	☐	☒	☐
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (CEQA VIIIc)	☐	☐	☒	☐
Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? (CEQA VIIId)	☐	☐	☒	☐
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the Project Area? (CEQA VIIIe)	☐	☐	☒	☐
For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the Project Area? (CEQA VIIIf)	☐	☐	☐	☒
Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (CEQA VIIIg)	☐	☐	☒	☐
Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? (CEQA VIIIh)	☐	☐	☐	☒

Will the Proposal:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Environmental Checklist Item- Risk of Upset				
Involve a risk of explosion or the release of hazardous substances including, but not limited to, oil, pesticides, chemicals, or radiation in the event of an accident or upset conditions? (TRPA 10a)	☐	☐	☐	☒
Involve possible interference with an emergency evacuation plan? (TRPA 10b)	☐	☐	☐	☒
TRPA Environmental Checklist Item- Human Health				
Result in the creation of any health hazard or potential health hazard (excluding mental health)? (TRPA 17a)	☐	☐	☐	☒
Result in the exposure of people to potential health hazards? (TRPA 17b)	☐	☐	☐	☒

9.1 CEQA Checklist Analysis

CEQA VIIIa and CEQA VIIIb. Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Standard of Significance. Non-compliance with state and federal standards for transport and use of hazardous materials during construction of operation of the Project constitutes a significant impact. The Federal Hazardous Materials Transportation Act, California Health and Safety Code Division 20, and California Code of Regulations Titles 8 and 19 determine the regulatory standards.

El Dorado County General Plan, as well as the Health and Safety Element of the City's General Plan, includes industrial or other land use designations that allow the handling, use, or manufacture of hazardous materials. However, only relatively small quantities of hazardous materials and hazardous wastes are generated, stored, and transported in South Lake Tahoe, California because of limited heavy industrial land uses and lack of major interstate trucking routes. Consequently, the Project Area has a low risk of hazardous materials spills or incidents, as the significant portion of the Project alignment is located on disturbed land.

The area does have naturally occurring hazardous materials such as radon gas, which is a radioactive gas that is found in some soil types, but is often concentrated in granite and granitic soils. These types of soils are not prevalent within the Project Area. Radon vapors occurring in building materials, within buildings, and through indoor water systems are considered hazardous if they are allowed to concentrate to levels at 4 pico-curies per liter of air. Although radon vapors are found in some soils, they typically only become hazardous when vapors are concentrated, such as in indoor settings, and are unable to disperse into the atmosphere. The Project creates no such environment.

Project construction would require limited use of potentially hazardous materials, such as fuel, paint, solvents, petroleum products and asphalt concrete. Once constructed, the Project would not require the use of hazardous materials other than during periodic maintenance activities, such as repainting.

Construction personnel and people living or working near the sites could be exposed to accidental releases of these materials. To avoid and minimize potential impacts, a spill response plan is necessary, which details measures to avoid and minimize the potential for accidental spills and specific response actions to be taken should an accidental spill occur. Appropriate procedures to follow in the event that contaminated soil or groundwater is encountered during construction activities is also necessary to minimize potential impacts and will be developed as part of the SWPPP required for construction permitting (detailed in Section 1.10.3 of the Project description).

Accidental releases of hazardous materials could occur, but the use of these materials and the cleanup of accidental releases would be in accordance with applicable regulations intended to prevent significant hazards to the public, including hazardous materials storage and use. To minimize the potential for exposure, implementation of the BMPs described in Section 1.10.3 would occur and staging, equipment refueling, and materials storage would take place in one central portion of the Project Area in accordance with the provisions of the Caltrans Construction Site BMPs:

- WM-1, Material Delivery and Storage;
- WM-2, Material Use; WM-3, Stockpile Management;
- WM-5, Solid Waste Management; WM-6, Hazardous Waste Management;
- NS-8, Vehicle and Equipment Fueling; and
- NS-10, Vehicle and Equipment Management.

Project construction would comply with applicable regulations for the handling, transportation, and disposal of hazardous materials and waste to reduce potential impacts to a level of less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA VIIIc. Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Standard of Significance. The transport or use of hazardous materials within one-quarter mile of a school constitutes a significant impact if the Project includes no measures ensuring public health and safety.

Tahoe Valley Elementary is located approximately 0.25 mile from the northernmost portion of the Project boundary.

As discussed in the analysis for CEQA VIIIa and b, the Project would require the use of common hazardous materials during construction and maintenance, and although accidental releases could occur, construction materials would be handled in accordance with applicable regulations intended to protect public health and safety; thus, impacts on schools would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA VIIId. Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Standard of Significance. A project location on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 creates a significant hazard to the public or the environment.

The Project proposes trench excavation in the US 50 corridor at the Third Street crossing for the purpose of installing a stormwater pipeline to pass underneath the highway. The trench excavation alignment would be localized at the Third Street crossing, and would not extend beyond the limits of the street width. Based on data from the following sources, excavation within the US 50 corridor does pose some risk of encountering hazardous materials. Data have been obtained and analyzed from the following sources:

1. GeoTracker for Hazardous Materials (http://geotracker.waterboards.ca.gov/): The GeoTracker database was accessed, which displays locations of Leaking Underground Fuel Tanks regulated by the State Water Board. There are approximately 13 Leaking Underground Fuel Tank sites within the Project Area located within the corridor of US 50; however, the sites have been mitigated and are now listed as "completed, case closed." There is one mapped Spills, Leaks, Investigation, and Cleanup site in the vicinity of the Project Area, along US 50 (Lake Tahoe Blvd), at a former service station located at 2316 Lake Tahoe Blvd. The site has been mitigated and is also listed as "completed, case closed" (RB Case #T6S068) (State Water Board 2015).
2. California Department of Toxic Substances Control, EnviroStor: The EnviroStor database (recently replacing the CalSites database for hazardous substance release sites) lists six sites in the vicinity of the Project; however, none are within Project boundaries.
3. CORTESE List: No sites were identified with waste constituents above hazardous waste levels within, or directly adjacent to, the Project Area (California Environmental Protection Agency 2018). Additionally, there are no Cease and Desist Orders and Cleanup and Abatement Orders within, or directly adjacent to, the Project Area.

Soil and groundwater sampling and analysis was conducted by Geocon Consultants, Inc. for the Caltrans Y to Trout Creek Project (Tahoe Y at State Highway 89 and US 50 Between Tahoe Y and Trout Creek, 2009) to test for contamination constituents such as total petroleum hydrocarbons and volatile organic compound releases into the Caltrans ROW from adjacent facilities. The analysis area encompassed the area of Third Street and US 50 where the former service station located at 2317-2316 Lake Tahoe Blvd was located, and where the Project proposes to excavate a trench nearby (within 60 feet) for the purposes of installing a stormwater pipe to cross underneath the highway at Third Street. The purpose of the survey and analysis was to determine the presence of contaminates in the ROW from potential leaking underground storage tanks, surface spillage, and solvent plumes. The nearest facility of potential contaminant concern to the Project is 2316 Lake Tahoe Blvd, a former service station that had a documented former underground storage tank that may have impacted the ROW from surface or subsurface releases. Direct-push borings were performed to evaluate potential petroleum hydrocarbons in the vicinity of the identified facility.

Although the results of the analysis showed areas of total petroleum hydrocarbon concentration directly adjacent to the former service station, the presence of total petroleum hydrocarbons does not extend into the Project Area. "Elevated" petroleum hydrocarbons in soil are considered to be greater than 10 milligrams per kilogram (mg/kg). Results less than 10 mg/kg likely represent naturally occurring organic content and are not indicative of contamination (Geocon Consultants, Inc. 2009). The boring location closest to the Project location had observable total petroleum hydrocarbons levels less than 1.0 mg/kg, which would not be considered contaminated soil (Geocon Consultants, Inc. 2009).

In the event that undocumented hazardous materials are encountered in site soils or water during construction, implementation of the Soil Management Plan and standard construction BMPs for hazardous materials discussed in Section 1.10.5 would render impacts less than significant, because the type of contamination would be identified, and it would be disposed of at an appropriate site in accordance with applicable regulations. In addition, the Project would comply with the requirements of General Plan Policy HS-6.2: Construction Stoppage Due to Contamination.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA VIIIe. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project Area?

Standard of Significance. A significant impact results from non-compliance with an airport comprehensive land use plan or Federal Aviation Administration safety regulations.

The Project is located within Zone 3 of the Overflight Safety Zone of the Lake Tahoe Airport Comprehensive Land Use Plan (City 2007). Zone 3 is the least restrictive safety zone, and Project actions are considered compatible with airport activities within this area. The Project would be compliant with the City's Airport Ordinance and the City's General Plan regulating use of the Overflight Zone. The impact would be less than significant.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA VIIIf. For a project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project Area?

Standard of Significance. Creation of a safety hazard to people residing or working in the vicinity of a private airstrip results in a significant impact.

The Project is not located within the vicinity of a private airstrip. Therefore, no impact would occur.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA VIIIg. Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Standard of Significance. If impediments to emergency response or evacuation routes occur or response times fall below emergency response plan standards because of Project construction or operations, a significant impact occurs.

The Project interferes with no emergency response or evacuation plans. The shared-use trail provides for a new, alternative emergency vehicle access route into wildland-urban interface areas. Wildland-urban interface areas are locations in which developed areas are adjacent to areas of natural vegetation capable of carrying a wildfire.

In the event of wildfire or other significant community threat, emergency access for evacuation or fire-fighting equipment can occur along the shared-use trail. In portions of its alignment, the shared-use trail

allows an alternate route capable of improving response times or improving circulation options during evacuation. In these situations, official personnel will direct emergency use to avoid creating trail use safety concerns. Therefore, the Project produces a less-than-significant impact on emergency response or evacuation plans.

The Project would involve construction within road ROWs that could be used for emergency response vehicles and evacuation. During Project construction, US 50 and local city streets within the Project Area would have temporary traffic controls in place for road shoulder and lane closures to accommodate construction activities, equipment, and crews; however, a minimum of one traffic lane would remain open to emergency vehicles and for evacuations, if needed. Additionally, construction activities would be conducted in compliance with the Project-specific contractor's TCP (see Section 1.10.4). The TCP would include measures that would ensure safe emergency, business, residential, bicycle, and pedestrian access to the Project Area during construction, and would also be reviewed by the Fire Department to ensure emergency access during construction. The Project would not alter or require revisions to the City's Emergency Operation Plan or Emergency Management Plan. Thus, impacts on emergency response and evacuation would be less than significant.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA VIIIh. Would the Project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Standard of Significance. Project exposure of people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands a creates significant impact.

The Project would not result in additional structures, dwellings, or other constructed features susceptible to wildland fires, nor would the Project cause additional susceptibility to wildland fire. Thus, no impact would occur.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

9.2 TRPA Checklist Analysis – Risk of Upset

TRPA 10a. Will the proposal involve a risk of explosion or the release of hazardous substances including, but not limited to, oil, pesticides, chemicals, or radiation in the event of an accident or upset conditions?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Non-compliance with local, state, and federal standards for transport and use of hazardous materials during construction or operation of the Project constitutes a significant impact. The Federal Hazardous Materials Transportation Act, California Health and Safety Code Division 20, and California Code of Regulations Titles 8 and 19 determine the regulatory standards. The City's General Plan sets forth the goals, policies, and implementation plans related to public safety and hazards associated with hazardous materials that are applicable to the Project. Lahontan Board Order No. R6T-2011-0101 also outlines requirements for storage and handling of hazardous substances for construction projects within the California portion of the Lake Tahoe Basin. Refer to the analyses for CEQA VIIIa and b, which conclude

that the level of potential impact related to the transport of hazardous materials would be less than significant.

The Project would employ the use of construction equipment for stormwater and recreation improvements. Construction of the Project would involve short-term use of hazardous materials, principally diesel fuel, hydraulic fluid, and other materials necessary for operation and maintenance of construction equipment. Design features, construction measures, and other BMPs have been incorporated into the Project to reduce the risk to the public or the environment from hazardous materials during construction. These include implementation of spill prevention and cleanup measures contained in the Spill Response section of the SWPPP for any spill or contamination encountered. Construction vehicles would be serviced in specific upland areas or stabilized areas to prevent accidental spills from reaching unprotected soils. Once construction is completed, the operations of the Project would not involve the use, transport, disposal, or accidental release of hazardous materials. The contractor would be required to submit a Spill Prevention Plan.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 10b. Will the proposal nvolve possible interference with an emergency evacuation plan?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. If impediments to emergency response or evacuation routes occur or response times fall below emergency agency standards because of Project construction or operations, a significant impact occurs. Refer to the analysis for CEQA VIIIg, which concludes that the Project would have a less than significant impact on emergency response or evacuation plans.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

9.3 TRPA Checklist Analysis – Human Health

TRPA 17a. Will the proposal result in creation of any health hazard or potential health hazard (excluding mental health)?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Non-compliance with state and federal standards for transport and use of hazardous materials during construction or operation of the Project constitutes a significant impact. The Federal Hazardous Materials Transportation Act, California Health and Safety Code Division 20, and California Code of Regulations Titles 8 and 19 determine the regulatory standards.

Refer to the analyses for CEQA VIIIa and VIII, which concern the Project's potential to create health hazards or increase exposures to health hazards and conclude the level of impact would be less than significant.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 17b. Will the proposal result in exposure of people to potential health hazards?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Non-compliance with state and federal handling and disposal regulations and procedures during construction or operation of the Project constitutes a significant impact. The Federal Hazardous Materials Transportation Act, California Health and Safety Code Division 20, and California Code of Regulations Titles 8 and 19 determine the regulatory standards.

Refer to the analysis for CEQA VIIIb, which concludes that the Project would have a less-than-significant impact toward exposure of people to potential health hazards related to construction and operations.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

10.0 HYDROLOGY & WATER QUALITY

This section evaluates the Project's impacts on surface and groundwater hydrology and water quality during construction and operations. **Table 20** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 20. Hydrology and Water Quality Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist				
Violate any water quality standards or waste discharge requirements? (CEQA IXa)	☐	☐	☒	☐
Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? (CEQA IXb)	☐	☐	☒	☐
Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? (CEQA IXc)	☐	☐	☒	☐
Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? (CEQA IXd)	☐	☐	☒	☐
Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff? (CEQA IXe)	☐	☐	☒	☐
Otherwise substantially degrade water quality? (CEQA IXf)	☐	☐	☒	☐
Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? (CEQA IXg)	☐	☐	☐	☒
Place within a 100-year flood hazard area structures which would impede or redirect flood flows? (CEQA IXh)	☐	☐	☒	☐

Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (CEQA IXi)	☐	☐	☐	☒
Inundation by seiche, tsunami, or mudflow? (CEQA IXj)	☐	☐	☒	☐
Will the Proposal result in:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist				
Changes in currents, or the course or direction of water movements? (TRPA 3a)	☐	☐	☐	☒
Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff so that a 20 yr. 1 hr. storm runoff (approximately 1 inch per hour) cannot be contained on the site? (TRPA 3b)	☐	☐	☐	☒
Alterations to the course or flow of 100-yearflood waters? (TRPA 3c)	☐	☐	☐	☒
Change in the amount of surface water in any water body? (TRPA 3d)	☐	☐	☐	☒
Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity? (TRPA 3e)	☐	☐	☐	☒
Alteration of the direction or rate of flow of ground water? (TRPA 3f)	☐	☐	☐	☒
Change in the quantity of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations? (TRPA 3g)	☐	☐	☐	☒
Substantial reduction in the amount of water otherwise available for public water supplies? (TRPA 3h)	☐	☐	☐	☒
Exposure of people or property to water related hazards such as flooding and/or wave action from 100-year storm occurrence or seiches? (TRPA 3i)	☐	☐	☐	☒
The potential discharge of contaminants to the groundwater or any alteration of groundwater quality? (TRPA 3j)	☐	☐	☐	☒
Is the project located within 600 feet of a drinking water source? (TRPA 3k)	☒	☐	☐	☐

10.1 CEQA Checklist Analysis

CEQA IXa. Would the Project violate any water quality standards or waste discharge requirements?

Standard of Significance. Failure to implement effective, reasonable and appropriate measures to protect water quality and/or non-compliance with WQOs, waste discharge requirements or Board Orders No R6T-2017-0010 (Tahoe Stormwater Permit/City's Municipal Stormwater Discharge Permit) or R6T-2016-0010 (Tahoe General Construction Permit) result in a significant impact to surface water quality and beneficial uses. TRPA Code Chapters 33 and 60 and the Lahontan Basin Plan Chapter 5 disclose the applicable codified regulations and narrative and quantitative WQOs.

The discharge of surface flows generated within the Project Area to surface waters or to stormwater runoff conveyance systems during construction or operations cannot cause the concentrations in Lake Tahoe, Upper Truckee River, minor surface waters, or minor wetlands to exceed the WQO limits stated in the Lahontan Basin Plan, TRPA RPU Chapter 60, and applicable Board Orders.

Most of the Greenbelt area surface water is generally hydrologically disconnected from the Upper Truckee River meadow system, as no perennial drainage channels are present in the area. Surface runoff within the Project Area typically sheet flows and infiltrates within the undeveloped forested uplands or is captured and conveyed to existing stormwater systems that were installed in the early to mid-1980s. Little surface water data is available for the Project Area, but non-point sources of stormwater runoff from residential and commercial developments, including lawns and landscaping, driveways, parking lots and access roadways that comingle with surface runoff from forested uplands are known to be the primary influences on surface water quality (TVAP 2014).

Site disturbance, stormwater runoff, erosion, and sedimentation during construction activities pose direct and indirect short-term impacts to surface water quality and beneficial uses within and downstream of the Project Area. During construction, ground-disturbing activities could expose soils to potential mobilization by rainfall/runoff and wind through activities such as vegetation removal, grading, and road asphalt removal. Non-sediment-related pollutants that are also of concern during construction include waste construction materials, chemicals, and petroleum products. Concentrated runoff from modified impervious surfaces and disturbed slopes could occur from long-term operations of the Project. Indirect impacts of atmospheric deposition of particulates could occur if disturbed areas are not revegetated or significant increased vehicle miles of travel (VMT) occur.

This analysis evaluates potential impacts in the context of the design features, construction controls, BMPs, and resource protection measures that have been built into the Project proposal. These measures, incorporated into the Project proposal during planning and design, are intended to avoid, reduce, and minimize potential effects to surface water quality and beneficial uses. These Project components address direct and indirect, short-term, and long-term effects to surface water quality and beneficial uses from construction runoff, urban runoff, and atmospheric deposition within the Project Area.

Short-term Construction Impacts. Construction of the Project would involve land disturbance activities, such as vegetation removal, excavation and backfill, soil compaction, and stockpiling of soils. Short-term impacts to surface water quality and beneficial uses could result if precipitation events occur simultaneously with construction activities. Disturbed and compacted soils could alter contribute runoff rates and subsequently increase peak and total runoff volumes from the Project Area. However, containment of soil erosion and runoff on-site during construction would protect the down-gradient drainage surface water quality and beneficial uses. A small potential for accidental petroleum releases from motorized equipment exists during construction activities, which could result in temporary effects to water quality.

The Project will comply with conditions for permit coverage under Board Order No. R6T-2017-0010, the Tahoe Construction General Permit. During the final stages of construction plan development, the City and its contractors will prepare details and specifications that make up the TRPA ESCP and NPDES SWPPP requirements. These plans address construction-related disturbance to minimize, control and infiltrate runoff. At a minimum, implementation of the ESCP and SWPPP prevents debris, soil, silt, sand, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from Project construction or operation from entering into receiving waters or their tributaries and adjacent wetlands. The SWPPP outlines erosion control measures to be taken as well as structural BMPs to control and prevent to the maximum extent practicable the discharge of pollutants to surface waters and groundwater. The SWPPP includes a plan for responding to and managing accidental spills during construction (i.e., Emergency Response Plan) as well as overall management of the construction project such as designating areas for material storage, equipment fueling, concrete washout, and stockpiles. The City will file the permit registration documents prior to ground disturbing activities and its contractor will install construction-related temporary BMPs according to the California Stormwater Quality Association (CASQA) and TRPA BMP handbooks.

The Project Area would present few construction challenges that could reduce the effectiveness of standard compliance measures in meeting discharge limitations during construction. The Project proposal locates the trails primarily in areas with existing disturbance and on high capability land with reasonable construction access and would comply with the TRPA grading period. Available staging areas would provide opportunities to erect and maintain erosion controls on higher capability lands distant from streams and conveyance systems. Plan Sheets in **Appendix A** detail temporary construction access, staging areas, and turnarounds.

Tree protection measures that are detailed in Section 1.10.7 of the Project description outline procedures for protection of roots and boles during construction activities. Mature tree roots play a role in slope stability, and tree canopy aids in the protection of topsoil by moderating temperatures and dispersing the effects from precipitation events that could lead to erosion. A QSP on-site during construction activities would provide professional expertise and expedited response to correct issues that could arise during construction and would ensure compliance with permitting conditions and fulfillment of Project commitments.

This evaluation concludes that through implementation of the construction controls, BMPs, and resource protection measures, the Project would adequately avoid and minimize the potential for direct and indirect water quality degradation during construction. Conformance with existing regulations and Project permitting conditions would reduce direct and indirect short-term potential impacts to surface water quality and beneficial uses during the construction period to a level of less than significant.

<u>Long-term Operation Impacts.</u> The Project includes construction of a comprehensive regional stormwater treatment system that also provides for open space and recreational uses, including a non-motorized trail. The Project would introduce little long-term potential for runoff containing hydrocarbons, heavy metals, and other chemicals or toxins associated with motorized vehicles and exhaust. The Project includes no snow removal or use of deicing chemicals or sand.

Given the linear configuration of the Greenbelt, source control would be more effective in preventing surface water degradation than extensive runoff collection and treatment. The final trail designs would employ, but not be limited to, the following design features, construction controls, and permanent BMPs to avoid and minimize direct and indirect, long-term potential impacts to surface water quality and beneficial uses from operations and maintenance:

- Avoidance and minimization of encroachment in low capability LCDs;

- BMP retrofit of key neighborhood connector trails;
- Raised asphalt concrete trail on permeable fill/vented trail design option, or other comparable trail design and materials, in areas with potential for surface hydrology;
- Flexible grades to minimize disturbance;
- User management fences, bollards, and/or boulders;
- Trail alignment location to reduce disturbance areas and stabilize cut and fill slopes;
- Hydrologic source controls (i.e., clear zones); and
- On-site drainage strategies and structures (i.e., transition aprons and culverts) to tie into the enhanced stormwater treatment basins.

To reduce potential long-term impacts to surface water quality from operations and maintenance actions, the Project would implement post-construction stormwater management in accordance with permit R6T-2016-0010 requirements for Lahontan Notice of Termination conformance and install permanent BMPs according to the CASQA and TRPA BMP handbooks. Post-project BMP effectiveness and stormwater monitoring would be addressed through the ongoing, City-owned Facilities, Equipment and Parks Maintenance Program.

The Project includes strategies for revegetation and restoration based on the type and location of disturbance with goals of reestablishment of native hydrology and vegetation communities. The Project does not include ornamental landscaping or use of fertilizer beyond the vegetation reestablishment stage. The Project would include irrigation initially during the revegetation establishment. Revegetation strategies include the use of native plants and materials.

The Project was identified in the TVAP as key to helping meet TMDL requirements, by implementing water quality improvements that would reduce pollutant loads that currently discharge to the Upper Truckee River. As such, the TVAP outlined the following applicable policies:

- ***Policy NCR-5.1:*** *Construct the Tahoe Valley Water Quality Improvement Project as part of the Greenbelt Project to treat stormwater from Tahoe Valley and adjacent residential areas, in order to reduce fine sediment loads to the Upper Truckee River and Lake Tahoe, and restore disturbed SEZs.*
- ***Policy NCR-5.5****: Coordinate with TRPA to implement the EIP water quality improvement projects in the Tahoe Valley area, with priority on Total Maximum Daily Load (TMDL) pollutant load reduction opportunities.*

The Project would contribute toward attainment of TRPA water quality thresholds and Lahontan's WQOs for specific water bodies and general hydrologic areas through Project benefits such as environmental protection of air and water quality and of sensitive lands. The Project provides for an incremental step in meeting the basin-wide water quality thresholds through implementation of two TRPA EIP Projects and would install essential public transportation linkage identified in the RTP (TRPA 2017), Lake Tahoe Region BPMP (TMPO 2010), and TRPA EIP Update, Planning Horizon 2008-2018 (TRPA 2009).

Given that the Project would implement a comprehensive regional stormwater treatment system, long-term operational impacts to water quality would be beneficial. The stormwater infrastructure would serve to convey and treat additional stormwater runoff volumes captured from portions of the Project Area, removing pollutants and specifically fine sediments. The potential effects of concentrated coverage on water quality in the Project Area was analyzed using the PLRM—a publicly available computer model used to evaluate and compare alternatives for stormwater quality improvement projects in the Lake Tahoe Basin. The PLRM is a tool to compare urban stormwater quality improvement alternatives in an urban catchment

based on the predicted load reductions of the pollutants of concern. The PLRM summarizes output as average annual runoff volumes and pollutant loads for each modeled scenario. The PLRM quantifies pollutant generation from an urban land use and associated land use condition. Urban land use types include single-family residential, multi-family residential, commercial, primary roads, and secondary roads, etc. Condition is defined as the existing state of a land use relative to the pollutant generation risk during a subsequent storm and is the integration of physiographic characteristics, pollutant source controls, and the effectiveness of pollutant recovery efforts.

The PLRM model run of the net effect of increased coverage resulting from the TVAP estimates that pollutant loadings to surface waters would be reduced overall when compared to the baseline conditions that exist in the TVAP (City of South Lake Tahoe 2014).

Overall, the TVAP would result in reductions of: runoff volumes by 27 percent; total suspended sediment by 23 percent; Fine Sediment Particles by 25 percent; total phosphorus by 20 percent; soluble reactive phosphorus by 41 percent; total nitrogen by 21 percent; and dissolved inorganic nitrogen by 24 percent. The decrease in the pollutant load is the result of a number of factors including implementation of BMPs on existing developed parcels that qualify for additional coverage. Currently, the compliance rate for BMP installation in the TVAP is approximately 32 percent. As existing parcels with no BMPs are redeveloped, and BMPs are installed, pollutant loads are captured and treated. Implementation of the TVAP would result in the construction of the Tahoe Valley Stormwater System, the Project, which would treat runoff from city streets and function as an area-wide treatment system to which adjacent commercial parcels and project would connect. Because the stormwater system will be maintained by the City, the area-wide treatment system is expected to be more effective in treating pollutant loads than parcel-level BMPs. The PLRM will be used to estimate the reduced pollutant loads that would be expected from operation of the area-wide stormwater system, as based on the final project design submitted for TRPA EIP project approval. Loads will be translated into corresponding "Clarity Credits" that would be applied towards the City's pollutant load reduction commitments.

The direct and indirect, long-term impacts to surface water quality and beneficial uses from operation and maintenance of the Project would be less than significant based on the potential benefits to the immediate Project Area and the Project's contributions toward attainment of TRPA Thresholds and the Lake Tahoe TMDL Program.

Atmospheric Deposition. Atmospheric sources can contribute to surface water quality degradation, as more than half of the nitrogen loading in Lake Tahoe is delivered by air (TRPA and Nevada Department of Environmental Protection 2008). Several sources of airborne pollutants include motorized vehicles, dust and particulates from unvegetated slopes, and pulverized road salts and abrasives. Fugitive dust generated during Project construction could increase ambient fine particulate concentrations. Fine particulate emissions can be deposited directly in surface waters or can be transported by runoff to surface waters.

The Project includes the development and implementation of a Fugitive Dust Control Plan for the control of dust during construction activities. The Project minimizes long-term, potential impacts to surface water quality and atmospheric deposition through revegetation of disturbed areas and trail clear zones.

The Project will offer an alternative to use of private automobiles for travel. Section 17.0, Traffic and Circulation, discusses VMT, and after Project construction no measurable change related to emissions would be expected. Revegetation of disturbed areas to cover bare soils, stabilize slopes, and reduce sediment sources and proper management and maintenance to identify areas of trail surface repair and additional slope stabilization and revegetation further minimize long-term, potential impacts to surface water quality and beneficial uses from atmospheric deposition.

Anti-Degradation Policy. The State anti-degradation policy (Resolution No. 68-16) is incorporated into regional water quality control plans, including the Lahontan Basin Plan. The policy applies to high-quality waters only (i.e., Lake Tahoe and tributaries) and requires that existing high quality be maintained to the maximum extent possible. The Project implements reasonable and appropriate measures for the protection of surface water quality and beneficial uses and complies with conditions set forth in Board Orders No. R6T-2017-0010 and R6T-2016-0010. Based on the stated evaluation criteria for determination of significant impacts to surface water quality and beneficial uses, the Project maintains beneficial uses and protects surface water quality through the Project proposal and implementation of mitigation measures for conformance with federal, regional, State, and City codified regulations for protection of beneficial uses and surface water quality.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA IXb. Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Standard of Significance. A significant impact results if the Project installs improvements that intercept groundwater or otherwise cause substantial changes in existing groundwater quality, quantity, elevations or movement; requires excavations greater than five (5) feet that will intercept groundwater; or fails to comply with Lahontan requirements for disposal of groundwater during construction, as outlined in TRPA Code Chapters 33 and 60, Lahontan Basin Plan Chapter 5.7 and Lahontan Board Order No R6T-2017-0010 (Tahoe General Construction Permit).

Groundwater elevations within the Project Area were investigated during the geotechnical study and have been incorporated into site design. Out of the 11 test pits, one encountered groundwater at a depth of 9.2 feet at the Perc-6 location (northwestern-most part of Project Area). Direct impacts to groundwater would be avoided during grading and construction activities. Water quality is expected to improve overall once the stormwater management and quality controls are installed within the Project boundary. Construction of gutter and curb systems would allow for better management of larger stormwater runoff flows throughout the area, and would allow for greater infiltration in natural sediment basins located throughout the Project Area. Redirection of stormwater runoff to new and expanded basin areas would allow for increased infiltration and positively benefit groundwater recharge within the Project Area.

The full geotechnical report is included in this IS/IEC as **Appendix G**, Geotechnical Report.

Groundwater Quantity. No design features would affect groundwater quantity. The Project would cause no permanent change in the quantity of groundwater, either through direct addition or withdrawal, and thus poses no effects to local groundwater table levels. Project operations would pose no impacts to the existing available public water supply.

Groundwater Movement. The Project accommodates groundwater infiltration of surface runoff along the length of the trail alignments. Infiltration of surface water to groundwater would occur in close proximity to its origin, either in the adjacent clear zones for the asphalt concrete surface design, or would be captured, conveyed, and infiltrated within the stormwater treatment infrastructure that is proposed. The design element maintains the existing direction and rate of groundwater flows through use of asphalt concrete on raised permeable fill, or other comparable trail design and materials, in portions of the Project Area that exhibit seasonal high groundwater levels or surface hydrology. No active hazardous release sites are located

within the Project Area (refer to the analysis for CEQA VIIId); however, if final excavation depths must exceed 5 feet depth below ground surface, then the appropriate TRPA and Lahontan exemption findings will be made for Project approvals. Groundwater interception or interference is prohibited under Section 33.3.6 of the TRPA Code, except under certain circumstances, described as follows:

1. *Excavation is prohibited that interferes with or intercepts the seasonal high water table by:*

    a. Altering the direction of groundwater flow;

    b. Altering the rate of flow of ground water;

    c. Intercepting ground water;

    d. Adding or withdrawing ground water; or

    e. Raising or lowering the water table.

2. *TRPA may approve exceptions to the prohibition of groundwater interception or interference if TRPA finds that:*

    a. Excavation is required by the International Building Code (IBC) or local building code for minimum depth below natural ground for above ground structures;

    b. Retaining walls are necessary to stabilize an existing unstable cut or fill slope;

    c. Drainage structures are necessary to protect the structural integrity of an existing structure;

    d. It is necessary for the public safety and health;

    e. It is a necessary measure for the protection or improvement of water quality;

    f. It is for a water well;

    g. There are no feasible alternatives for locating mechanical equipment, and measures are included in the project to prevent groundwater from leaving the Project Area as surface flow, and any groundwater that is interfered with is rerouted in the ground water flow to avoid adverse impacts to riparian vegetation;

    h. It is necessary to provide two off-street parking spaces, there is no less environmentally harmful alternative, and measures are taken to prevent groundwater from leaving the Project Area as surface flow;

    i. It is necessary to provide below grade parking for projects that qualify for additional height under subsection 37.5.4 or 37.5.9 to achieve environmental goals, including scenic improvements, land coverage reduction, and area-wide drainage systems. Measures shall also be included in the project to prevent ground water from leaving the Project Area as surface flow and that any groundwater, that is interfered with is rerouted into the groundwater flow to avoid adverse impacts to hydrologic conditions, SEZ vegetation, and mature trees; or

    j. It is necessary for a marina expansion approved pursuant to Chapter 14: Specific and Master Plans, and the environmental documentation demonstrates that there will be no adverse effect on water quality.

Implementation of resource protection measures, detailed in Section 1.10, would ensure compliance with Lahontan requirements for dewatering of groundwater during construction, if necessary, as outlined in

Lahontan Basin Plan Chapter 5.7 and Lahontan Board Order No R6T-2016-0010. Depending on final engineering design, the Project will submit a dewatering plan as part of the SWPPP for NPDES construction permitting. Dewatering plans will identify actions to be taken should unexpected groundwater interception occur during construction. Proper planning and implementation of the dewatering plan minimizes the risk of discharge of contaminants to groundwater or alteration of groundwater movement during construction.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA IXc. Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Standard of Significance. A significant impact occurs if Project construction or operations substantially alter an existing watercourse alignment or capacities or increases in runoff occurs such that flooding occurs because the 20-year, 1-hour storm volume cannot be captured by existing or proposed stormwater drainage facilities.

Alterations to drainage patterns capable of creating on-site or off-site erosion produce a significant impact. To conform to TRPA codified regulations set forth in Code Chapter 60, the 20-year, 1-hour storm runoff volume must be contained and infiltrated within the Project Area so that existing drainage patterns do not substantially change and result in erosion or siltation on- or off-site. The Project drainage design would direct surface flow to the edges of trails and infiltrate runoff into the clear zone areas that function as source control so that existing drainage patterns would not substantially change and result in erosion or siltation on- or off-site. Preliminary construction plans (**Appendix A**) identify areas potentially requiring culverts to minimize effects to surface drainage crossed by the Project. Properly sized culverts installed at appropriate grade would provide for cross drainage that will not contribute to substantial erosion or siltation on- or off-site.

Refer to the analyses for CEQA IXa and CEQA IXb. Stream modifications are limited by the provisions of Chapter 63, which requires protection of fish resources, and Sections 61.3.3 and 30.5, which requires protection of SEZ areas, thereby protecting streams as well. Consistent with existing requirements, the Project would not alter the existing watercourse alignments or direction of water movements. Stormwater improvements associated with the Project would be beneficial to site drainage and would reduce the amount of sediment within the potential to be carried off-site. The Project would implement stormwater design features that would allow for greater infiltration of stormwater on-site, reducing erosion and siltation potential and alleviating flood risk. The level of impact would be reduced to less than significant, though consistence with existing regulations.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA IXd. Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Standard of Significance. Refer to the analysis for CEQA IXc, which concludes the level of impact to existing or planned stormwater drainage systems is reduced to a level of less than significant by the Project. The improvements would allow for increased capture, retention and infiltration of runoff, thus reducing flooding potential.

Temporary construction BMPs would contain runoff within the Project Area during precipitation events. The Project would maintain existing surface water drainage patterns and proposes source control for runoff from new impervious surfaces, ensuring that long-term operation of the shared-use trail does not alter existing surface water drainage patterns or increase runoff rates or volumes that result in flooding or exceed the capacity of existing or planned stormwater drainage systems.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA IXe. Would the Project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Standard of Significance. Refer to the analyses for CEQA IXa through CEQA IXd for potential impacts to existing drainage patterns. Analyses conclude the level of impact to existing or planned stormwater drainage systems is reduce to a level of less than significant by the Project proposal. The Project would implement an area-wide stormwater treatment system for a portion of the TVAP, most specifically the Tahoe Valley Urban Planning Catchment that is depicted in **Figure 2**.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IXf. Would the Project otherwise substantially degrade water quality?

Standard of Significance. Failure to implement effective, reasonable and appropriate measures to protect water quality and non-compliance with WQOs, waste discharge requirements or Board Orders NO R6T-2017-0010 and R6T-2016-0010 results in a significant impact to surface water quality and beneficial use. Refer to the analysis for CEQA IXa, which concludes the level of impact to surface water quality and beneficial uses would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA IXg. Would the Project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

Standard of Significance. Placement of habitable structures within mapped 100-year flood hazard area creates a significant impact.

The Project does not include housing or habitable structures and thus places no housing within a mapped 100-year flood hazard area.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA IXh. Would the Project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Standard of Significance. If the Project places structures that impede or redirect 100-year flood flows, a significant impact results.

Federal Emergency Management Agency (FEMA) FIRM maps consulted indicate no FEMA 100-year flood hazard areas present within the Project Area. The Project is located in FEMA Zone X unshaded, and is not within a 100-year flood hazard area (**Figure 11**). Zone X unshaded is a minimal flood hazard area, which is outside the Special Flood Hazard Area and 100-year flood area, and higher than the elevation of the 0.2-percent-annual-chance flood (500-year flood) (FEMA 2017).

The analysis identifies no changes to the 100-year floodplain storage capacity, flow routes or boundaries and no effects to neighboring properties or structures.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA IXi. Would the Project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Standard of Significance. Exposure of people or structures to a significant risk of loss, injury or death involving flooding constitutes a significant impact.

The Project site is not located within a FEMA Special Flood Hazard Area and is not downstream of levees or dams. The Project includes stormwater improvements, which would improve drainage in the Project Area. The Project would not alter any hydrological conditions that would increase site inundation or debris flow risk over that which currently exists within the Project Area. Risk of dam failure would not be applicable to the Project Area because no dams or levees are present or proposed.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

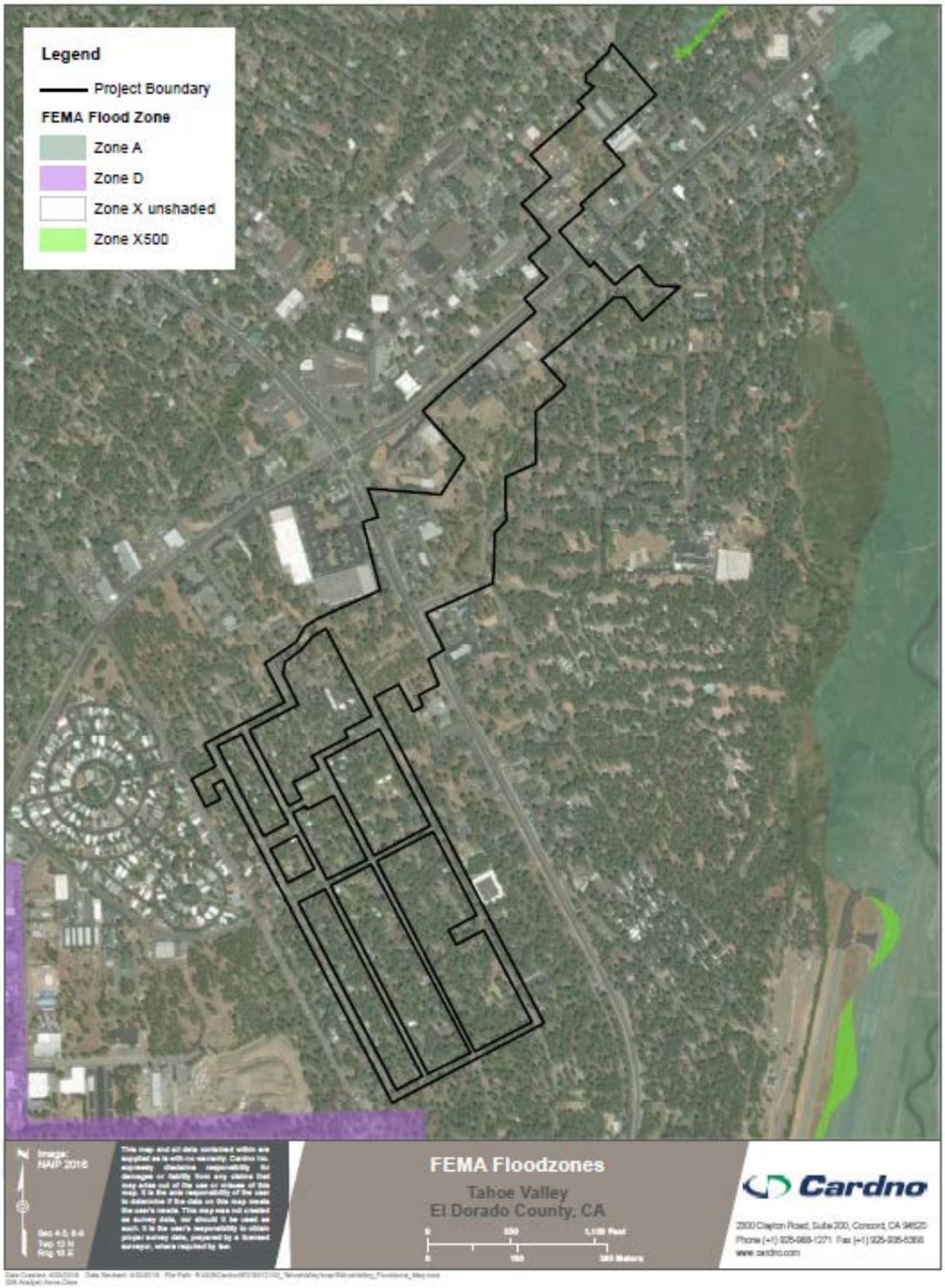

Figure 11 FEMA Flood Hazard Zones.

CEQA IXj. Would the Project expose people or structures to inundation by seiche, tsunami, or mudflow?

Standard of Significance. An increase in risk of inundation by seiche, tsunami, or mudflow as a result of Project installation constitutes a significant impact.

Although not anticipated, there is potential for a seiche to develop in Lake Tahoe that could affect the Project Area. However, the Project does not include new uses that would result in exposure of people or structures to seiche. The General Plan includes the following policy to protect persons from seiches:

Policy HS-1.1: Local Emergency Operations Plan Review and update:

The City shall continue to periodically review and update the City's Local Emergency Operations Plan (LEOP). The City shall update the Local Emergency Operations Plan and Emergency Management Plan to include planning and response provisions for Seiche wave hazards. This would include a warning process of when area earthquake events are of 7 magnitude or greater that could generate a Seiche wave and a notification and evacuation process for residents, employees, and visitors. This may include the provision of directional signage to guide evacuees to areas outside of the Seiche wave hazard zone.

The City has in place a Natural Hazard Mitigation Plan and an Emergency Management Plan. Both of these plans would assist in reducing potential impacts resulting from a seiche. These plans provide for the effective mobilization of available resources and emergency response entities, both public and private, to meet any condition constituting a local emergency, state of emergency, or state of war emergency, and outlines the organization, powers and duties, services, and staff of the emergency organization.

The effects of the Project would not add to this existing potential because the Project location is outside of flood flow paths and hazard zones, buffered by existing barriers and would not significantly increase the quantity of shallow groundwater that could initiate debris or mudflows. The level of impact would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

10.2 TRPA Checklist Analysis

Will the proposal result in:

TRPA 3a. Will the proposal result in changes in currents, or the course or direction of water movements?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analysis for CEQA IXc, which concludes that the level of impact to existing drainage patterns of the Project Area is less than significant.

There are no such water features located within the Project Area. Therefore, the Project would not have potential to impact currents or the course of direction of water movements.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3b. Will the proposal result in changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff so that a 20 yr. 1 hr. storm runoff (approximately 1 inch per hour) cannot be contained on the site?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact to surface water occurs if the Project results in increases in runoff from disturbed area because of compaction, vegetation removal and impervious surfaces such that the 20-year, 1-hour storm volume cannot be captured by existing or proposed stormwater drainage systems, as defined by TRPA Code Chapter 60. Code Subsection 60.4.6 requires infiltration facilities to discharge runoff to groundwater except as provided in Subsection 60.4.8, which allows for approval of alternative BMPs to meet water quality standards under special circumstances that include bike trails.

Refer to analyses for CEQA checklist items IXd and IXe, which conclude, respectively, that the level of impact to existing drainage patterns, rate and amount of runoff from the Project to existing or planned stormwater drainage systems is reduced to a level of less than significant by the Project proposal.

The Project would not alter the adsorption rates within the Project Area, nor would the Project improvements increase surface water runoff. Hydrologic modeling has been performed for the engineered plans to ensure that Project improvements would not alter absorption rates, drainage patterns, or the rate and amount of surface water runoff so that the 20-year, 1-hour storm cannot be contained on-site. Implementation of the Project would improve the performance of the storm drainage system when containing the 20-year, 1-hour storm event.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3c. Will the proposal result in alterations to the course or flow of 100-year flood waters?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analysis for CEQA IXh, which concludes the Project structures would not impede or redirect 100-year floodwaters and the level of impact is less than significant.

As depicted in **Figure 11**, the Project Area lies outside of the 100-year floodplain.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3d. Will the proposal result in a change in the amount of surface water in any waterbody?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. If the Project results in a change in the amount of surface water in a water body, a significant impact results as defined by TRPA Code Chapter 60.

The Project does not propose impacts to surface water bodies.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3e. Will the proposal result in discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Failure to implement effective, reasonable and appropriate measures to protect water quality and non-compliance with WQOs, waste discharge requirements or Board Order No R6T-2011-0019 or R6T-2011-0101 result in a significant impact to surface water quality and beneficial use.

Refer to analysis for CEQA Xa, which concludes the level of impact to surface water quality and beneficial uses is less than significant. Construction and operation of the Project does not cause alteration to surface water quality nor contribute toward non-attainment of TRPA Thresholds through implementation of the Project proposal and mitigation measures that ensure conformance to federal, regional, State, and local regulations and ordinances.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3f. Will the proposal result in alteration of the direction or rate of flow of groundwater?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analysis for CEQA IXb, which concludes the level of impact to groundwater movement is less than significant.

The Project completed geotechnical studies to guide location of design features, such as near surface stormwater treatment basins. The siting of basins on lands that provide for sufficient separation to groundwater would avoid alteration to groundwater.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3g. Will the proposal result in change in the quantity of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to analysis for CEQA checklist item IXb, which concludes the level of impact to groundwater quantity and movement is less than significant.

Redirection of stormwater runoff into near surface basins would increase surface infiltration to groundwater resources. Greater infiltration of stormwater runoff into near surface basins would positively benefit groundwater resources in the Project Area.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3h. Will the proposal result in substantial reduction in the amount of water otherwise available for public water supplies?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. If the Project creates a demand that exceeds available water supplies, a significant impact to source water occurs as defined in TRPA Code Chapter 60.

The Project would only require minor amounts of water for dust suppression and would not substantially reduce public water supplies. The Project site would be landscaped with native plants that would require minimal irrigation until established. As supported by the analysis in the Lake Tahoe Region BPMP (TMPO 2010), implementation of bikeway and pedestrian projects is not anticipated to change the amount of surface water in any body of water in the Lake Tahoe Basin or reduce the amount of water available for public water supplies. The Project does not include features such as developed trailheads with restroom facilities or irrigated planting beds. Construction activities and initial revegetation activities require water, yet will occur in phases over the construction season and demand will not exceed the maximum permitted capacity of service providers.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3i. Will the proposal result in exposure of people or property to water related hazards such as flooding and/or wave action from 100-year storm occurrence or seiches?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA IXh, which concludes the level of impact related to flooding from the 100-year storm occurrence is less than significant.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3j. Will the proposal result in potential discharge of contaminants to the groundwater or any alteration of groundwater quality?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA IXb, which concludes the level of impact to groundwater quality is less than significant. The Project would implement a SWPPP that would prevent the discharge of contaminants to groundwater.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 3k. Is the Project located within 600 feet of a drinking water source?

☒ Yes ☐ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A contaminating land use within 600 feet of a drinking water source identified on TRPA Source Water Assessment Maps constitutes a significant impact as defined by TRPA Code Section 60.3.

There are several 600-foot source water protection zones (SWPZ) that overlap with the Project Area. Development within SWPZs is subject to TRPA Code Section 60.3.3.D, Source Water Protection Standards, which includes requirements to install water quality BMPs and develop a Spill Control Plan. In addition to compliance with these requirements, the Project would also incorporate appropriate source water

protection and site-specific BMPs, as required by TVAP Policy NCR-5.7. Project compliance with the regulations pertaining to SWPZ would reduce impacts to less than significant.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

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11.0 LAND USE & PLANNING

This section evaluates the Project's impacts on land use and planning during construction and operations. **Table 21** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 21. Land Use and Planning Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist				
Physically divide an established community? (CEQA Xa)	☐	☐	☐	☒
Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? (CEQA Xb)	☐	☐	☐	☒
Conflict with any applicable habitat conservation plan or natural community conservation plan? (CEQA Xc)	☐	☐	☐	☒
Will the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist				
Include uses which are not listed as permissible uses in the applicable Plan Area Statement, adopted Community Plan, or Master Plan? (TRPA 8a)	☐	☐	☐	☒
Expand or intensify an existing non-conforming use? (TRPA 8b)	☐	☐	☐	☒

11.1 CEQA Checklist Analysis

CEQA Xa. Would the Project physically divide an established community?

Standard of Significance. A significant impact results if the Project installs a structural impediment to vehicle or pedestrian movement in the community. The TRPA Regional Plan, Plan Area Statements (PASs) and Code, and City General Plan determine this level of impact significance.

The Project Area is located within the city limits of the City of South Lake Tahoe and within the established TVAP community. The Project would implement stormwater improvements that would have no impact on established communities. The recreational improvement component of the Project would improve access and mobility for local residents by providing a lighted path for cyclists and pedestrians; these features of the Project would improve pedestrian and bicycle connectivity within the community. The Project would

install a linear trail and associated amenities that are not of a size or use that physically divides the community or redirects existing traffic to change circulation patterns.

Because the Project improves mobility options and does not create physical divisions in the community, the Project results in improving connections within the urban community, thus avoiding impacts.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA Xb. Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Standard of Significance. A significant impact results from non-compliance of the Project with land use plans, goals, policies, regulations or provisions as established by the TRPA RPU and Code Chapters 21 and 20, City General Plan, and TVAP.

The adopted land use plan for the Project Area is the TVAP (City and TRPA 2015). The Project includes improvements to stormwater runoff and quality, recreation/circulation improvements, and traffic circulation improvements, which would be a permissible use under the TVAP. The TVAP conforms to the RPU conceptual land use map and the General Plan land use diagram and incorporates the applicable policies and regulations of both plans to avoid or mitigate an environmental effect. Because the Project would implement land uses established in the TVAP, the Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project.

Although no TRPA Thresholds for land use exist, the Project would promote the Recreation Threshold through establishment of new recreation resources and linkages to other recreation in the area and improvement of access to and quality of the recreational experience. Development of the Project improves bicycle and pedestrian access and provides an alternative to the use of the automobile, which results in progress toward air quality, water quality, traffic, and other associated environmental goals. Retrofit of existing unpaved trails reduces erosion and hydrological impacts. The use of concrete asphalt on permeable fill/vented trail, or other comparable trail design and materials, in areas of seasonal surface hydrology protects SEZ and hydrologic function without increasing erosion and sedimentation. The addition of transportation routes to the list of permissible land uses is consistent with the shared-use trail route identified in the Tahoe Region Bicycle and Pedestrian Master Plan (TMPO 2010) as well as the TRPA EIP, which seeks to construct shared-use trails to reduce vehicle travel and associated environmental impacts caused by vehicle travel, as well as restore sensitive areas that are currently disturbed.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA Xc. Would the Project conflict with any applicable habitat conservation plan or natural community conservation plan?

Standard of Significance. A significant impact results from noncompliance with an adopted habitat conservation plan or natural community conservation plan.

The Project does not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan because no such plans exist for the Project Area.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

11.2 TRPA Checklist Analysis

TRPA 8a. Will the proposal include uses which are not listed as permissible in the applicable Plan Area Statement, adopted Community Plan, or Master Plan?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact results from inconsistency with permissible land uses established in the TVAP.

Refer to the analysis for CEQA Xb, which concludes that the Project would create no impact to land use, zoning and permissible uses.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

8b. Will the proposal expand or intensify an existing non-conforming use?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact results from expansion of an existing non-conforming use that is in conflict with permissible land uses as established in PASs and Area Plans adopted by TRPA and the City.

The Project is consistent with permissible uses, as discussed in the CEQA Xb analysis, and would result in no impact.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

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12.0 MINERAL RESOURCES (CEQA) & NATURAL RESOURCES (TRPA)

This section evaluates the Project's impacts on mineral resources during construction and operations. **Table 22** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 22. Mineral and Natural Resources Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (CEQA XIa)	☐	☐	☐	☒
Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? (CEQA XIb)	☐	☐	☐	☒
Will the Proposal result in:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Environmental Checklist Item				
A substantial increase in the rate of use of any natural resources? (TRPA 9a)	☐	☐	☐	☒
Substantial depletion of any non-renewable natural resource? (TRPA 9b)	☐	☐	☐	☒

12.1 CEQA Checklist Analysis – Mineral Resources

CEQA XIa. Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Standard of Significance. A significant impact occurs if the Project creates a loss of availability of mineral resources that are valuable to the region.

Such resources do not occur in the Project Area. The City General Plan, TVAP, and TRPA RPU do not identify any sites within the Project Area as containing an important mineral resource.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA XIb. Would the Project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Standard of Significance. A significant impact occurs if the Project creates a loss of availability of locally important mineral resource recovery sites.

The Project Area contains no mineral resource recovery sites, and therefore, the Project creates no impact to such sites.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

12.2 TRPA Checklist Analysis – Natural Resources

TRPA 9a. Will the proposal result in a substantial increase in the rate of use of any natural resources?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact occurs if the Project creates a substantial increase in the rate of use of natural resources.

The Project would use what is required for construction such as metal, vegetation, and fuel; however, the use would be required only during construction, and there would be no sustained, long-term use or need for these resources. The Project does not create population increases or facilities that could substantially increase the rate of use of natural resources and thus creates no impact to such resources.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

TRPA 9b. Will the proposal result in substantial depletion of any non-renewable natural resource?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact occurs if the Project creates a substantial depletion of non-renewable resources.

Non-renewable natural resources, such as gasoline and diesel fuel for construction equipment and vehicles would be used temporarily during construction. The Project does not include facilities or actions that cause depletion of non-renewable natural resources and thus creates no impact to such resources.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

13.0 NOISE

This section evaluates the Project's noise impacts during construction and operations. **Table 23** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 23. Noise Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (CEQA XIIa)	☐	☐	☒	☐
Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? (CEQA XIIb)	☐	☐	☒	☐
A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? (CEQA XIIc)	☐	☐	☒	☐
A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? (CEQA XIId)	☐	☐	☒	☐
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the Project Area to excessive noise levels? (CEQA XIIe)	☐	☐	☒	☐
For a project within the vicinity of a private airstrip, would the project expose people residing or working in the Project Area to excessive noise levels? (CEQA XIIf)	☐	☐	☐	☒

Will the Proposal result in:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Initial Environmental Checklist				
Increases in existing Community Noise Equivalency Levels (CNEL) beyond those permitted in the applicable Plan Area Statement, Community Plan or Master Plan? (TRPA 6a)	☐	☐	☐	☒
Exposure of people to severe noise levels? (TRPA 6b)	☐	☐	☐	☒
Single event noise levels greater than those set forth in the TRPA Noise Environmental Threshold? (TRPA 6c)	☐	☐	☐	☒
The placement of residential or tourist accommodation uses in areas where the existing CNEL exceeds 60 dBA or is otherwise incompatible? (TRPA 6d)	☐	☐	☐	☒
The placement of uses that would generate an incompatible noise level in close proximity to existing residential or tourist accommodation uses? (TRPA 6e)	☐	☐	☐	☒
Exposure of existing structures to levels of ground vibration that could result in structural damage? (TRPA 6f)	☐	☐	☐	☒

13.1 CEQA Checklist Analysis

CEQA XIIa. Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Standard of Significance. Exceedance of Community Noise Equivalent Level (CNEL) limits stated in Project Area PASs and Regional and City noise ordinances constitutes a significant noise impact.

Equipment (e.g., excavators, tractors, rollers, trucks) used in construction of the stormwater and recreation improvements would produce localized noise during standard working hours during the two season, six-month construction periods. TRPA has established noise thresholds for CNELs for various land use categories and single-event standards for specific noise sources. CNELs are developed for permanent uses and activities, not construction projects. The City has adopted the noise thresholds established by the TVAP (**Table 24**) (TVAP Policy HNS-2.1).

Table 24. Maximum Cumulative Noise Equivalent Levels

Land Use District	CNEL (dBA)
Tahoe Valley Area	65
Neighborhood Professional	55
Healthcare Campus	55

TRPA Code Chapter 68 (Noise Limitations) establishes noise limitations for areas within TRPA's jurisdiction. Section 68.3 establishes noise level standards (expressed in CNEL) that shall not be exceeded. In addition, Section 68.3 stipulates that community noise levels shall not exceed levels existing on August 26, 1982, where such levels are known. Section 68.9 stipulates that TRPA-approved construction or maintenance projects, or the demolition of structures, are exempt from TRPA Code Noise Limitations (TRPA Code Chapter 68) if the activities occur between the hours 8:00 a.m. and 6:30 p.m.

The long-term operation of the Project would result in little to no new, long-term sources of operational noise because the shared-use trail is limited to non-motorized vehicle use (except that generated by occasional disabled persons with mobility devices, maintenance or emergency vehicles). Noise from recreation activities (e.g., bicycling, walking, running) is not considered nuisance noise.

The Project would create less than significant noise levels during construction and operations.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA XIIb. Would the Project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Standard of Significance. 30 CFR Part 816 defines a significant impact as a vibrational increase greater than 1 inch/second peak particle velocity, as based on typical characteristics of Project equipment and materials.

Stormwater and trail/path facilities do not create groundborne vibration. Construction equipment may produce localized vibration. TVAP policy HNS-2.4 requires construction activities that have potential to cause groundborne vibration within 200 feet of structures to conduct analysis to determine the potential for adverse effects. Although vibration dissipates rapidly, given the proximity of structures, the impact would be less than significant with implementation of the below vibration reduction measure as listed in Section 1.10.9, consistent with TVAP Policy HNS-2.4:

Noise-1. An analysis of potential vibration impact will be conducted for construction activities that include impact equipment and activities such as pile driving, soil compaction, or vibratory hammers that occur within 200 feet of existing structures. The analysis would address the potential for adverse vibration levels based on the criteria contained in Table 4.6-12 of the City General Plan Draft EIR. The City would ensure that construction operations are designed to avoid or mitigate for vibrations above 0.02 inches/second (0.5 millimeters/second) (City and TRPA 2015).

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA XIIc. Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?

Standard of Significance. Substantial permanent increase in ambient noise levels in the Project vicinity created by the Project constitutes a significant impact, as defined by permissible CNELs for PASs and noise ordinances.

As discussed in CEQA XIIa, the Project will result in a temporary, localized increase in ambient noise levels due to constriction activities. The Project would not result in a permanent increase in the permissible levels of ambient noise above established CNELs for the TVAP, PAS, or local noise ordinances. Additionally, implementation of noise and vibration reduction measures as discussed in Section 1.10.9 will reduce impacts from temporary increases in noise during construction; therefore, the impact will be less than significant.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA XIId Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?

Standard of Significance. TRPA Code Section 68.9 stipulates that TRPA-approved construction or maintenance projects are exempt from TRPA's noise limitations during the hours of 8:00 a.m. and 6:30 p.m. Construction activities occurring outside of these exempt hours, or if noise levels exceed CNEL levels set for the land use categories and PAS corresponding to the Project Area (see **Table 24**) will result in a significant impact.

As discussed in CEQA XIIa, construction activities would result in a temporary and intermittent increases in ambient noise levels. Noise impacts from construction would depend upon the noise generated by the various pieces of construction equipment, the timing and duration of noise-generating activities, the distance between the noise-generating activities and nearby sensitive receptors, and the time of day or night that the construction activities occur. Construction is typically carried out in stages. During each stage of construction, a different mix of construction equipment would operate. The EPA estimates that construction of public works projects, which include features similar to those of the Project, typically generates an average of between 78 and 88 dBA depending on the construction phase and the amount of equipment being used (EPA 1971). Noise generated by a point source, such as equipment at a construction site, drops off at a rate of 6 dBA per doubling of distance. Assuming construction noise of 78 to 88 dBA, noise attenuation from construction activities is anticipated to occur as shown in **Table 25**.

Table 25. Attenuation of a Noise Source of 78 to 88 dBA

Distance (feet)	Noise Level (dBA)
50	78 – 88
100	72 – 82
200	66 – 76
400	60 – 70
800	54 – 64
1,600	48 – 58
3,200	42 – 52

Table 25. Attenuation of a Noise Source of 78 to 88 dBA

Distance (feet)	Noise Level (dBA)
6,400	36 – 46
12,800	30 – 40

Note: this attenuation is applicable to point sources, such as construction equipment, not mobile sources, such as truck traffic.

Construction would occur primarily in open space basin areas, but would also occur in road ROWs adjacent to commercial buildings and residential properties. However, considerable sound reduction occurs in buildings when the windows are closed; buildings constructed in cold climates, like in the City, typically reduce exterior noise levels by 27 decibels (dB) (EPA 1978). Thus, impacts from construction would not result in a substantial noise increase inside commercial and residential buildings.

Noise reduction measures (outlined in Section 1.10.9) minimizes noise effects related to construction by placing noise controls on construction equipment. Given that the noise increase would be temporary, and noise reduction measures will be implemented during construction, which would occur only during daytime hours and result in less than significant noise levels.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XIIe. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project Area to excessive noise levels?

Standard of Significance. Exposure of people residing or working in the Project Area to excessive noise levels from aircraft results in a significant impact.

The Project is located approximately 2 miles from the nearest runway at Lake Tahoe Airport. The Project Area is primarily outside of the 50 dB CNEL contour for the latest Lake Tahoe Airport Comprehensive Land Use Plan (City 2007), which is well under the maximum CNEL shown in **Table 24**. The most northeastern and southwestern boundaries of the Project Area are along the border of the 50 dB CNEL contour; thus, those within the Project Area would not be exposed to excessive aircraft noise. Moreover, any noise exposure would be temporary. Because the Project would not result in exposure of people to excessive noise levels associated with an airport, the level of impact would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XIIf. For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project Area to excessive noise levels?

Standard of Significance. Exposure of people residing or working in the Project Area to excessive noise levels from aircraft results in a significant impact.

The Project is not located in the vicinity of a private airstrip, and therefore, the Project would not expose people in the Project Area to excessive noise levels from aircraft. The Project does not establish permanent, non-transitory populations after completion of construction and does not expose people utilizing the trail to excessive noise levels.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

13.2 TRPA Checklist Analysis

TRPA 6a. Will the proposal result in increases in existing Community Noise Equivalency Levels (CNEL) beyond those permitted in the applicable Plan Area Statement, Community Plan, or Master Plan?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIIa, which concludes that the level of impact related to CNELs is less than significant with implementation of noise reduction measures listed in Section 1.10.9 of the Project description.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 6b. Will the proposal result in expose of people to severe noise levels?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analyses for CEQA XIIc and CEQA XIId, which conclude that the Project would not exposure people to severe or excessive (i.e., vibrational or groundborne) noise levels.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 6c. Will the proposal result in single event noise levels greater than those set forth in the TRPA Noise Environmental Threshold?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIId, which concludes that the Project with implementation of noise reduction measures listed in Section 1.10.9 of the Project description, would not result in a substantial temporary or permanent increase in ambient noise levels in the Project vicinity outside of the exempt daytime hours allowed for temporary construction activities.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 6d. Will the proposal result in the placement of residential or tourist accommodation uses in areas where the existing CNEL exceeds 60 dBA or is otherwise incompatible?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Placement of residential or tourist accommodation uses in areas where the existing CNEL exceeds 60 dBA or is otherwise incompatible would result in a significant impact.

No such uses are associated with the Project, therefore there is no impact.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

TRPA 6e. Will the proposal result in the placement of uses that would generate an incompatible noise level in close proximity to existing residential or tourist accommodation uses?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A significant impact would occur if the Project results in placement of uses that would generate an incompatible noise level in close proximity to existing residential or tourist accommodation uses.

The Project would not result in generation of incompatible noise levels. The Project does not propose a change in land use that would typically cause incompatibility, and therefore, no impact would result.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

TRPA 6f. Will the proposal result in exposure of existing structures to levels of ground vibration that could result in structural damage?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Exposure of existing structures to levels of ground vibration that could result in structural damage would be a significant impact.

Refer to the analysis for CEQA XIIb which concludes that potential impacts from vibrational noise would be less than significant during construction. Project compliance with TVAP Policy HNS-2.4, ensures that noise vibration levels will be addressed and reduced if Project construction activities reach adverse vibration levels. Criteria contained in Table 4.6-12 of the City General Plan Draft EIR require construction operations to be designed to avoid or mitigate for vibrations above 0.02 inches/second (0.5 millimeters/second) (City and TRPA 2015).

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

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14.0 POPULATION & HOUSING

This section evaluates the Project's population and housing impacts during construction and operations. **Table 26** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 26. Population and Housing Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (CEQA XIIIa)	☐	☐	☒	☐
Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? (CEQA XIIIb)	☐	☐	☐	☒
Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? (CEQA XIIIc)	☐	☐	☐	☒
Will the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Environmental Checklist Item – Population				
Alter the location, distribution, density, or growth rate of the human population planned for the Region? (TRPA 11a)	☐	☐	☐	☒
Include or result in the temporary or permanent displacement of residents? (TRPA 11b)	☐	☐	☐	☒
Will the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Environmental Checklist Item – Housing				
Affect existing housing, or create a demand for additional housing? (TRPA 12a):				
1. Will the proposal decrease the amount of housing in the Tahoe Region?	☐	☐	☐	☒
2. Will the proposal decrease the amount of housing in the Tahoe Region historically or currently being rented at rates affordable by lower and very-low-income households?	☐	☐	☐	☒
Result in the loss of housing for lower-income and very-low-income households? (TRPA 12b)	☐	☐	☐	☒

14.1 CEQA Checklist Analysis

CEQA XIIIa. Would the Project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Standard of Significance. A significant impact results from direct and indirect population growth in excess of the growth anticipated in the TRPA RPU and City General Plan, as disclosed in the Land Use Element and PASs and Areas Plans.

The Project proposal provides for no long-term employment, educational opportunities, or other population-generating features known to increase local populations. The Project would not directly induce substantial population growth because no new homes or business would be constructed, and the small labor force needed to construct the Project would be drawn from the local population. The Project also would not indirectly induce population growth because the infrastructure improvements would be located in an already developed area. Thus, no significant impacts associated with population growth would occur.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XIIIb. Would the Project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Standard of Significance. Displacement of substantial numbers of existing housing that necessitates construction of replacement housing elsewhere creates a significant impact.

The Project does not displace housing or necessitate the construction of replacement housing elsewhere and thus creates no impact.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA XIIIc. Would the Project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Standard of Significance. Displacement of substantial numbers of people that necessitates construction of replacement housing elsewhere creates a significant impact.

The Project would not displace people and thus would create no impact.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

14.2 TRPA Checklist Analysis – Population

TRPA 11a. Will the proposal alter the location, distribution, density, or growth rate of the human population planned for the Region?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance**.** Alteration to land use patterns not envisioned by the RPU or City General Plan constitutes a significant impact to human population planned for the Region.

Refer the analysis for CEQA XIIIa. The Project creates no new housing units or permanent employment opportunities. Because the Project improves non-motorized access between existing neighborhoods and community facilities, the desirability of residential neighborhoods benefitted by the trail has the potential to increase. No overall change in housing density or availability will occur, however, because housing is regulated and limited by TRPA. With no residential displacement, permanent employment opportunities, or new housing developments, the Project results in no alteration of the location, distribution, density, or growth rate of the human population planned for the region beyond that envisioned by the Regional Plan.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 11b. Will the proposal include or result in the temporary or permanent displacement of residents?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Significant temporary or permanent displacement of residents results in a significant impact.

The Project does not require the temporary or permanent displacement of residents and thus creates no impact.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

14.3 TRPA Checklist Analysis – Housing

TRPA 12a. Will the proposal affect existing housing, or create a demand for additional housing?

(1) Will the proposal decrease the amount of housing in the Tahoe Region?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance**.** Refer to the analysis for CEQA XIIIa, which concludes the level of impact to housing demand is less than significant and that no existing housing would be removed by the Project.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

(2) Will the proposal decrease the amount of housing in the Tahoe Region historically or currently being rented at rates affordable by lower and very-low-income households?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance**.** Refer to the analysis for CEQA XIIIa, which concludes the level of impact to housing demand is less than significant and that no existing housing would be removed by the Project.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 12b. Will the proposal result in the loss of housing for lower-income and very-low-income households?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance**.** Refer to the analysis for CEQA XIIIa, which concludes the level of impact to housing demand is less than significant and that no existing housing would be removed by the Project.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

15.0 PUBLIC SERVICES

This section evaluates the Project's impacts on public services during construction and operations. **Table 27** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 27. Public Service Impacts

Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
CEQA Environmental Checklist Item				
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services (CEQA XIVa):				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐
Will the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Environmental Checklist Item				
Have an unplanned effect upon, or result in a need for new or altered governmental services in any of the following areas?	☐	☐	☐	☒
a) Fire Protection (TRPA 14a)	☐	☐	☐	☒
b) Police Protection (TRPA 14b)	☐	☐	☐	☒
c) Schools (TRPA 14c)	☐	☐	☐	☒
d) Parks or other recreational facilities (TRPA 14d)	☐	☐	☐	☒

Will the Proposal:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Environmental Checklist Item				
e) Maintenance of public facilities, including roads (TRPA 14e)	☐	☐	☐	☒
f) Other governmental services (TRPA 14f)	☐	☐	☐	☒

15.1 CEQA Checklist Analysis

CEQA XIVa. Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, and other public facilities?

Standard of Significance. A significant impact results to governmental and public services if the Project causes an increase demand for personnel, equipment or infrastructure beyond that planned by public service entities, the TRPA Regional Plan, or City General Plan.

The Project Area is located in a fully developed area of the City. City services such as fire protection and law enforcement are readily available. Schools, parks, and other governmental facilities are also in the vicinity of the Project Area.

Fire Protection. The South Lake Tahoe Fire District (SLTFD) is a municipal fire department that operates two staffed fire stations in City limits. The Project Area is currently served by the SLTFD. Fire Station #3 is located at 2101 Lake Tahoe Boulevard and almost adjacent to the Project Area.

In addition, the SLTFD maintains mutual aid agreements with other fire and emergency response agencies in the Tahoe region, including the Tahoe Douglas Fire Protection District, the Lake Valley Fire Protection District, and the Forest Service, providing for area-wide fire response and ambulance services both inside and outside the City limits.

Ambulance services within the City are provided by the California Tahoe Emergency Services Operations Authority (Cal Tahoe). Cal Tahoe responds to medical emergencies from City's Fire Station #2, located at 2951 Lake Tahoe Blvd, 2 miles from the Project location.

The General Plan includes policies to ensure adequate fire protection services. For example, Policy PQP-6.0 requires the City to ensure that fire department staffing levels reflect enough personnel to perform the needed tasks to control an emergency and provide for the life and safety of the public and the responders.

Because the Project is located in an area that is currently served by the SLTFD and Cal Tahoe, the Project would not require new construction or expansion of existing fire protection facilities. The Project would require protection from fire during construction activities, and would therefore have minimal impact on SLTFD and Cal Tahoe. Because impact would be temporary and there would be no need for additional services, impact would be less than significant.

Law Enforcement. The South Lake Tahoe Police Department (SLTPD) provides police services within incorporated South Lake Tahoe. The SLTPD has a jurisdictional area of approximately 13 square miles. The City's only police facility is located at 1532 Johnson Blvd. The Project Area is currently served by the SLTPD. The City is also located within the jurisdiction of the California Highway Patrol Valley Division,

which covers the greater Sacramento area and an area extending to the City on the east. The California Highway Patrol area office is located at 2063 Hopi Avenue in Meyers.

Typically, increases in the need for police services are linked to an increase in population. As discussed under CEQA XIVa, the Project would not result in a substantial increase in population in the area. Additionally, the General Plan includes policies related to the maintenance of an adequate police force. Policy PQP-5.1 requires the City to continue to provide adequate police protection and law enforcement by maintaining a police department capable of meeting the needs of the entire community at present and in the future. Policy PQP-5.4 requires the City to maintain appropriate law enforcement staffing levels and provide necessary equipment and vehicles to ensure maximum efficiency within the City's overall budgetary constraints. Impacts on law enforcement would be less than significant.

Schools. South Tahoe High School is located approximately 0.6 mile west of the Project Area in Tahoe Valley. Tahoe Valley Elementary is located within 0.25 mile of the northernmost part of the Project Area. South Tahoe Middle School and Lake Tahoe Community College are located approximately 2.5 miles away from the Project Area. Impacts to school facilities are typically linked to an increase or decrease in population. As discussed in CEQA XIVa, the Project would not have potential to impact population; therefore, the potential to impact school services would be less than significant.

Parks. Bonanza Park (located at 1209 Bonanza Avenue) is immediately adjacent to the Project Area that encompasses the Bonanza Avenue ROW. Bijou Community Park and South Lake Tahoe Skate Park are located approximately 2.5 miles northeast of the Project Area. The Project would not result in a population increase that would have potential to increase the demand for services associated with the parks.

Other Public Facilities. As discussed, the Project would not result in an increase in population that would require additional services. The Project is served by the existing surrounding facilities and would not result in the need for additional services. Therefore, impacts to public services would be less than significant.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

15.2 TRPA Checklist Analysis – Public Services

TRPA 14. Will the proposal have an unplanned effect upon, or result in a need for new or altered governmental services in any of the following areas:

TRPA 14a. Fire protection?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIVa, which concludes that the level of impact to fire protection would be less than significant. The Project would not reduce access, response times, or other performance objectives for fire protection. The Project would not result in the need for new or additional services for fire protection.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 14b. Police protection?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIVa, which concludes that the level of impact to police protection would be less than significant. The Project would not reduce access, response times or other performance objectives for police protection. The Project would not result in the need for new or additional services for police protection.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 14c. Schools?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIVa, which concludes that the level of impact to schools would be less than significant. The Project maintains acceptable service ratios and other performance objectives for schools. The Project would not result in the need for new or additional school services.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 14d. Parks or other recreational facilities?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIVa, which concludes that the level of impact to parks or other recreational facilities would be less than significant.

The Project would improve access to recreational facilities. The Project would not result in the need for additional public services. The Project would result in additional amenities to the passive recreation area of the Greenbelt, including a children's play area, additional seating with public art, and improvements to the trail system. These amenities would be a beneficial improvement to recreation in the Tahoe Valley area and would not result in the need for additional parks or recreation facilities.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 14e. Maintenance of public facilities, including roads?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. If the Project creates new or altered unplanned effects to governmental services in maintenance of roads, a significant impact results.

The existing maintenance program and facilities within the City would maintain the Project street corridor; the Project would create little impact or change to what is required for maintenance of public utilities, including roads.

The Public Works Operations staff is responsible for the maintenance and repair of 130 miles of City streets, including pavement repair and construction, drainage facilities, pavement marking and striping, sign installation and maintenance, curb and gutter maintenance, street sweeping and additional activities connected with keeping the city streets safe for all motorists (City 2018).

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 14f. Other governmental services?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analyses for CEQA XIVa and TRPA 14a through 14e, which conclude that the level of impact to governmental services such as fire protection, police protection, schools, parks, and road would be less than significant. For other governmental services, such as treatment of stormwater, if the Project creates new or altered unplanned effects to governmental services in maintenance of stormwater systems, a significant impact results.

The Project would not result in the need for new or additional governmental services. The Project would not contribute additional stormwater runoff to existing Caltrans infrastructure and would not cause runoff to exceed existing system capacities. The Project proposal relies on source control and infiltration to soils for stormwater treatment along the trail alignment and within enhanced stormwater treatment areas, thereby reducing government maintenance services for existing stormwater infrastructure. Long-term maintenance of facilities would be included on the City's operations and maintenance program.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

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16.0 RECREATION

This section evaluates the Project's impacts on recreation during construction and operations. **Table 28** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 28. Recreation Impacts

Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
CEQA Environmental Checklist Item				
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? (CEQA XVa)	☐	☐	☒	☐
Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? (CEQA XVb)	☐	☐	☒	☐
Does the Proposal:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist				
Create additional demand for recreation facilities? (TRPA 19a)	☐	☐	☐	☒
Create additional recreation capacity? (TRPA 19b)	☐	☐	☐	☒
Have the potential to create conflicts between recreation uses, either existing or proposed? (TRPA 19c)	☐	☐	☐	☒
Result in a decrease or loss of public access to any lake, waterway, or public lands? (TRPA 19d)	☐	☐	☐	☒

16.1 CEQA Checklist Analysis

CEQA XVa. Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Standard of Significance. If the Project improves access to recreation facilities or public lands used for recreation, by numbers sufficient to create new disturbance, this constitutes a significant impact.

The Project connects to other trail systems that access the lake and other area recreation facilities. These trails pass through undeveloped land that currently supports unpaved trail use. The potential for indirect effects to these facilities would be remote because roads and unpaved trails already access the areas. Providing an access mode that does not require a parking space would reduce impacts on these facilities at

peak times. Allowing an alternative, non-motorized means of transportation would reduce the pressure on existing parking supply and reduces the potential for unpermitted parking in undeveloped areas. The Project would also provide recreation and opens public access and enjoyment of the natural landscape by encouraging more people to access trail areas by improving access near neighborhoods.

The Project would not increase use of adjacent parks because the Project would not result in increased population, and demands for recreational facilities are driven by the ratio of parkland to population. Additionally, the Project proposes passive recreational amenities within the Greenbelt area such as seating areas, signage for an interpretive path, public art, an improved trail system, and an expanded plaza area behind the "Y" factory stores, which would improve public use of this area for passive recreation opportunities within the Project Area. Thus, the Project would not have potential to increase the use of adjacent parks such that physical deterioration of the facilities would occur. Improvements to the existing trail system within the Project Area may increase use, but the increase would not lead to substantial physical deterioration of these facilities. The City has planned for increased use and associated maintenance of the multi-use paths, which is consistent with its goals and policies supporting alternative forms of transportation (e.g., General Plan Transportation and Circulation Element Goal TC-3, which seeks to "*expand bicycle and pedestrian activity in community centers and throughout the City, across all seasons of the year, through enhancements to and maintenance of bike paths, bike lanes, pedestrian paths, and sidewalks,*") and has factored in ongoing maintenance into its maintenance plans. As demonstrated throughout this document, the Project would not result in significant environmental deterioration.

Environmental Analysis: **Less Than Significant Impact**.

Required Mitigation: **None.**

CEQA XVb. Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Standard of Significance. A significant impact results if the Project requires the construction or expansion of recreational facilities that cause an adverse physical effect on the environment. The TRPA RPU Recreation Element, PASs and Thresholds, along with the City's General Plan Recreation Element, determine this level of impact significance.

The Project includes improvements to existing recreation amenities within the Greenbelt area. As discussed in Section 1.6, BMPs and construction measures would be in place prior to construction, which would protect against significant impacts during construction. Recreational amenities such as the children's play area, seating and public art areas, improved trail system, and expanded plaza area behind the "Y" factory store area are intended to be beneficial passive recreational amenities for public use. No significant impacts resulting from implementation of the Project have been identified.

The Project improvements for bike/pedestrian trails and paths within the Greenbelt area would retain and enhance linkages and connectivity to the existing bike/pedestrian network identified within the TVAP. How the Project proposal and design avoids, reduces and minimizes the potential impacts of constructing and operating these bike paths are analyzed in this IS/IEC. The Project would not require the construction or expansion of other recreational facilities because it would not result in increased population, and implementation of recreation use construction measures will reduce temporary impacts on pedestrian and trail users during construction

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

16.2 TRPA Checklist Analysis

TRPA 19a. Does the proposal create additional demand for recreation facilities?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance: Refer to the analyses for CEQA XVa and CEQA XVb. The Project does not create additional demand for recreational facilities; rather, it helps meet existing recreation and connectivity needs.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 19b. Does the proposal create additional recreation capacity?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance: Recreation capacity at Lake Tahoe is measured by TRPA with the allocation of Persons at One Time (PAOTs).

The Project does not propose an allocation of PAOT summer day recreation use. However, the Project proposes improvements to the existing passive recreation capacity within the Greenbelt area of Tahoe Valley that may increase public use of the area. Such improvements include an interpretive trail loop, expanded open space, passive seating areas, connectivity to the plaza area behind "Y" factory stores to expand the plaza into the Greenbelt for public use and access, and installation of a children's play area. These improvements would benefit the threshold for recreation as defined by TRPA, which directs policy to "preserve and enhance high quality recreational experience; preserve undeveloped shorezone and other natural areas; and maintain a fair share of recreational capacity for the general public" (TRPA 2016). Although improvements to the Greenbelt may increase capacity, because the Project does not propose a PAOT recreation use, based on TRPA standards of significance, the impact would be beneficial.

Environmental Analysis: **No; Beneficial Impact**.

Required Mitigation: **None.**

TRPA 19c. Does the proposal have the potential to create conflicts between recreation uses, either existing or proposed?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Elimination of or decreased viability of an existing or proposed recreation use caused by the construction and operation of the Project constitutes a significant impact.

Recreational conflicts intensify when an increasingly diverse mix of social, cultural, and political interest groups make claim to what they perceive to be their fair share of a public resource. This can be due to perceived dissimilarity of attitudes and values attributed to activities of different user groups. Four major factors have the potential to produce conflict when there is social contact between recreational users: activity style, resource specificity, mode of experience, and lifestyle tolerance.

Temporary conflicts could occur during the construction period and would result from the temporary closure of the existing trails/path linkages through the Greenbelt area that connect with the western terminus of Barton Avenue and Helen Avenue. Surrounding trails and roadways exterior and adjacent to the Greenbelt construction area would allow for sufficient detours and connectivity, where directed by temporary construction signage. Temporary impacts to recreational users would be reduced to a level of

less than significant by implementing the recreational use protection measures (Section 1.10.10) that have been identified as part of the Project to avoid potential conflicts.

These measures will reduce potential impacts from the temporary closure of the existing paths to a level of less than significant because those currently using the path would be notified in advance of the closure and would be able to take an alternate route during the brief construction period. This would ensure safety of users and would not allow them within an active construction area. The Project does not propose to eliminate or decrease viability of a recreation facility.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 19d. Does the proposal result in a decrease or loss of public access to any lake, waterway, or public lands?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A decrease or loss of public access to lakes, waterways or public lands as a result of Project construction and operation constitutes a significant impact.

Project construction results in temporary restricted access to the Project Area for purposes of public health and safety. Public access would not decrease outside of the active construction corridor. Project operation lead to an increase of public access to public lands and to the lake through non-motorized means, thereby supporting TRPA Recreation Threshold R-1. The Project connects with existing bike trails and pathways with connections to established public access routes to the lake and beach facilities.

Specifically, the Project includes relocation and realignment of multi-use paths and trails within the Greenbelt area that provide linkages and connectivity to the surrounding bike/pedestrian path network within the Tahoe Valley. The improvements for bike/pedestrian trails and paths within the Greenbelt area will retain and enhance linkages and connectivity to the existing bike/pedestrian network identified within the TVAP and will increase access and connectivity to public lands within the City.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

17.0 TRANSPORTATION & TRAFFIC (CEQA) AND TRAFFIC & CIRCULATION (TRPA)

This section evaluates the Project's impacts on transportation and traffic during construction and operations **Table 29** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 29. Transportation, Traffic, and Circulation Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? (CEQA XVIa)	☐	☐	☒	☐
Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? (CEQA XVIb)	☐	☐	☒	☐
Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? (CEQA XVIc)	☐	☐	☐	☒
Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (CEQA XVId)	☐	☐	☐	☒
Result in inadequate emergency access? (CEQA XVIe)	☐	☐	☒	☐
Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? (CEQA XVIf)	☐	☐	☒	☐

Will the Proposal result in:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Environmental Checklist Item				
Generation of 100 or more new Daily Vehicle Trip Ends (DVTE)? (TRPA 13a)	☐	☐	☐	☒
Changes to existing parking facilities, or demand for new parking? (TRPA 13b)	☐	☐	☐	☒
Substantial impact upon existing transportation systems, including highway, transit, bicycle or pedestrian facilities? (TRPA 13c)	☐	☐	☐	☒
Alterations to present patterns of circulation or movement of people and/or goods? (TRPA 13d)	☐	☐	☐	☒
Alterations to waterborne, rail or air traffic? (TRPA 13e)	☐	☐	☐	☒
Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians? (TRPA 13f)	☐	☐	☐	☒

17.1 CEQA Checklist Analysis

CEQA XVIa. Would the Project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system?

Standard of Significance. Project conflicts with applicable plans, ordinances, or policies establishing measures of effectiveness for circulation system performance result in a significant impact.

The Project is consistent with existing policies, plans, and programs that encourage the promotion and use of alternative modes of transportation because the Project creates an alternative transportation trail for pedestrians and non-motorized transportation, which supports policies, plans, and programs for alternative transportation, such as those listed in **Table 30**. The Project creates new opportunities for alternative modes of transportation to result in a less than significant impact to circulation systems.

Table 30. Applicable Transportation, Parking, and Circulation Standards

Jurisdiction/ Plan/Policy	Standard/Criteria
Tahoe Regional Planning Compact	The goal of transportation planning shall be: (A) To reduce the dependency on the automobile by making more effective use of existing transportation modes and public transit to move people and goods within the region; and (B) To reduce to the extent feasible air pollution which is caused by motor vehicles.
Mobility 2030: Lake Tahoe Basin RTP (Mobility 2030)	The Goals and Policies of Mobility 2030 reflect the consideration of environmental, social and economic factors in making transportation-related decisions. Specific goals of Mobility 2030 include the following: 1) reduce reliance on the private automobile; 2) provide for alternative modes of transportation; 3) serve the basic transportation needs of the citizens of Lake Tahoe; 4) support the economic base of the region; and 5) minimize adverse impacts on man and the environment.

Table 30. Applicable Transportation, Parking, and Circulation Standards

Jurisdiction/ Plan/Policy	Standard/Criteria
Federal Planning Guidelines	In 1999, the Lake Tahoe Basin became a federal Metropolitan Planning Organization (MPO). Federal regulations, pertaining to transportation, require that the MPO planning process provide for the consideration of projects and strategies that will: • increase the safety and security of the transportation system for motorized and non-motorized users; • enhance the integration and connectivity of the transportation system, across and between modes, for people and freight; • promote efficient system management and operation; and • emphasize the preservation of the existing transportation system.
TRPA Goals and Policies	Establish level of service (LOS) criteria for various roadway categories and signalized intersections. LOS criteria during peak periods shall be: • LOS C on rural recreational/scenic roads; • LOS D on rural developed area roads; • LOS D on urban developed area roads; • LOS D for signalized intersections; • LOS E may be acceptable during peak periods in urban areas, not to exceed four hours/day. The policies and objectives of this document also place high priority on constructing pedestrian and bicycle facilities in urbanized areas and encouraging waterborne transportation measures.
TRPA Thresholds	TRPA has nine threshold categories: water quality, air quality, noise, scenic, vegetation, soils, wildlife, recreation, and fisheries. There is no threshold for transportation; however transportation system projects in the Lake Tahoe Basin cannot degrade any of the thresholds. Rather, TRPA must make findings that the proposed projects attain or maintain existing thresholds.
TRPA Thresholds: Air Quality	Air Quality has two transportation related standards: VMT and traffic volumes on US Hwy 50. • AQ-5 US Hwy 50 Traffic Volumes – 7% reduction in traffic volume on the US Hwy 50 corridor from 1981 base year values, winter, 4 p.m. to 12 a.m. (25,173 vehicles at the US Hwy 50/Park Ave intersection.) • AQ-7 VMT – 10% reduction in VMT in the Lake Tahoe Basin from 1981 base year values. (1,648,466 VMT for a peak summer day.)
TRPA Code of Ordinances	Adherence to: Code Chapter 12 requirements for traffic considerations, including VMT reduction policies and level of service goals for street and highway traffic, and Code Chapter 65 requirements for traffic analyses; the Code sections require reducing significant impacts to a less than significant level.
City of South Lake Tahoe General Plan	The Circulation Element of the City's General Plan provides transportation objectives and policies associated with areas within the City. The objectives and policies are generally consistent with other applicable plans.

Table 30. Applicable Transportation, Parking, and Circulation Standards

Jurisdiction/ Plan/Policy	Standard/Criteria
American Association of State Highway and Transportation Officials (AASHTO)	The AASHTO Guide for the Development of Bicycle Facilities specifies design recommendations and standards for the width, horizontal alignment, sight distance, separation distance from roadways, grades and graded shoulders of trails. Design recommendations and standards are also specified for signage and striping, sight distance, and crossing angles at all location where paths cross a roadway.
Other	Signal warrant criteria as established by the Federal Highway Administration Manual on Uniform Traffic Control Devices.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XVIb. Would the Project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Standard of Significance. Conflict with applicable congestion management programs, specifically level of service (LOS) standards, creates a significant impact to traffic and circulation from the Project.

Construction Impacts. The Project would have a temporary impact on traffic circulation during the two seasonal, 6-month construction periods. Temporary traffic control measures would be implemented in both the City and Caltrans roadways where Project improvements are proposed in the respective ROWs, and appropriate standards applied. Project construction activities would conform to the *Work Area Traffic Control Handbook* (Watch Committee of Public Works Standards, Inc. 2016) and the *California Manual of Uniform Traffic Control Devices* (Caltrans 2014). Controls within the ROW would include varying lane and shoulder closures using standard signage, delineators, barricades, and flagger personnel.

As described in Section 1.10.4, the BMPs will include preparation of a TCP by the construction contractor. The TCP will include measures to provide safe emergency, business, residential, bicycle, and pedestrian access through the Project Area during construction. At a minimum, the TCP will include the following measures:

- TC-1: The temporary traffic control measures will be implemented during standard construction periods (Monday through Friday) and roadways opened during weekends and holidays.
- TC-2: Access to driveways and parking lots within the Project Area will be maintained during the course of construction, unless work is being performed in the vicinity of, or for, the driveway or parking lot area.
- TC-3: If a driveway or parking lot closure is necessary to facilitate construction activities, the contractor will hand-deliver notices to the affected property owners at least 48 hours prior to closure.
- TC-4: During construction, temporary parking will be provided for construction personnel within designated staging areas.

Given implementation of the TCP, construction impacts will be less than significant because safe access will be maintained during the construction period and it will be only for a short stretch of road and for a limited period of time.

Operational Impacts. No impacts to traffic operations would result from Project operations.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA XVIc. Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

Standard of Significance. If the Project causes a change in air traffic patterns that results in substantial safety risks, a significant impact occurs.

The Project provides a new facility for bicycle and pedestrian transit and does not change air traffic patterns or air traffic.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA XVId. Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Standard of Significance. Substantial increases in hazards resulting from the Project proposal or incompatible use of the trail create a significant impact.

The Project does not include transportation design features that would impact the safety of users or change the compatibility of use. The Project has been designed to more safely facilitate bicyclists and pedestrians in the Project Area, consistent with trail design standards for Class I trails in the *Caltrans Highway Design Manual* (Chapter 1003, Design Criteria) (Caltrans 2017b). The City's South Lake Tahoe Public Improvements and Engineering Standards (PIES) are the secondary design standard being followed. Project compliance with Caltrans and City PIES design standards would ensure the Project would not have potential to increase hazards due to a design feature.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA XVIe. Would the Project substantially result in inadequate emergency access?

Standard of Significance. Inadequate access for emergency responders during Project construction and operations constitutes a significant impact.

The Project would not result in impact to emergency access. There would be minor, temporary impact during construction. As discussed in the analysis for CEQA VIIIg, the Project would remain open to emergency vehicles during construction activities. Given implementation of the TCP, construction impacts would be less than significant because safe access would be maintained during the construction period. Temporary construction measures as described in Section 1.10.4 would also be implemented to further reduce impacts to less than significant. In addition, the Project would not require revisions to the City's Emergency Operation Plan or Emergency Management Plan.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XVIf. Would the Project conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Standard of Significance. Inconsistency with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities constitutes a significant impact.

The Project would enhance bicycle and pedestrian facilities by providing additional access to southshore residential communities and by providing connections to existing facilities and key destinations and is consistent with the goals and policies of the TRPA Transportation Plan to encourage walking and cycling as modes of transportation within the Lake Tahoe Basin. The Project would help implement General Plan Policy NCR-5.1: "*The City shall encourage the use of alternative modes of transportation by encouraging public transit, neighborhood electric vehicles, bicycle, and pedestrian modes in City transportation planning and by requiring new development to provide safe and separate pedestrian circulation and adequate bikeway circulation and facilities*."

Other applicable policies include General Plan TC-3.2: Cohesive and Continuous Bicycle and Pedestrian Network; Policy TC-3.3: Implement the Bicycle Master Plan and Improve Connections; Policy TC-3.13: Bicycle Trail Crossings; Policy TC-3.15: Pedestrian Linkages along Highway 50; and Policy PQP -6.3: Traffic Control and Calming Measures. The Project would comply with applicable goals and policies and would increase the performance and safety of pedestrian and traffic facilities; thus, the level of impact would be a less than significant.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

17.2 TRPA Checklist Analysis – Traffic & Circulation

TRPA 13a. Will the proposal result in generation of 100 or more new Daily Vehicle Trip Ends (DVTE)?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. If the Project results in the generation of 200 or more new Daily Vehicle Trip Ends (DVTE), a significant impact results.

The Project would not result in the generation of additional trips. The Project would be expected to eliminate some existing vehicle-trips in the vicinity of the Project by trail users bicycling/walking to the trail and on to their final destination instead of using a vehicle to make the trip. The level of potential impact to DVTE would be less than significant.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 13b. Will the proposal result in changes to existing parking facilities, or demand for new parking?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Change in use of existing parking facilities that create an unmet demand for new parking as a result of Project operations constitutes a significant impact.

The Project does not propose any new development that would require use of additional or expansion of parking.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 13c. Will the proposal result in substantial impact upon existing transportation systems, including highway, transit, bicycle or pedestrian facilities?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. If the Project causes delay that degrades the LOS on roadways to LOS E for more than four hours/day, impacting vehicles and transit, or hinders pedestrian or bicycle travel, a significant impact results.

The Project would not result in substantial negative impact upon existing transportation systems but instead enhances and improves bicycle and pedestrian access. The Project would be beneficial to the multi-use trail system through implementation of improvements, such as increased connectivity of trails and lighting, which would increase safety.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 13d. Will the proposal result in alterations to present patterns of circulation or movement of people and/or goods?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. If the Project results in an alteration to present patterns so that circulation is substantially disrupted and/or public access cannot be met, a significant impact results.

The Project improvements for bike/pedestrian trails and paths within the Greenbelt area retain and enhance linkages and connectivity to the existing bike/pedestrian network identified within the Tahoe Valley. The minor realignment of multi-use trails within the Greenbelt would not have potential to significantly alter the pattern of circulation or movement of people or goods. The Project would result in a benefit of enhanced transportation/circulation to areas within and adjacent to the Project Area.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 13e. Will the proposal result in alterations to waterborne, rail, or air traffic?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Alterations to waterborne, rail, or air traffic by Project construction or operations that result in service disruptions constitute a significant impact.

The Project provides a new facility for bicycle and pedestrian traffic and does not change air traffic, waterborne traffic, or rail traffic.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

TRPA 13f. Will the proposal result in increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Increases to traffic hazards at trail crossing locations constitutes a significant impact. Refer to the analysis for CEQA XVId, which concludes that the level of impact from the Project to traffic hazards to vehicles, bicyclists, and pedestrians would be less than significant. The Project would result in increased safety of use of the trail system due to lighting installation. This would be a positive impact.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

18.0 UTILITIES & SERVICE SYSTEMS (CEQA) AND ENERGY & UTILITIES (TRPA)

This section evaluates the Project's impacts on utilities and service systems during construction and operations. **Table 31** identifies the level of significance of the impacts based on the CEQA Guidelines Appendix G: Environmental Checklist Form and the TRPA Initial Environmental Checklist Form and indicates whether additional mitigation measures would be required to avoid, reduce, minimize, or otherwise mitigate potential impacts to a level of less than significant.

Table 31. Utilities and Service Systems and Energy Impacts

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? (CEQA XVIIIa)	☐	☐	☒	☐
Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (CEQA XVIIIb)	☐	☐	☐	☒
Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (CEQA XVIIIc)	☐	☐	☒	☐
Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? (CEQA XVIIId)	☐	☐	☒	☐
Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (CEQA XVIIIe)	☐	☐	☒	☒
Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? (CEQA XVIIIf)	☐	☐	☒	☐
Comply with federal, state, and local statutes and regulations related to solid waste? (CEQA XVIIIg)	☐	☐	☒	☐

Will the Proposal:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Environmental Checklist Item – Utilities				
Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to the following utilities:				
a) Power or natural gas? (TRPA 16a)	☐	☐	☐	☒
b) Communication systems? (TRPA 16b)	☐	☐	☐	☒
c) Utilize additional water which amount will exceed the maximum permitted capacity of the service provider? (TRPA 16c)	☐	☐	☐	☒
d) Utilize additional sewage treatment capacity which amount will exceed the maximum permitted capacity of the sewage treatment provider? (TRPA 16d)	☐	☐	☐	☒
e) Storm water drainage? (TRPA 16e)	☐	☐	☐	☒
f) Solid waste disposal (TRPA 16f)	☐	☐	☐	☒
Will the Proposal result in:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Environmental Checklist Item – Energy				
Use of substantial amounts of fuel or energy? (TRPA 15a)	☐	☐	☐	☒
Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy? (TRPA 15b)	☐	☐	☐	☒

18.1 CEQA Checklist Analysis

CEQA XVIIIa. Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Standard of Significance. Exceedance of wastewater treatment requirements as established by Lahontan constitutes a significant impact.

The Project would develop an area-wide stormwater treatment system that also provides for distinct and unique recreation and open space amenities, and as discussed Section 14, Population and Housing, would not create population growth. The Project proposes no new housing that could increase resident populations in need of these services and does not propose fixtures or features that require connections to wastewater. The Project would not affect wastewater quantities and would create no impact on wastewater treatment operations, treatment, or capacity. The resulting Project would not discharge additional wastewater to the public sewer system. The stormwater improvements would remove a portion of the existing runoff volumes from entering the existing combined wastewater sewer system.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XVIIIb. Would the Project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Standard of Significance. Construction of new water or wastewater facilities or expansion of existing facilities as a result of the Project constitutes a significant impact if new construction creates significant and immitigable environmental effects.

The Project would develop an area-wide stormwater treatment system that also provides for distinct and unique recreation and open space amenities, and as discussed Section 14, Population and Housing, would not create population growth. The Project proposal includes no new housing that could increase resident populations in need of these services and does not propose fixtures or features (e.g., restrooms) that require connections to water or wastewater. The Project installs no permanent irrigation, restrooms, or water fountains.

TRPA Code Chapter 32 provides regulations for utilities and services. The Project complies with these regulations, as no new water or wastewater utilities are required to operate the improvements.

Environmental Analysis: **No Impact.**

Required Mitigation: **None.**

CEQA XVIIIc. Would the Project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Standard of Significance. Construction of new stormwater treatment facilities or expansion of existing facilities as a result of the Project constitutes a significant impact if new construction creates significant and immitigable environmental effects.

Construction of the Project would result in improved stormwater treatment facilities, as described in detail in Section 1.5.1. These facilities would improve area-wide drainage and stormwater quality. As discussed throughout this document, the Project would have a temporary impact on the environment during construction. Implementation of construction controls and erosion and sediment control BMPs would avoid and minimize potentially significant impacts during construction.

The Project would largely avoid alterations to existing drainage patterns through location of new coverage over existing unpaved trails wherever possible and a drainage design that relies primarily on sheet flow and infiltration to soils for source control. This approach would meet requirements for containment of the 20-year, 1-hour storm runoff volume. A basic strategy for drainage from trail surfaces is sheet flow and infiltration onto 2-foot-wide clear zones that are immediately adjacent to the sides of the shared-use trail. Coordination with City drainage requirements at certain crossings will direct final design plans to capture surface runoff and convey and discharge to the stormwater treatment facilities, as appropriate. The Project would implement the requirements for permanent BMPs, as outlined in TRPA Code Chapter 60, Lahontan's Basin Plan Chapter 5, and the City's drainage design criteria.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XVIIId. Would the Project have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?

Standard of Significance. A significant impact occurs if the Project creates a demand in water supply that requires new or expanded entitlements or resources to ensure continuation of sufficient water supply to the public.

The Project would require temporary water during construction for dust control. Water trucks would be filled using designated fire hydrants located in the vicinity of the Project Area. Temporary water use during construction would be minimal and could be served through the existing entitlements. The Project, once built, would not require additional wastewater resources, but would require temporary water for vegetation establishment (native vegetation). Once vegetation is established the Project would not require additional water resources.

Refer to the analyses for CEQA XVIIIa and CEQA XVIIIb. The Project requires no new water service, and therefore, would avoid significant impact on water supplies, entitlements, or resources.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XVIIIe. Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?

Standard of Significance. A significant impact results if the Project creates additional demand that prohibits South Tahoe Public Utility District (STPUD) from meeting existing provider commitments with existing wastewater treatment capacity.

Refer to the analyses for CEQA XVIIIa and CEQA XVIIIb. The Project requires no new wastewater service.

Environmental Analysis: **Less than Significant Impact.**

Required Mitigation: **None.**

CEQA XVIIIf. Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?

Standard of Significance. A significant impact results if the project creates demand for a new landfill or is unable to be served by existing landfills.

Construction activities, including the removal of roadway asphalt, concrete, earthen soils, and vegetation debris, may require the use of a solid waste facility, though Project designs and contract documents would encourage balancing of earthwork within the Project Area and recycling of asphalt/concrete materials for incorporation with new construction materials, as well as grinding/chipping of vegetation waste for use in revegetation/planting for the Project. The Project would use the services of South Tahoe Refuse to collect and dispose of solid waste generated by the Project. The main facility, located in the City, consists of a transfer station, a materials recovery facility, and the Tahoe Basin Container Service. Solid waste could also be disposed of at the Lockwood Regional Landfill in Sparks, Nevada. This landfill has a total capacity of approximately 43 million tons and is expected to reach capacity by the year 2025. However, multiple large-scale expansions to the facility are expected before this capacity is reached.

Both the South Tahoe Refuse main facility and the Lockwood Regional Landfill have sufficient capacity to manage the growth anticipated under the General Plan EIR update, which would include the Project. The

Project, once constructed, would not generate solid waste requiring disposal. Because impact would be temporary during construction, the impact would be less than significant.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XVIIIg. Would the Project comply with federal, state, and local statutes and regulations related to solid waste?

Standard of Significance. Noncompliance with statutes and regulations regarding solid waste results in a significant impact as defined by TRPA RPU Goals and Policies, the City General Plan and state (Title 14 and 27 CCR) and federal solid waste handling and disposal regulations.

As discussed in Section 1.10.6, the Project would be subject to City Code Section 4.150, Refuse and Garbage; the TRPA RPU Land Use Element Goal 5, Policy 1; Public Services Element Goal 3, Policy 2; and General Plan Policy PQP-3.3, requiring the transport of solid waste outside the Lake Tahoe Basin in compliance with California state laws. The Project would also implement Caltrans Construction Site BMPs, which address solid waste, such as WM-5, Solid Waste Management.

The Project would comply with TRPA Code Chapter 33.3.4, Disposal of Materials, requiring implementation of the following controls to limit impact from solid waste generation and disposal:

- Temporary stockpiling of the topsoil on the site for use on areas to be revegetated.
- Disposal of material at a location approved by TRPA.
- Export of the materials outside of the region.

Potential impacts would be reduced to a level of less than significant through compliance with federal, state, and local statutes and regulations related to solid waste.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

18.2 TRPA Checklist Analysis – Utilities

TRPA 16a. Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to power or natural gas?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Substantial alteration to power or natural gas or the requirement for new systems by the Project results in a significant impact as defined by TRPA RPU Conservation Element**.**

The Project is located within close proximity to existing electric and gas infrastructure, and therefore would not require new or altered power or natural gas systems. Underground facilities exist within the Project Area, typically located at the edge of existing pavement buried at a depth of 3 to 4 feet. Costs associated with relocation of facilities are the responsibility of the Project. Coordination with utility companies will follow accepted practice. During final plan preparation, utilities will be located on the civil plan sheets and confirmed to identify the depth to conduit, pipeline, or other facility and to avoid significant grade changes for maintenance of minimum coverage depths for safety and compliance. If necessary, the Project shall relocate utility infrastructure including underground or above-ground connections. Prior to construction, the contractor will contact Underground Service Alert to ensure buried lines are properly located and marked and provide utility companies with an accurate schedule noting when construction occurs in the vicinity of their facilities.

The City and Project contractor will coordinate with law enforcement and fire protection agencies, utility companies, and businesses and residents within and adjacent to the construction corridor prior to and during construction activities. This coordination will inform affected parties of the construction schedule and allows development of actions to best maintain access and service in the active Project Area.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 16b. Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to communication systems?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. The need for new systems or substantial alteration to communication systems as a result of the Project constitutes a significant impact.

Project construction and operation would have no effect on demand for communication service, as no increase in population, housing, or commercial units would result from the Project. The Project includes no new communication facilities. Communication lines within the Project Area are above-ground on existing utility poles. The Project intercepts a utility pole that may require relocation. Since facilities are above-ground, detection and relocation in coordination with AT&T and Charter is necessary.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 16c. Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to utilize additional water which amount will exceed the maximum permitted capacity of the service provider?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Construction of new water facilities or expansion of existing facilities as a result of the Project constitutes a significant impact if new construction creates significant and immitigable environmental effects.

Refer to the analyses for CEQA XVIIIa, XVIIIb, XVIIId, and XVIIIe, which are related to water and wastewater systems and conclude that the Project creates either no impact or that the Project proposal includes appropriate measures to reduce potential impacts to a level of less than significant. The Project creates no demand to water or wastewater systems requiring alterations to STPUD systems. The Project would not require the use of water resources with the exception of what is necessary for dust control and vegetation establishment. The use would not impact the maximum permitted capacity of the service provider.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 16d. Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to utilize additional sewage treatment capacity which amount will exceed the maximum permitted capacity of the sewage treatment provider?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Construction of new wastewater facilities or expansion of existing facilities as a result of the Project constitutes a significant impact if new construction creates significant and immitigable environmental effects.

Refer to the analyses for CEQA XVIIIa, XVIIIb, XVIIId, and XVIIIe, which are related to water and wastewater systems and conclude that the Project creates either no impact or that the Project proposal includes appropriate measures to reduce potential impacts to a level of less than significant. There would be no impact to sewage treatment facilities.

Environmental Analysis: **No; No Impact.**

Required Mitigation: **None.**

TRPA 16e. Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to storm water drainage? (TRPA 15e)

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance: Construction of new stormwater drainage facilities or expansion of existing facilities as a result of the Project constitutes a significant impact if new construction creates significant and immitigable environmental effects.

The Project proposes improvements to the existing stormwater drainage system and would not result in the need for additional stormwater facilities. The Project would implement requirements for permanent BMPs as outlined in TRPA Code Chapter 60 and Lahontan Basin Plan Chapter 5.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 16f. Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to solid waste and disposal?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Construction of new solid waste systems or disposal sites constitutes a significant impact.

Refer the analysis for CEQA XVIIIf and XVIIIg, which conclude that significant quantities of trash would not be generated and the Project would not initiate the development of new landfills. Additional collection equipment, personnel, or infrastructure would not be needed.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

18.3 TRPA Checklist Analysis – Energy

TRPA 15a. Will the proposal result in use of substantial amounts of fuel or energy?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Use of substantial amounts of fuel or energy by the Project results in a significant impact as defined by TRPA RPU Conservation Element.

Development of the Project would occur in accordance with the RPU and the City Code. While any new construction would require electric and natural gas service as part of basic services (TRPA Code Chapter 32, Basic Services), the Project is located in close proximity to existing electricity and gas infrastructure and would not result in the need for new utility facilities.

Use of fuel and energy would be required only during the 12 months of construction. Installation of new lighting would result in the use of energy; however, as discussed in the response to 15b below, this use would not be significant, and would require the use of energy efficient bulbs. In addition, the Project would be subject to the energy efficiency requirements of California's mandated CalGreen Code.

As part of the RPU, utility companies projected that based on the forecasted growth, the available capacity of utilities would far exceed the demand of new projects built under the RPU (TRPA 2012a:3.13-20).

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 15b. Will the proposal result in substantial increase in demand upon existing sources of energy, or require the development of new energy sources?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A substantial increase in demand upon existing sources of energy or requirement of the development of new sources of energy by the Project results in a significant impact as defined by TRPA RPU Conservation Element.

Installation of lighting within the Project Area would use existing sources of energy and would not require the development of a new energy source. Consistent with General Plan Policy NCR-6.18, the Project would use energy efficient bulbs. Other uses of energy would be temporary in nature during construction.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

19.0 MANDATORY FINDINGS OF SIGNIFICANCE

This section presents the analyses for mandatory findings of significance. **Table 32** identifies the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less than significant level.

Table 32. Mandatory Findings of Significance

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
CEQA Environmental Checklist Item				
Would the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? (CEQA XIXa)	☐	☒	☐	☐
Would the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? (CEQA XIXb)	☐	☐	☒	☐
Would the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? (CEQA XIXc)	☐	☐	☒	☐
Does the Project:	**Yes**	**No, With Mitigation**	**Data Insufficient**	**No**
TRPA Initial Environmental Checklist				
Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California or Nevada history or prehistory? (TRPA 21a)	☐	☒	☐	☐
Have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.) (TRPA 21b)	☐	☐	☐	☒

Does the Project:	Yes	No, With Mitigation	Data Insufficient	No
TRPA Initial Environmental Checklist				
Have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environmental is significant?) (TRPA 21c)	☐	☐	☐	☒
Have environmental impacts which will cause substantial adverse effects on human being, either directly or indirectly? (TRPA 21d)	☐	☐	☐	☒

19.1 CEQA Checklist Analysis

CEQA XIXa. Would the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Standard of Significance. Substantial degradation of the quality of the environment constitutes a significant impact.

Impacts to the environment, including habitat for fish and wildlife species, populations of plants and animals, rare and endangered species, sensitive habitats, historical and cultural resources, hydrology, geology, and soils, have been evaluated as part of this IS/IEC. As discussed in Section 3.5, the Project has potential to significantly impact biological resources associated with impact to wetlands. With implementation of mitigation measure BIO-1, wetlands within the Project Area will be delineated (if present) and the Project will follow proper protocol under Section 404 of the CWA to avoid, minimize, or mitigate where necessary impacts to jurisdictional waters of the US. As discussed in Section 3.2, implementation of AGR-1 will ensure compliance with exemption and noncommercial disposal requirements to reduce potential impacts to forest land to a level of less than significant.

Most impacts from the Project would be temporary and localized, and would cease after construction. BMPs have been included that would minimize the potential for cumulative impacts by requiring appropriate measures to minimize stormwater runoff, minimize impacts to water quality and vegetation, protect against hazards and hazardous materials, and protect the safety of the public during construction activities.

As discussed, mitigation has been incorporated that would ensure that the Project's contribution to any significant cumulative impacts would not be cumulatively considerable. Potential impacts were found to be less than significant with mitigation. The purpose of the Project is to make improvements to the Project Area and meet the various goals of the City's General Plan and TVAP. Improvements include stormwater management, SEZ restoration and enhancement, trail safety and connectivity improvements, reduction of vehicle-based transportation, and increased pedestrian and cyclist access throughout the area. The anticipated effects from the Project are expected to be overall beneficial to the environment.

Environmental Analysis: **Less than Significant Impact with Mitigation Incorporated**.

Required Mitigation:

- Mitigation Measure BIO-1, Complete Jurisdictional Wetland Delineation and Determination

- Mitigation Measure AGR-1, Public Agency Right-of-Way Exemption with CalFire

CEQA XIXb. Would the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Standard of Significance. When the Project's incremental contribution is "cumulatively considerable" to the environmental resource, a significant impact could result. The projects that could have a cumulative impact on the resources in the Project Area when considered incrementally with the Project are referred to as "related projects."

Table 33 identifies a list of past, present, and reasonably foreseeable future projects that have occurred or are planned to occur in the vicinity of the Project Area. The table identifies the name of the related project, a brief description, project status, agencies contacted, and documents referenced.

Table 33. List of Related Projects in Vicinity of the Project Area – South Lake Tahoe Basin Area

Agency	Project Title	Description	Status
City of South Lake Tahoe	D Street Public Works Facility	The City acquired a parcel located at 1740 D Street to create an office and industrial facility for the City's Public Works Department staff and equipment currently located at the Rufus Allen Corporation Yard and the Tata Lane Offices. By relocating the staff and equipment at the Rufus Allen location, the City realizes potential for increased recreational opportunities and facilities at that location in conjunction with the proposed recreation center rehabilitation and future 56 acres project.	Design, 2018
City of South Lake Tahoe	Lake Tahoe Blvd Bike Trail	This project will design and construct a Class I bike trail, ADA-compliant ramps, and lighting along the 0.6-mile section of Lake Tahoe Boulevard from the intersection of Viking Way (D Street) to the intersection of SR-89 and US 50 (South Wye). The project is currently in the design phase with construction expected in 2020.	Design, completed by 2020
City of South Lake Tahoe	Sierra Blvd Streetscape	The primary intent of the project is the rehabilitation of the 0.6-mile stretch of Sierra Blvd from Palmira Avenue to Barbara Ave. The rehabilitation of Sierra Blvd will include redesign of the roadway section, the addition of bike lane(s), paths, pedestrian sidewalks, and the addition of streetscape improvements such as pedestrian lighting, hardscape, and landscape improvements in conjunction with a Rule 20 Utility undergrounding project that occurred in 2011. The project will also provide corridor water quality improvements and tie-in with the erosion control improvements surrounding the Project Area. The Complete Streets project would provide a major link.	Implementation, 2018

Table 33. List of Related Projects in Vicinity of the Project Area – South Lake Tahoe Basin Area

Agency	Project Title	Description	Status
City of South Lake Tahoe	Bijou Park Creek SEZ/Watershed Restoration	The project aims to address water quality and flooding issues in the Lower Bijou Park Creek area (Phase 1), which currently discharges runoff from roadways, commercial, and residential areas directly into the Ski Run Marina. The area is subject to historic flooding due to undersized and deteriorating infrastructure in the lower watershed area. The project will include restoration of SEZ and associated water quality improvements to reduce sediment and nutrient loads in urban runoff discharged to Lake Tahoe.	Implementation, 2018
City of South Lake Tahoe	Upper Bijou Park Creek Restoration	Bijou Park Creek watershed is one of the most urbanized within the Lake Tahoe Basin, including encroachment of impervious coverage (buildings, parking lots, and roads) into historic stream environment zones (SEZs). The watershed-scale effort will address fine sediment particle and nutrient loading associated with urban and roadway runoff while seeking to alleviate flooding with SEZ restoration. The planning and design will consider opportunities to address the alteration of the upper watershed when large amount of fill that created the Heavenly California Lodge parking lot inadvertently altered drainage patterns in the watershed, routing new runoff into the constrained conveyance system.	2020
City of South Lake Tahoe	South Tahoe Greenway	The South Tahoe Greenway Shared Use Trail will connect residents and visitors to community and recreation destinations from Meyers to the Stateline.	Construction will start in 2019 and estimated completion in 2020
City of South Lake Tahoe	Bike Path Rehabilitation	This project focused on rehabilitation and laid new asphalt on an existing Class I bike path that runs from Trout Creek to the Y intersection.	Completed 2014
Caltrans	US 50 Airport to “Y” Junction Water Quality Improvement Project	The project collects and treats runoff along US 50. The project will provide a 3- to 4-foot shoulder for a Class II bike lane, and will provide curb, gutter, and sidewalk.	Completed in 2014
Caltrans	US 50 “Y” to Trout Creek Water Quality Improvement Project	The project will collect and treat stormwater runoff from the “Y” junction to Trout Creek. It will include 6-foot shoulders for Class II bike lanes, and replace traffic signals, curbs, gutters, and sidewalks.	Existing capital project. Begin construction 2016, completed by 2019.
Caltrans	SR 89 “Y” to Cascade Road Water Quality Improvement Project:	The project will collect and treat runoff along SR 89 from the “Y” junction to Cascade Road. The project will provide curbs, gutters, and sidewalks, and a 4-foot shoulder for a Class III bike route.	Existing capital project construction began in the Fall of 2014, completed in 2015.
Caltrans	RTP #74	US 50 Signal Synchronization and Adaptive Signals Project. Upgrade signal timing equipment	Existing capital project

Table 33. List of Related Projects in Vicinity of the Project Area – South Lake Tahoe Basin Area

Agency	Project Title	Description	Status
		at signalized intersections along US Highway 50 to improve traffic flow.	
TRPA	Shoreline Plan	TRPA has prepared a set of policy concepts to guide resource management and development within the shorezone and lakezone of Lake Tahoe. These concepts and Code provisions are referred to as the Shoreline Plan. The Shoreline Plan would involve amendments to sections of the TRPA Code that address uses and development in the shorezone of Lake Tahoe, and related amendments to TRPA Code Chapters.	Planning, Future
	Tahoe South Events Center Project	The Events Center will be a publically owned assembly event and entertainment venue located in Stateline, Douglas County, Nevada. The project area would consist of portions of two parcels currently owned by Edgewood Companies. One is the site of the MontBleu Resort Casino and Spa and the other is an adjacent undeveloped parcel located immediately east of the existing surface parking area. Although both parcels have been used to define the project area, the improvements associated with the Events Center will be situated within a 13.3-acre boundary that fits almost entirely within the existing MontBleu surface parking lots.	Planning, Future
	Draft U.S. 50/South Shore Community Revitalization Project EIR/EIS	The project would realign US 50, enabling the creation of a pedestrian-oriented “Main Street” through the middle of the existing tourist core, where the highway is not located. Walking, bicycling, and reliable transit would be attractive and safe transportation options, and community gathering places would be available in the tourist core.	Planning, Future
	Lake Tahoe Community College Master Plan and University Center	The Lake Tahoe Community College is preparing a Facilities Master Plan to plan for campus growth over the next 10-15 years. Completion and certification of the Facilities Master Plan EIR/EIS will allow the College Board to officially adopt the Facilities Master Plan and the TRPA Governing Board to approve a public service application for the University Center Project and a cumulative impacts review of the remaining Facilities Master Plan projects.	Planning, Future
	FINAL Heavenly Epic Discovery EIR/EIS/EIS	The Proposed Action is designed to expand and diversify year-round, non-skiing recreational opportunities at Heavenly, primarily for summer time users. Proposed projects would utilize existing infrastructure and guest service facilities to provide a wide variety of new summer daytime activities for guests. All activities would be accessed using	Planning, Future

Table 33. List of Related Projects in Vicinity of the Project Area – South Lake Tahoe Basin Area

Agency	Project Title	Description	Status
		the existing gondola from the base station at Heavenly Village.	
	Upper Truckee River Restoration and Golf Course Reconfiguration Project	The primary purpose of the project is to restore natural geomorphic and ecological processes along this reach of river and to reduce the river's suspended sediment discharge to Lake Tahoe. The restoration project would require reconfiguration of the Lake Tahoe Golf Course to allow for restoration of the river, reduce the area of stream environment zone occupied by the golf course, and allow for establishment of a buffer area between the golf course and the river.	Future
	Edgewood Lodge	The approximately 231-acre project site is located within the Edgewood Tahoe Golf Course and includes a small area to the east across US 50. The Edgewood Lodge and Golf Course Improvement Project would include construction of a new lodge complex with associated parking, and other improvements.	Approved/historical
	Draft Heavenly Epic Discovery EIR/EIS/EIS	The purpose of the Epic Discovery proposal at Heavenly Mountain Resort is to diversify summer and year-round activities pursuant to the Ski Area Recreational Opportunity Enhancement Act to engage a larger segment of summer and non-ski/ride visitors seeking more managed recreation opportunities.	Approved/historical
	Heavenly Mountain Resort Master Plan and Monitoring	The primary purpose of this report is to present trend analysis, with respect to watershed health, as measured through data collected in water years 2012 through 2016 at Heavenly and as defined by the Lahontan Board Order Waste Discharge Requirements. The secondary purpose of this report is to provide input and consideration to direction on Heavenly and Forest Service management activities on the ability of the program to meet the monitoring objectives.	Approved/historical
	Community Enhancement Program (CEP)	The focus of the CEP is to encourage revitalization projects in downtown and recreation areas that demonstrate substantial environmental, as well as social and economic benefits. The program provides incentives for mixed-use development projects on existing disturbed or underutilized sites. The CEP is competitive and is designed to encourage the "best" projects that will demonstrate the desires of the community captured in the Regional Vision. The Community Enhancement Program is a collaboration between the Tahoe Regional Planning Agency, the community, and local government partners. The program provides a means to demonstrate implementation of the	Approved/historical

Table 33. List of Related Projects in Vicinity of the Project Area – South Lake Tahoe Basin Area

Agency	Project Title	Description	Status
		Regional Vision through the implementation of selective projects.	
	Beach Club	The Beach Club on Lake Tahoe project was approved by the TRPA Governing Board in August 2008. The project applicant, Beach Club, Inc., proposed to redevelop the existing Tahoe Shores Mobile Home Park located at the end of Kahle Drive in Stateline, Nevada. The Draft EIS evaluated the potential environmental impacts associated with the proposed project (Alternative A), two separate development alternatives (Alternatives B and C), and two variations on the no-project alternative (Alternatives D and E).	Approved/historical
	Boulder Bay	At its April 2011 meeting, the TRPA Governing Board voted to approve the Boulder Bay Community Enhancement Project. Four years in the planning, the project will replace the aging Tahoe Biltmore Casino in Crystal Bay, Nevada, with an eco-friendly, mixed-use resort that will significantly reduce stormwater pollution and vehicle emissions associated with the site.	Approved/historical
LTBMU Forest Service	Heavenly Mountain Resort 2017 Capital Improvements Project Environmental Assessment	Capital improvements projects at Heavenly Mountain Resort including selective widening of existing ski trails as well as implementation of the Easy Street Run Hazard Reduction prescription and relocating snow making equipment.	4/2018
	Kahle Water Quality Basin CE	The project proposes to increase the size of the existing stormwater basin located on National Forest Service lands at the end of Kahle Road in the Lam Watah area. The project would improve capacity for stormwater treatment.	8/2018
	SR 28 Corridor Plan Environmental Assessment	Continuation of Stateline to Stateline bike path from Sand Harbor to Spooner Summit. The project will remove highway parking, co-locate utilities with bikeway, improve existing parking lots, and create new parking, highway pull-outs, and water quality BMPs.	4/2019
	South Tahoe Fuels Treatment Project CE	Hazardous fuels reduction and healthy forest activities in the urban defense zone on 3,800 acres. Mechanical treatments up to 3,000 acres. Thinning, aspen and meadow health, prescribed fire, forest health activities, re-entry in past treatment areas.	5/2019
California Tahoe Conservancy	Upper Truckee River and Marsh Restoration Project	In the last 150 years development has eliminated more than half of the original 1,300-acre marsh. The Conservancy has acquired 600 acres to restore the river's natural cleansing function and subsequently increase habitat quality for plant, wildlife, and fish species.	Future

Additionally, the cumulative projects contemplated in the General Plan EIR (City 2010: Chapter 5.0; TRPA 2012a: 4-2 through 4-10) include Environmental Enhancement, Land Management Plans, Tahoe Transportation District/TMPO projects and programs, and other development projects. These projects and programs (listed below) also apply to the TVAP. Their scope and characteristics are not known to have substantially changed, and no additional cumulative projects or programs are known at this time (City and TRPA 2015).

19.1.1 Environmental Enhancement Projects and Programs

The following programs focus on environmental improvement, including those specifically designed to address environmental thresholds: the EIP, the Community Enhancement Program (CEP), the Water Quality Management Plan for the Lake Tahoe Region (208 Plan), and the Lake Tahoe TMDL.

Like the General Plan, the TVAP is a collection of goals and policies developed to guide development and support the region in attaining environmental thresholds (City and TRPA 2015). The TVAP identifies the construction of the "Tahoe Valley Stormwater System and Tahoe Valley Greenbelt" as an EIP project to provide measureable improvements in water quality. Specifically, Policy NCR-5.1 states: "Construct the Tahoe Valley Water Quality Improvement Project as part of the Greenbelt Project to treat stormwater from Tahoe Valley and adjacent residential areas, in order to reduce fine sediment loads to the Upper Truckee River and Lake Tahoe, and restore disturbed SEZs" (City and TRPA 2015).

Because the TVAP is wholly consistent with the General Plan and because no specific projects are proposed for which cumulative impacts may be defined and assessed, the cumulative impacts analysis prepared for the RPU is also applicable to the TVAP.

The General Plan EIR concluded that implementation of the General Plan could result in increased development, redevelopment, and construction activity that would result in an increase in GHG emission that would make a considerable contribution to global climate change. Because the TVAP and subsequent projects are consistent with and implement the General Plan and the General Plan EIR, development associated with the TVAP could also contribute cumulatively to global climate change.

The General Plan EIR disclosed this significant effect, mitigated for it, and concluded that implementation of policies from the General Plan Update, the City's Sustainability Plan (which calls for development of GHG inventory and reduction target), and associated mitigation measure MM 4.5.6, which would require coordination with future TRPA GHG reduction efforts and the establishment of an emission reduction target consistent with AB 32 and SB 375 reduction efforts in conjunction with IMP-8.6 (Greenhouse Gas Emission Reduction Strategy in the years 2013-2015), would ensure that City GHG emissions are mitigated. Thus, this impact is considered less than cumulatively considerable (City 2011a: 4.0-4 through 4.0-5).

Because the TVAP and its subsequent projects are consistent with and implement the General Plan and are consistent with the General Plan EIR, development under the TVAP planning horizon is not expected to make a considerable contribution to climate change. Thus, the impact is considered **less than significant** (City and TRPA 2015).

19.1.2 Land Management Plans

LTBMU Forest Plan and Lake Tahoe Nevada State Park General Management Plan.

19.1.3 Tahoe Transportation District/Tahoe Metropolitan Planning Organization Projects and Programs

Regional Transportation Plan/Sustainable Communities Strategy, Lake Tahoe Waterborne Transit Project, US/50 South Shore Community Revitalization Project, State Route 89 Fanny Bridge Community Revitalization Project, Stateline-To-Stateline Bikeway Project, Lake Tahoe Regional Multimodal Pedestrian And Safety Improvement Project, 2010 Lake Tahoe Region BPMP.

19.1.4 CEP and Other Development Projects

Beach Club On Lake Tahoe, Boulder Bay Community Enhancement Program Project, Kings Beach Housing Now Project, Kings Beach Town Center Project, Sierra Colina Village, Tahoe Vista Partners, LLC Affordable Housing And Interval Ownership Development Project, Homewood Mountain Resort Ski Area Master Plan, Edgewood Lodge And Golf Course Improvement Project, The Chateau Village At Heavenly Village, South Tahoe Greenway Shared-Use Trail, 64 Acres Park Project, Lakeview Commons Recreation Improvements Project, Calpeco 625 and 650 Electrical Line Upgrade Project.

Those projects that are currently under construction, approved for construction, or in various stages of formal planning are present and reasonably foreseeable, probable future projects. Some of the projects could be constructed concurrently with the Project during construction in 2020. Project construction phasing planned for year 2020 recognizes the potential for concurrent projects and overlapping Project Area to avoid a number of potential cumulative impacts.

The present or reasonably foreseeable, probable future projects considered in this cumulative analysis are those projects located in the South Shore of the Lake Tahoe Basin and that have been identified as having potential effects on environmental resources that could also be affected by the Project. **Table 33** identifies the related projects in the cumulative effects analysis based on these following criteria:

- The project is reasonably foreseeable, because it has an identified lead agency, and has initiated CEQA, TRPA, and/or National Environmental Policy Act environmental review or other regulatory procedures.
- The information available defines the project in adequate detail to allow meaningful analysis.
- The project could affect resources potentially affected by the Project

Refer to discussion for CEQA XIXa above. The Project is expected to be cumulatively beneficial through improved stormwater management and quality of runoff ultimately entering Lake Tahoe. The expanded trail system throughout the area would also be beneficial in the long term to the residents and visitors of the Lake Tahoe region, while also providing alternative routes of transportation for non-motorized travel throughout the area. Additionally, BMPs have been included that would minimize the potential for cumulative impacts by requiring appropriate measures to minimize impacts to resources during construction (Section 1.10). Finally, mitigation measures have been incorporated that would ensure that the Project's contribution to any significant cumulative impacts would not be cumulatively considerable.

Temporary individual impacts to the environment due to construction activities are minimized to less than significant. Potential impacts would not be significant with the implementation of BMPs and mitigation measures; therefore, the individual impacts would not be cumulatively considerable.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

CEQA XIXc. Would the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Standard of Significance. Project environmental effects that cause direct or indirect substantial adverse effects to humans create a significant impact.

As discussed in this IS/IEC, the Project would not adversely affect humans. The Project would positively affect humans through improvement of the non-automobile transportation network, providing safer and more convenient alternatives to the automobile, and install stormwater improvements for removal of fine sediments and other water quality pollutants. The Project would not cause substantial adverse effects on human beings, either directly or indirectly.

Environmental Analysis: **Less than Significant Impact**.

Required Mitigation: **None.**

19.2 TRPA Checklist Analysis

TRPA 21a. Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of Nevada or California history or prehistory?

☐ Yes ☐ No ☒ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIXa, which concludes the level of impact would be less than significant after mitigation.

Potential impacts to the environment, including air quality, habitat for fish and wildlife species, populations of plants and animals, rare and endangered species, sensitive habitats, historical, cultural, and tribal resources, hydrology, geology, and soils, have been evaluated as part of this IS/IEC. As discussed in Section 3.5, the Project has potential to significantly impact biological resources associated with impact to wetlands. With implementation of mitigation measure BIO-1, wetlands within the Project Area will be delineated (if present) and the Project will follow proper protocol under Section 404 of the CWA to avoid, minimize, or mitigate where necessary impacts to jurisdictional waters of the US. As discussed in Section 3.2, implementation of AGR-1 will ensure compliance with exemption and noncommercial disposal requirements to reduce potential impacts to forest land to a level of less than significant.

The purpose of the Project is to make improvements to the site that would have beneficial impacts to stormwater quality and management, restoration of SEZ areas through revegetation and expansion of existing basins, and increased pedestrian and cyclist access and safety through the improvement to the multi-use trail system through the Project site. The overall impact from the Project is intended and anticipated to be beneficial to both the environment and persons affected by the Project.

Environmental Analysis: **No, with Mitigation; Less than Significant Impact with Mitigation Incorporated**.

Required Mitigation:

- Mitigation Measure BIO-1, Complete Jurisdictional Wetland Delineation and Determination
- Mitigation Measure AGR-1, Public Agency Right-of-Way Exemption with CalFire

TRPA 21b. Does the Project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future).

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. A short-term impact on the environment is one that occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.

Project construction would result in short-term impacts on the environment, but BMPs would be implemented, and mitigation measures have been identified that would ensure that potential impacts would be less than significant. Long-term impacts would be beneficial because the Project would result in improved stormwater management and water quality of runoff entering Lake Tahoe. The expanded trail system throughout the area also would represent a long-term benefit for the residents and visitors of the Lake Tahoe region. The Project also would provide alternative routes of transportation for non-motorized travel throughout the area, which would have beneficial impacts on air quality, GHGs, and safety, mobility, and traffic circulation.

Environmental Analysis: **No; Less than Significant Impact.**

Required Mitigation: **None.**

TRPA 21c. Does the Project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environmental is significant?)

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Individually limited project impacts that may overlap or combine to create a cumulative impact constitute a significant impact.

No cumulatively considerable impacts resulting from the Project were identified during this analysis. Refer to the analysis for CEQA XIXb, which concludes the level of impact would be less than significant.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

TRPA 21d. Does the project have environmental impacts which will cause substantial adverse effects on human being, either directly or indirectly?

☐ Yes ☒ No ☐ No, with Mitigation ☐ Data Insufficient

Standard of Significance. Refer to the analysis for CEQA XIXc, which concludes the level of impact would be less than significant.

No significant effects to the environment or persons were identified in this analysis. It is anticipated the direct and indirect effects on the environment would be beneficial to both humans and environmental health.

Environmental Analysis: **No; Less than Significant Impact**.

Required Mitigation: **None.**

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20.0 DRAFT MITIGATION MONITORING PROGRAM

20.1 Introduction

In accordance with CEQA, the City prepared an IS/MND that identifies adverse impacts related to construction activity for the Project. The MND also identifies mitigation measures that would reduce or eliminate these impacts.

Section 21081.6 of the PRC and Sections 15091(d) and 15097 of the State CEQA Guidelines require public agencies "to adopt a reporting and monitoring program for changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." A Mitigation Monitoring Plan (MMP) is required because the MND for the Project identified potentially significant adverse impacts related to construction activity, and mitigation measures have been identified to mitigate those impacts.

Adoption of the MMP would occur along with approval of the Project.

20.2 Purpose of Mitigation Monitoring Plan

This MMP has been prepared to ensure that required mitigation measures are implemented and completed according to schedule and maintained in a satisfactory manner during construction of the Project, as required. The MMP may be modified by the City during Project implementation, as necessary, in response to changing conditions or other refinements. **Table 34** has been prepared to assist the responsible parties in implementing the MMP. The table identifies the category of significant environmental impact, individual mitigation measures, monitoring/mitigation timing, responsible person/agency for implementing the measure, monitoring and reporting procedure, and space to confirm implementation of the mitigation measures. The numbering of mitigation measures follows the numbering sequence found in the MND. Revisions to mitigation measures that were necessary as a result of responding to public and agency comments have been incorporated into this MMP.

20.3 Roles and Responsibilities

Unless otherwise specified herein, the construction contractor is responsible for taking the actions necessary to implement the mitigation measures according to the specifications provided for each measure and for demonstrating to the City that the action has been successfully completed.

The City would be responsible for overall administration of the MMP and for verifying that the construction contractor has completed the necessary actions for each measure. The City would designate a project manager to oversee the MMP during the construction period. Duties of the project manager include the following:

- Ensure that routine inspections of the construction site are conducted by appropriate City staff; check plans, reports, and other documents required by the MMP; and conduct reporting activities.
- Serve as a liaison between the City and the construction contractor regarding mitigation monitoring issues.
- Complete forms and maintain reports and other records and documents generated by the MMP.
- Coordinate and ensure that corrective actions or enforcement measures are taken, if necessary.

The construction contractor would identify the staff members responsible for coordinating with the City on the MMP.

20.4 Mitigation Monitoring Reporting

The City would prepare an annual monitoring report on compliance with the required mitigation measures for the year of construction (inclusive of the first rainy season following construction). The report would be designed to simply and clearly identify whether mitigation measures are being, or have been, adequately

implemented. At a minimum, each report would identify the mitigation measures or conditions to be monitored for implementation, whether compliance with the mitigation measures or conditions has occurred, the procedures used to assess compliance, and whether further action is required.

20.5 Mitigation Monitoring Plan Table

The annual report submitted would verify the implementation of mitigation measures. The MMP, **Table 34**, that follows would be used to guide the City in their evaluation and be the basis for annual reporting.

The column categories identified in the MMP table are described below:

- **Mitigation Number.** This column lists the mitigation measures by number.
- **Mitigation Measure.** This column provides the text of the mitigation measures identified in the MND/IEC.
- **Timing/Schedule.** This column lists the time frame in which the mitigation would take place.
- **Implementation Responsibility.** This column identifies the entity responsible for complying with the requirements of the mitigation measure. In most cases, the construction contractor would be responsible for conforming to the mitigation measure.
- **Implementation and Verification.** These columns are for verifying compliance. The “Monitoring Action” column describes the type of action taken to verify implementation. The “Date Completed” column is to be dated and initialed by the City Engineer, or his/her designee, based on the documentation provided by the construction contractor, its agents (qualified individuals), or through personal verification by City staff.

Table 34. Mitigation Monitoring Plan

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Implementation and Verification	
				Monitoring/ Action	Date Completed
AESTHETICS (CEQA) AND SCENIC RESOURCES/COMMUNITY DESIGN & LIGHT AND GLARE (TRPA)					
There are no potentially significant impacts related to aesthetics and scenic resources					
AGRICULTURE & FORESTRY					
There are no potentially significant impacts related to agriculture.					
AGR-1	AGR-1. Public Agency Right-of-Way Exemption with CalFire. A Timberland Conversion Permit shall not be required for noncommercial removal of solid wood products from non-TPZ land and a waiver shall be applied for prior to construction. The Project Applicant shall file for a Public Agency Right-of-Way exemption with CalFire to comply with requirements for conversion of Timberland for installation of public service projects. Tree removal shall occur along the Greenbelt corridor and in association with expansion of existing and construction of new trail and stormwater infrastructure improvements. Tree removal operations shall be completed within one year of filing by a Licensed Timber Operator. The Project shall implement noncommercial removal, which means that the products are neither sold nor exchanged for other goods or services. Noncommercial disposal includes the owner's personal use of the products, disposal by piling and burning, and hauling away and dumping without processing. These operations are not timber operations under the Forest Practice Act definition.	During Project Permitting	City of South Lake Tahoe		
AIR QUALITY					
Potentially significant impacts related to air quality will be avoided, reduced, or minimized through implementation of the air quality resource protection measure detailed in Section 1.10.2 of the Project description.					
BIOLOGICAL RESOURCES (SEZ, WETLANDS, VEGETATION & WILDLIFE)					
Potentially significant impacts related to wildlife and native plant species will be avoided, reduced, or minimized through implementation of the biological resource protection measure detailed in Section 1.10.7 of the Project description.					
BIO-1	**Mitigation Measure BIO-1.** Prior to completion of final design of the Project, a qualified biologist retained by the City	Prior to construction	Contractor and City of South Lake Tahoe		

Table 34. Mitigation Monitoring Plan

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Implementation and Verification	
				Monitoring/ Action	Date Completed
	would perform a wetland delineation for the Project Area. The delineation would conform to the USACE *Wetlands Delineation Manual* and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0). If the delineation identifies jurisdictional wetlands within the Project Area that would be impacted by the Project the Project design and/or location will be modified to avoid impacts to the delineated wetland or the City will be required to comply with the permitting regulations of Section 404 of the CWA to minimize and mitigate for the loss of jurisdictional wetlands.				
CULTURAL & TRIBAL RESOURCES (CEQA) AND ARCHAEOLOGICAL & HISTORICAL RESOURCES (TRPA)					
Potentially significant impacts related to cultural and tribal cultural resource will be avoided through implementation of the cultural resource protection measures detailed in Section 1.10.8 of the Project description**.** There are no potentially significant impacts related to tribal cultural resources.					
GEOLOGY & SOILS (CEQA) AND LAND (TRPA)					
Potentially significant impacts related to geology and soils will be avoided through implementation of the soil and water resource protection measure detailed in Section 1.10.3 of the Project description.					
GREENHOUSE GAS EMISSIONS					
There are no potentially significant impacts related greenhouse gas emissions.					
HAZARDS & HAZARDOUS MATERIALS (CEQA) AND RISK OF UPSET & HUMAN HEALTH (TRPA)					
Potentially significant impacts related to hazards and hazardous materials will be avoided through implementation of the resource protection measure detailed in Section 1.10.5 of the Project description.					
HYDROLOGY & WATER QUALITY					
Potentially significant impacts related to hydrology, water quality, and groundwater will be avoided through implementation of the soil and water resource protection measure detailed in Section 1.10.3 of the Project description.					
LAND USE & PLANNINIG					
There are no potentially significant impacts related to land use and planning.					
MINERAL RESOURCES (CEQA) & NATURAL RESOURCES (TRPA)					
There are no potentially significant impacts related to mineral resources.					
NOISE					

Table 34. Mitigation Monitoring Plan

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Implementation and Verification	
				Monitoring/ Action	Date Completed
Potentially significant impacts related to noise will be avoided through implementation of the noise and vibration protection measures detailed in Section 1.10.9 of the Project description					
POPULATION & HOUSING					
There are no potentially significant impacts related to population and housing.					
PUBLIC SERVICES					
There are no potentially significant impacts related to public services.					
RECREATION					
Potentially significant impacts related to recreation uses will be avoided through implementation of the recreational resource protection measure detailed in Section 1.10.10 of the Project description.					
TRANSPORTATION & TRAFFIC (CEQA) AND TRAFFIC & CIRCULATION (TRPA)					
Potentially significant impacts related to traffic will be avoided through implementation of the traffic protection measures detailed in Section 1.10.4 of the Project description					
UTILITIES & SERVICE SYSTEMS (CEQA) AND ENERGY & UTILITIES (TRPA)					
There are no potentially significant impacts related to utilities and service systems.					

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Tahoe Valley Stormwater and Greenbelt Improvement Project, CEQA and TRPA Environmental Documentation

APPENDIX A

PRELIMINARY PLAN SET DRAWINGS

2 working days Call before you Dig.
1-800-227-2600
AVOID CUTTING UNDERGROUND UTILITIES

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

JANUARY 2018

OWNER/DEVELOPER:

CITY OF SOUTH LAKE TAHOE
ATTN: JASON BURKE
1052 TATA LANE
SOUTH LAKE TAHOE, CA 96150
PH.: (530) 542-6038

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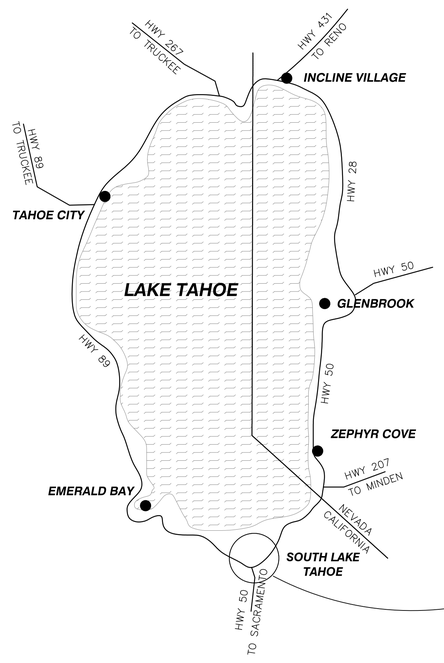
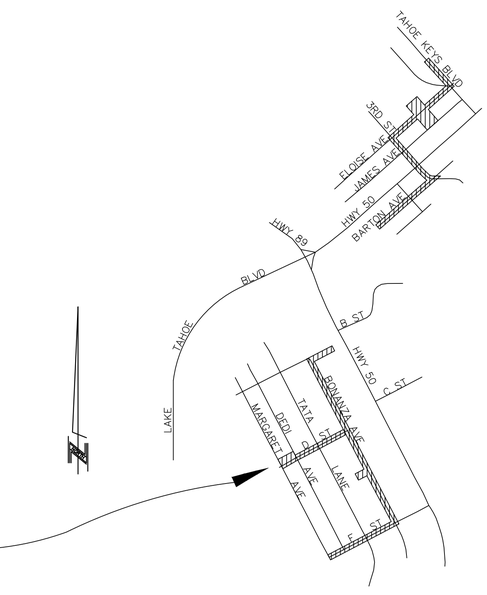
PH.: (775) 588-6490



LOCATION MAP



VICINITY MAP

BASIS OF BEARING & ELEVATION:

THE HORIZONTAL COORDINATES AND BASIS OF BEARINGS FOR THIS PROJECT IS BASED UPON THE CALIFORNIA SPATIAL REFERENCE SYSTEM, NAD83 (1991.35), CCS 83 ZONE 2. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988). THE DATUM WAS DETERMINED BY REFERENCING RECORD OF SURVEY BOOK 34, PAGE 76, RECORDED ON FEBRUARY 9TH, 2015 BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION. NAVD88 ELEVATIONS WERE DETERMINED BY APPLYING A NGS NORTH AMERICAN VERTICAL DATUM CONVERSION (VERTCON) TO THE PUBLISHED NGVD29 ELEVATIONS.

SHEET INDEX

Sheet Number	Sheet Title
T1	TITLE SHEET
T2	NOTES ABRREV LEGEND
X1	SHEET INDEX
X2	BONANZA RESIDENTIAL PLAN AREA
C1	PLAN & PROFILE–F ST. STA 10+00 TO 15+20
C2	PLAN & PROFILE–F ST. STA 15+20 TO 20+20
C3	PLAN & PROFILE–BONANZA AVE. STA 20+50 TO 25+50
C4	PLAN & PROFILE–BONANZA AVE. STA 25+50 TO 31+00
C5	PLAN & PROFILE–BONANZA AVE. STA 31+00 TO 36+50
C6	PLAN & PROFILE–BONANZA AVE. STA 36+50 TO 42+00
C7	PLAN & PROFILE–BONANZA AVE. STA 42+00 TO 44+50
C8	PLAN & PROFILE–BONANZA AVE. STA 44+50 TO 49+50
C9	PLAN & PROFILE–D STREET STA P12+00 TO P16+50
C10	PLAN & PROFILE–D STREET STA P16+50 TO P22+00
X3	GREENBELT PLAN AREA
X3CP	GREENBELT CONCEPT PLAN
C11	PLAN & PROFILE PATH CL 2 STA P15+00 TO STA P20+40
C12	PLAN & PROFILE PATH CL 2 STA P20+40 TO STA P25+80
C13	PLAN & PROFILE PATH CL 2 STA P25+80 TO STA P31+20
C14	PLAN & PROFILE PATH CL 2 STA P31+20 TO STA P36+30
C15	PLAN & PROFILE PATH CL 3 STA P36+30 TO STA P41+41
C16	PLAN & PROFILE PATH 4 STA P48+52 TO STA P53+20
C17	PLAN & PROFILE PATH CL 3 STA P41+41 TO STA P46+81
C18	PLAN & PROFILE PATH 5 CL STA 57+84 TO STA 62+37.83
C19	PLAN & PROFILE–BARTON AVE. STA 71+00 TO 76+40
C20	PLAN & PROFILE PATH 8 CL STA P68+49 TO STA P72+76.35
XS–i	CROSS SECTION INDEX
XS–1	GREENBELT CROSS SECTIONS
X4	JAMES AVE.– ELOUISE AVE. PLAN AREA
C21	PLAN & PROFILE–BARTON AVE. STA 76+40 TO STA 80+25
C22	PLAN & PROFILE–THIRD STREET STA 80+25 TO STA 85+90
C23	PLAN & PROFILE– THIRD ST. STA 86+90 TO JAME AVE. STA 91+50
C24	PLAN & PROFILE ELOUISE AVE STA 91+50 TO 93+70
C25	PLAN & PROFILE–ELOISE AVE. TO TAHOE KEYS BLVD.
C26	PLAN & PROFILE– ELOISE AVE. SWALE STA 12+00 TO 15+84
C27	PLAN & PROFILE–TAHOE KEYS BLVD. STA 99+25 TO 101+75
C28	PLAN & PROFILE–THIRD STREET STA 1+00 TO STA 4+35
D1	DETAILS
D2	DETAILS
D3	DETAILS
D4	DETAILS
D5	DETAILS
D6	DETAILS

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X/X/X

SOUTH LAKE TAHOE
TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT
TITLE SHEET
SOUTH LAKE TAHOE EL DORADO COUNTY CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

T1

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E31501200 – CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE.dwg,C1 TITLE, 05/24/2018 09:51 am Shaun.Buckman

GENERAL NOTES:

1. THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PROCEDURES AND GUIDELINES, AND ARE IN SUBSTANTIAL COMPLIANCE WITH APPLICABLE STATUTES, CITY ORDINANCES OR STANDARDS. IN THE EVENT OF CONFLICT BETWEEN ANY PORTION OF THESE PLANS AND CITY OF SOUTH LAKE TAHOE PUBLIC IMPROVEMENT AND ENGINEERING STANDARDS, THE STANDARDS SHALL APPLY AND THE ENGINEER SHALL BE CONTACTED IMMEDIATELY.

2. THE SPECIFICATIONS AND SPECIAL PROVISIONS FOR THIS PROJECT, WHICH ARE SEPARATE DOCUMENTS, ARE AN INTEGRAL PART OF THE CONSTRUCTION DOCUMENTS. SEE THE SPECIFICATIONS AND SPECIAL PROVISIONS FOR INFORMATION NOT PROVIDED IN THESE GENERAL NOTES OR SHOWN ON THE PLANS.

3. UNLESS OTHERWISE DEFINED OR NOTED, "ENGINEER" SHALL MEAN THE CITY ENGINEER OR THEIR DESIGNEE; "ENGINEER OF RECORD" SHALL MEAN LUMOS AND ASSOCIATES, INC (LUMOS); "OWNER" SHALL MEAN THE CITY OF SOUTH LAKE TAHOE

4. THE TYPES, LOCATIONS, SIZES, EXTENT AND/OR DEPTHS OF EXISTING UNDERGROUND IMPROVEMENTS THAT ARE SHOWN, MAY NOT BE EXACT. LUMOS AND THE CITY OF SOUTH LAKE TAHOE, ASSUMES NO RESPONSIBILITY FOR ANY UNDERGROUND FACILITIES OR OTHER BURIED OBJECTS WHICH MAY BE ENCOUNTERED, BUT WHICH ARE NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING APPROPRIATE UTILITY AGENCIES TO DETERMINE LOCATIONS OF UNDERGROUND FACILITIES PRIOR TO ANY EXCAVATIONS AND FOR THE PROTECTION OF AND REPAIR OF ANY DAMAGE TO THEM. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF THESE UTILITIES AND IMMEDIATELY NOTIFY THE ENGINEER IF THE ACTUAL LOCATION IS SIGNIFICANTLY DIFFERENT FROM THAT SHOWN ON THESE PLANS.

5. THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT AT "CALL BEFORE YOU DIG" (1-800-227-2600) FORTY-EIGHT (48) HOURS OR TWO (2) BUSINESS DAYS PRIOR TO START OF CONSTRUCTION.

6. AS PART OF THIS WORK, THE CONTRACTOR IS TO VERY CAREFULLY PROTECT ALL EXISTING IMPROVEMENTS, VEGETATION, TREES AND OTHER FACILITIES WHICH ARE WITHIN THE PROJECT AREA BUT OUTSIDE THE SCOPE OF THIS PROJECT. WHERE THE REMOVAL OF ANY SUCH FEATURES ARE IN QUESTION, THE CONTRACTOR SHALL PROTECT THAT AREA UNTIL A DECISION CAN BE MADE BY THE ENGINEER. WHERE THE POSSIBILITY OF DAMAGE TO ANY TREE OR VEGETATION THAT IS DESIGNATED TO REMAIN ON SITE EXISTS, THE CONTRACTOR SHALL ERECT A TEMPORARY FENCE OR BARRIER TO PROTECT THE TREE OR VEGETATION (SEE DETAILS). IF ANY TREES ARE SCARRED DURING CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY INVESTIGATION TO DETERMINE EXTENT OF DAMAGE AND RECOMMENDED REMEDIAL MEASURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMEDIAL MEASURES.

7. THE REQUIREMENTS OF ANY PERMITS ISSUED FOR THIS PROJECT BY ANY LOCAL, COUNTY, STATE OR FEDERAL AGENCY SHALL BE STRICTLY OBSERVED BY THE CONTRACTOR.

8. NO CONSTRUCTION SHALL BE DONE BETWEEN OCTOBER 15 AND MAY 1 WITHOUT AN APPROVED SEDIMENT AND EROSION CONTROL PLAN TO PREVENT SOIL EROSION AND A GRADING EXCEPTION FROM TRPA AND THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD – LAHONTAN REGION. THERE SHALL BE NO GRADING OR LAND DISTURBANCE PERFORMED WITH RESPECT TO THE PROJECT BETWEEN OCTOBER 15 AND MAY 1 UNLESS PROPER APPROVALS ARE OBTAINED FROM THE ENGINEER. ALL WORK PERFORMED BETWEEN OCTOBER 15 AND MAY 1 MUST BE PERFORMED IN SUCH A MANNER THAT THE PROJECT CAN BE WINTERIZED WITHIN TWENTY-FOUR (24) HOURS.

9. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED BY THE CONTRACTOR AS NOTED IN THE PROJECT PLANS.

10. IF THERE ARE ANY SOILS THAT, IN THE OPINION OF THE ENGINEER, ARE NOT STABILIZED BY OCTOBER 15, THE SITE SHALL BE COMPLETELY WINTERIZED. THE WINTERIZATION SHALL INCLUDE (BUT NOT BE LIMITED TO) REPAIR OF SEDIMENT BARRIERS AND FILTER BERMS AS NECESSARY, APPLICATION OF A PINE NEEDLE MULCH TO DISTURBED AREAS TO BE REVEGETATED, APPLICATION OF ASPHALTIC TACKING AGENTS TO AREAS TO BE PAVED AND INSTALLATION OF FILTER INLETS AROUND STORM DRAINAGE INLETS AND PROTECTION OF WATER BODIES INCLUDING SEZ.

11. THERE SHALL BE NO GRADING, FILLING, CLEARING OF VEGETATION (WHICH DISTURBS SOIL), OR OTHER DISTURBANCE OF THE SOIL DURING INCLEMENT WEATHER AND FOR THE RESULTING PERIOD OF TIME WHEN THE SITE IS IN A SATURATED, MUDDY OR UNSTABLE CONDITION. CLEARING, EARTH-MOVING, AND EXCAVATION OPERATIONS AND OTHER GRADING ACTIVITIES SHALL CEASE WHEN WIND SPEED EXCEEDS 20 MPH AVERAGED OVER 1 HOUR.

12. SOIL AND CONSTRUCTION MATERIAL SHALL NOT BE TRACKED OFF THE CONSTRUCTION SITE. GRADING OPERATIONS SHALL CEASE IN THE EVENT THAT A DANGER OF VIOLATING THIS CONDITION EXISTS. THE SITE SHALL BE CLEANED UP AND ROAD RIGHT-OF-WAY SWEPT CLEAN WHEN NECESSARY. THE PROJECT SHALL BE TREATED AS NECESSARY TO PREVENT OFF-SITE MIGRATION AND ACCUMULATION OF DIRT, SOIL OR OTHER MATERIALS WHICH CAN SUBSEQUENTLY BE ENTRAINED IN AMBIENT AIR. CONTRACTOR SHALL PROVIDE PERIODIC WATERING TO CONTROL AIRBORNE PARTICLES. TRACKING CONTROL MEASURES SHALL BE IN PLACE AT ALL TIMES AT ALL LOCATIONS OF GRADING.

13. DURING CONSTRUCTION, ENVIRONMENTAL PROTECTION DEVICES SUCH AS ADEQUATE EROSION CONTROL DEVICES, DUST CONTROL AND VEGETATION PROTECTION BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR.

14. REHABILITATION AND CLEANUP OF THE SITE FOLLOWING CONSTRUCTION MUST INCLUDE REMOVAL OF ALL CONSTRUCTION WASTE AND DEBRIS.

15. NO CLEANING OF EQUIPMENT, INCLUDING CEMENT MIXERS, SHALL BE PERMITTED ANYWHERE WITHIN THE PROJECT AREA UNLESS AUTHORIZED BY THE ENGINEER.

16. NO VEHICLES OR HEAVY EQUIPMENT SHALL BE ALLOWED IN ANY RIPARIAN OR WET AREA, EXCEPT AS SPECIFICALLY AUTHORIZED BY THE ENGINEER.

17. LOOSE SOIL MOUNDS OR SURFACES SHALL BE PROTECTED FROM WIND OR WATER EROSION BY BEING APPROPRIATELY COVERED WHEN CONSTRUCTION IS NOT IN ACTIVE PROGRESS OR WHEN REQUIRED BY THE ENGINEER.

18. SEWER SERVICE AND SEWER MAIN HORIZONTAL LOCATIONS AND DEPTHS SHOWN ON THESE PLANS ARE APPROXIMATE ONLY (SEE NOTE 4). CONTRACTOR SHALL ASSUME THAT EACH PARCEL IS SERVED BY A SEWER SERVICE. EXISTING SEWER SERVICES THAT CONFLICT WITH STORM DRAIN INSTALLATION WILL REQUIRE RELOCATION. CONTRACTOR SHALL RELOCATE SEWER SERVICES AND MAINS. ALL SEWER RELATED CONSTRUCTION MATERIALS, METHODS, TESTING AND INSPECTION SHALL CONFORM TO THE REQUIREMENTS OF THE SOUTH TAHOE PUBLIC UTILITY DISTRICT. THE SEWER LATERALS RELOCATED BY THE CONTRACTOR SHALL BE AIR TESTED PURSUANT TO STPUD STANDARDS AND APPROVED BEFORE BACKFILLING THE TRENCH.

19. CONTRACTOR SHALL NOTIFY SOUTH TAHOE PUBLIC UTILITY DISTRICT IN WRITING 48 HOURS IN ADVANCE OF WORK AFFECTING SEWER LINES. CONTRACTOR SHALL COORDINATE DISRUPTIONS TO SERVICE WITH SOUTH TAHOE PUBLIC UTILITY DISTRICT AND THE AFFECTED PROPERTY OWNERS AND RESIDENTS.

20. THE CONTRACTOR SHALL SEQUENCE, COORDINATE, AND CONDUCT DEMOLITION AND CONSTRUCTION OPERATIONS SUCH AS TO MAINTAIN CONTINUOUS PUBLIC SAFETY, ACCESS, DRAINAGE, AND UTILITY SERVICES TO EXISTING FACILITIES REQUIRING THESE SERVICES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AS WELL AS BUSINESSES AND RESIDENTS IN THE VICINITY THAT WILL BE AFFECTED AT LEAST SEVEN (7) DAYS, UNLESS OTHERWISE APPROVED, IN ADVANCE OF INTERRUPTION OF ANY OF THESE SERVICES.

21. WATER SERVICE AND WATER MAIN HORIZONTAL LOCATIONS AND DEPTHS SHOWN ON THESE PLANS ARE APPROXIMATE ONLY (SEE NOTE 4). EXISTING WATER LINES MAY BE STEEL, IRON, PVC OR OTHER MATERIAL. IF POLYBUTYLENE WATERLINE IS DISCOVERED CONTRACTOR SHALL NOTIFY ENGINEER. FOR PURPOSES OF AVOIDING WATER SERVICE DAMAGE, CONTRACTOR SHALL ASSUME THAT EACH PARCEL IS SERVED BY A WATER SERVICE. EXISTING WATER SERVICES AND MAINS THAT CONFLICT WITH STORM DRAIN INSTALLATION SHALL REQUIRE RELOCATION. CONTRACTOR SHALL RELOCATE WATER SERVICES AND MAINS. ALL WATER RELATED CONSTRUCTION MATERIALS AND METHODS AND TESTING AND INSPECTION SHALL CONFORM TO THE REQUIREMENTS OF THE SOUTH TAHOE PUBLIC UTILITY DISTRICT AND THE CALIFORNIA CODE OF REGULATIONS.

22. CONTRACTOR SHALL NOTIFY SOUTH TAHOE PUBLIC UTILITY DISTRICT IN WRITING 48 HOURS IN ADVANCE OF WORK AFFECTING WATER LINES. CONTRACTOR SHALL COORDINATE DISRUPTIONS TO SERVICE WITH SOUTH TAHOE PUBLIC UTILITY DISTRICT AND THE AFFECTED PROPERTY OWNERS AND RESIDENTS.

23. WATER, SEWER AND STORM DRAIN SEPARATIONS SHALL CONFORM TO THE "CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS" OF THE STATE OF CALIFORNIA CODE OF REGULATIONS.

24. WHERE PROPOSED STORMDRAIN PIPE AND EXISTING SEWER PIPE CROSS, AS SHOWN ON PLANS OR AS MARKED BY USA, CONTRACTOR SHALL POTHOLE SEWER LINES TO A MINIMUM DEPTH OF 12" BELOW BOTTOM OF STORMDRAIN PIPE. POTHOLING SHALL BE PERFORMED A MINIMUM OF TWO WORKING DAYS PRIOR TO THE BEGINNING OF STORM DRAIN CONSTRUCTION OR PAVEMENT SAWCUTTING ANYWHERE IN THE PROJECT. IF CONFLICT EXISTS AND IS NOT SHOWN ON PLANS, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY. ANY DAMAGED SEWER MUST BE REPORTED TO THE SOUTH TAHOE PUBLIC UTILITY DISTRICT. SEWER CONSTRUCTION WILL REQUIRE TESTING PER THE SOUTH TAHOE PUBLIC UTILITY DISTRICT STANDARDS.

25. WHERE PROPOSED STORMDRAIN PIPE AND EXISTING WATER PIPE CROSS, AS SHOWN ON PLANS OR AS MARKED BY USA, CONTRACTOR SHALL POTHOLE WATER LINES TO A MINIMUM DEPTH OF 12" BELOW BOTTOM OF STORMDRAIN PIPE. POTHOLING SHALL BE PERFORMED A MINIMUM OF TWO WORKING DAYS PRIOR TO THE BEGINNING OF STORM DRAIN CONSTRUCTION OR PAVEMENT SAWCUTTING ANYWHERE IN THE PROJECT AREA. IF CONFLICT EXISTS AND IS NOT SHOWN ON PLANS CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY. ANY DAMAGED WATER LINES MUST BE REPORTED TO THE SOUTH TAHOE PUBLIC UTILITY DISTRICT. WATER CONSTRUCTION WILL REQUIRE TESTING PER THE SOUTH TAHOE PUBLIC UTILITY DISTRICT STANDARDS.

26. GAS SERVICE AND GAS MAIN HORIZONTAL LOCATIONS AND DEPTHS SHOWN ON THESE PLANS ARE APPROXIMATE ONLY (SEE NOTE 4). CONTRACTOR SHALL ASSUME THAT EACH PARCEL IS SERVED BY A GAS SERVICE. EXISTING GAS SERVICES AND MAINS THAT CONFLICT WITH STORM DRAIN INSTALLATION SHALL REQUIRE RELOCATION. CONTRACTOR SHALL EXPOSE EXISTING PIPE AND PROVIDE ALL TRENCHING AND SHORING AS REQUIRED. THE GAS UTILITY COMPANY WILL CONSTRUCT THE PIPE RELOCATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING AND COORDINATING THIS WORK WITH THE GAS UTILITY COMPANY. CONTRACTOR SHALL CONSTRUCT TRENCH RESURFACING PER DETAILS. ALL GAS RELATED CONSTRUCTION MATERIALS AND METHODS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT GOVERNING GAS UTILITY.

27. WHERE PROPOSED STORMDRAIN PIPE AND EXISTING GAS PIPE CROSS, AS SHOWN ON PLANS OR AS MARKED BY USA, CONTRACTOR SHALL POTHOLE GAS LINES TO A MINIMUM DEPTH OF 12" BELOW BOTTOM OF STORMDRAIN PIPE. POTHOLING SHALL BE PERFORMED A MINIMUM OF TWO WORKING DAYS PRIOR TO THE BEGINNING OF STORM DRAIN CONSTRUCTION OR PAVEMENT SAWCUTTING ANYWHERE IN THE PROJECT. IF CONFLICT EXISTS AND IS NOT SHOWN ON PLANS CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY.

28. CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED IN GOOD CONDITION AND IN PROPER TUNE IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATIONS AND NOT ALLOWED TO IDLE FOR LONG PERIODS OF TIME. ALL WHEELED AND TRACK CONSTRUCTION EQUIPMENT SUCH AS BACKHOES, EXCAVATORS, TRUCKS, TRACTORS, COMPACTOR ROLLERS, ETC. SHALL BE STEAM CLEANED TO REMOVE ALL DIRT, WEEDS AND GREASE BEFORE ARRIVAL AT THE PROJECT SITE. IF EQUIPMENT IS TO BE BROUGHT INTO THE TAHOE BASIN, STEAM CLEANING MUST OCCUR OUTSIDE THE TAHOE BASIN.

29. LAND DISTURBING ACTIVITIES SHALL BE DONE IN INCREMENTS AS DETERMINED ON THE APPROVED PROJECT SCHEDULE TO MINIMIZE THE AMOUNT OF AREA DISTURBED, AND UNTREATED, AT ANY ONE TIME.

30. NO OPEN BURNING OF DEBRIS SHALL OCCUR WITHIN THE PROJECT LIMITS, DURING AND AFTER CONSTRUCTION.

31. ADEQUATE MUFFLERS AND ENCLOSURES FOR POWERED EQUIPMENT ARE REQUIRED.

32. CONTRACTOR SHALL INSTALL CENTERLINE REFLECTORIZED TRAFFIC PAINT AT ALL LOCATIONS WHERE THE EXISTING CENTERLINE PAINT HAS BEEN DISTURBED, DEFACED, OBLITERATED OR WHERE THE LOCATION OF THE CENTERLINE HAS SIGNIFICANTLY CHANGED DURING CONSTRUCTION. "STOP" PAINT AND "STOP BAR" PAINT SHALL BE INSTALLED AT ALL LOCATIONS WHERE THE EXISTING "STOP BAR" PAINT HAS BEEN DISTURBED, DEFACED, OBLITERATED OR WHERE THE LOCATION OF THE EXISTING "STOP BAR" PAINT HAS CHANGED DURING CONSTRUCTION. CONTRACTOR SHALL REMOVE THE EXISTING DISTURBED, DEFACED, OBLITERATED "STOP BAR" OR YELLOW CENTERLINE PAINT.

33. PAYMENT FOR AC PATCHING WILL BE LIMITED TO WHAT IS SHOWN ON THE PLANS UNLESS APPROVAL FOR REMOVAL AND REPLACEMENT OF ADDITIONAL PAVEMENT IS APPROVED BY THE ENGINEER.

34. THE GENERAL CONTRACTOR OR SUB-CONTRACTORS SHALL OBTAIN APPROVAL PRIOR TO CONSTRUCTION FROM THE ENGINEER FOR STAGING LOCATIONS.

35. CONTRACTOR SHALL OBTAIN APPROVAL FROM ENGINEER ON SUITABLE BEDDING AND BACKFILL MATERIAL. IF MATERIAL IS DEEMED UNSUITABLE BY THE ENGINEER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OFF-HAUL OF UNSUITABLE MATERIAL AND THE IMPORT OF SUITABLE BEDDING AND BACKFILL MATERIAL.

36. INSTALLATION AND MAINTENANCE OF EROSION CONTROL MEASURES ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREVENTION OF SIGNIFICANT EROSION AND SILTATION FROM ENTERING THE STORM DRAIN SYSTEM, NATURAL DRAINAGE COURSES, AND/OR INTRUDING UPON ADJACENT ROADWAYS AND PROPERTIES. EROSION CONTROL MEASURES SHOWN ON THESE PLANS ARE INTENDED AS A GUIDE. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS DETERMINED IN THE FIELD AND AS APPROVED BY THE ENGINEER. THIS RESPONSIBILITY SHALL APPLY THROUGHOUT THE COURSE OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS HAVE BECOME STABILIZED AND SHALL NOT BE LIMITED TO WET WEATHER PERIODS. THE CONTRACTOR IS RESPONSIBLE FOR SWPPP UPDATES.

37. THE CONTRACTOR SHALL COMPARE ALL PLANS FOR CONFORMANCE AS TO THE LAYOUT OF FEATURES AND DIMENSIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. IF DISCREPANCIES BETWEEN THE PLANS AND THE SPECIFICATIONS OCCUR, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE WORK.

38. IF ANY UNKNOWN SUBSURFACE STRUCTURE OR CONTAMINATION IS ENCOUNTERED DURING CONSTRUCTION, IT SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.

39. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND MAINTAINING SAFE CLEARANCES FROM OVERHEAD ELECTRICAL LINES AT ALL TIMES, AND WHERE HAZARDOUS CONDITIONS EXIST, FOR TAKING THE NECESSARY PRECAUTIONS AGAINST INJURY AND DAMAGE.

40. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE AT ALL TIMES INCLUDING SAFETY OF PERSONS AND PROPERTY, AND FOR ALL NECESSARY INDEPENDENT ENGINEERING REVIEWS OF THESE CONDITIONS. THE ENGINEER'S JOB SITE REVIEW DOES NOT INCLUDE THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES.

41. ALL EXCAVATED MATERIAL FROM THE SITE NEEDS TO BE INSPECTED BY THE ENGINEER PRIOR TO OFF HAUL. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION FOR INSPECTION.

42. ALL EXCAVATED MATERIAL SHALL BE DISPOSED OF OUTSIDE THE TAHOE BASIN OR AT A SITE APPROVED BY TRPA.

43. ONLY EQUIPMENT OF A SIZE AND TYPE THAT, UNDER PREVAILING SITE CONDITIONS, AND CONSIDERING THE NATURE OF THE WORK TO BE PERFORMED AND WILL DO THE LEAST AMOUNT OF DAMAGE TO THE ENVIRONMENT, SHALL BE USED.

44. THE CONTRACTOR SHALL OBTAIN AND HAVE AVAILABLE COPIES OF APPLICABLE GOVERNING AGENCY STANDARDS AT THE JOB SITE DURING THE RELATED CONSTRUCTION OPERATIONS.

45. ASPHALT PAVEMENT AND BASE THICKNESS ARE SHOWN ON THE PLANS. IN PLACE COMPACTED THICKNESS
THEREOF SHALL BE WITHIN THE FOLLOWING TOLERANCES:
AGGREGATE BASE COURSE: ¼" PLUS OR MINUS
ASPHALT COURSE: ⅛" PLUS OR MINUS

46. SURFACE SMOOTHNESS OF ASPHALT SHALL NOT BE ACCEPTABLE IF EXCEEDING ¼" USING A 10' STRAIGHT EDGE.

47. ALL ASPHALT CONCRETE SURFACES SHALL BE SAWCUT THREE FEET MINIMUM INSIDE THE EDGE OF PAVEMENT TO A NEAT, STRAIGHT LINE AND REMOVED. THE EXPOSED PAVEMENT TIE-IN EDGES SHALL BE METICULOUSLY CLEANED OF ALL LOOSE MATERIAL AND THEN TREATED WITH BITUMINOUS EMULSION PRIOR TO PAVING. THE EXPOSED BASE MATERIALS SHALL BE GRADED AND RECOMPACTED PRIOR TO PAVING.

48. MANUFACTURER'S MATERIAL AND WEIGHT TICKETS SHALL BE FURNISHED TO THE ENGINEER.

49. CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING A PRE-CONSTRUCTION JOB SITE CONFERENCE WITH GOVERNING AGENCIES, ALL UTILITY COMPANIES, AND OWNER'S REPRESENTATIVES PRIOR TO COMMENCING WORK. THIS MEETING WILL VERIFY SCHEDULES, METHODS, AND MATERIALS TO BE USED IN CONSTRUCTION OF THE PROJECT.

50. ANY NORMAL CONSTRUCTION ACTIVITIES CREATING NOISE IN EXCESS TO THE TRPA NOISE STANDARDS MAY BE CONSIDERED EXEMPT BETWEEN THE HOURS OF 8:00 AM AND 6:30 PM.

51. CONSTRUCTION NOISE EMANATING FROM ANY CONSTRUCTION ACTIVITIES FOR WHICH A CONSTRUCTION PERMIT OR GRADING PERMIT IS REQUIRED IS PROHIBITED ON SUNDAYS AND FEDERAL HOLIDAYS, AND SHALL ONLY OCCUR BETWEEN THE HOURS OF 8:00 AM AND 6:30 PM MONDAY THROUGH SATURDAY. SEE CHAPTER 23 OF TRPA CODE OF ORDINANCES.

52. CONTRACTOR SHALL MAINTAIN IN A SAFE PLACE AT THE SITE ONE RECORD COPY OF ALL DRAWINGS, SPECIFICATIONS, ADDENDA, CHANGE ORDERS, WORK CHANGE DIRECTIVES, FIELD ORDERS, AND WRITTEN INTERPRETATIONS AND CLARIFICATIONS IN GOOD ORDER AND ANNOTATED TO SHOW CHANGES MADE DURING CONSTRUCTION.

53. CONTRACTOR SHALL CONFORM TO ALL REQUIREMENTS/STANDARDS OUTLINED IN THE CITY OF SOUTH LAKE TAHOE PUBLIC IMPROVEMENT ENGINEERING STANDARDS 2009, THE 2012 CA M.U.T.C.D., THE CONTRACTOR SHALL CONFORM TO THE CALTRANS REVISED STANDARD PLAN SHEETS FOR ADA COMPLIANCE.

54. NO CONSTRUCTION MATERIALS SHALL BE STORED IN STREAM ENVIRONMENT ZONES (SEZ) AT ANY TIME.

55. CONTRACTOR MUST SUBMIT TO CALTRANS A SIGNED COPY OF COMPLETE SWPPP IN THE BINDER PER LATEST TEMPLATE AT THE TIME WHEN CONTRACTOR APPLIES FOR A DOUBLE PERMIT.

56. CONTRACTOR MUST INSTALL, REGULARLY MONITOR AND MAINTAIN ALL TEMPORARY TRAFFIC CONTROL DEVICES TO GUIDE PEDESTRIANS TO THE OPPOSITE SIDE OF THE ROAD AND ENSURE NO PEDESTRIANS ARE ABLE TO WALK, BIKE, OR OTHERWISE ENTER CONSTRUCTION AREA.

57. ANY CROSS SLOPE THAT EXCEEDS 2% WILL BE REJECTED AND RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE.

ABBREVIATIONS

AC	ASPHALT CONCRETE
ACP	ASBESTOS CEMENT PIPE
AGG	AGGREGATE
BC	BEGIN CURVE (HORIZONTAL)
BOW	BACK OF WALK
BF, BOF	BOTTOM OF FOOTING
BV	BUTTERFLY VALVE
BVC	BEGIN VERTICAL CURVE
BW	BOTH WAYS
CB	CATCH BASIN
cfs	CUBIC FEET PER SECOND
C&G	CURB AND GUTTER
℄	CENTER LINE
CL	CLASS
CMP	CORRUGATED METAL PIPE
COMP	COMPACTION
CONC	CONCRETE
CONTR	CONTRACTOR
CP	CONCRETE PAD
CTV	CABLE TELEVISION
DI	DROP INLET
DIA	DIAMETER
DWY	DRIVEWAY
E	EAST
EA	EACH
EC	END CURVE (HORIZONTAL)
ELL	ELBOW
ELEC	ELECTRICAL
ELEV	ELEVATION
EVC	END VERTICAL CURVE
EX, (E)	EXISTING
EXT	EXTERIOR
FCA	FLANGE COUPLING ADAPTER
FE	FINISH ELEVATION
FES	FLARED END SECTION
FF	FINISH FLOOR
FFC	FRONT FACE OF CURB
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FLG	FLANGE
fps	FEET PER SECOND
FTG	FOOTING
G	GAS

GALV	GALVANIZED
GB	GRADE BREAK
GDW	GRAVEL DRIVEWAY
GD	GROUND
GV	GATE VALVE
H	HANDICAPPED
HGL	HYDRAULIC GRADE LINE
HORIZ	HORIZONTAL
HP	HIGH POINT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
INT	INTERSECTION
IRR	IRRIGATION
LAT	LATERAL
LF	LINEAR FEET
LP	LOW POINT
LT	LEFT
MAX	MAXIMUM
MDD	MAXIMUM DRY DENSITY
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MMD	MAXIMUM MARSHALL DENSITY
MUTCD	MANUAL FOR TRAFFIC CONTROL DEVICES
N	NORTH
NAP	NOT A PART
NIP	NOT IN PROJECT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD
(P)	PROPOSED
PCC	PORTLAND CEMENT CONCRETE
PG	PAD GRADE
PI	POINT OF INTERSECTION
PIVC	POINT OF INTERSECTION VERTICAL CURVE
PL	PROPERTY LINE
POCC	POINT OF COMPOUND CURVATURE
POT	POINT OF TANGENCY
PP	POWER POLE
PRC	POINT OF REVERSE CURVE
PRVC	POINT IF REVERSE CURVE VERTICAL CURVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
Q 5	5 YEAR PEAK FLOW

Q 100	100 YEAR PEAK FLOW
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REF	REFERENCE
RET	CURB RETURN
RP	RADIUS POINT
RT	RIGHT
R/W, ROW	RIGHT-OF-WAT
S=	SLOPE
S	SOUTH
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SL	STREET LIGHT
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEAN OUT
SSMH	SANITARY SEWER MANHOLE
SSPWC	STANDARD SPEC. FOR PUBLIC WORKS CONSTRUCTION
STA	STATION
SW	SIDEWALK
TELE	TELEPHONE
TBO	TEMPORARY BLOW OFF VALVE
TC	TOP OF CURB
TG	TO GRADE
TOB	TOP OF BERM
TF, TOF	TOP OF FOOTING
TW, TOW	TOP OF WALL
TS	TRAFFIC SIGNAL
TSCB	TRAFFIC CONTROL SIGNAL BOX
TR	TOP OF RAIL
TRANS	TRANSITION
UG/P	UNDER GROUND POWER
UNO	UNLESS NOTED OTHERWISE
Vs	VELOCITY AT 5 YEAR PEAK
VC	VERTICAL CURVE
VEL	VELOCITY
VERT	VERTICAL
VG	VALLEY GUTTER
W	WEST
W/G	WATER AND GAS
WL	WATER LINE
WM	WATER METER
WS	WATER SURFACE
WV	WATER VALVE
WWF	WELDED WIRE FABRIC

LEGEND

EXISTING		PROPOSED
4174	CONTOUR LINE	4174
+ 4163.1	GROUND ELEVATION	+ 4163.1
	TREE	
	ROCK	
	EDGE OF PAVEMENT / AC PAVING	
	TO BE REMOVED	
	TIE-IN PAVEMENT	
	TIE-IN PAVEMENT OUTSIDE ROW	
	CURB & GUTTER	
	CONCRETE	
	UTILITY POLE	
	LIGHT	
	GUY WIRE	
ET	ELECTRIC TRANSFORMER	ET
EV	ELECTRIC VAULT	EV
EP	ELECTRIC PANEL	EP
EC	ELECTRIC CABINET	EC
EB	ELECTRIC BOX	EB
EM	ELECTRIC METER	EM
EG	ELECTRIC GENERATOR	EG
E	ELECTRIC MANHOLE	E
AC	AIR CONDITIONER	AC
	ELECTRIC OUTLET	
	BOLLARD	
SD	STORM DRAIN MANHOLE	SD
	CATCH BASIN	
WV	WATER VALVE	WV
IRCV	IRRIGATION CONTROL VALVE	IRCV
WM	WATER METER	WM
WS	WATER SPIGOT / HOSE BIB	WS
W	WATER MANHOLE	W
WV	WATER VAULT	WV
GV	GAS VALVE	GV
GM	GAS METER	GM
	FIRE HYDRANT	
T	TELEPHONE MANHOLE	T
TB	TELEPHONE BOX	TB
TV	TELEPHONE VAULT	TV
S	SEWER MANHOLE	S
SSCO	SEWER CLEANOUT	SSCO
	SURVEY MONUMENT	
	CONTROL POINT	
	BARRICADE	
	SIGN	
	RETAINING WALL	
	FENCE	
	GRADE BREAK	
	FLOW LINE	
	SOIL TEST PIT	
	DETAIL CALLOUT	

FOUND SECTION CORNER AS NOTED

FOUND 5/8" REBAR AND CAP "PLS 14413" – UNLESS OTHERWISE NOTED

SET 5/8" REBAR AND CAP "PLS 17616" – UNLESS OTHERWISE NOTED

LUMOS & ASSOCIATES

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CARSON CITY, NEVADA 89706
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MATERIALS TESTING

Cardno Shaping the Future
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Address 295 US 50, Suite 1,
Stateline, NV 89449

X/X/X

SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER IMPROVEMENT PROJECT AND GREENBELT IMPROVEMENT PROJECT
NOTES ABRREV LEGEND

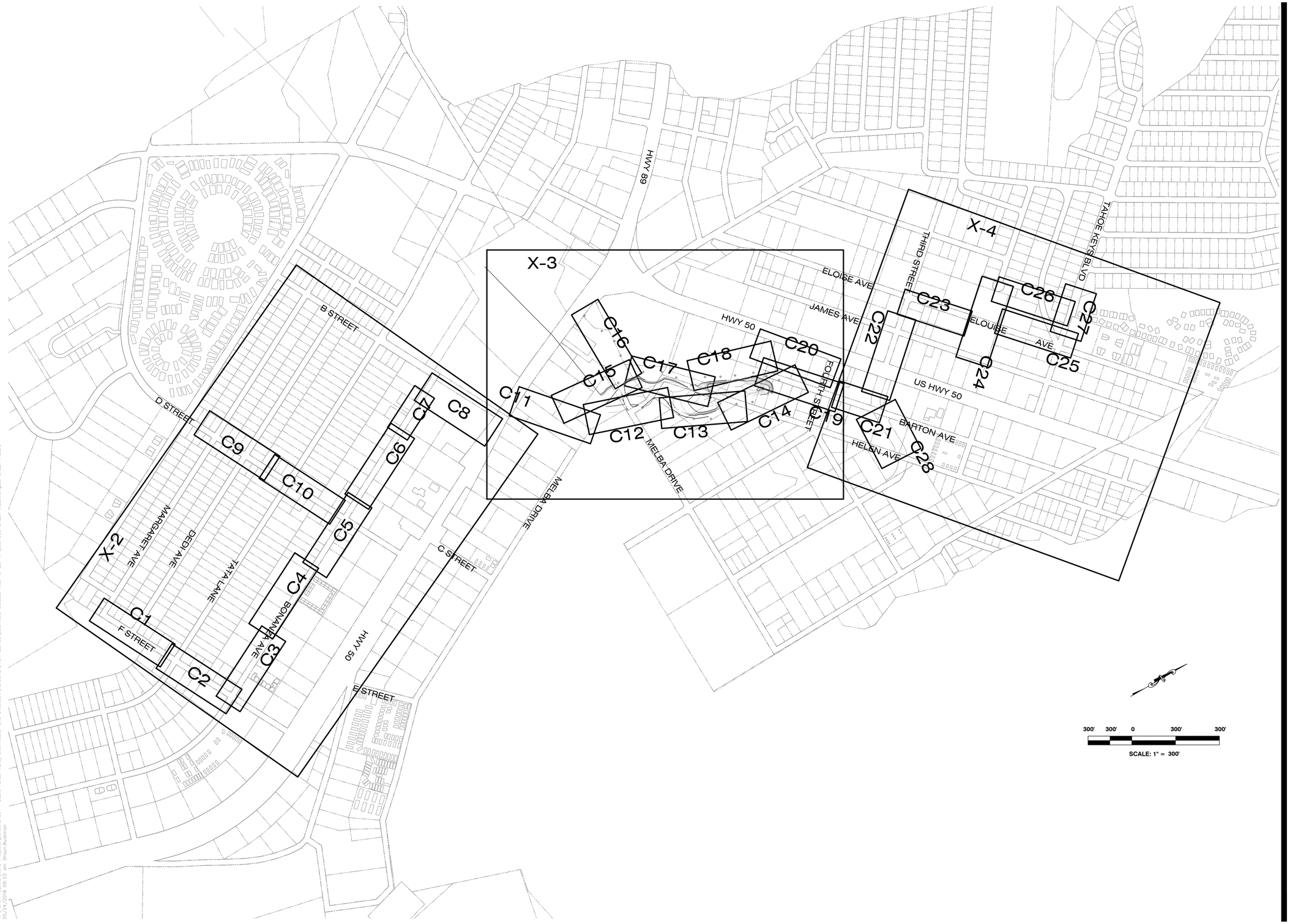
SOUTH LAKE TAHOE | EL DORADO COUNTY | CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

T2

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JC
CHECKED BY:	BM
JOB NO.:	8937.000



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SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
SHEET INDEX

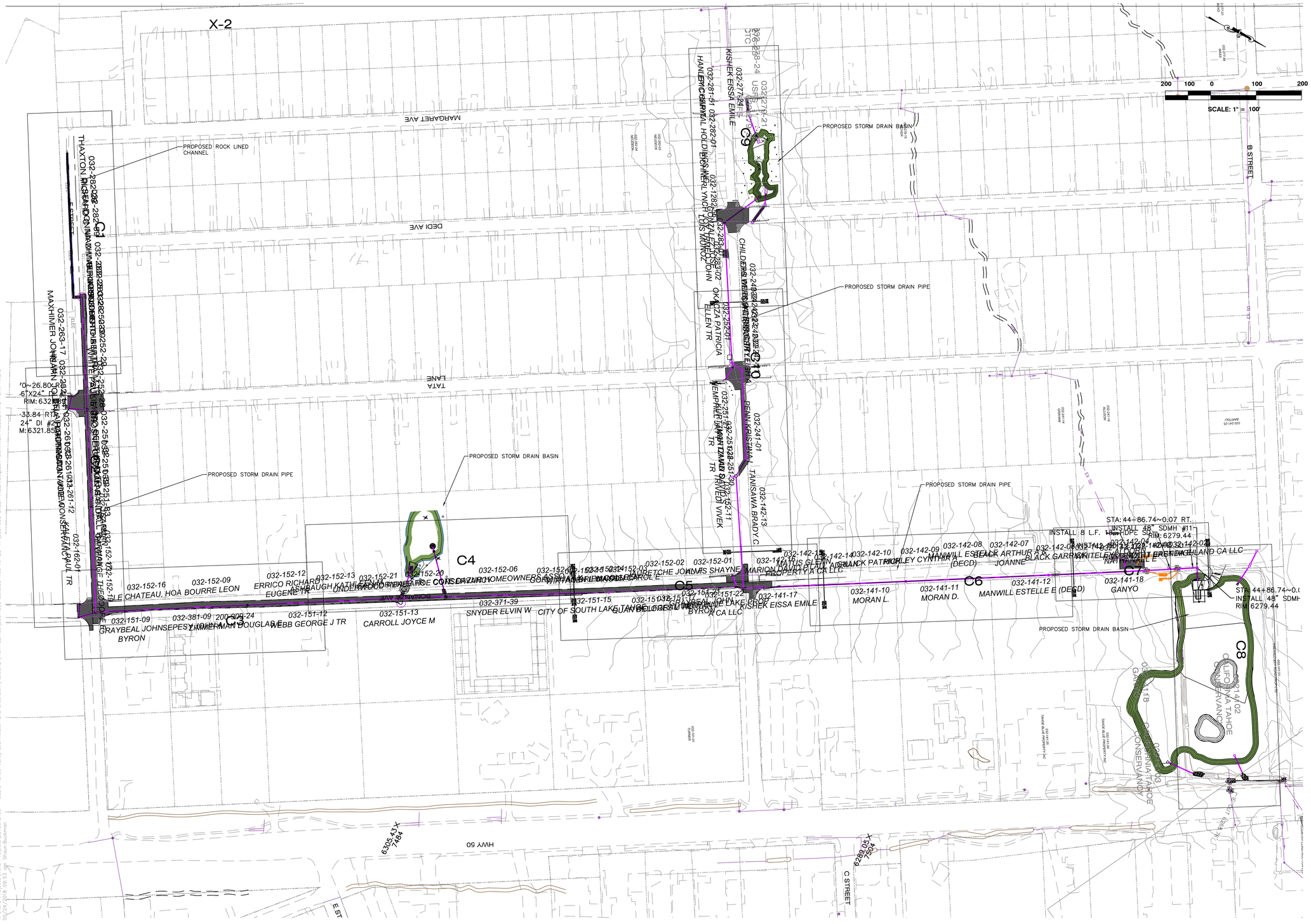
SOUTH LAKE TAHOE EL DORADO COUNTY CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

X1

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JTC
CHECKED BY:	BM
JOB NO.:	8937.000



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X/X/X

SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER IMPROVEMENT PROJECT AND GREENBELT IMPROVEMENT PROJECT BONANZA RESIDENTIAL PLAN AREA

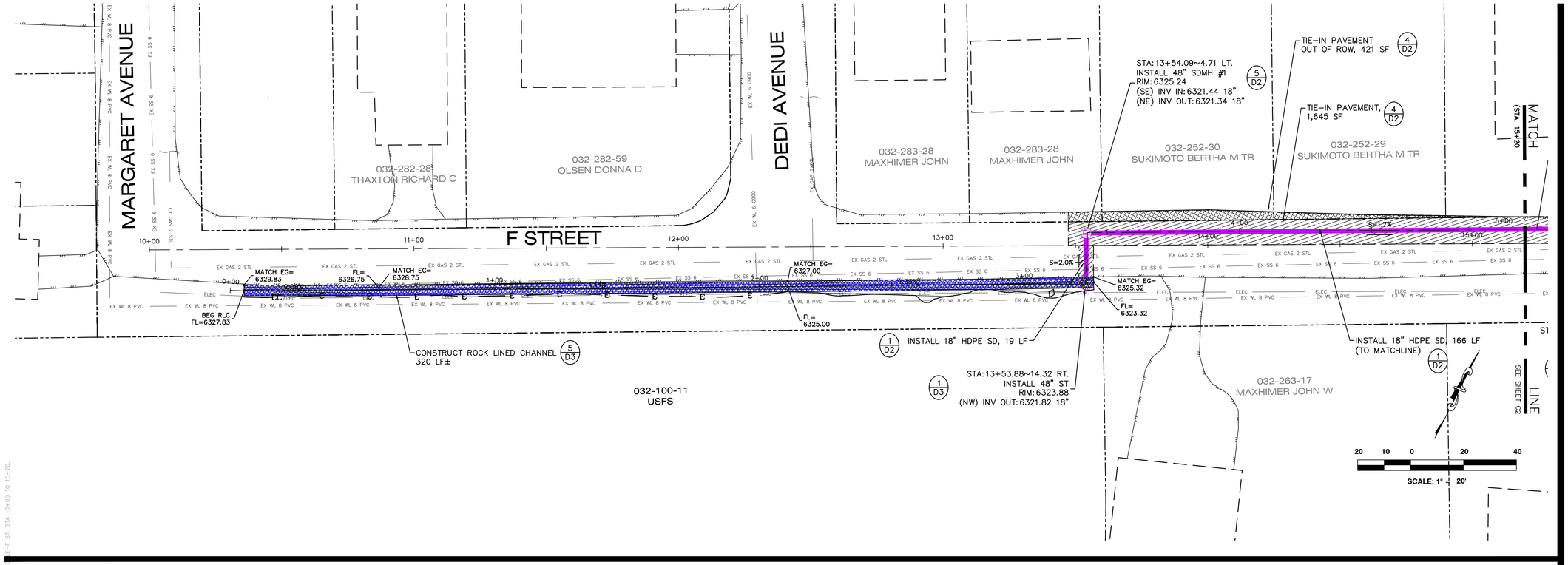
SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

REV	DATE	DESCRIPTION	BY

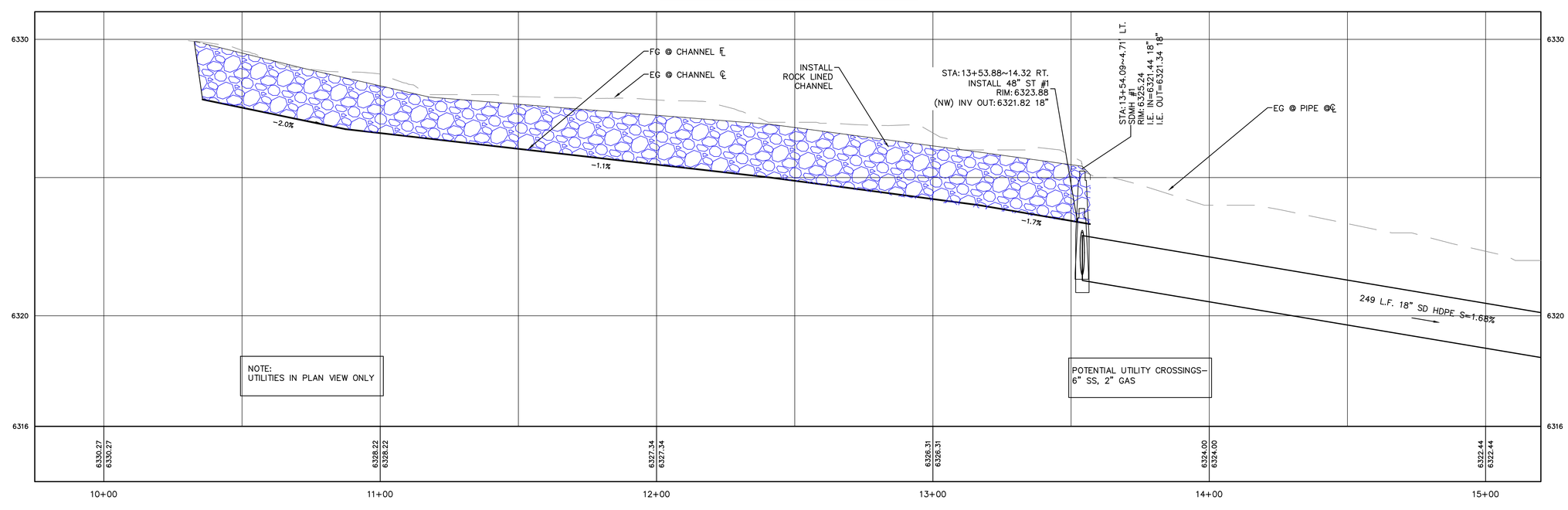
30% DESIGN

X2

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JTC
CHECKED BY:	BM
JOB NO.:	8937.000



F STREET– STA:9+75 TO STA:15+20



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SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-F ST. STA 10+00 TO 15+20

SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

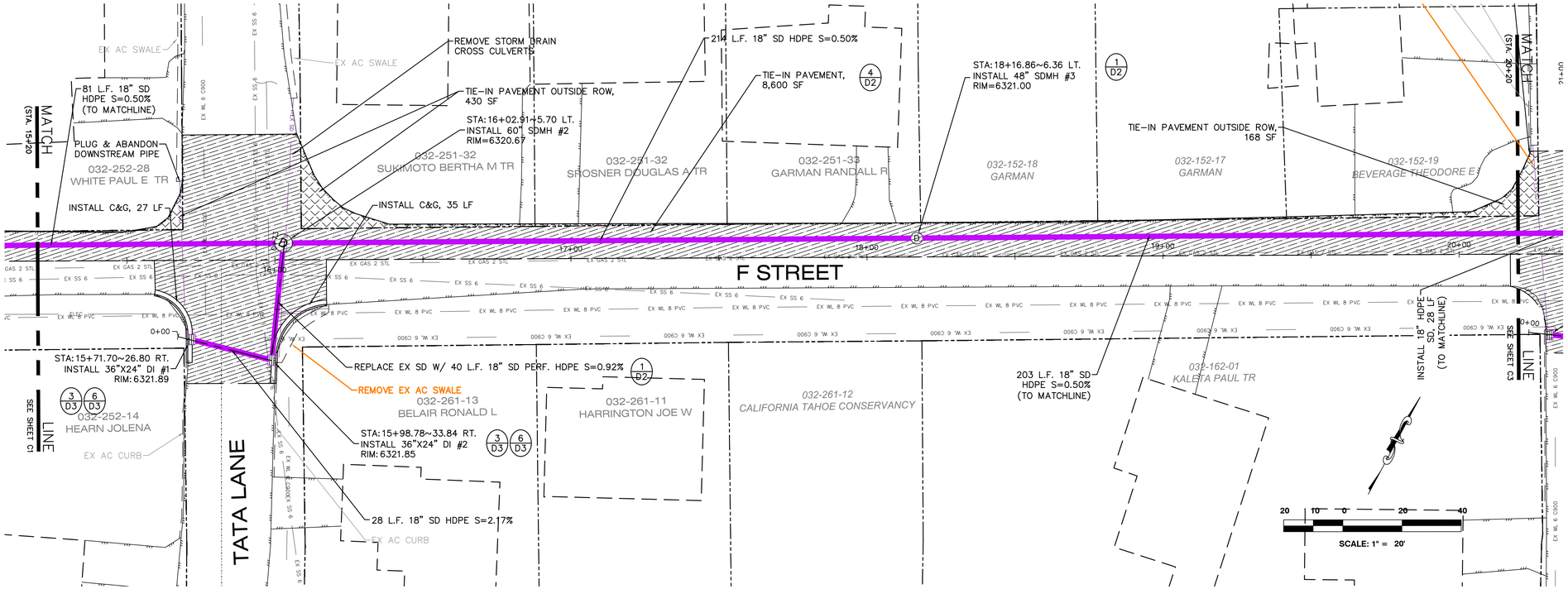
REV	DATE	DESCRIPTION	BY

30% DESIGN

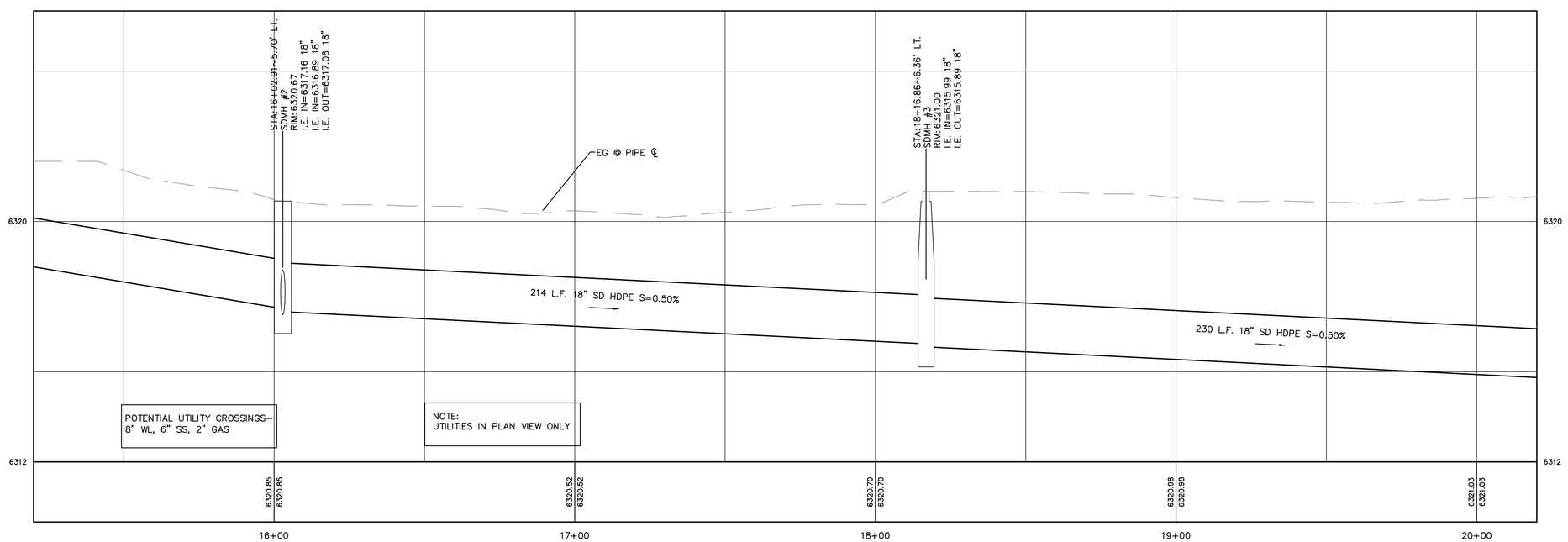
C1

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JC
CHECKED BY:	BM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\X31501210 – CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\Trom Lumos\8937.000 30%cad files 10-23-17\8937000 BASE.dwg\C4 PLAN & PROFILE-F ST. STA 10+00 TO 15+20.
09/24/2018 09:54 am Shaun.Buckman



F STREET CL– STA:15+20 TO STA:20+20



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X/X/X

SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT PLAN & PROFILE-F ST. STA 15+20 TO 20+20

SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

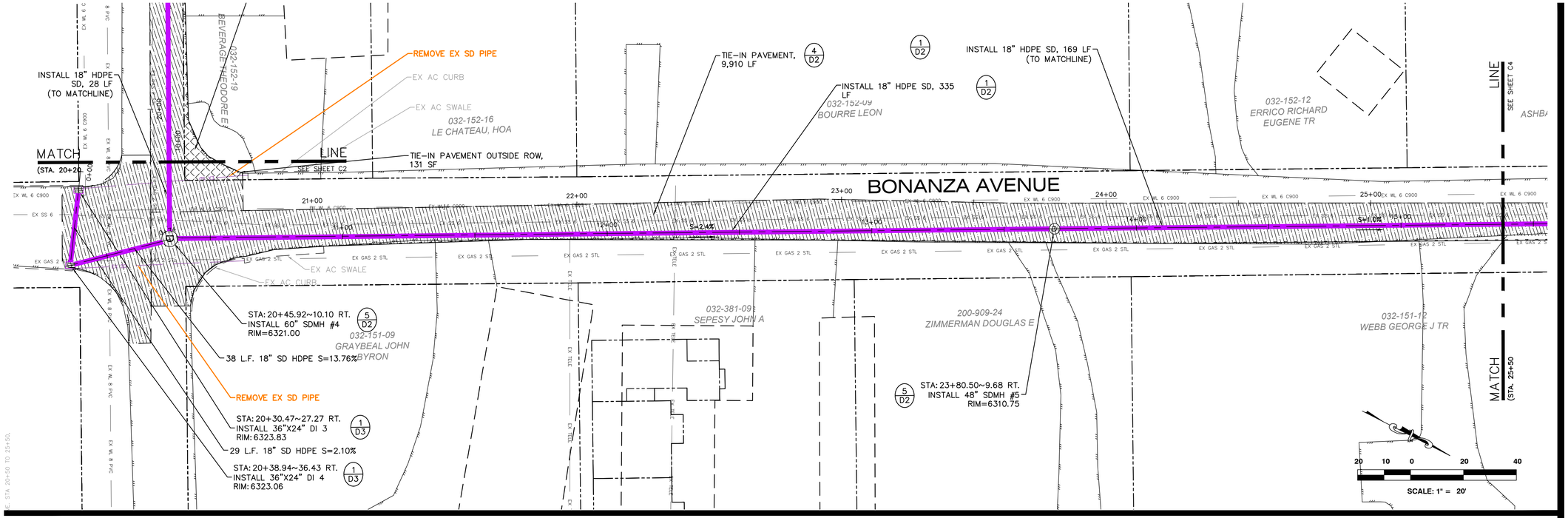
REV	DATE	DESCRIPTION	BY

30% DESIGN

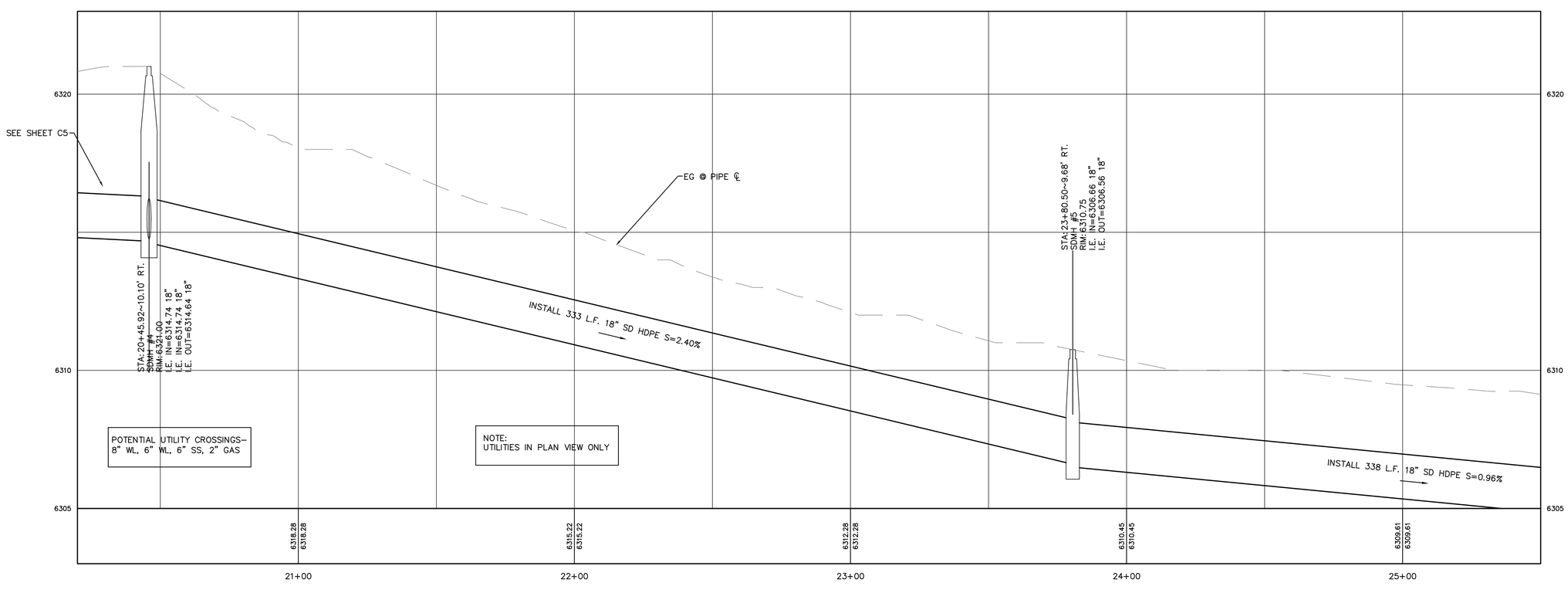
C2

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JC
CHECKED BY:	BM
JOB NO.:	8937.000

T:\Reno Projects\E31501200 - CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE.dwg\C5 PLAN & PROFILE-F ST. STA 15+20 TO 20+20,
05/24/2018 09:55 am Shaun.Buckman



BONANZA AVENUE– STA: 20+20 TO STA: 25+50



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X/X/X

SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-BONANZA AVE. STA 20+50 TO 25+50

SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

REV	DATE	DESCRIPTION	BY

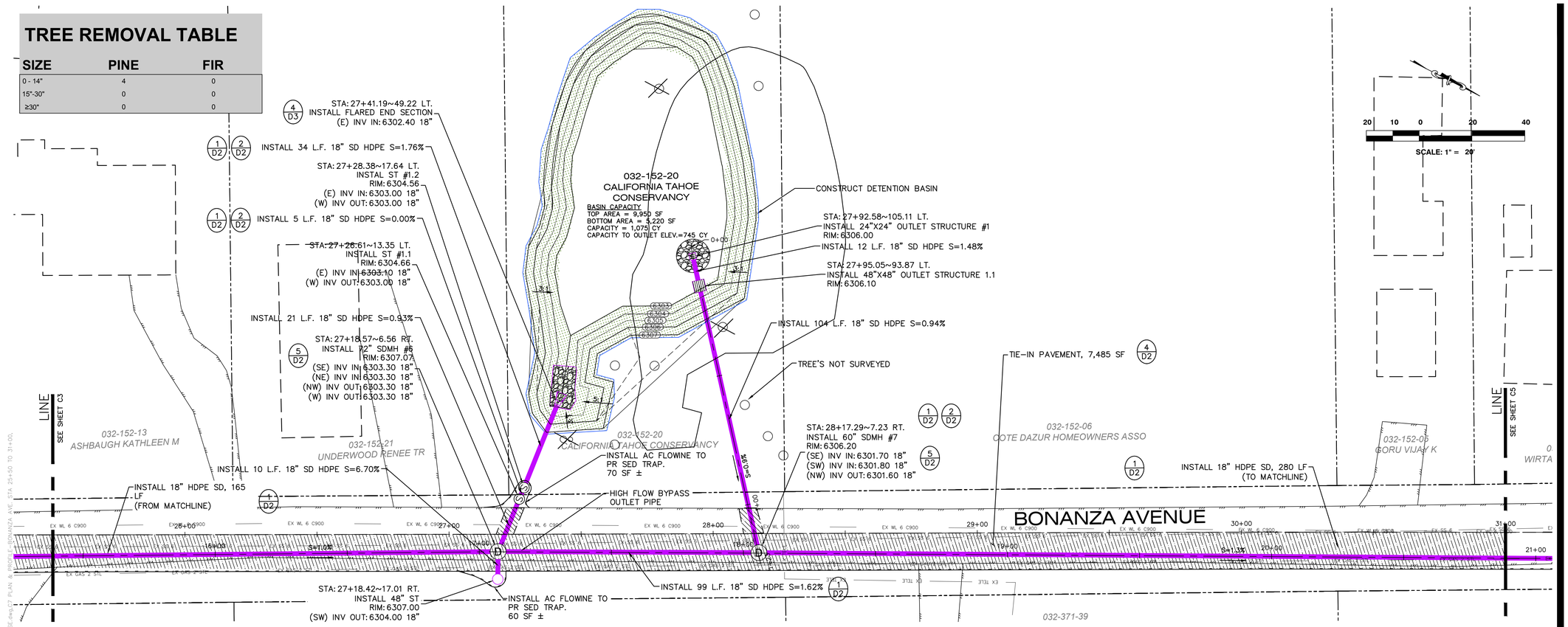
30% DESIGN

C3

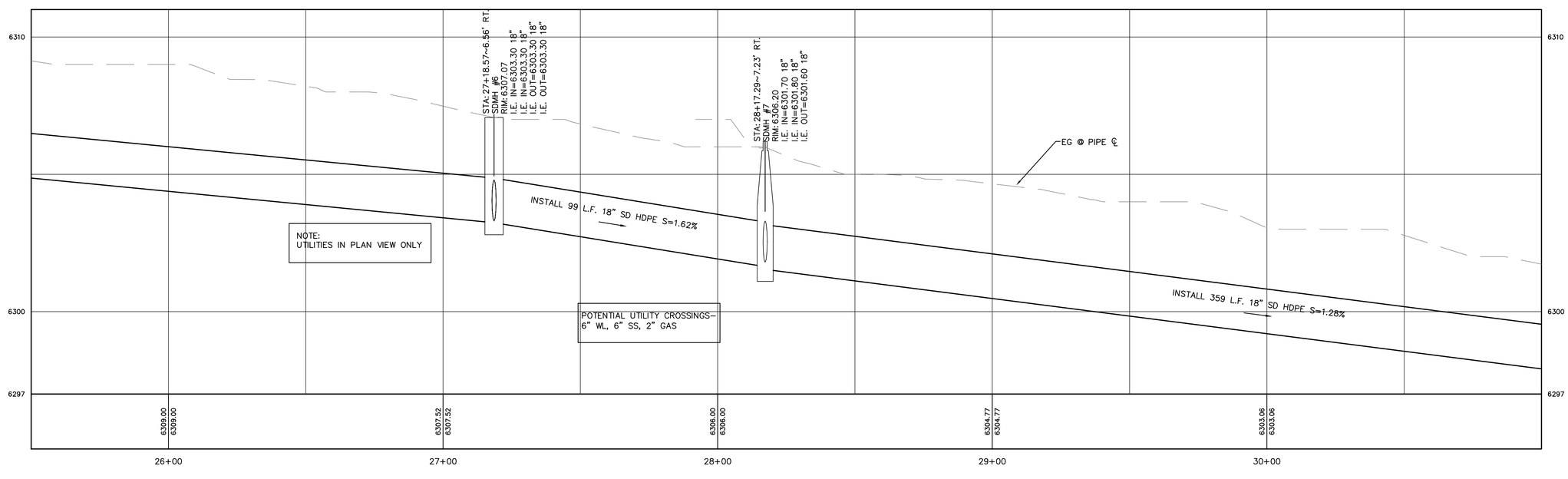
DATE:	NOVEMBER 2016
DRAWN BY:	JTC
DESIGNED BY:	BM/JC
CHECKED BY:	BM
JOB NO.:	8937.000

TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	4	0
15"-30"	0	0
≥30"	0	0



BONANZA AVENUE 1– STA: 25+50 TO STA: 31+00



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X/X/X

SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE-BONANZA AVE. STA 25+50 TO 31+00

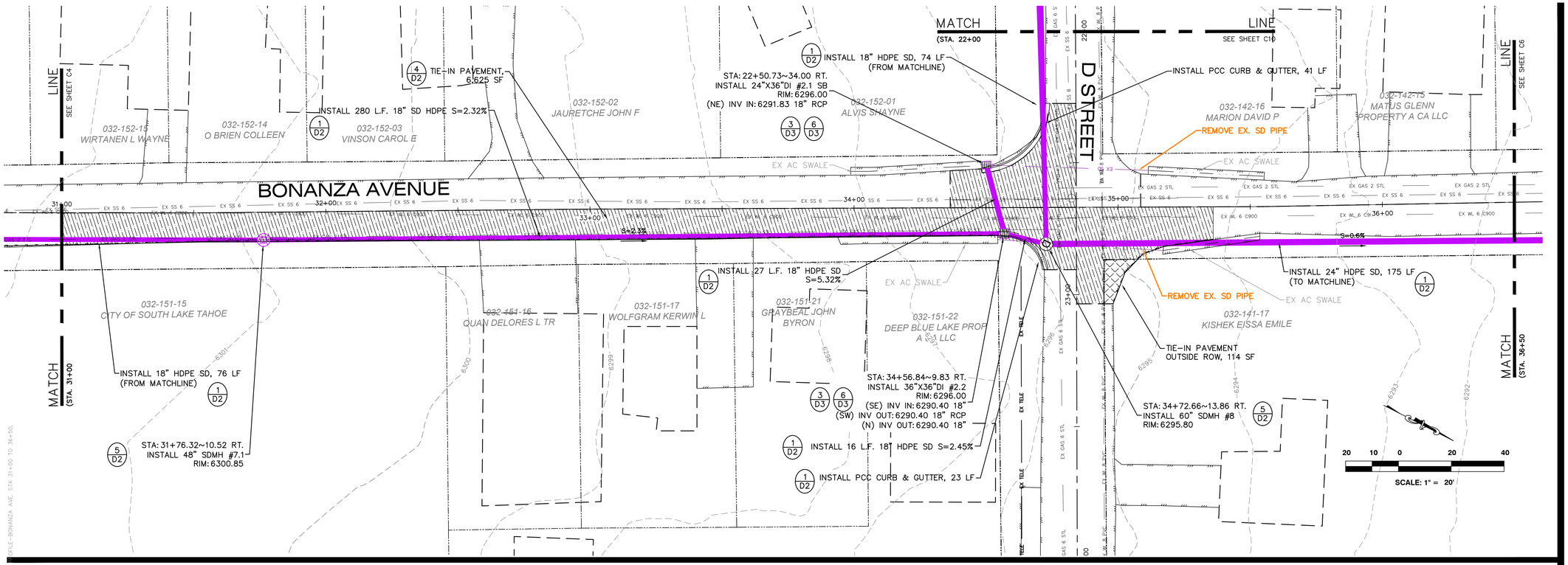
SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

REV	DATE	DESCRIPTION	BY

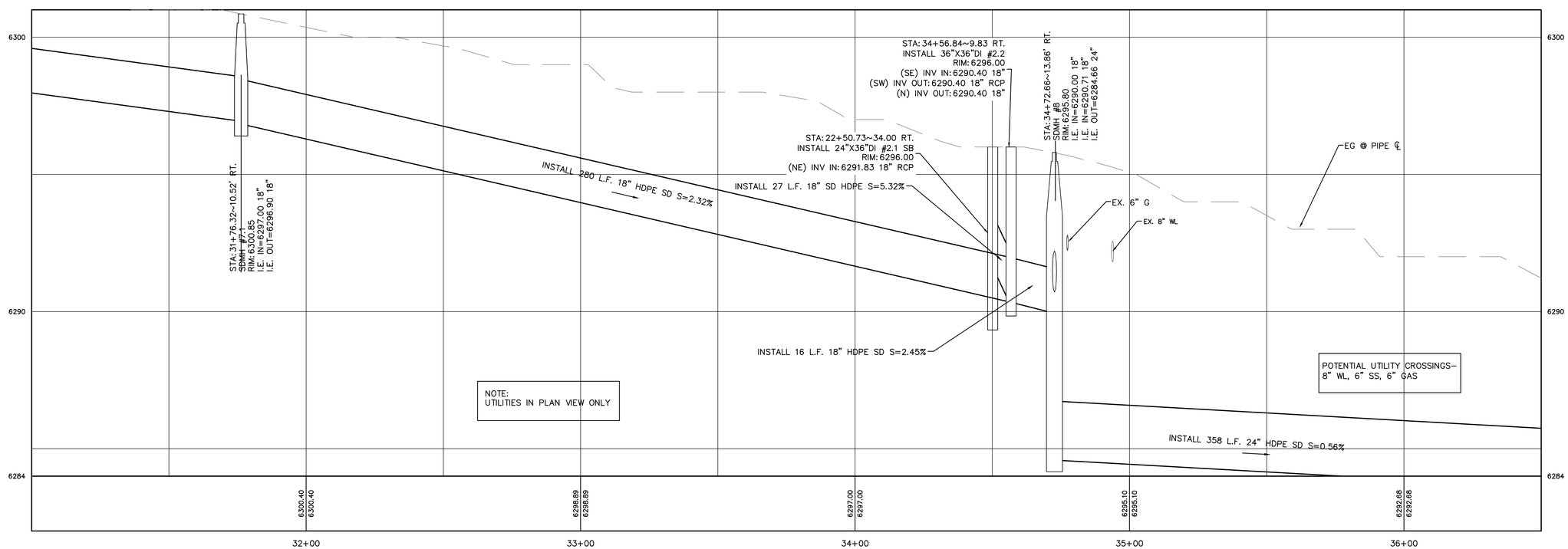
30% DESIGN

C4

DATE:	NOVEMBER 2016
DRAWN BY:	JTC
DESIGNED BY:	BM/JC
CHECKED BY:	BM
JOB NO.:	8937.000



BONANZA AVENUE 2 – STA: 31+00 TO STA: 36+50



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X/X/X

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-BONANZA AVE. STA 31+00 TO 36+50

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

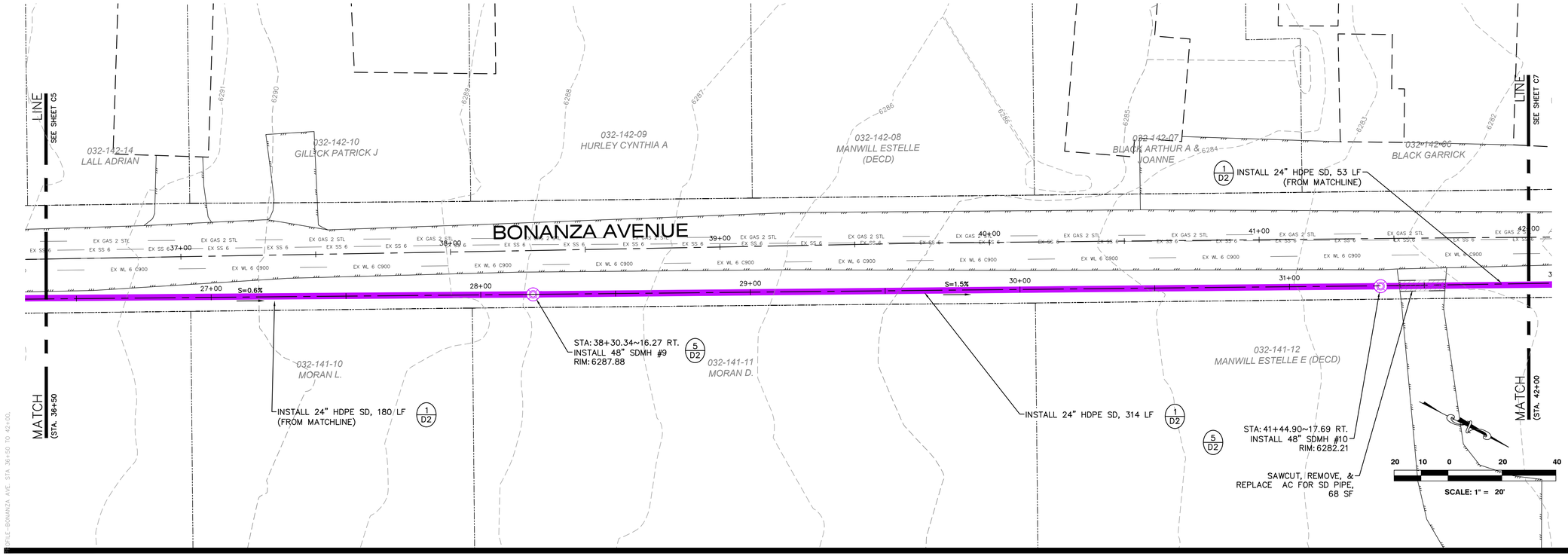
REV	DATE	DESCRIPTION	BY

30% DESIGN

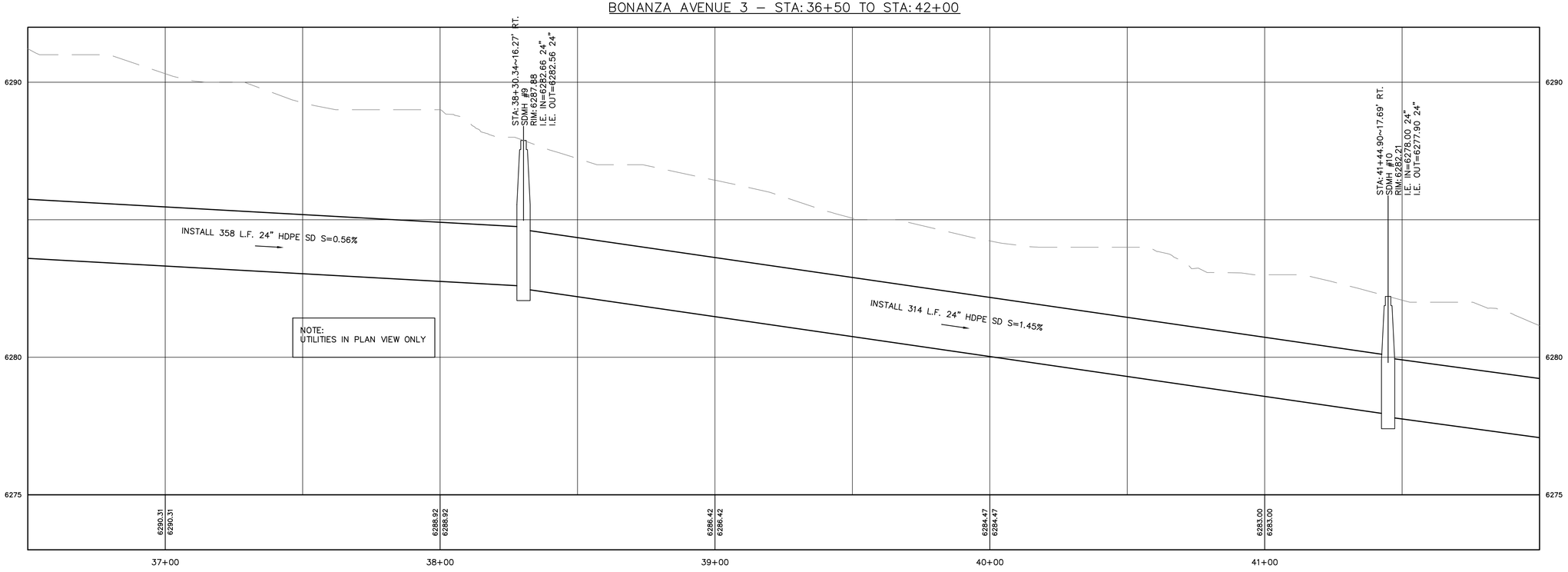
C5

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E21502100 – CSLT Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE 2.dwg,C8 PLAN & PROFILE-BONANZA AVE. STA 31+00 TO 36+50,
05/24/2018 09:57 am Shaun.Buckman



BONANZA AVENUE 3 – STA: 36+50 TO STA: 42+00



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X/X/X

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE-BONANZA AVE. STA 36+50 TO 42+00

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

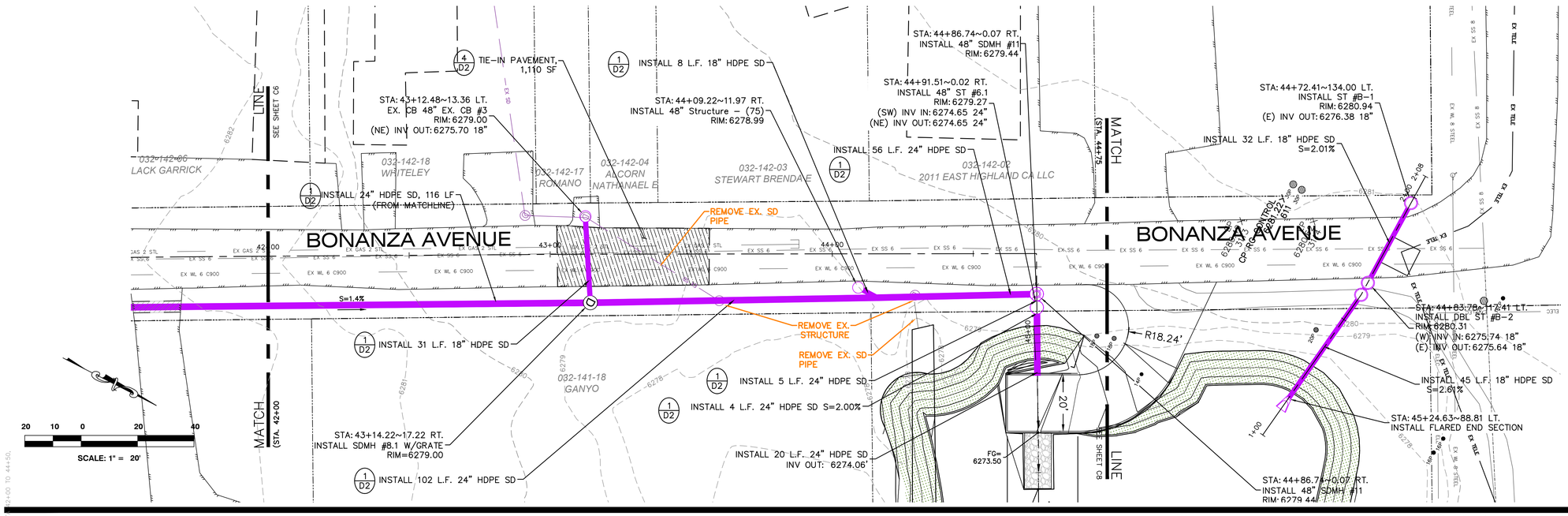
REV	DATE	DESCRIPTION	BY

30% DESIGN

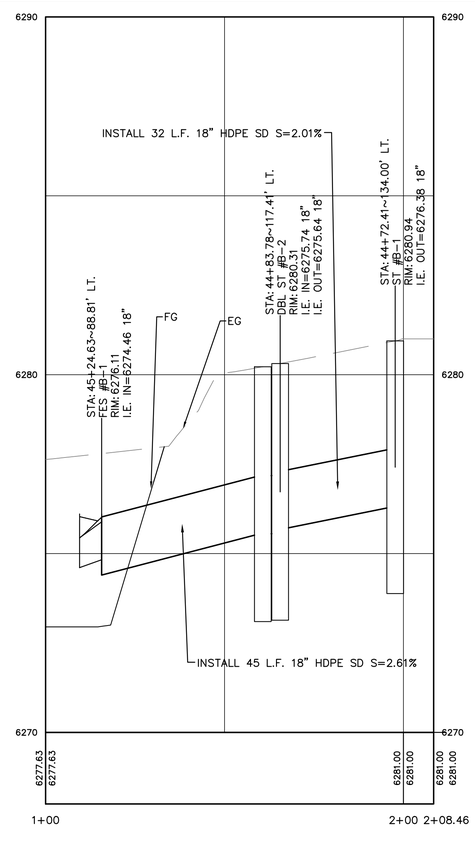
C6

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

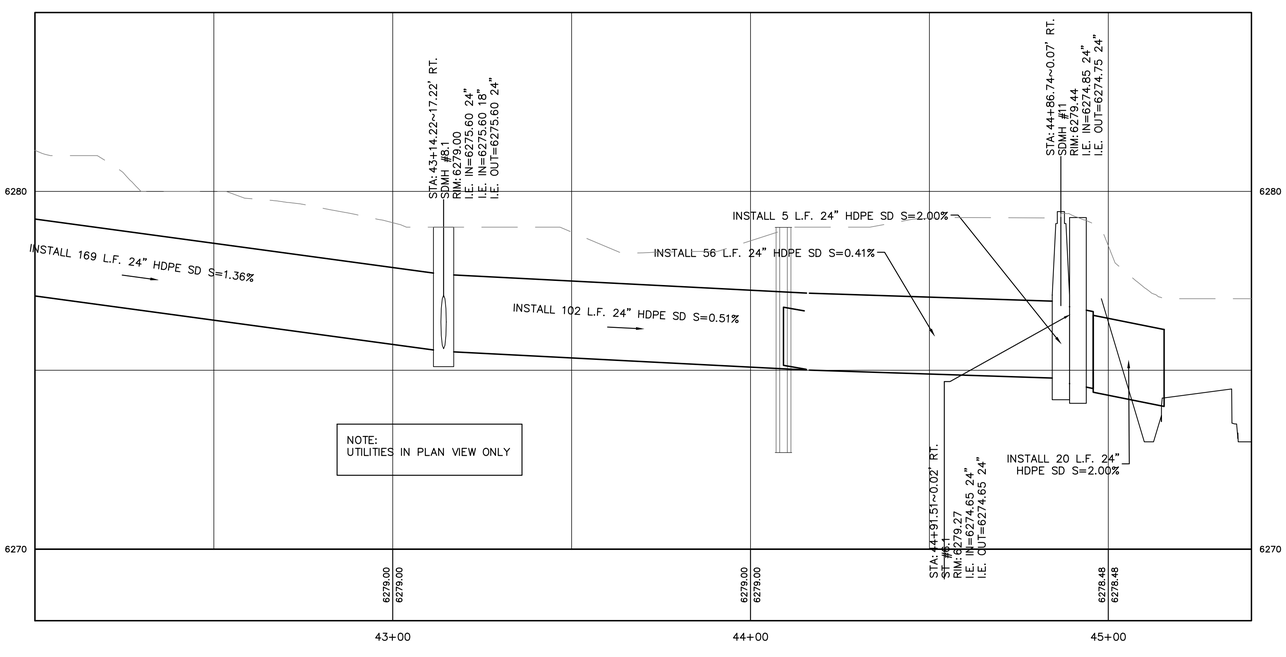
T:\Xerox Projects\Xerox Projects\CE15012100 – CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%Cad files 10-23-17\8937000 BASE 2.dwg\C9 PLAN & PROFILE-BONANZA AVE. STA 36+50 TO 42+00,
05/24/2018 09:57 am Shaun.Buckman



BONANZA AVE. AT B ST. – STA: 1+00 TO STA: 2+08.46



BONANZA AVENUE – STA: 42+00 TO STA: 45+40



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X/X/X

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE-BONANZA AVE. STA 42+00 TO 44+50

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C7

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

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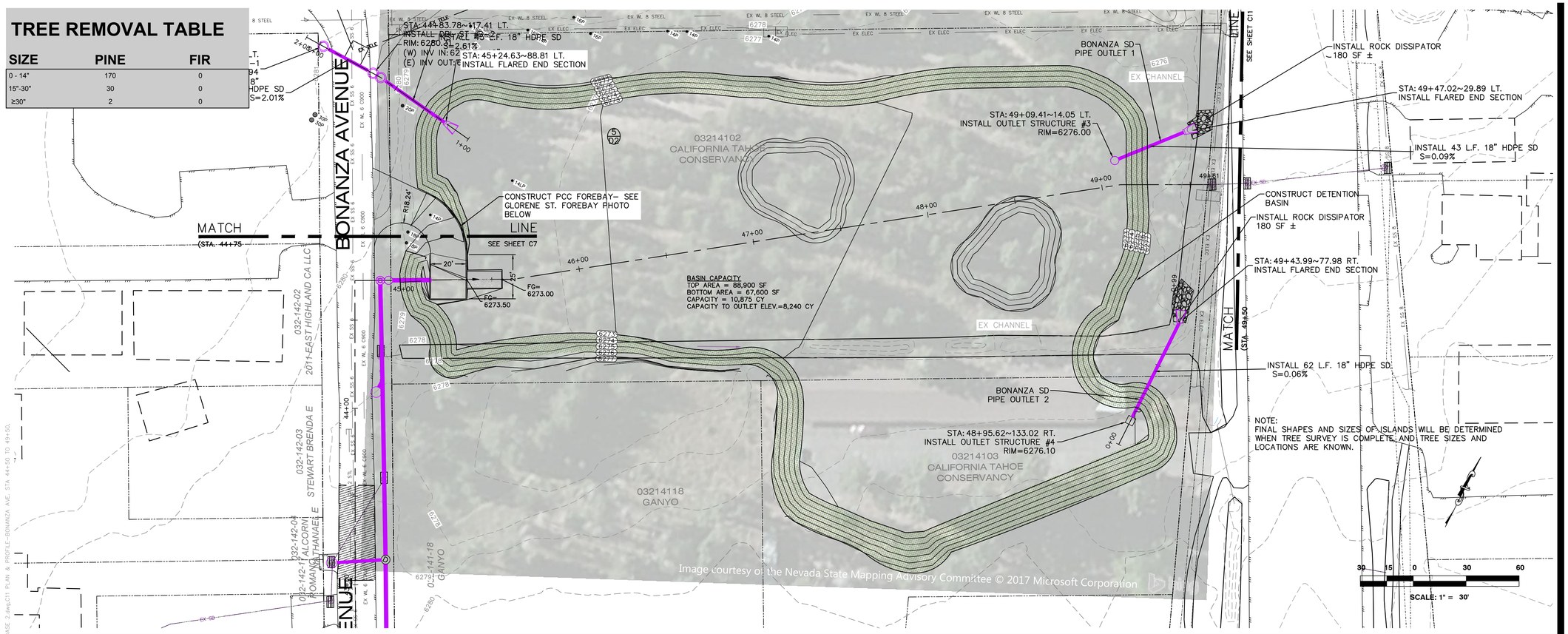
05/24/2018 09:58 am Shaun.Buckman

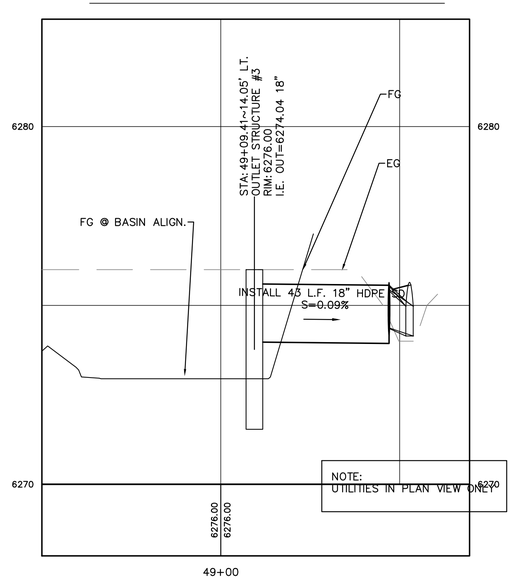
TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	170	0
15"-30"	30	0
≥30"	2	0

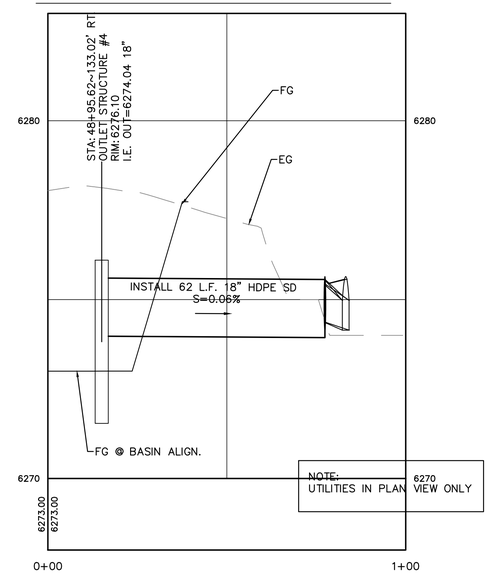


GLORENE ST. FOREBAY

BONANZA SD PIPE OUTLET 1



BONANZA SD PIPE OUTLET 2



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X/X/X

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE-BONANZA AVE. STA 44+50 TO 49+50

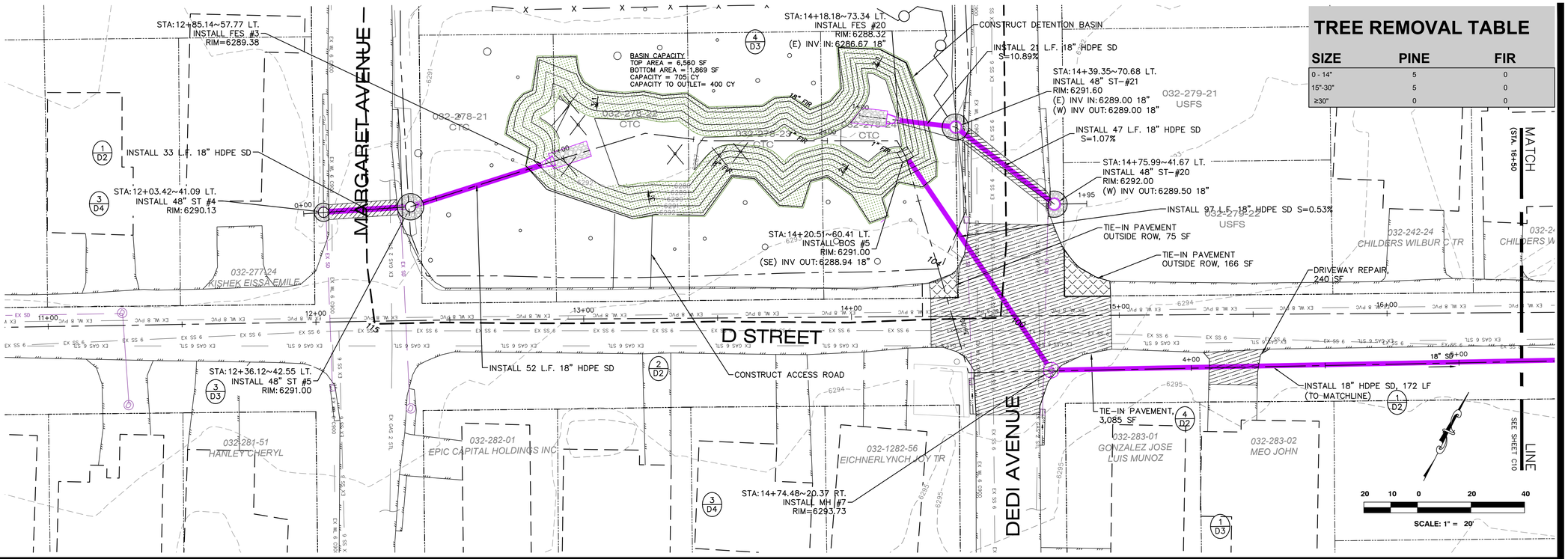
SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

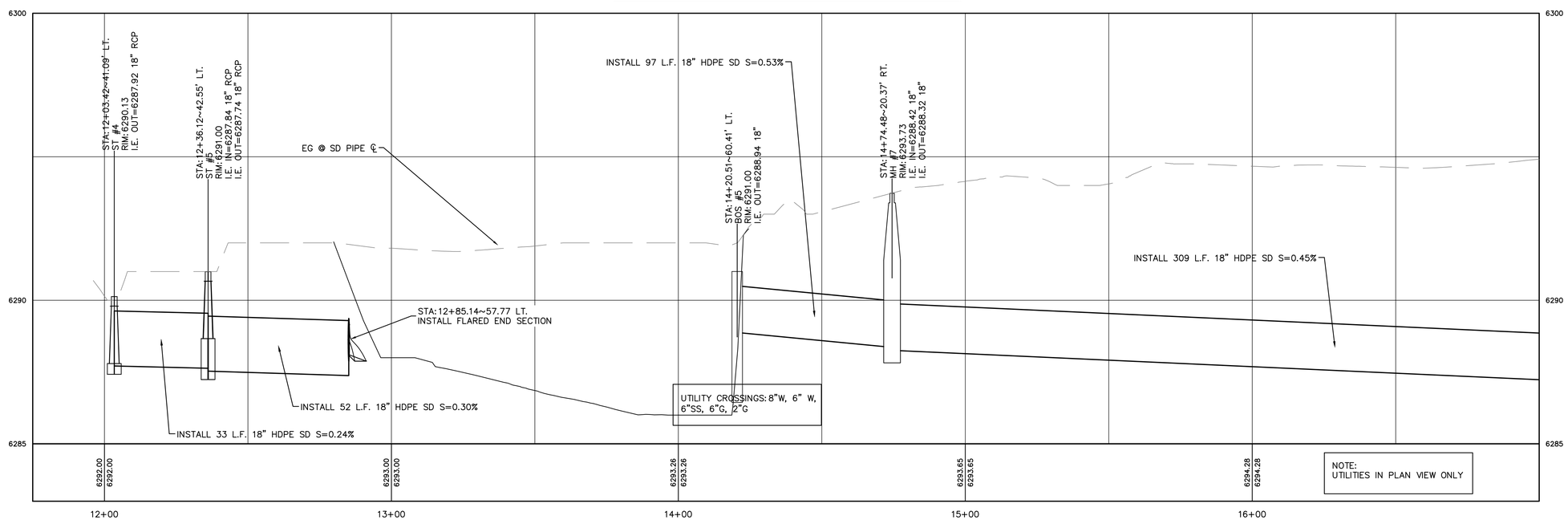
C8

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	5	0
15"-30"	5	0
≥30"	0	0



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE-D STREET STA P12+00 TO P16+50

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C9

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

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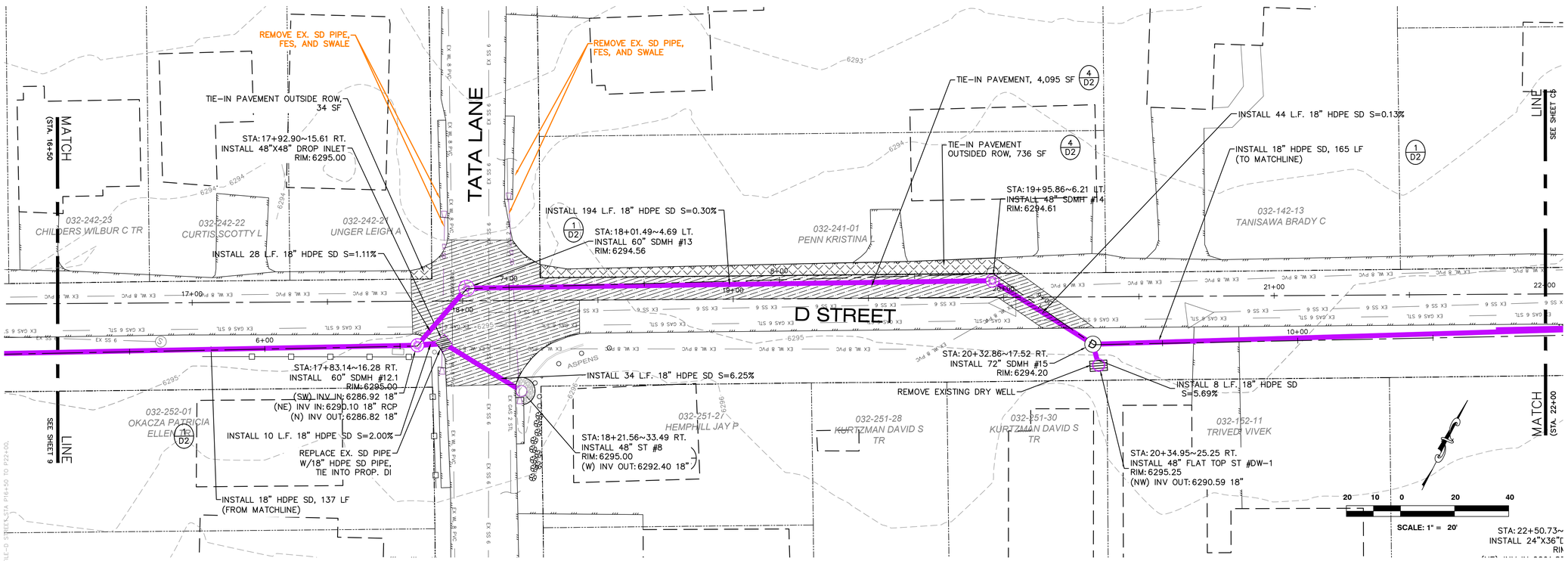
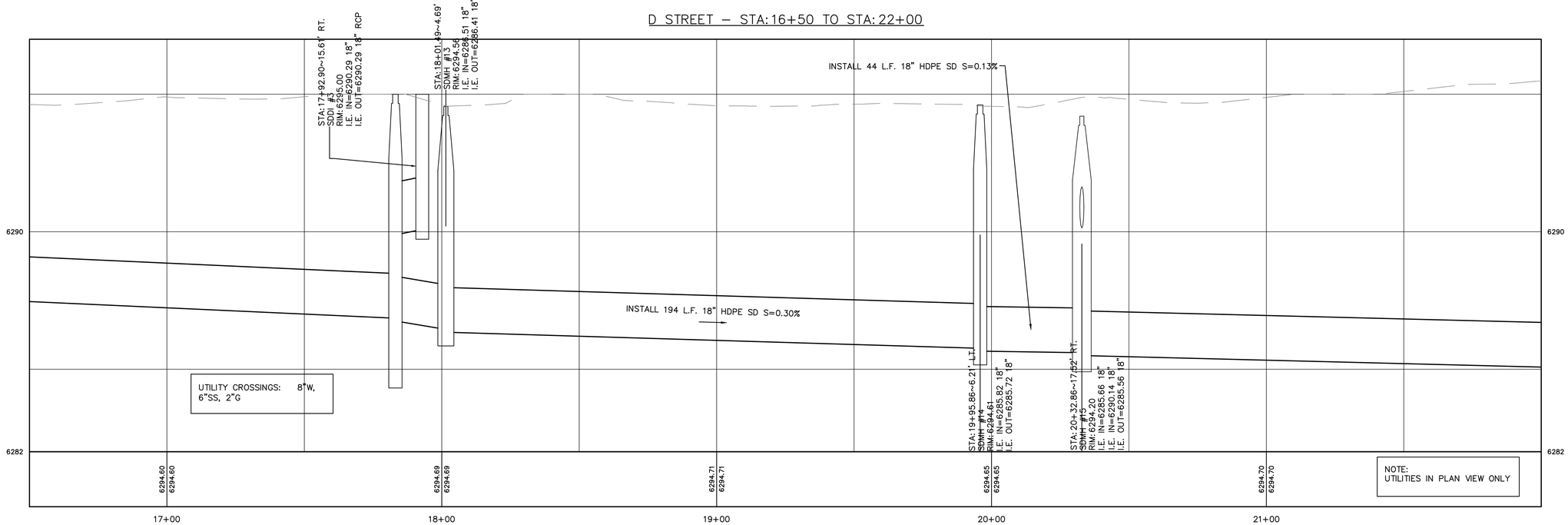
05/24/2018 10:00 am Shaun.Buckman





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X/X/X

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE-D STREET STA P16+50 TO P22+00

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C10

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

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05/24/2018 10:01 am Shaun.Buckman

200 100 0 100 200

SCALE: 1" = 100'

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X/X/X

SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
GREENBELT PLAN AREA

SOUTH LAKE TAHOE EL DORADO COUNTY CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

X3

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JTC
CHECKED BY:	BM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E315012100 - CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 32ft\cad files 10-23-17\8937000 SHEET INDEX.dwg\C131 GREENBELT PLAN AREA, 05/24/2018 10:03 am Shaun.Buckman

CONCEPTUAL PLAN

TAHOE VALLEY GREENBELT
SOUTH LAKE TAHOE, CA • THE CITY OF SOUTH LAKE TAHOE

DESIGNWORKSHOP
June 2018

LUMOS & ASSOCIATES
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X/X/X

SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT
GREENBELT CONCEPT PLAN

SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

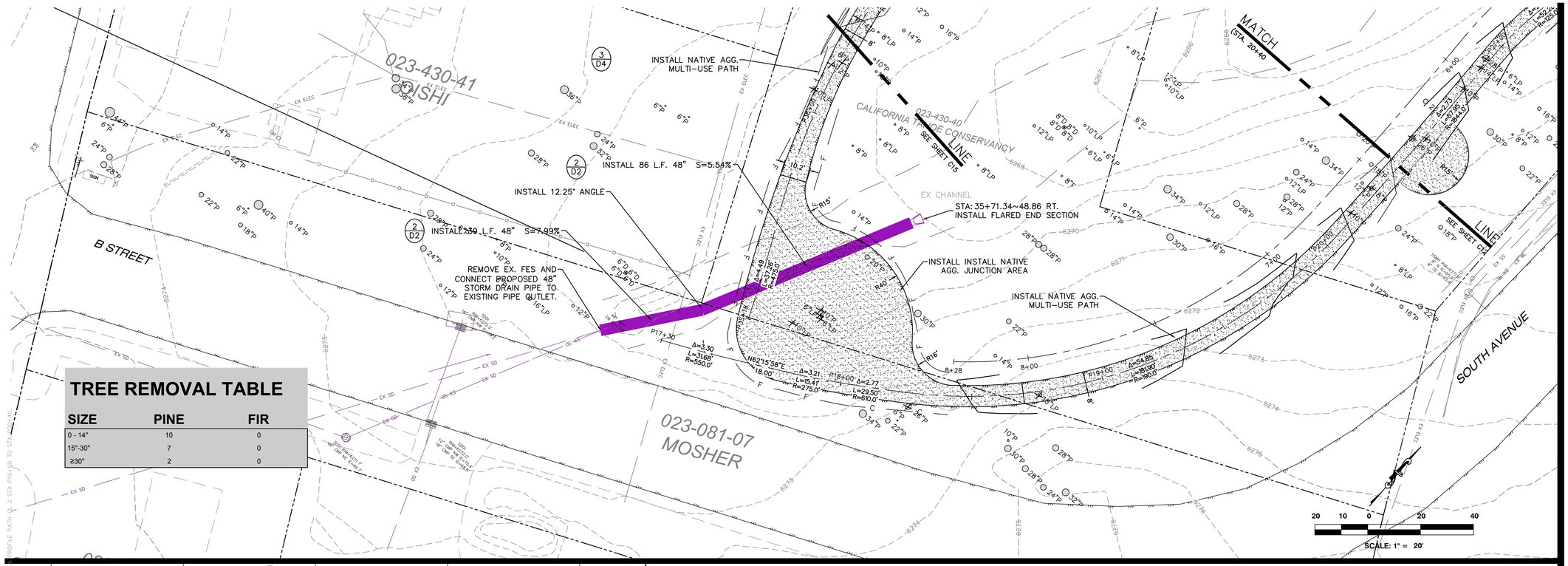
REV	DATE	DESCRIPTION	BY

30% DESIGN

XCP

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JTC
CHECKED BY:	BM
JOB NO.:	8937.000

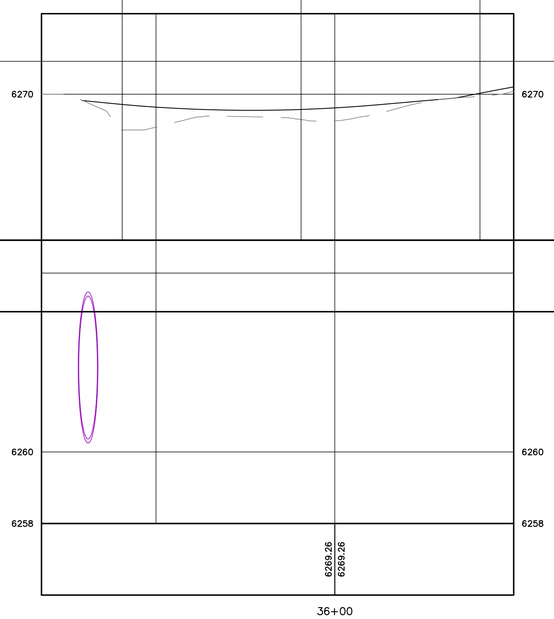
R:\Reno Projects\U31501210 – CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 SHEET INDEX.dwg,C13.2GREENBELT CONCEPT, 06/11/2018 04:56 pm ivan.trujillo



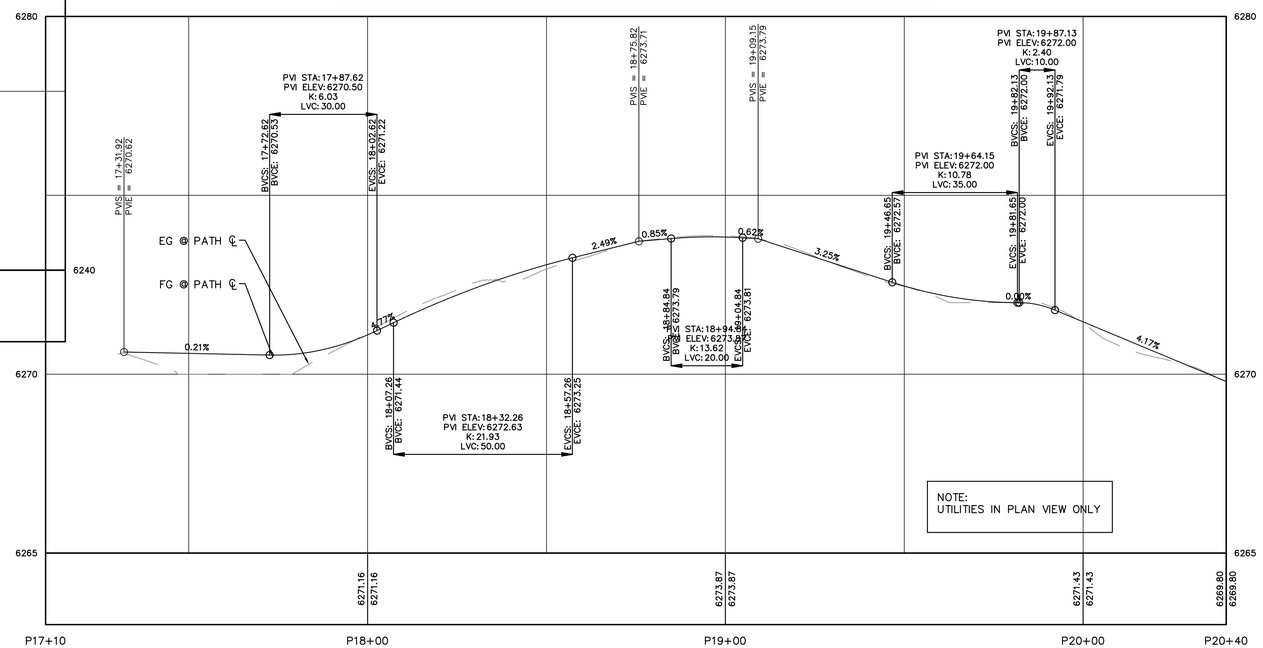
TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	10	0
15"-30"	7	0
≥30"	2	0

PROPOSED PATH CL 3 STA 2+82 – STA: 35+18 TO STA: 36+50



PROPOSED PATH CL 2 STA 20+16.69 – STA: 17+10 TO STA: 20+40



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH CL 2 STA P15+00 TO STA P20+40

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

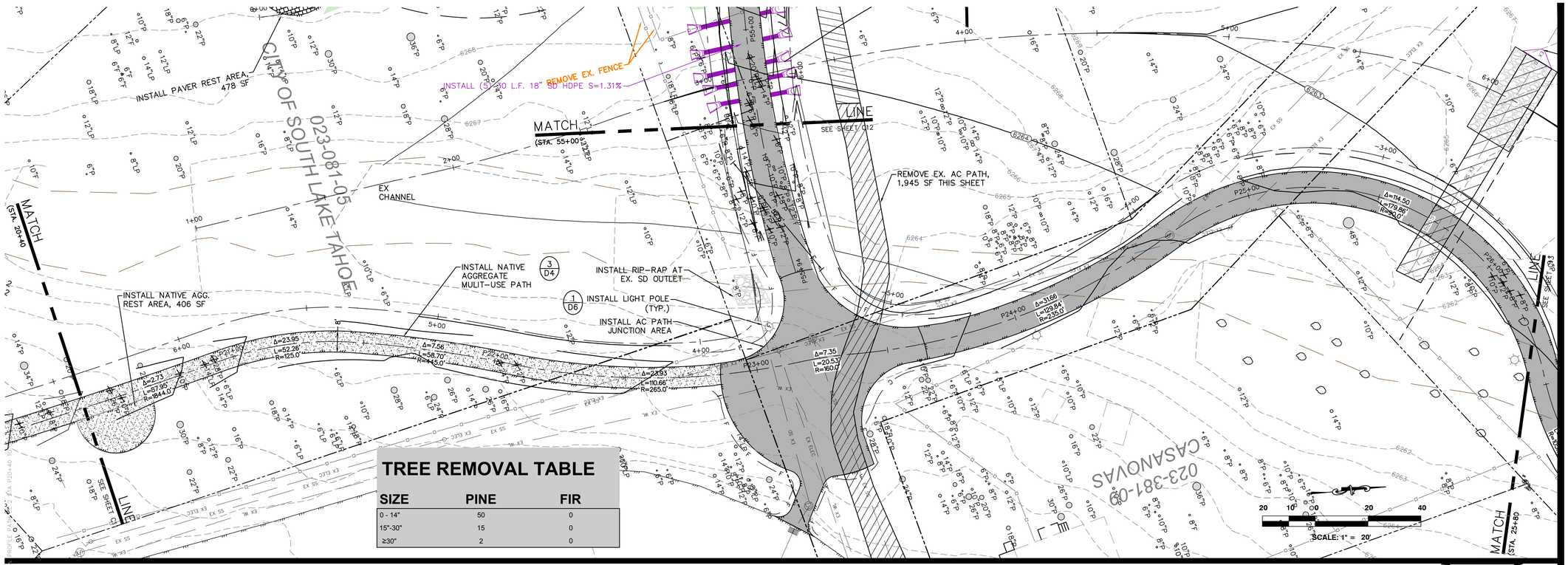
REV	DATE	DESCRIPTION	BY

30% DESIGN

C11

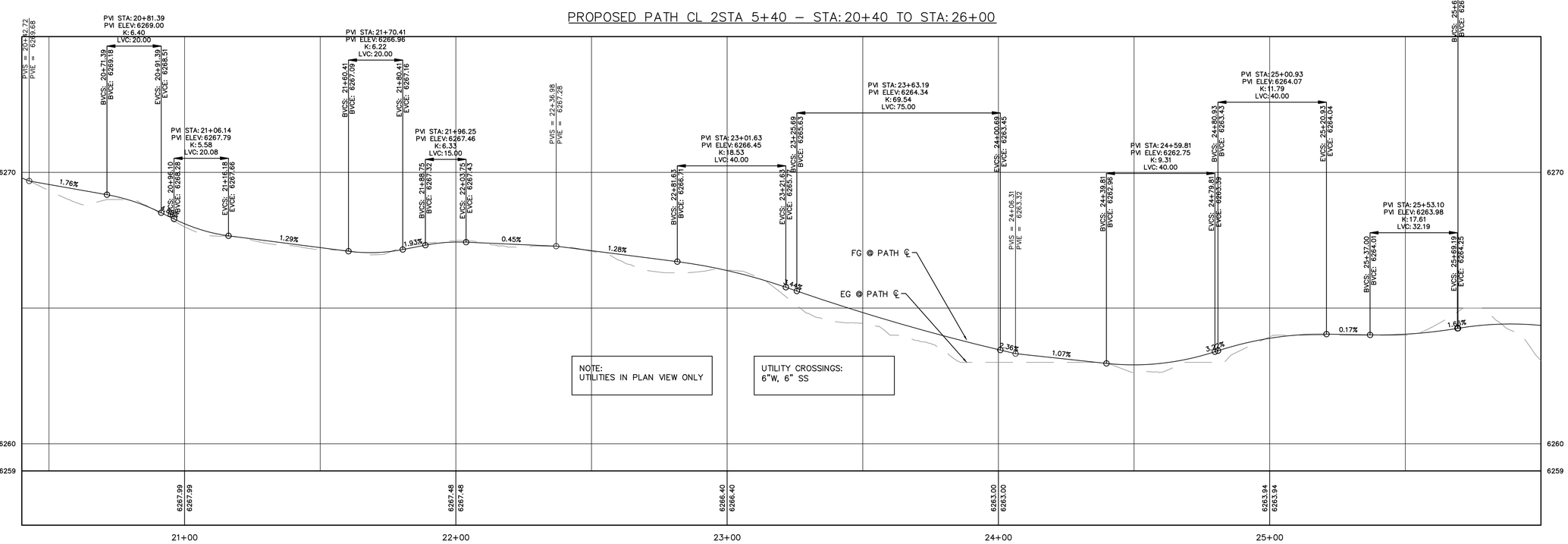
DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E3150\2100 – CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%Cost Files 10-23-17\8937.000 BASE 21.dwg\C14 PLAN & PROFILE PATH CL 2 STA P15+00 TO STA P20+40
05/24/2018 10:05 am Shaun.Buckman



TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	50	0
15"-30"	15	0
≥30"	2	0



NOTE:
UTILITIES IN PLAN VIEW ONLY

UTILITY CROSSINGS:
6"W, 6" SS

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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH CL 2 STA P20+40 TO STA P25+80

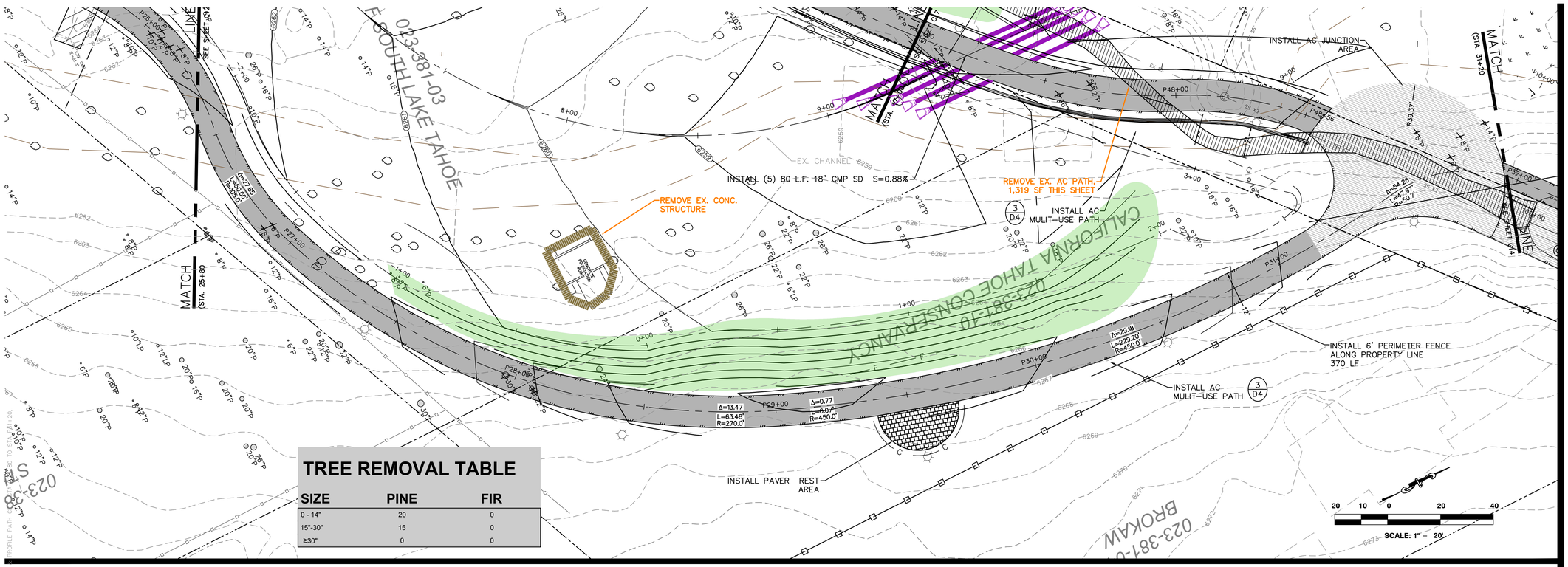
SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

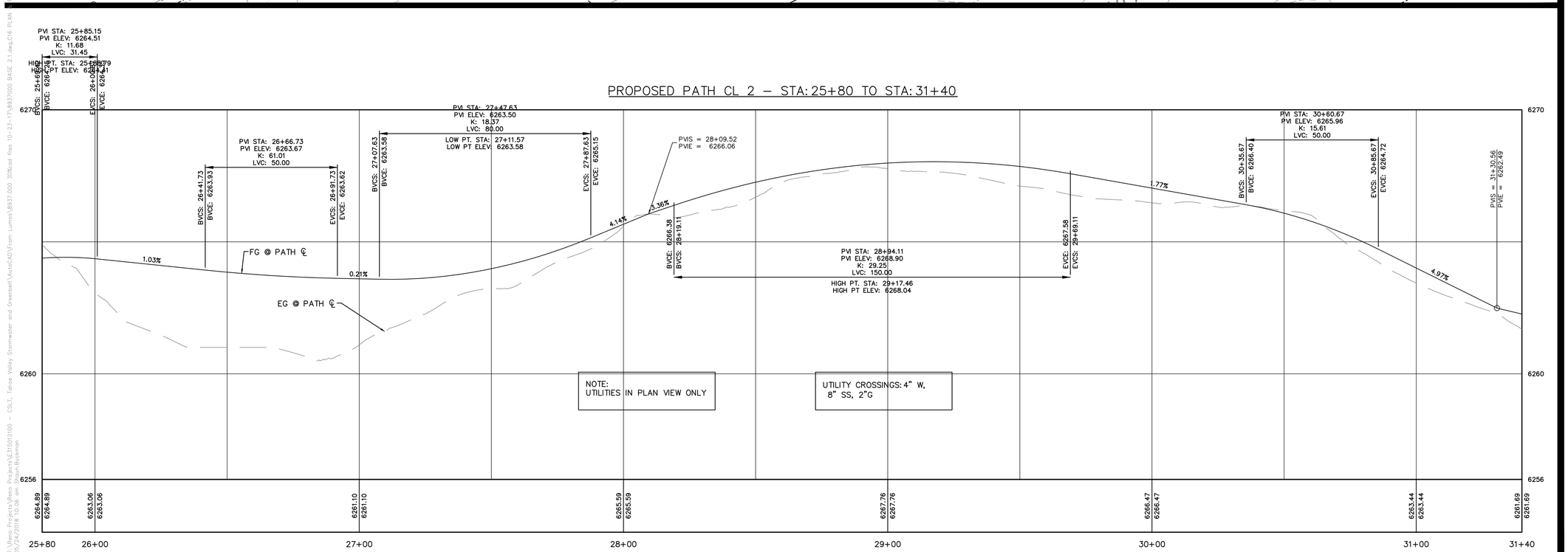
C12

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	20	0
15"-30"	15	0
≥30"	0	0



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH CL 2 STA P25+80 TO STA P31+20

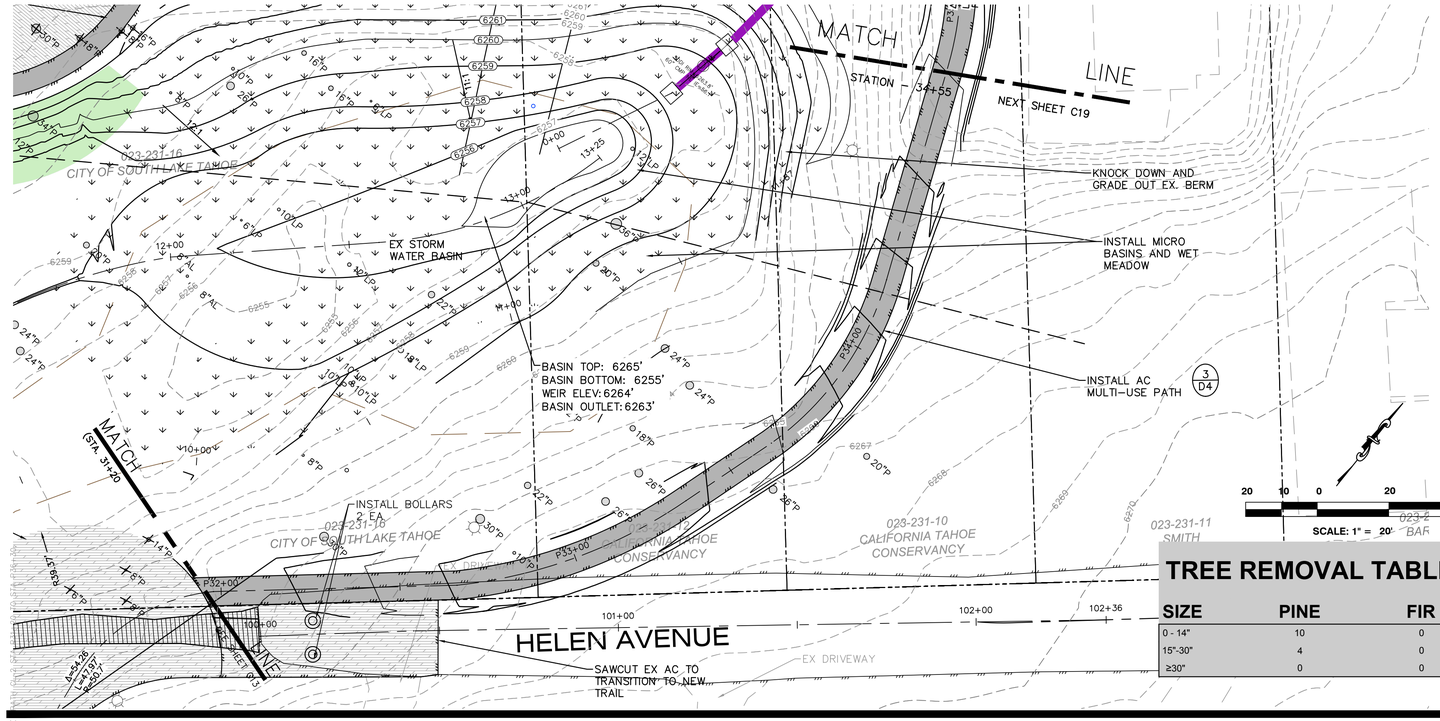
SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C13

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



TREE REMOVAL TABLE

SIZE	PINE	FIR
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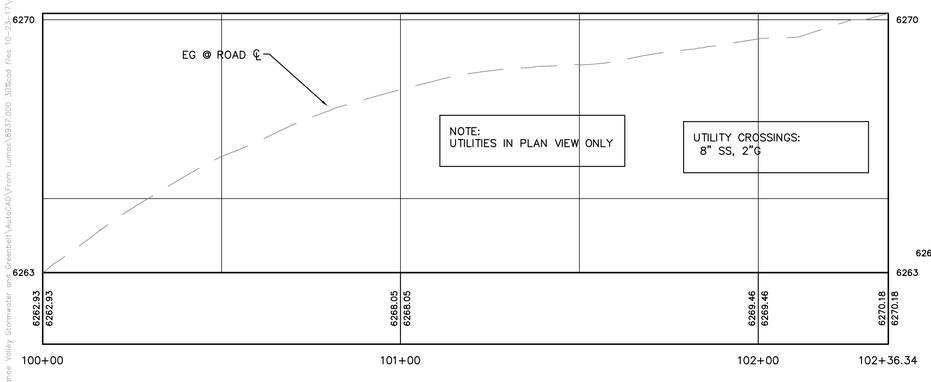
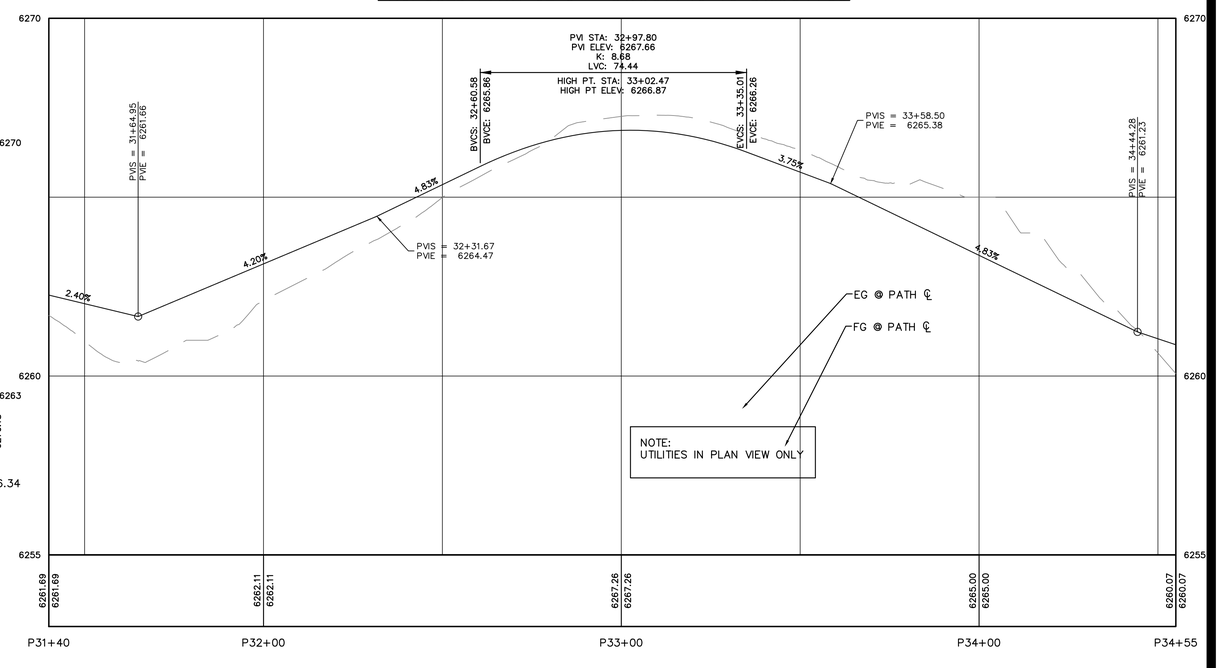
15"-30"	4	0
≥30"	0	0

HELEN AVENUE CL – STA:100+00 TO STA:102+36.34



PROPOSED PATH CL 3 – STA:31+40 TO STA:34+55



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH CL 2 STA P31+20 TO STA P36+30

SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

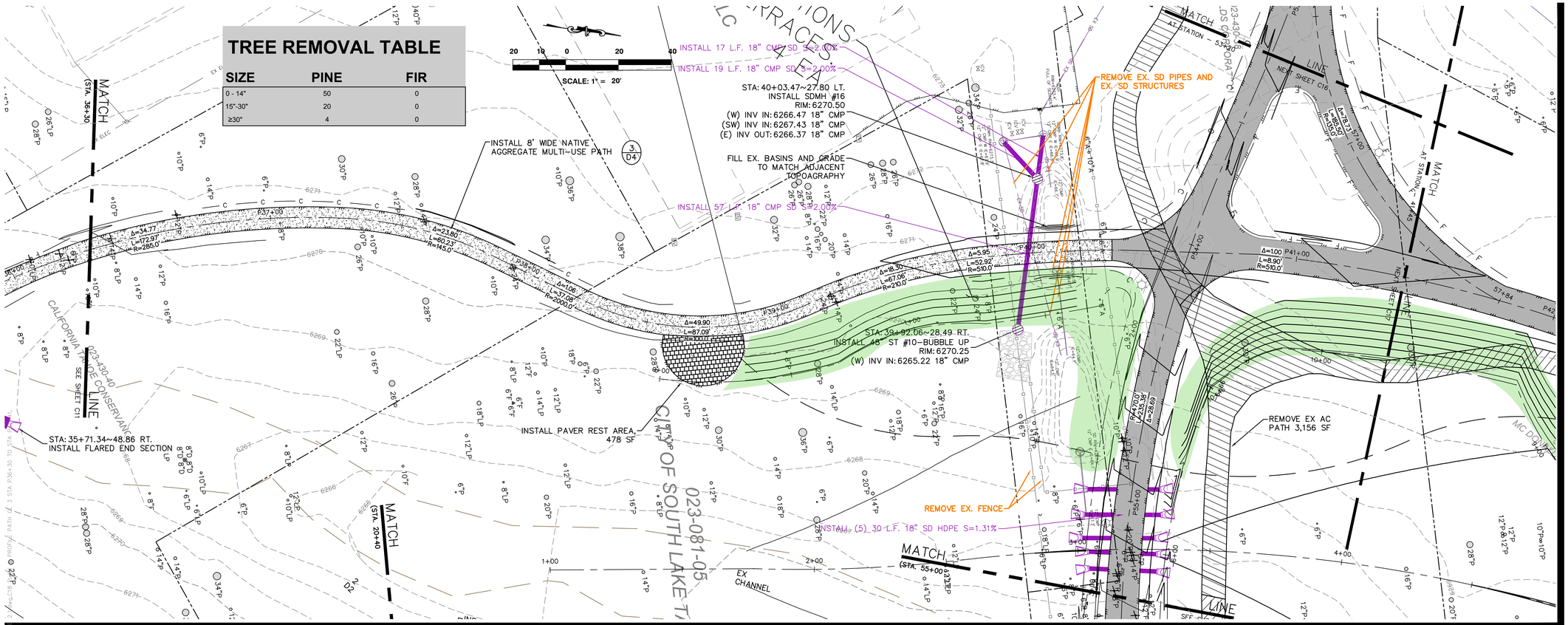
REV	DATE	DESCRIPTION	BY

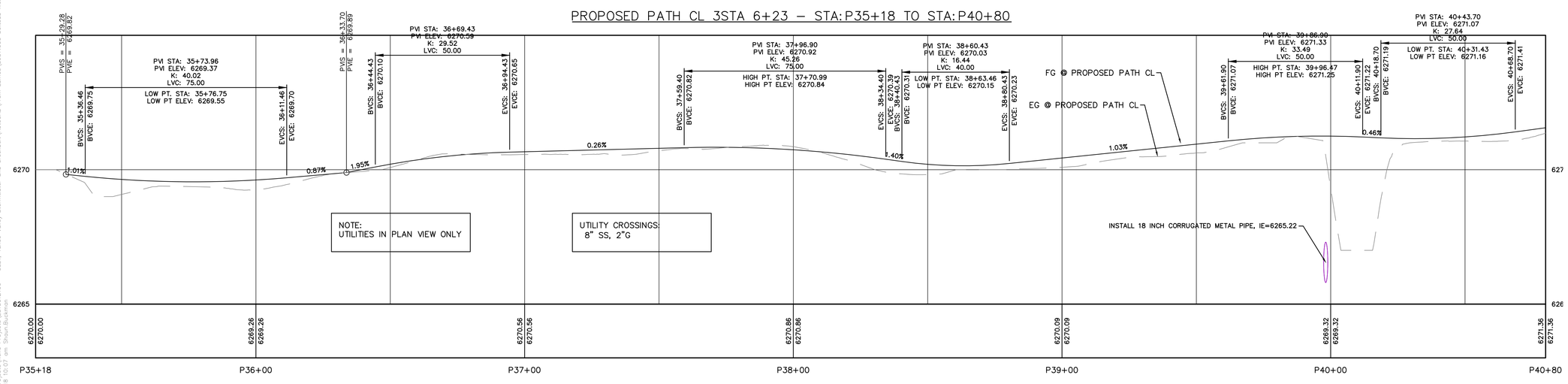
C14

DATE:	MAY 2017
DRAWN BY:	JTC
DESIGNED BY:	JTC/BEM
CHECKED BY:	BEM
JOB NO.:	8937.000

TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	50	0
15"-30"	20	0
≥30"	4	0





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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH CL 3 STA P36+30 TO STA P41+41

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C15

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
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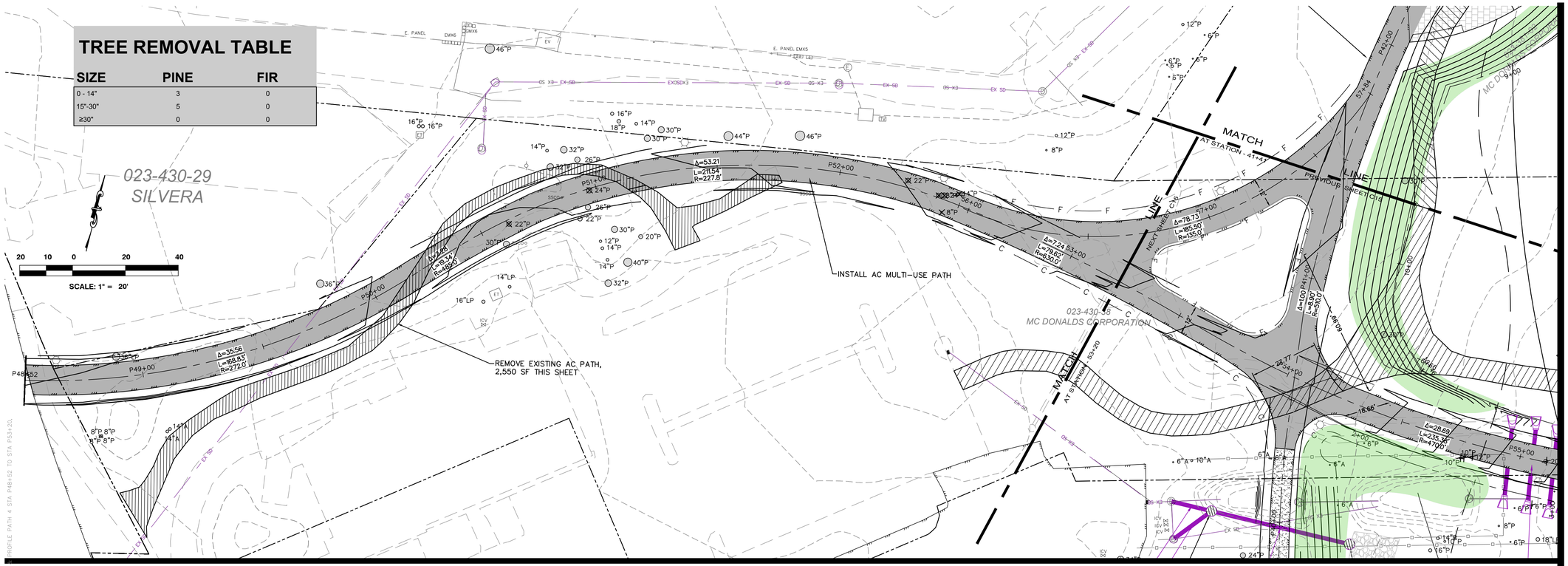
JOB NO.:	8937.000

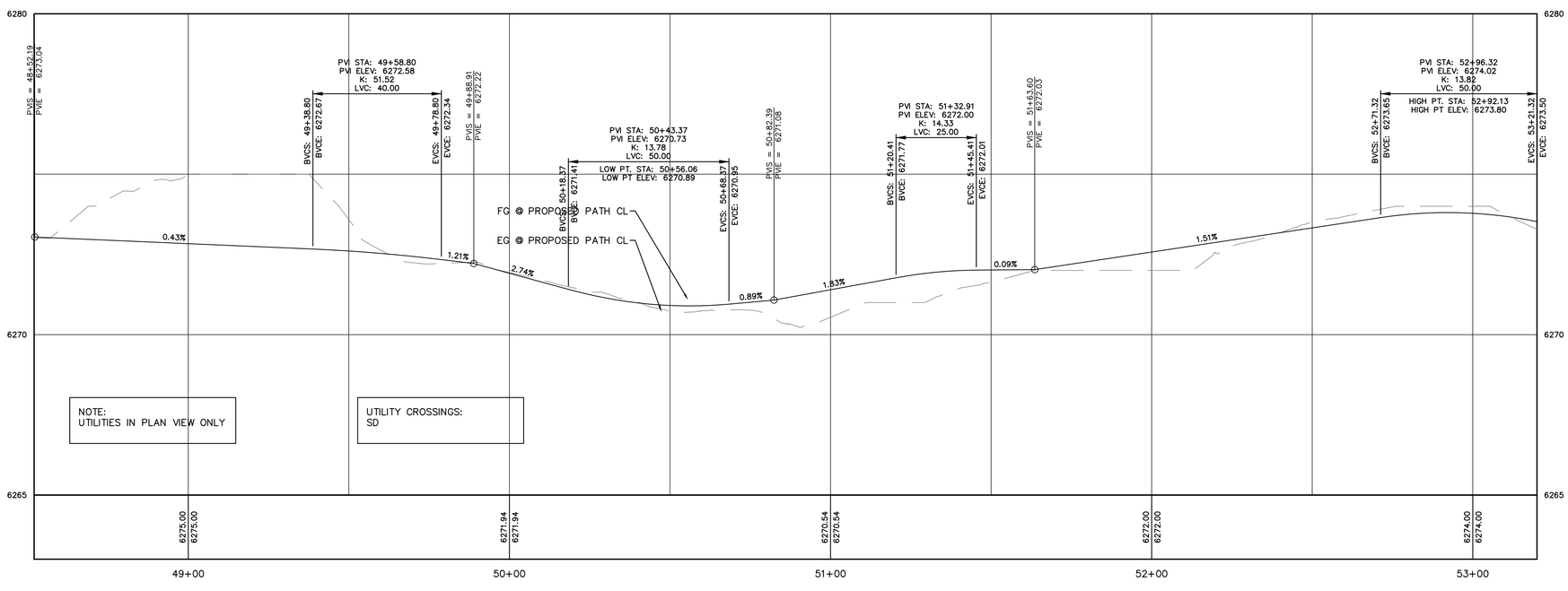
T:\Xerox Projects\Xerox Projects\E3150\2100 - CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%Cost files 10-23-17\8937000 Bikepath 05/24/2018 10:07 am Shaun.Buckman

TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	3	0
15"-30"	5	0
≥30"	0	0



PROPOSED PATH CL 4STA 7+45.08 – STA:48+52 TO STA:53+20



NOTE:
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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE PATH 4 STA P48+52 TO STA P53+20

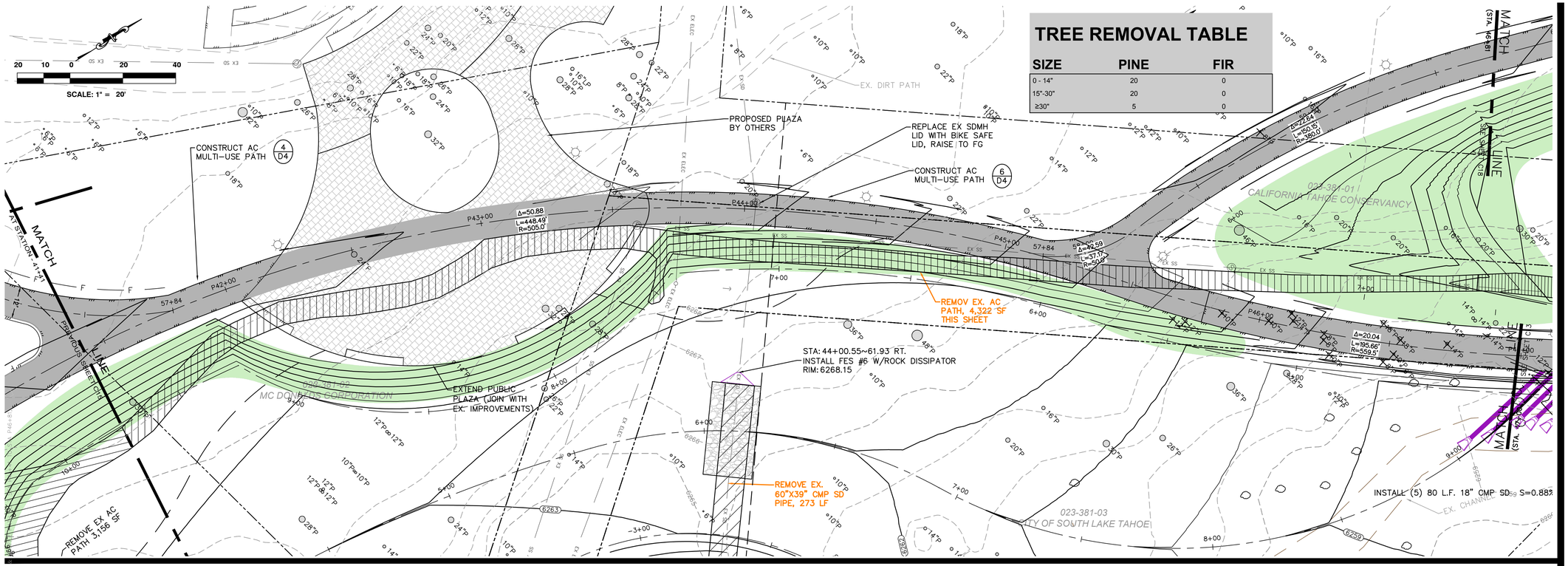
SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C16

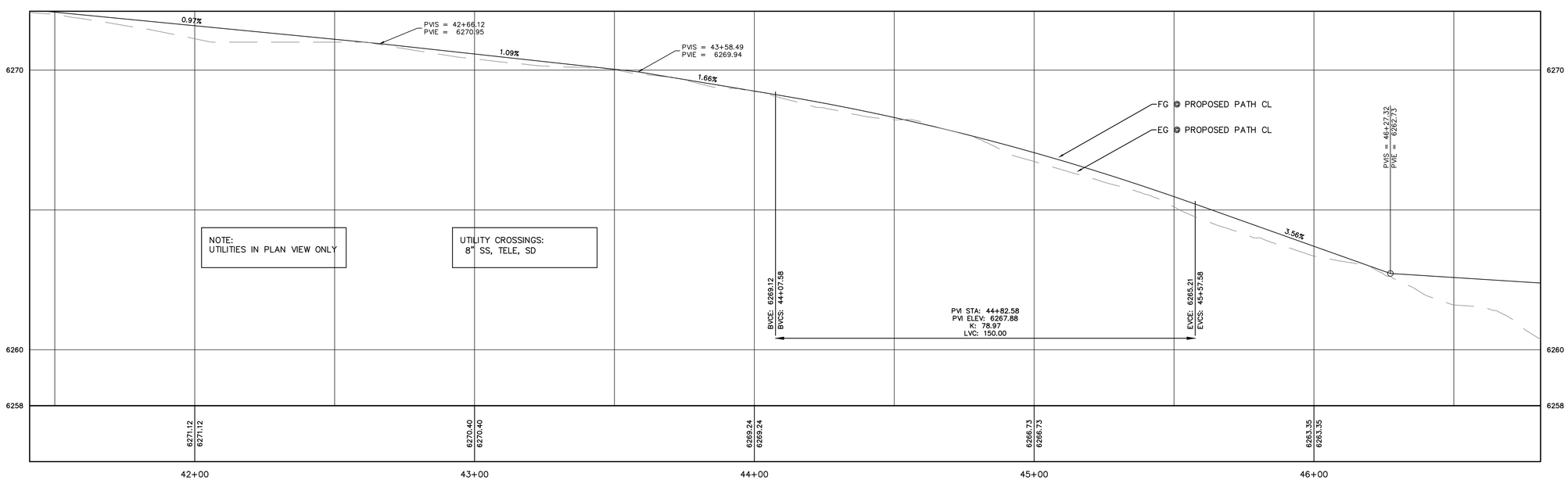
DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	20	0
15"-30"	20	0
≥30"	5	0

PROPOSED PATH CL 3 – STA: 41+41 TO STA: 46+81



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH CL 3 STA P41+41 TO STA P46+81

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C17

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
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JOB NO.:	8937.000

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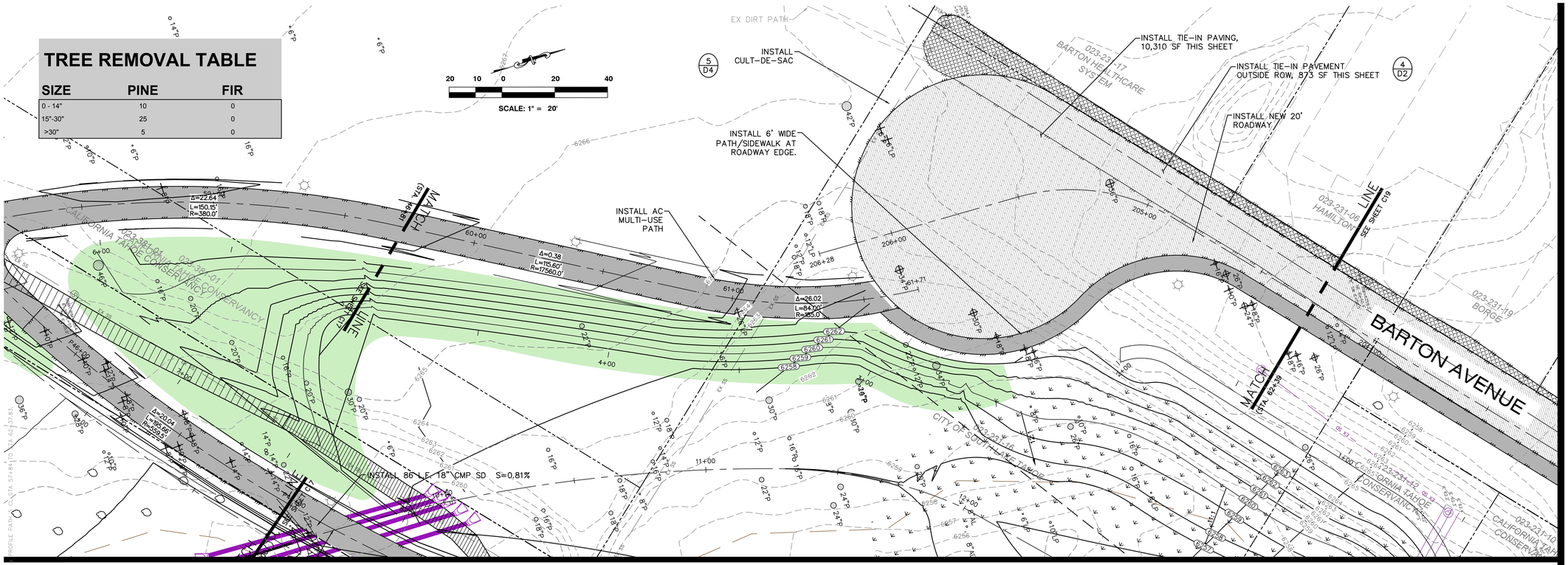
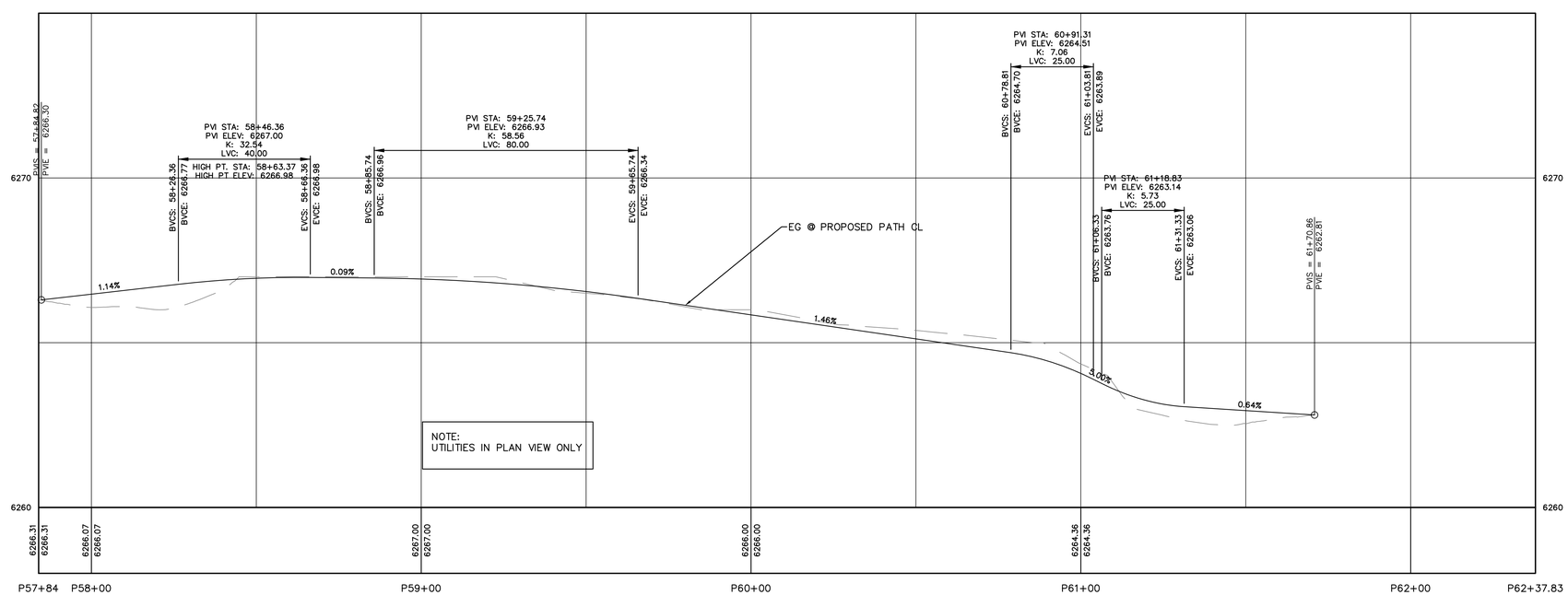
05/24/2018 10:08 am Shaun.Buckman

TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	10	0
15"-30"	25	0
>30"	5	0



PROPOSED PATH 5 CL – STA:P57+84 TO STA:P62+37.83



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH 5 CL STA 57+84 TO STA 62+37.83

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C18

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
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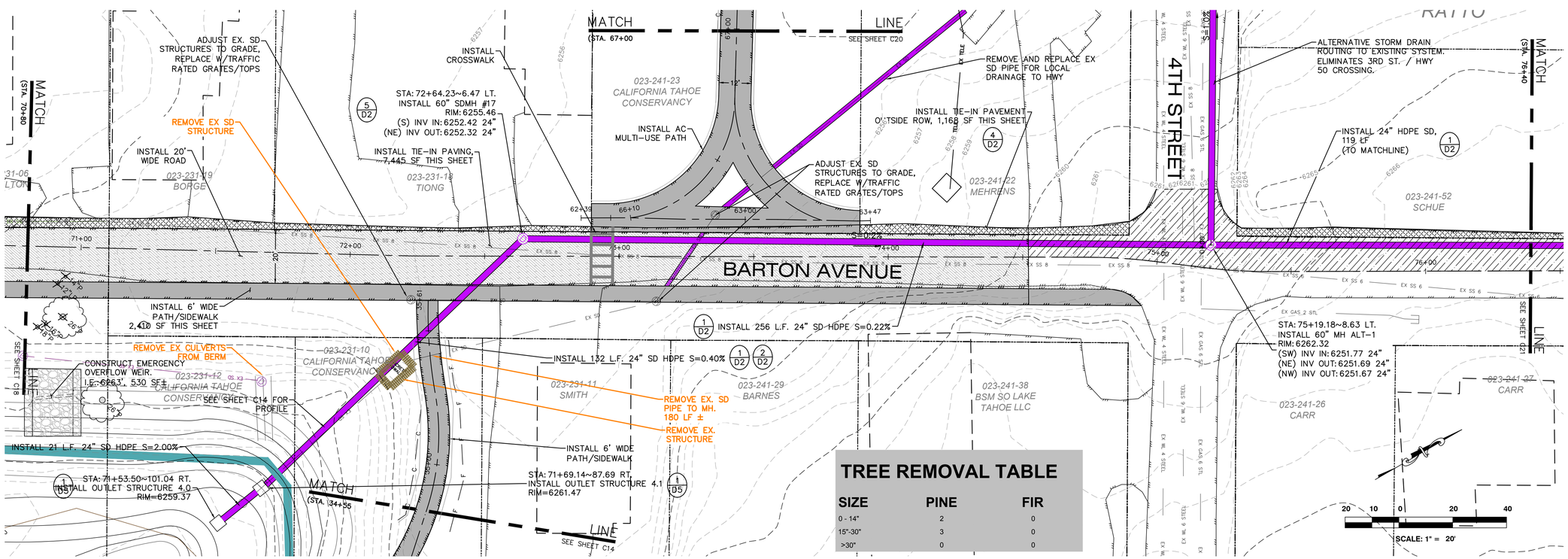
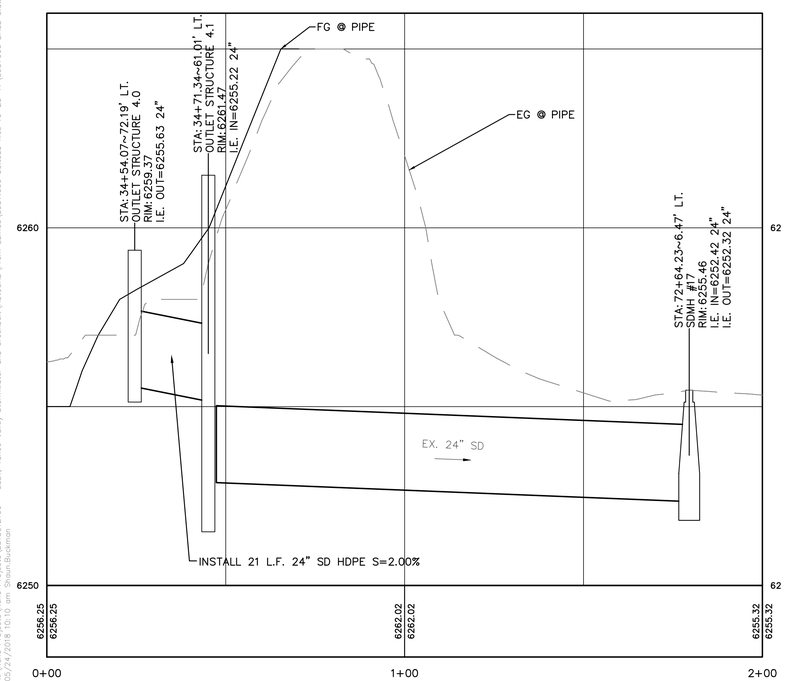
JOB NO.:	8937.000

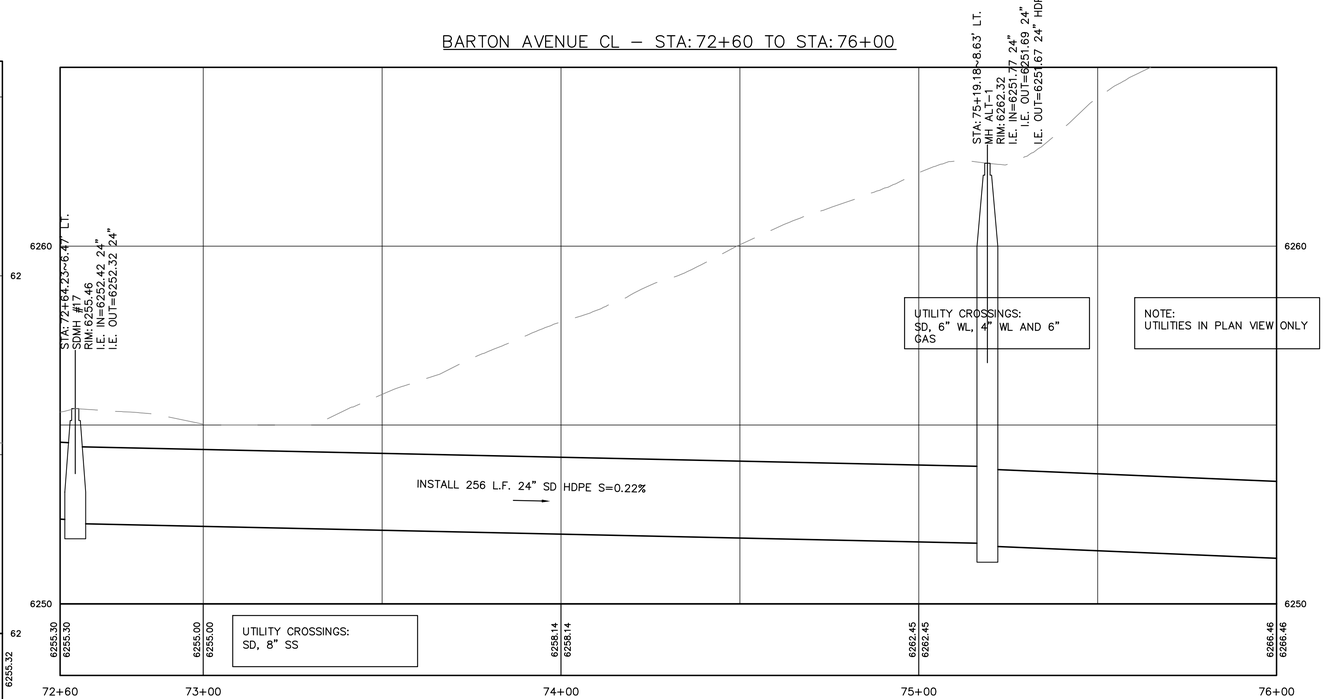
T:\Reno Projects\Reno Projects\E31501200 - CSLT. Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE 2.1.dwg,C21 PLAN PROFILE PATH 5 CL STA 57+84 TO STA 62+37.83
05/24/2018 10:08 am Shaun Buckman



TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	2	0
15"-30"	3	0
>30"	0	0





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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-BARTON AVE. STA 71+00 TO 76+40

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

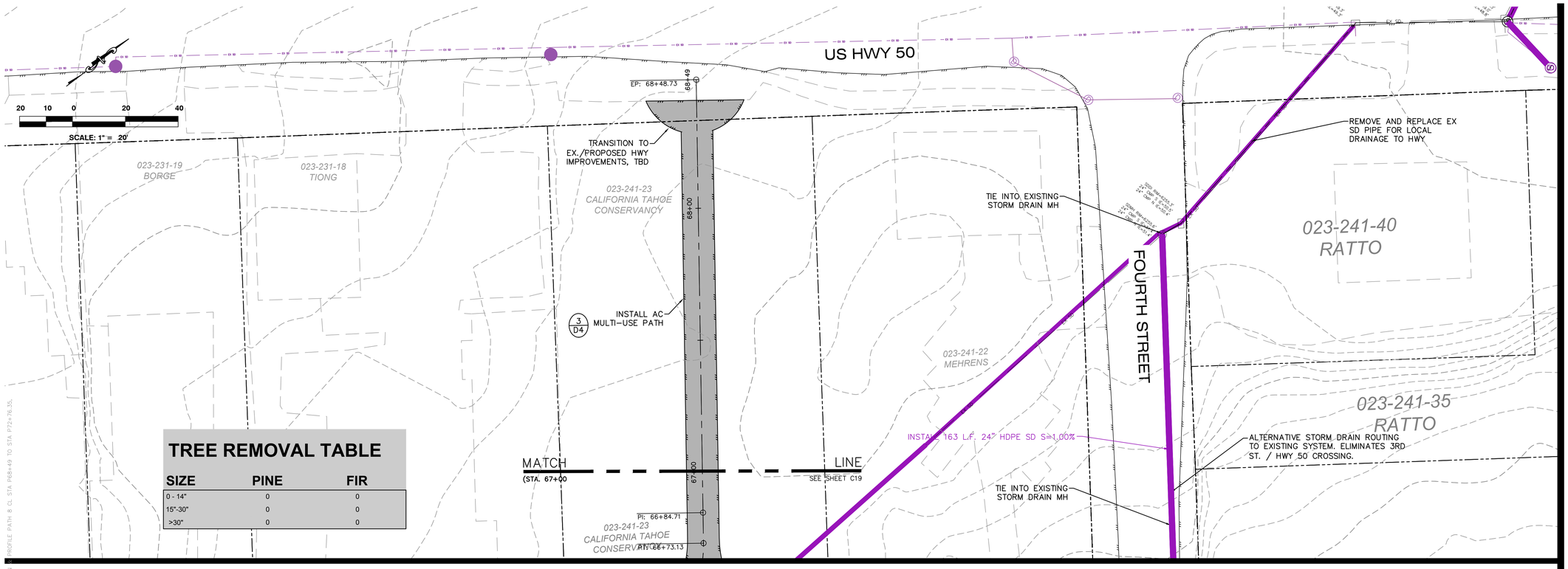
REV	DATE	DESCRIPTION	BY

30% DESIGN

C19

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

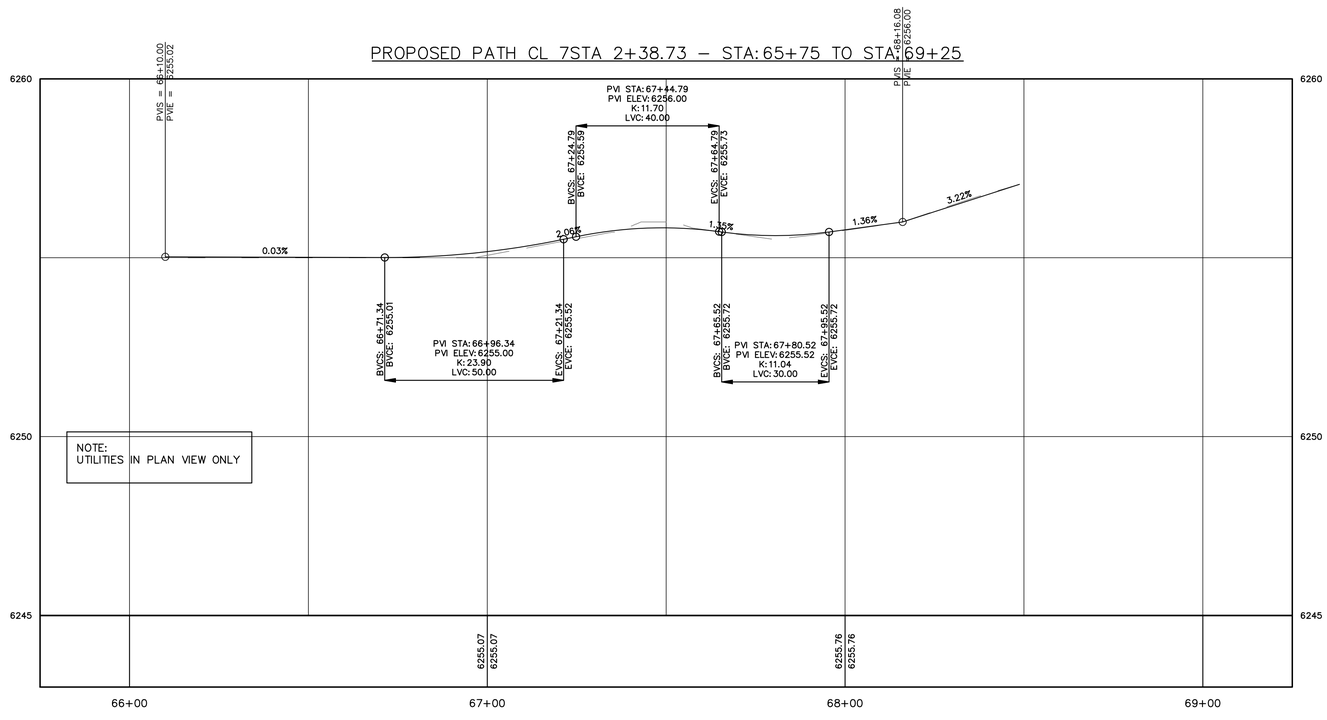
T:\Reno Projects\Reno Projects\E31501210 - CSLT. Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE 3.dwg,C22 SITE PLAN BARTON AVE. STA 71+00 TO 76+40,
05/24/2018 10:10 am Shaun.Buckman



TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	0	0
15"-30"	0	0
>30"	0	0

PROPOSED PATH CL 7STA 2+38.73 – STA:65+75 TO STA:69+25



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE PATH 8 CL STA P68+49 TO STA P72+76.35

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C20

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E31592100 – CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE 2.1.dwg\C23 PLAN PROFILE PATH 8 CL STA P68+49 TO STA P72+76.35,
05/24/2018 10:12 am Shaun.Buckman

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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

CROSS SECTION INDEX

SOUTH LAKE TAHOE | EL DORADO | CALIFORNIA

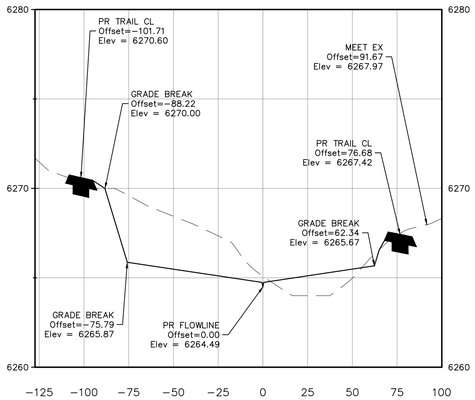
REV	DATE	DESCRIPTION	BY

30% DESIGN

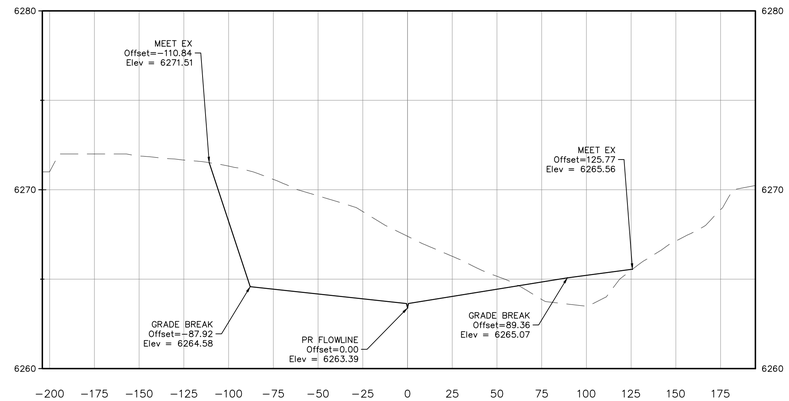
XS-i

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

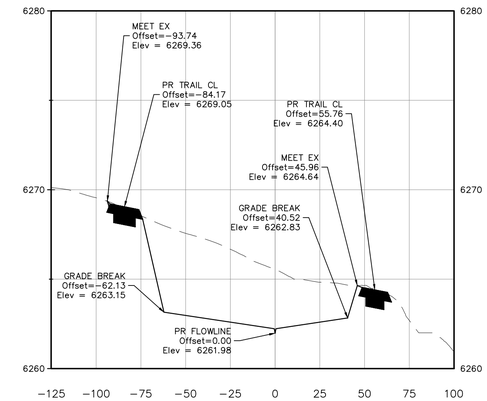
SECTION A



SECTION B

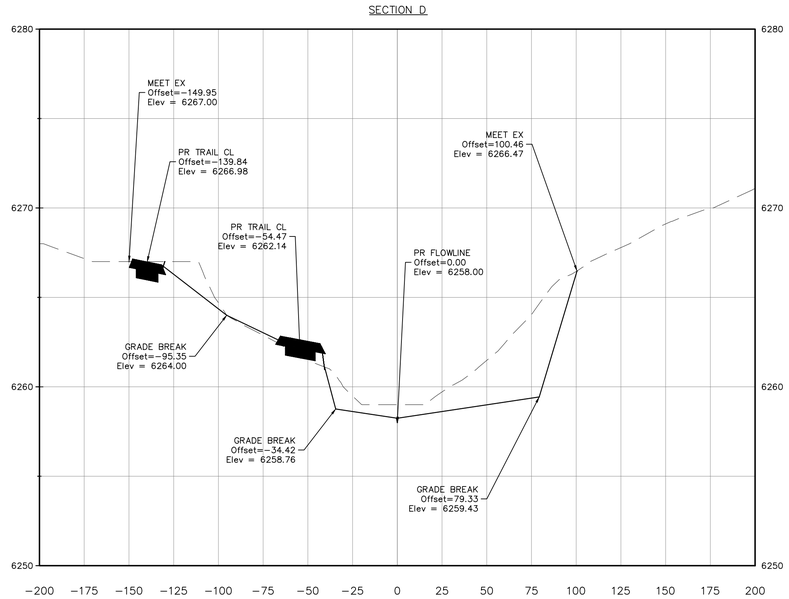


SECTION C

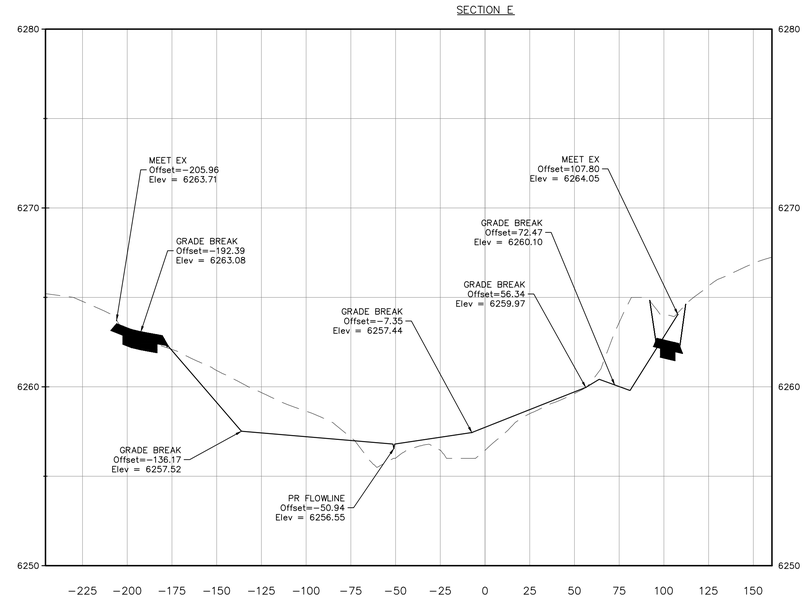


SCALE: 1" = 40'

SECTION D



SECTION E



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x/x/x

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT

GREENBELT CROSS SECTIONS

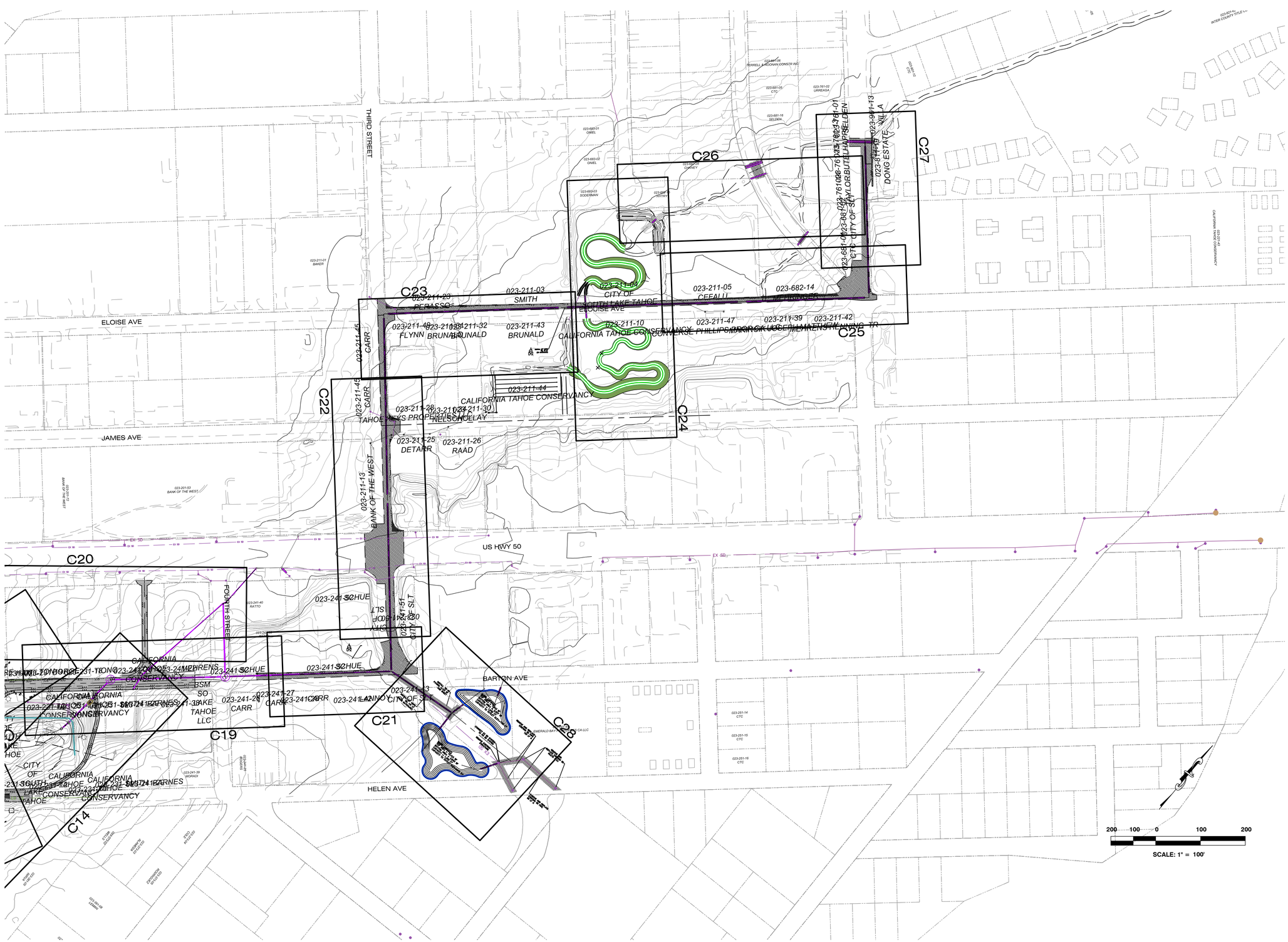
SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

XS-1

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



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SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT
JAMES AVE. - ELOUISE AVE. PLAN AREA

SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

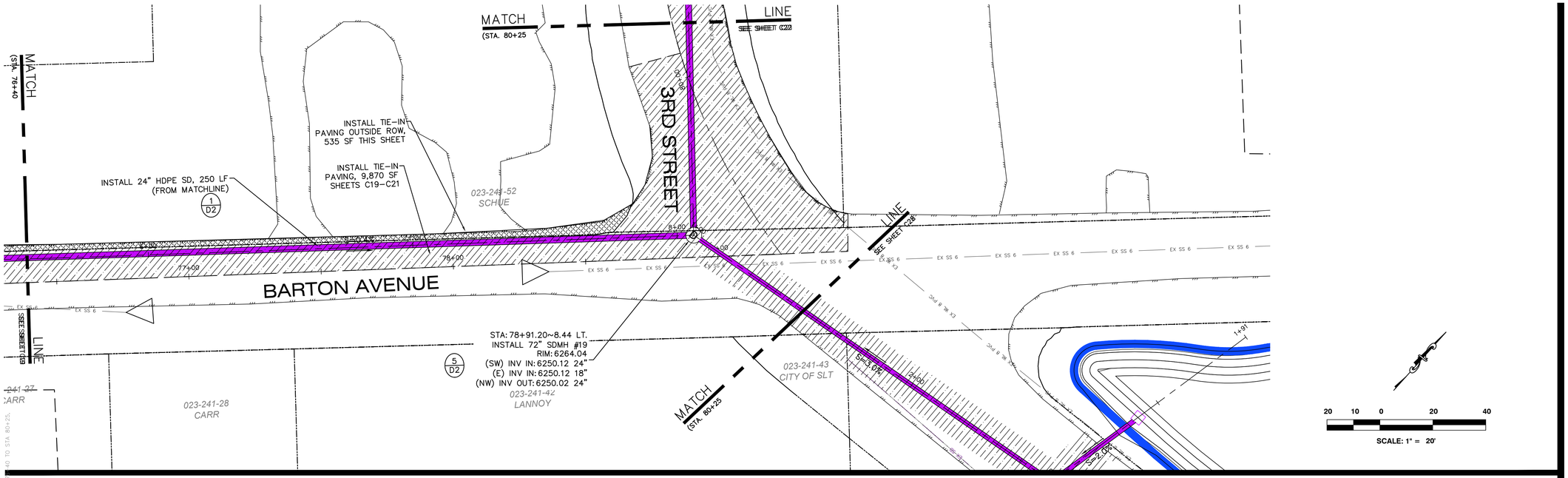
REV	DATE	DESCRIPTION	BY

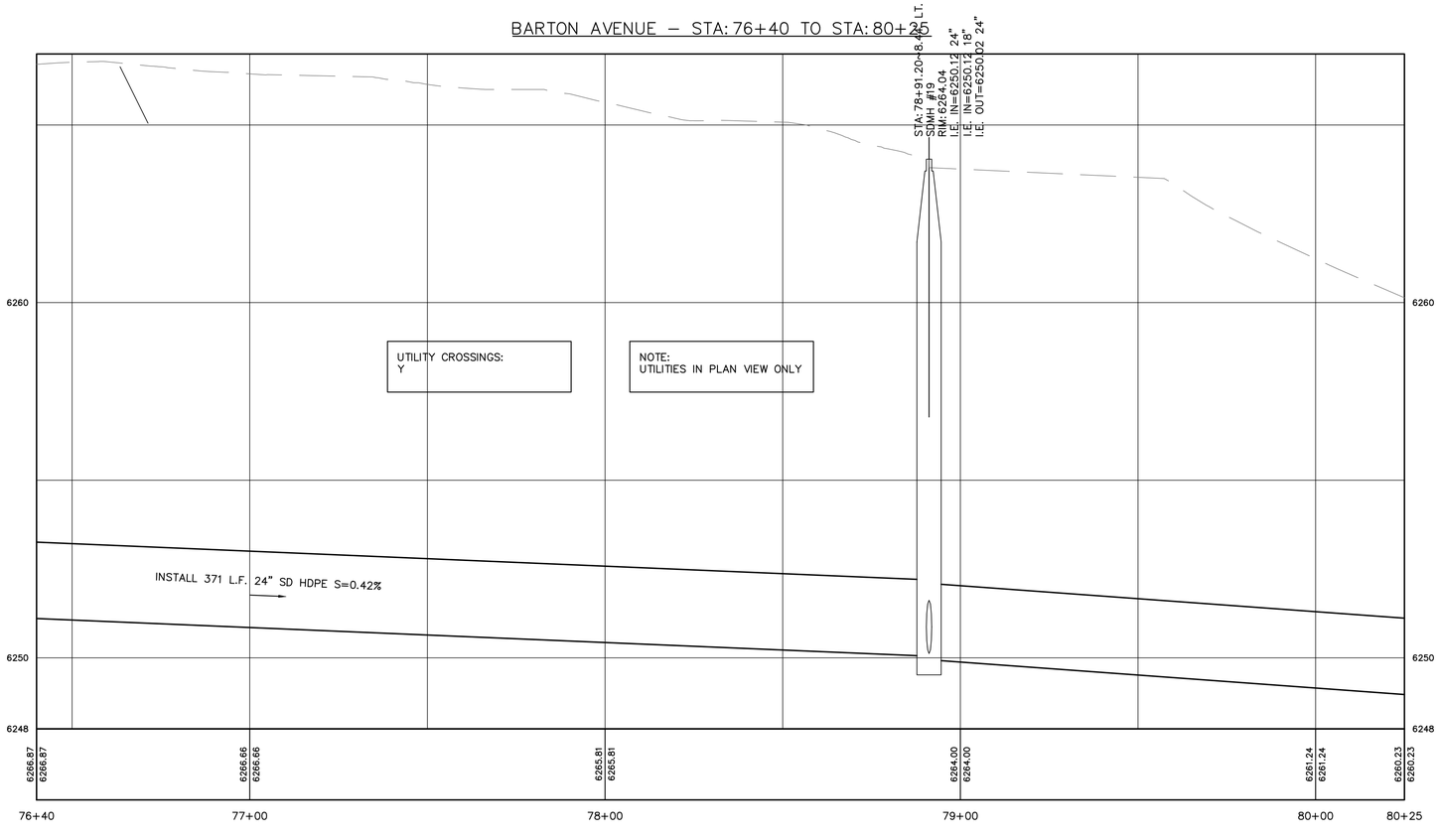
30% DESIGN

X4

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	BM/JTC
CHECKED BY:	BM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\Z1150\2100 - CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000_30%cad files 10-23-17\8937000 SHEET INDEX.dwg,C23,1, JAMES AVE.- ELOUISE AVE. PLAN AREA,
05/24/2018 10:15 am Shaun.Buckman





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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-BARTON AVE. STA 76+40 TO STA 80+25

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C21

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
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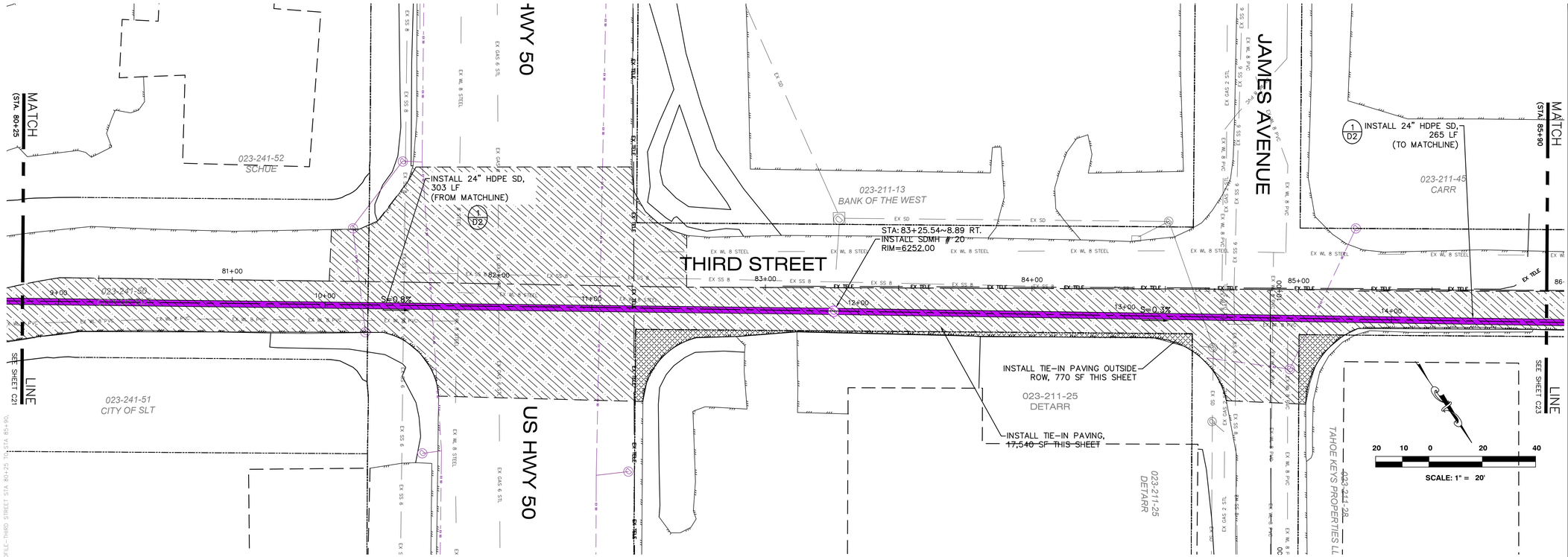
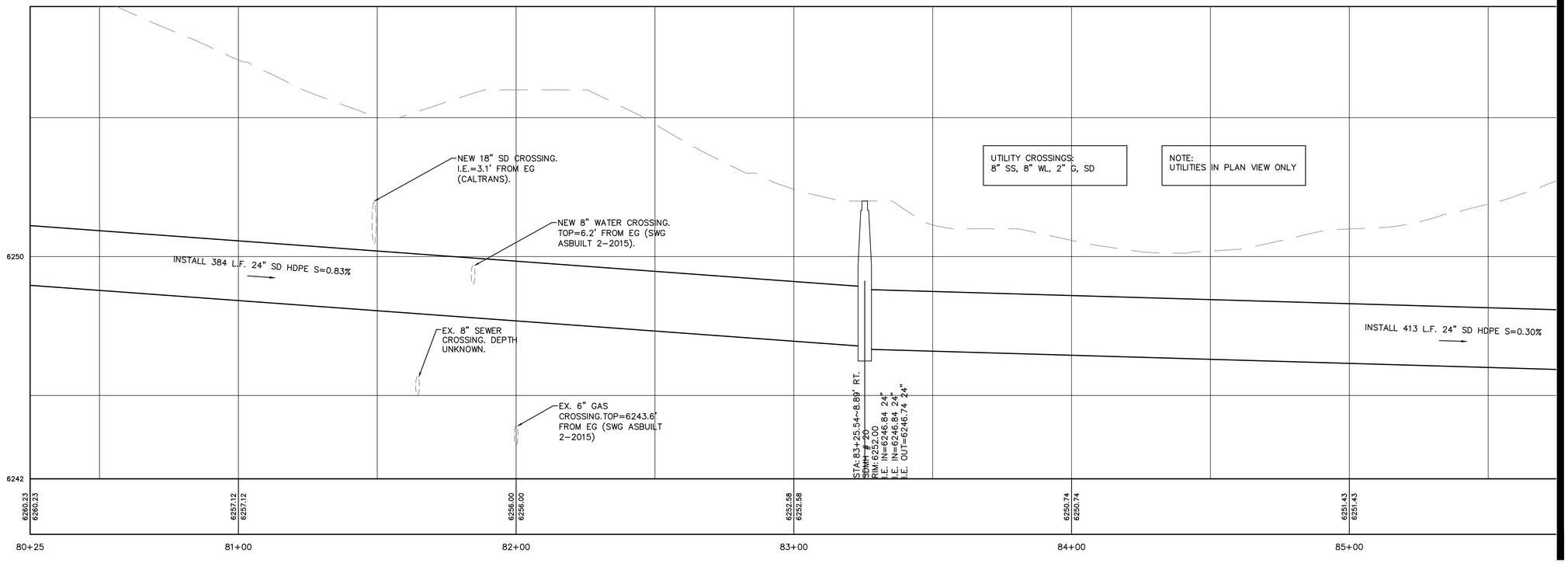
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E31501210 – CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE 3.dwg,C24 PLAN & PROFILE-BARTON AVE. STA 76+40 TO STA 80+25,
05/24/2018 01:08 pm Shaun.Buckman



THIRD STREET – STA:80+25 TO STA:85+90



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-THIRD STREET STA 80+25 TO STA 85+90

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

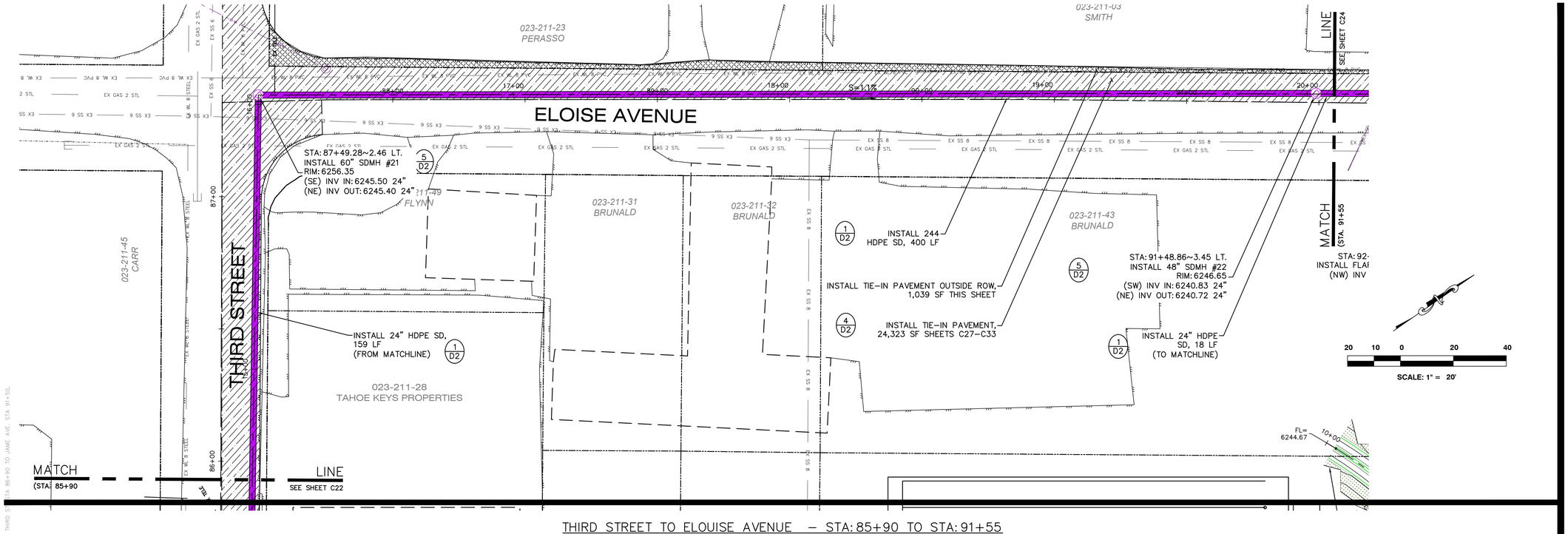
REV	DATE	DESCRIPTION	BY

30% DESIGN

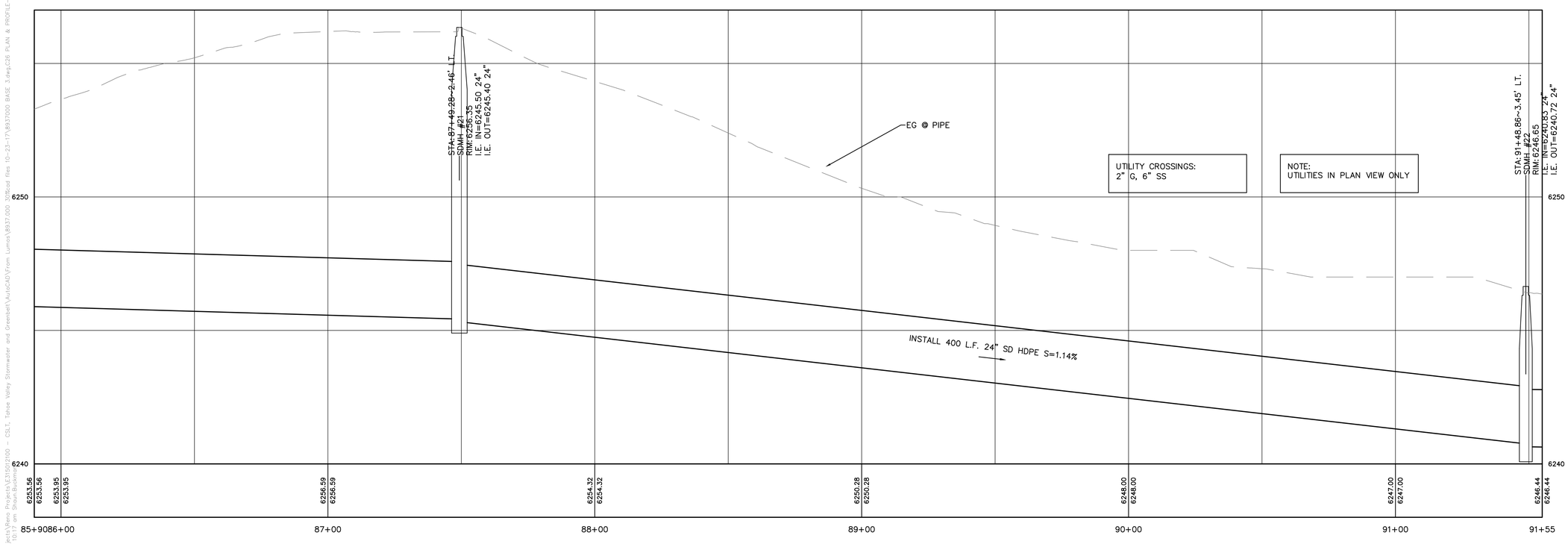
C22

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E315012100 - CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 BASE 3.dwg\C25 PLAN & PROFILE-THIRD STREET STA 80+25 TO STA 85+90.
05/24/2018 10:17 am Shaun.Buckman



THIRD STREET TO ELOUISE AVENUE – STA: 85+90 TO STA: 91+55



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE- THIRD ST. STA 86+90 TO JAME AVE. STA 91+50

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C23

DATE:	JAN 2018
DRAWN BY:	JTC
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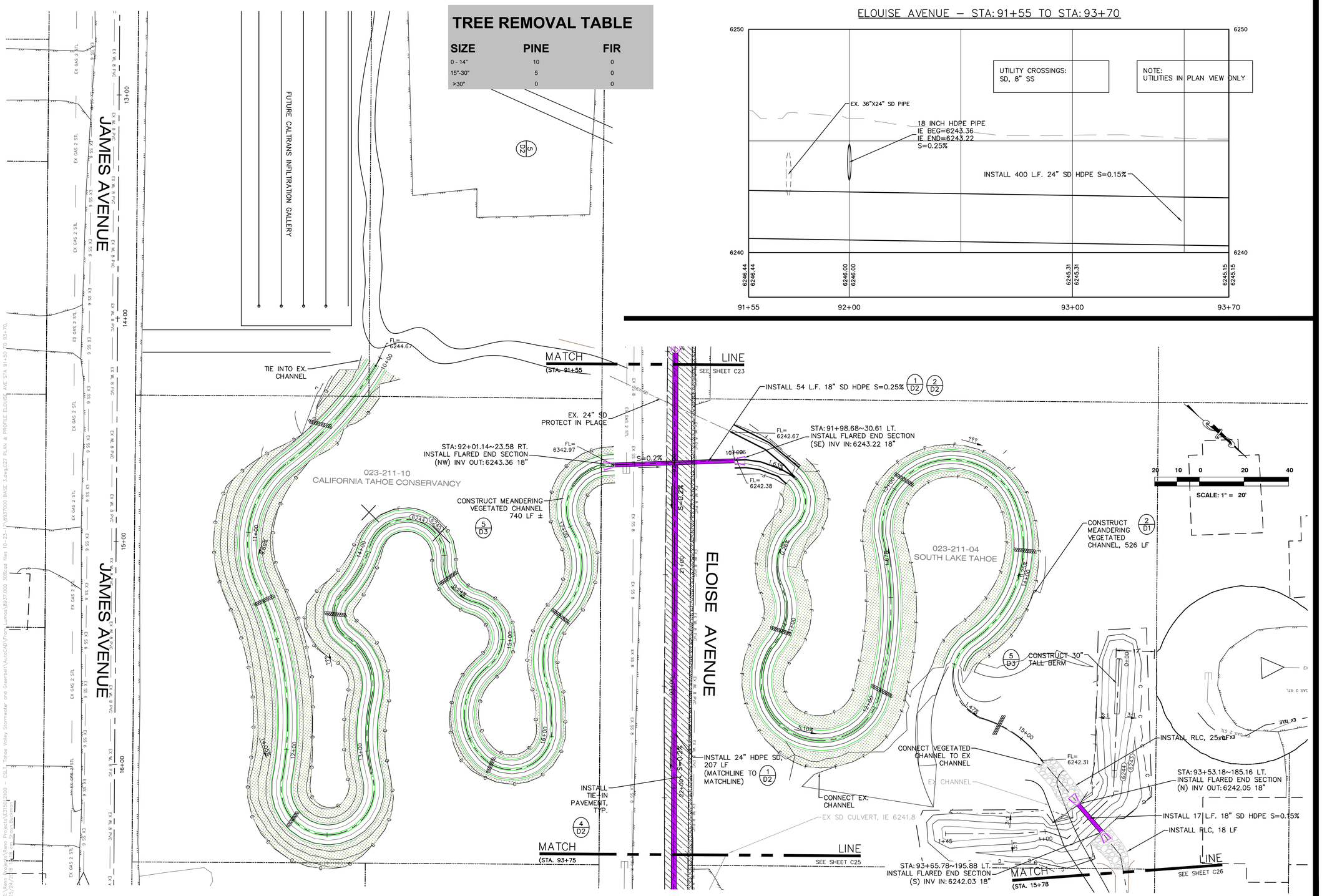
CHECKED BY:	BEM
JOB NO.:	8937.000

TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	10	0
15"-30"	5	0
>30"	0	0



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE ELOUISE AVE STA 91+50 TO 93+70

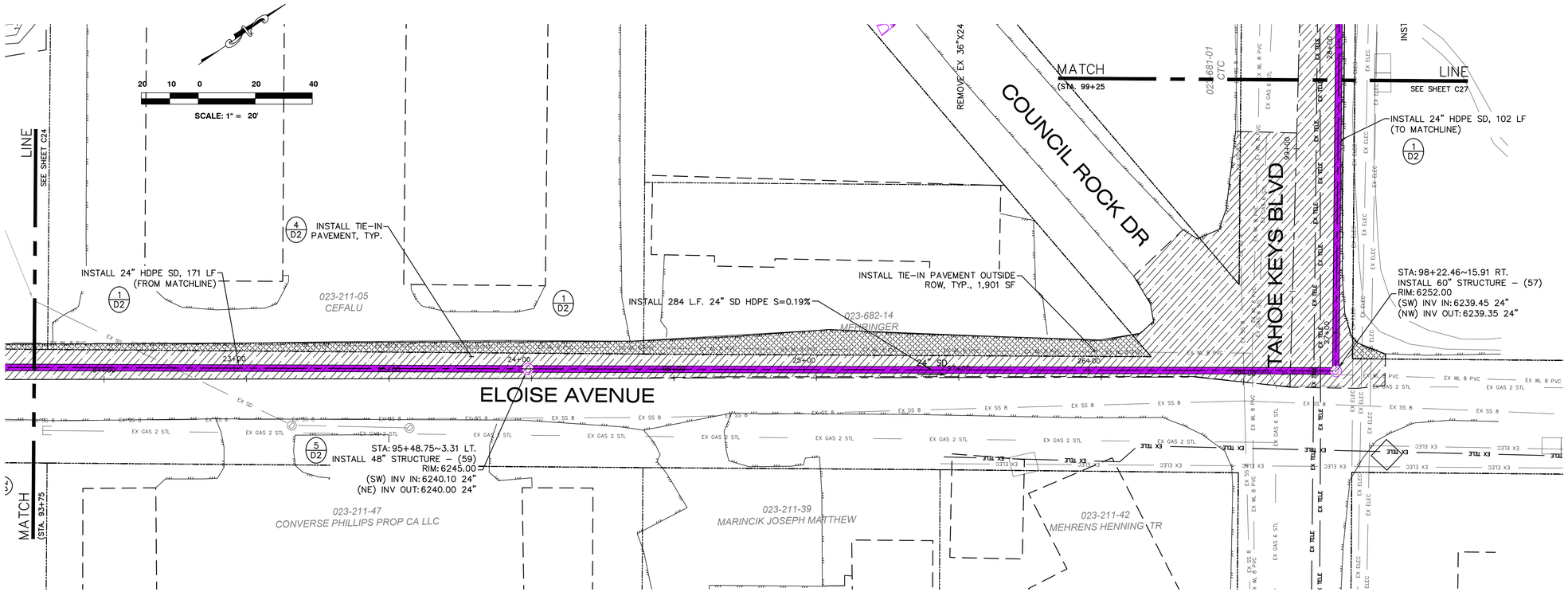
SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

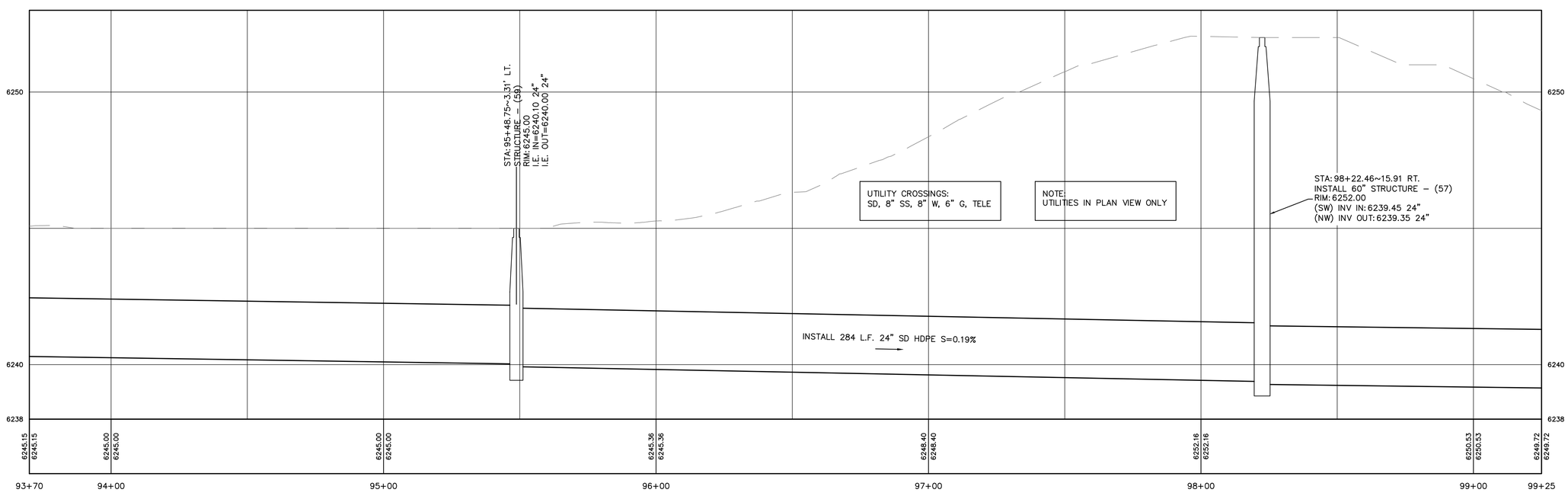
30% DESIGN

C24

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



ELOUISE AVENUE TO TAHOE KEYS BLVD – STA: 93+70 TO STA: 99+25



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
PLAN & PROFILE-ELOISE AVE. TO TAHOE KEYS BLVD.

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C25

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
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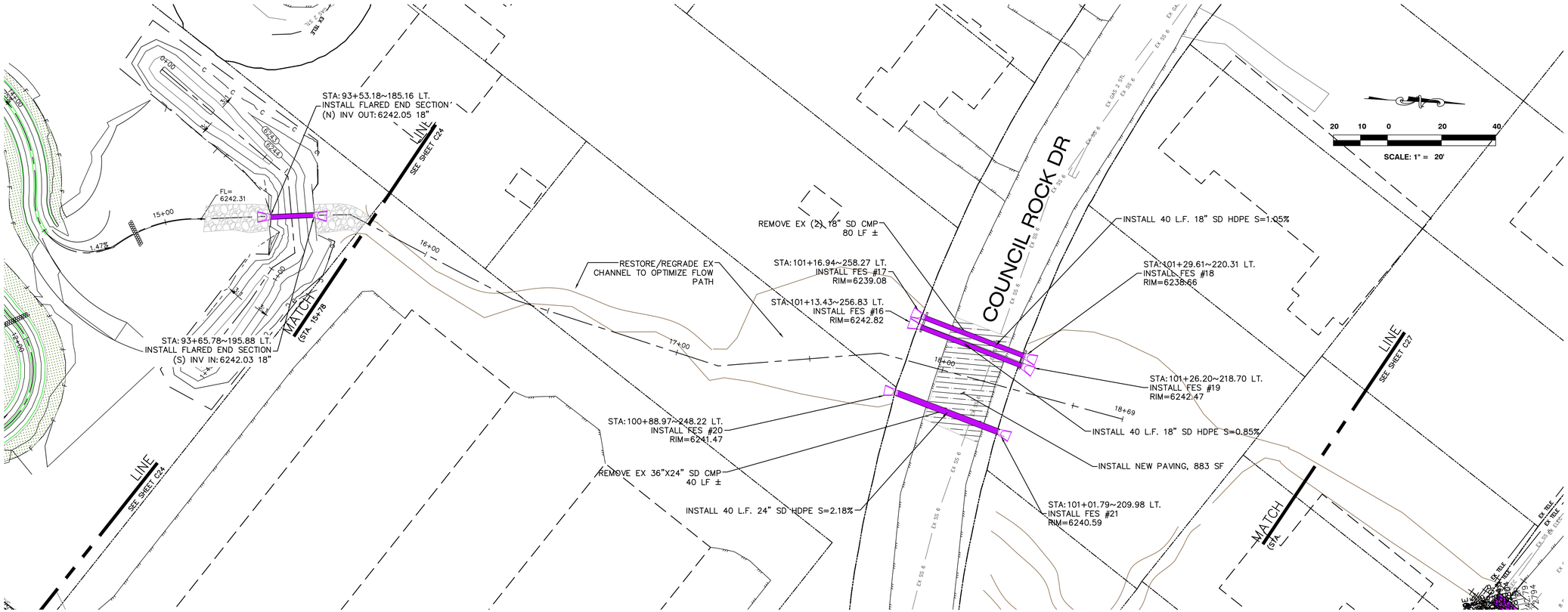
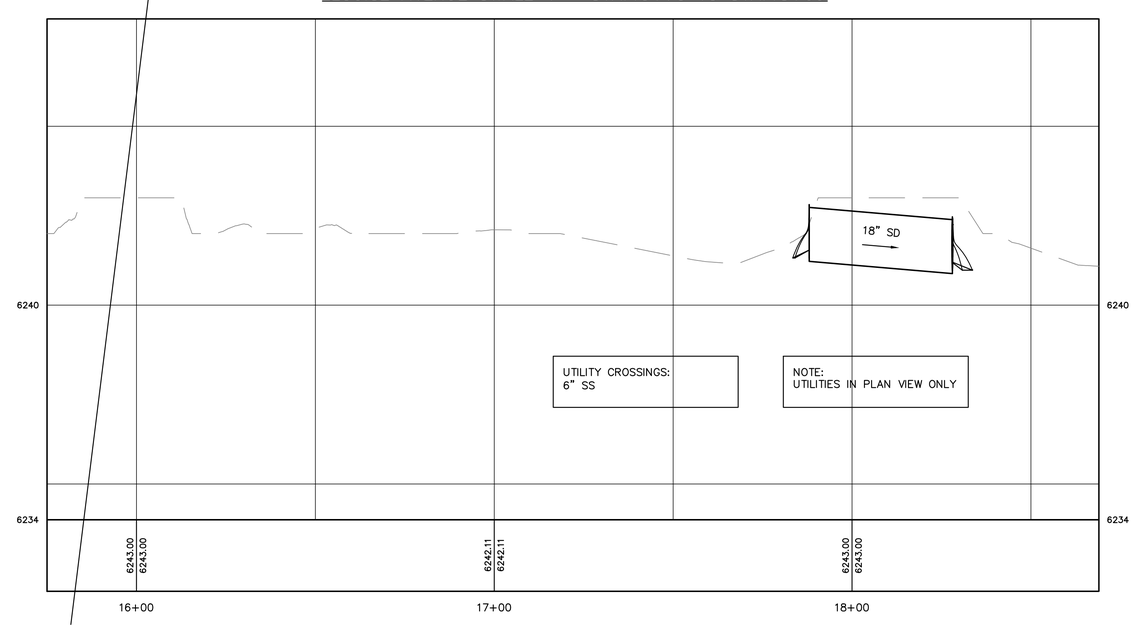
JOB NO.:	8937.000



ELOUISE AVENUE SWALE 4 – STA:15+75 TO STA:18+69



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE- ELOISE AVE. SWALE STA 12+00 TO 15+84

SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C26

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
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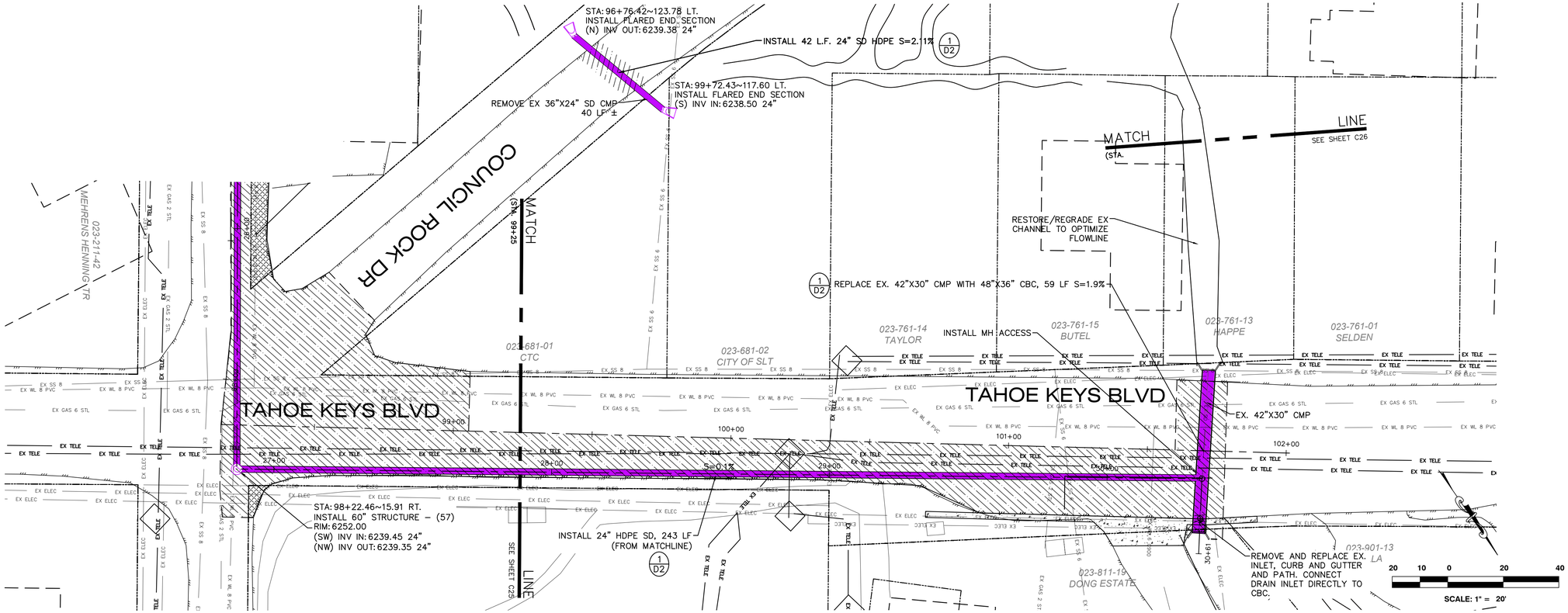
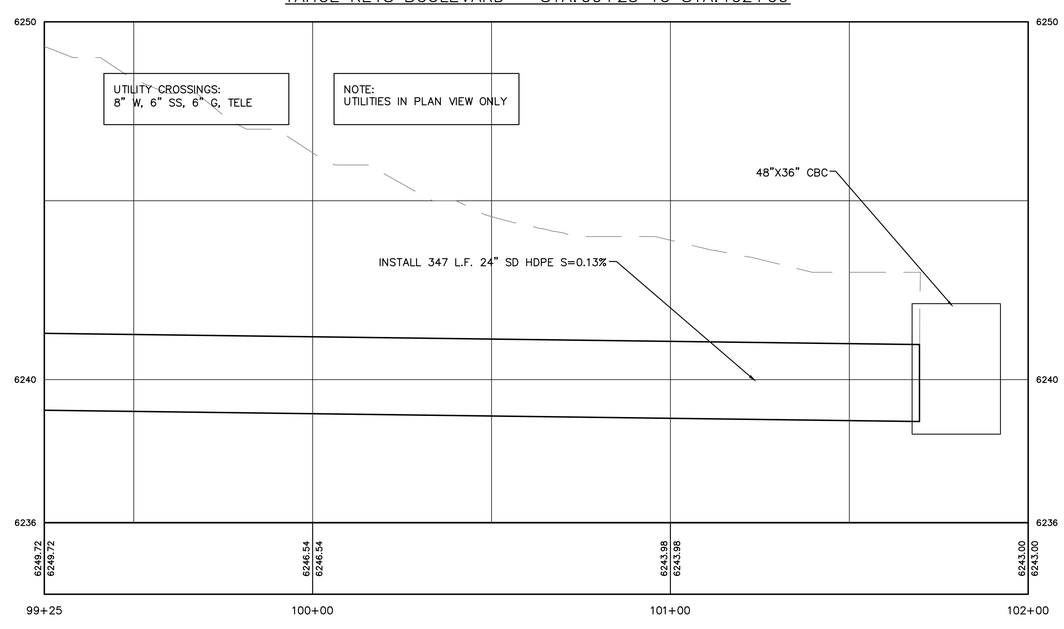
JOB NO.:	8937.000

T:\Reno Projects\Reno Projects\E3150\2150 - CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 Bid...dwg,C28 PLAN & PROFILE- ELOISE AVE. SWALE STA 12+00 TO 15+84,
05/24/2018 10:19 am Shaun.Buckman



TAHOE KEYS BOULEVARD – STA: 99+25 TO STA: 102+00



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-TAHOE KEYS BLVD. STA 99+25 TO 101+75

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C27

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

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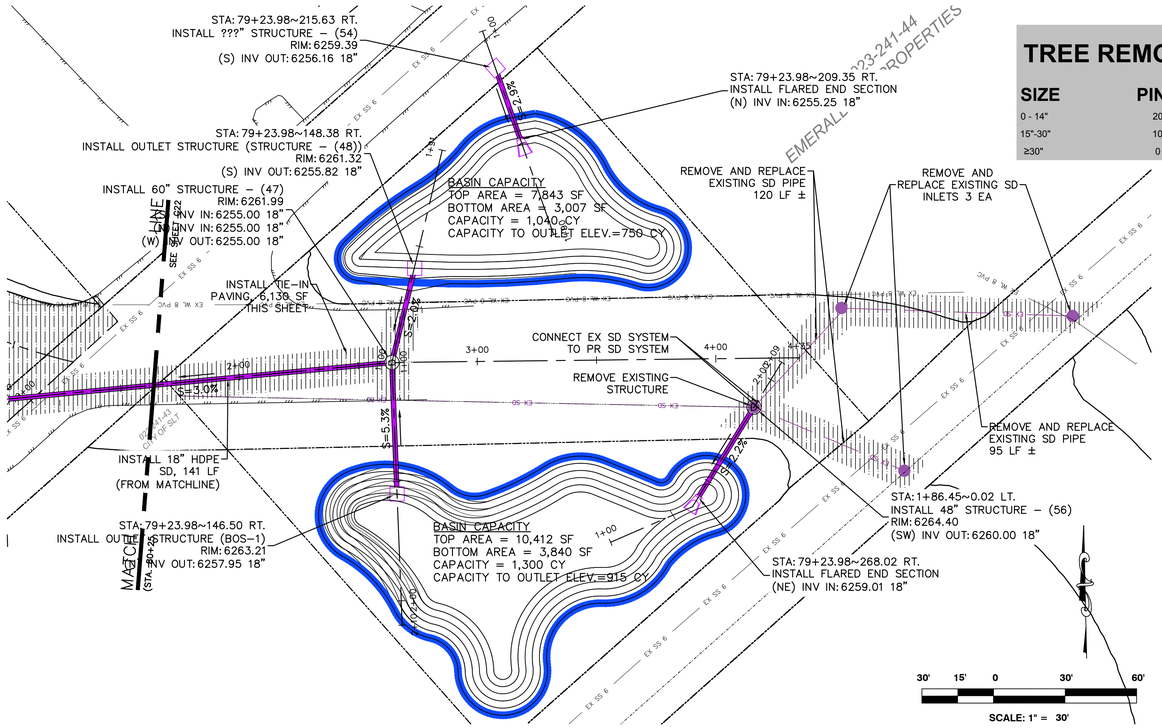
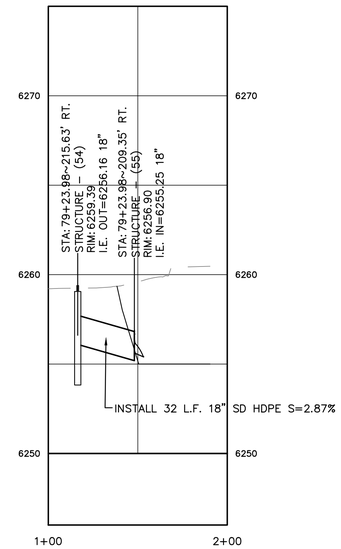
05/24/2018 10:20 am Shaun.Buckman



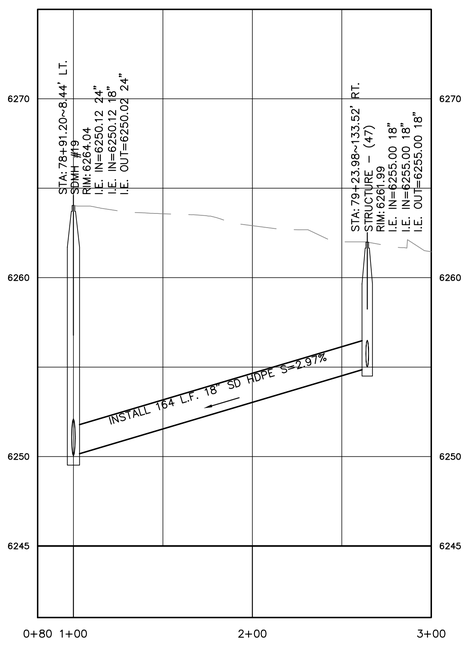
TREE REMOVAL TABLE

SIZE	PINE	FIR
0 - 14"	20	0
15"-30"	10	0
≥30"	0	0

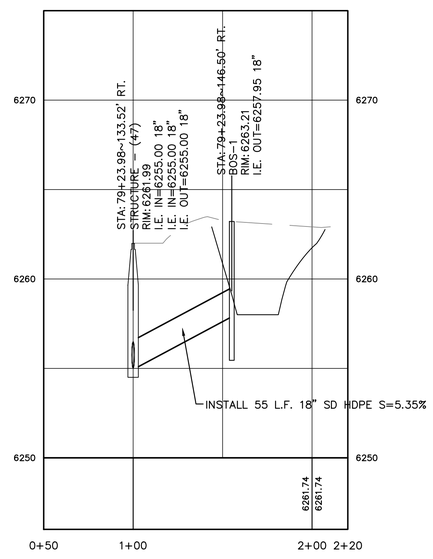
BASE 3 CL (8) – STA: 1+00 TO STA: 2+00



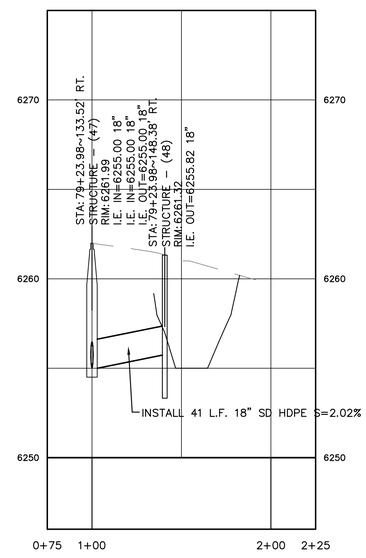
3RD ST. CL – STA: 0+80 TO STA: 3+00



3RD ST BASIN 1 – STA: 0+50 TO STA: 2+20



3RD ST BASIN 2 – STA: 0+75 TO STA: 2+25



40 20 0 40 80
SCALE: 1" = 40'

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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

PLAN & PROFILE-THIRD STREET STA 1+00 TO STA 4+35

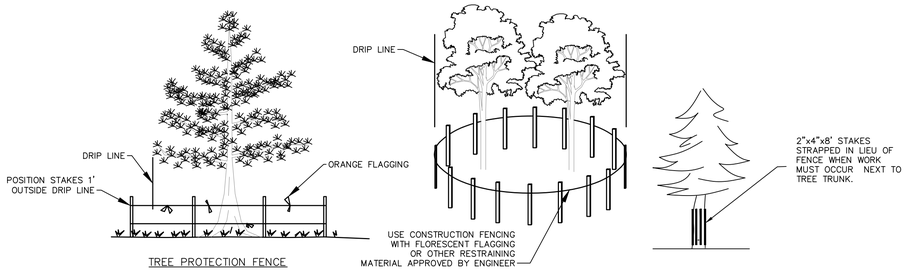
SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

C28

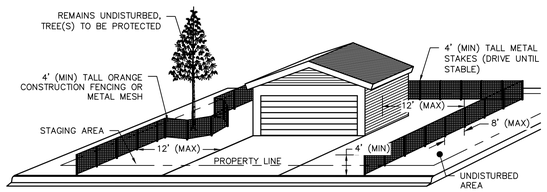
DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

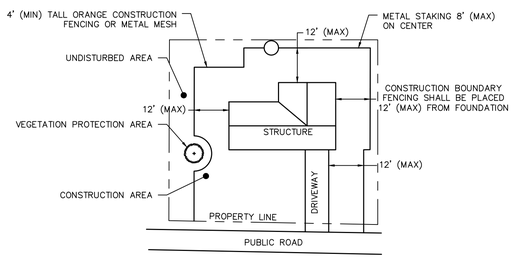


NOTES:
1. PLACING ANY MATERIAL–TEMPORARY OR OTHERWISE–WITHIN TREE PROTECTIVE FENCING OR ENTERING TREE PROTECTION AREAS MAY RESULT IN UP TO A $5,000 PENALTY PER VIOLATION PER DAY. (SECT 65.2 I AND J)
2. THESE CONDITIONS ARE PART OF ALL PROJECTS AS CONDITIONS OF ATTACHMENTS R,S, AND Q.
3. METAL OR WIRE MESH FENCING MAY BE REQURIED.

TREE PROTECTION FENCING — 1 / D1

SCALE: N.T.S.

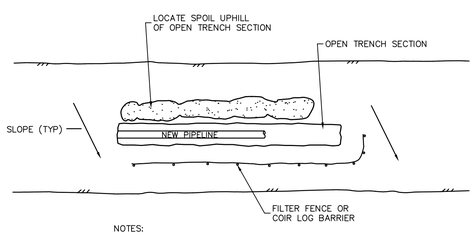




NOTES:
1. METAL OR WIRE MESH FENCING MAY BE REQUIRED FOR SITES THAT CONSISTENTLY FAIL TO MAINTAIN PERMITTED FENCING REQUIREMENTS.
2. INSPECTIONS SHALL BE MADE DAILY AND DOWNED SECTIONS REPAIRED IMMEDIATELY.
3. ALL DISTURBED SOIL WITHIN THE CONSTRUCTION AREA MUST BE DE–COMPACTED AND RESTORED. PLANT WITH NATIVE AND/OR ADAPTED PLANTS POST–CONSTRUCTION.

PROJECT PERIMETER FENCE — 4 / D1

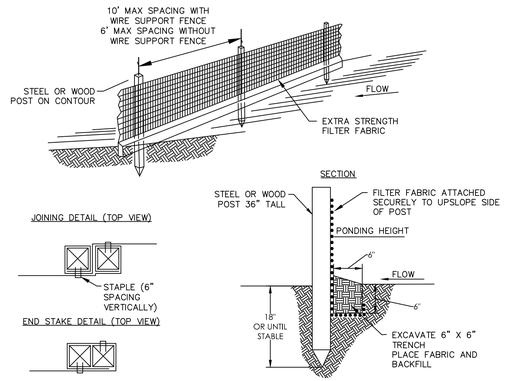
SCALE: N.T.S.



NOTES:
1. RELOCATE FILTER FENCE/COIR LOG SEDIMENT BARRIER AS NECESSARY.
2. SPOILS TO BE LOADED DIRECTLY INTO DUMP TRUCK TO BE HAULED OFF SITE. NO SPOILS TO BE STORED ON SITE.

TYPICAL OPEN TRENCH SECTION — 5 / D1

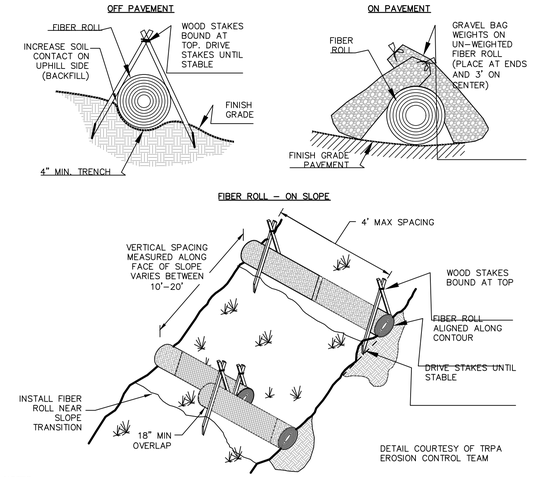
SCALE: N.T.S.



NOTES:
1. USE PRINCIPALLY IN AREAS WHERE SHEET FLOW OCCURS.
2. DO NOT USE IN STREAMS, CHANNELS, OR ANYWHERE FLOW IS CONCENTRATED. DO NOT USE SILT FENCES TO DIVERT FLOW.
3. DO NOT USE BELOW SLOPES SUBJECT TO CREEP, SLUMPING, OR LANDSLIDES.
4. SILT FENCE SHOULD BE WOVEN POLYPROPYLENE WITH A MINIMUM WIDTH OF 36 INCHES AND A MINIMUM TENSILE STRENGTH OF 100 LB FORCE.
5. INSTALL ALONG A LEVEL CONTOUR, SO WATER DOES NOT POND MORE THAT 1.5 FT AT ANY POINT ALONG THE SILT FENCE.
6. THE MAXIMUM LENGTH OF SLOPE DRAINING TO ANY POINT ALONG THE SILT FENCE SHOULD BE 100 FT OR LESS.
7. THE MAXIMUM SLOPE PERPENDICULAR TO THE FENCE LINE SHOULD BE 1:1.
8. PROVIDE SUFFICIENT ROOM FOR RUNOFF TO POND BEHIND THE FENCE AND TO ALLOW SEDIMENT REMOVAL EQUIPMENT TO PASS BETWEEN THE SILT FENCE AND TOES OF SLOPES OR OTHER OBSTRUCTIONS.
9. TURN THE ENDS OF THE FILTER FENCE UPHILL TO CREATE A "J" SHAPE, TO PREVENT STORM WATER FROM FLOWING AROUND THE FENCE.
10. LEAVE AN UNDISTURBED OR STABILIZED AREA IMMEDIATELY DOWN SLOPE FROM THE FENCE WHERE FEASIBLE.
11. SILT FENCES SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED.
12. REMOVE SEDIMENT WHEN DEPOSITS REACH APPROXIMATELY 1/3 HEIGHT OF BARRIER.

SILT FENCE — 2 / D1

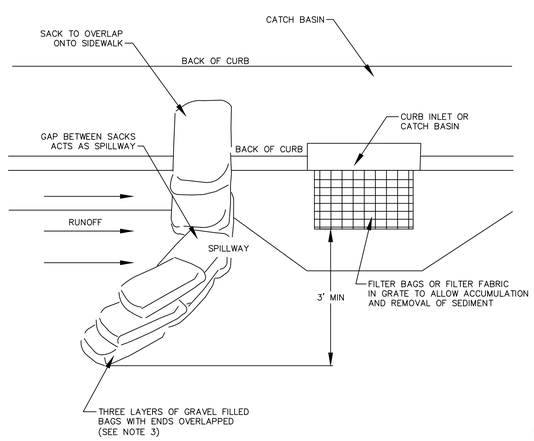
SCALE: N.T.S.



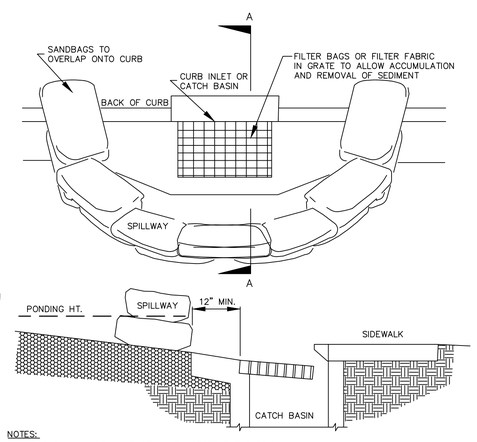
NOTES
1. INSTALL ALONG SLOPE CONTOUR, PERPENDICULAR TO SLOPE DIRECTION.
2. INSTALL FROM BOTTOM OF SLOPE UP TO PREVENT ACCIDENTAL DOWNSLOPE CONTAMINATION.
3. FIBER ROLLS MUST BE ENTRENCHED 1/3 TO 1/2 HEIGHT OF ROLL TO ENSURE MAXIMUM CONTACT SURFACE AREA WITH SOIL.
4. ENSURE THAT THE FIBER ROLL MAKES GOOD CONTACT WITH THE SOIL AT ALL LOCATIONS; THERE SHALL BE NO GAPS BENEATH THE FIBER ROLL.
5. FIBER ROLLS SHALL BE STAKED IN SUCH A MANNER THAT THEY ARE NOT DISTURBED BY WIND OR SHEET FLOW RUNOFF.
6. IF MORE THAN ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHOULD BE OVERLAPPED A MINIMUM OF 18", NOT ABUTTED.
7. TURN THE ENDS OF THE FIBER ROLL UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL.
8. FIBER ROLLS SHALL BE A MINIMUM 12" DIAMETER AND USED ON SLOPES LESS THAN 7%.
9. INSPECT AND MAINTAIN FIBER ROLLS DAILY AND AFTER EACH STORM EVENT. REMOVE SEDIMENT DEPOSITS WHEN DEPOSITS REACH 1/3 HEIGHT OF INSTALLED BARRIER.

COIR LOG — 3 / D1

SCALE: N.T.S.



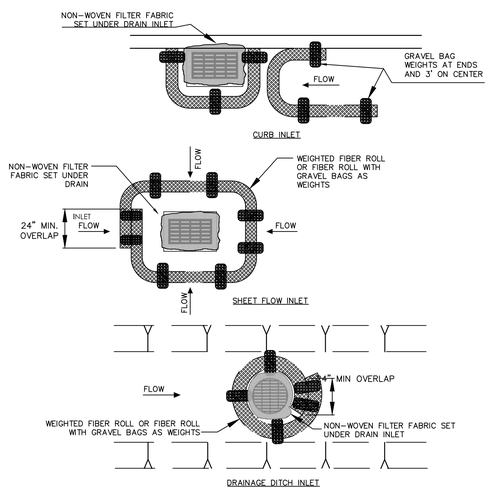
NOTES:
1. SACKS SHALL BE MADE OF WOVEN GEOTEXTILE FABRIC.
2. SACKS TO BE FILLED WITH 3/4" WASHED DRAIN ROCK OR 1/4" WASHED PEA GRAVEL.
3. CONSTRUCT ON GENTLY SLOPING STREETS WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE OUT OF SUSPENSION.
4. PLACE SEVERAL LAYERS OF FILLED SACKS OVER THE FIRST, OVERLAP AND PACK SACKS TIGHTLY TOGETHER TO MINIMIZE THE SPACE BETWEEN SACKS.
5. LEAVE A GAP OF ONE SACK IN THE MIDDLE OF THE TOP ROW OF SACKS TO SERVE AS THE SPILLWAY. SPILLWAY HEIGHT SHALL BE LOWER THAN CURB HEIGHT AND SUFFICIENT SIZE TO PASS FLOWS FROM SEVERE STORM EVENTS.
6. INSPECT AND REPAIR BARRIER AFTER EACH STORM EVENT. REMOVE SEDIMENT WHEN IT REACHES TOP OF SPILLWAY (CURB HEIGHT)
7. SEDIMENT SHALL BE COLLECTED AND DISPOSED OF AT A TRPA APPROVED SITE.
8. SEDIMENT AND GRAVEL SHALL BE IMMEDIATELY REMOVED FROM TRAVELED WAY OF ROAD.
9. PROPRIETARY INLET PROTECTION OR ALTERNATIVES SUCH AS WEIGHTED FIBER ROLLS ARE ACCEPTABLE.



NOTES:
1. SACKS SHALL BE MADE OF WOVEN GEOTEXTILE FABRIC.
2. SACKS TO BE FILLED WITH 3/4" WASHED DRAIN ROCK OR ¾" WASHED PEA GRAVEL.
3. CONSTRUCT IN SAG LOCATIONS WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE OUT OF SUSPENSION.
4. LEAVE A GAP OF ONE SACK IN THE MIDDLE OF THE TOP ROW TO SERVE AS THE SPILLWAY. SPILLWAY HEIGHT SHALL BE LOWER THAN CURB HEIGHT AND SUFFICIENT IN SIZE TO PASS FLOWS FROM SEVERE STORM EVENTS.
5. PLACE 2 LAYERS OF FILLED SACKS, OVERLAPPING BAGS AND PACK THEM TIGHTLY TOGETHER TO MINIMIZE THE SPACE BETWEEN SACKS.
6. INSPECT AND REPAIR FILTERS AFTER EACH STORM EVENT. REMOVE SEDIMENT WHEN ONE HALF OF THE FILTER DEPTH HAS BEEN FILLED.
7. SEDIMENT SHALL BE COLLECTED AND DISPOSED OF AT A TRPA SITE
8. SEDIMENT AND GRAVEL SHALL BE IMMEDIATELY REMOVED FROM TRAVELED WAY OF ROAD.
9. PROPRIETARY DI PROTECTION OR ALTERNATIVES SUCH AS WEIGHTED FIBER ROLLS ARE ACCEPTABLE.

INLET PROTECTION — 6 / D1

SCALE: N.T.S.



NOTES
1. FIBER ROLL DRAIN INLET PROTECTION SHALL USE A MIN 12" DIAMETER ROLL AND BE INSTALLED BEFORE CONSTRUCTION BEGINS.
2. GRAVEL BAGS SHALL BE WOVEN FILTER FABRIC. SAND BAGS ARE NOT AN ACCEPTABLE SUBSTITUTE.
3. ON PAVED SURFACES, SUBSTITUTE STAKES WITH GRAVEL BAGS (USE PROPER STAKING METHODS).
4. CONSTRUCT ON GENTLY SLOPING STREETS WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE OUT OF SUSPENSION.
5. INSPECT AND REPAIR FIBER ROLLS EACH DAY AND AFTER EACH STORM EVENT. REMOVE SEDIMENT WHEN ONE THIRD OF THE FILTER DEPTH HAS BEEN FILLED. REMOVED SEDIMENT SHALL BE DISPOSED OF PROPERLY.
6. SEDIMENT AND GRAVEL DEPOSITED ON ROADWAYS SHALL BE IMMEDIATELY REMOVED.
7. IN HIGH TRAFFIC AREAS, MARK DRAIN INLET PROTECTION WITH VISIBLE BARRIERS SUCH AS SAFETY CONES.
8. REMOVE DRAIN INLET PROTECTION AFTER THE SURROUNDING AREA IS STABILIZED.

DETAIL COURTESY OF TRPA
EROSION CONTROL TEAM

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SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

DETAILS

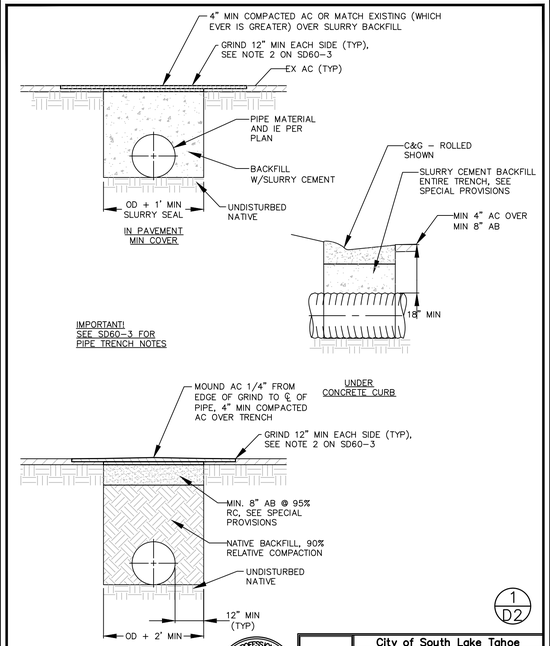
SOUTH LAKE TAHOE — EL DORADO COUNTY — CALIFORNIA

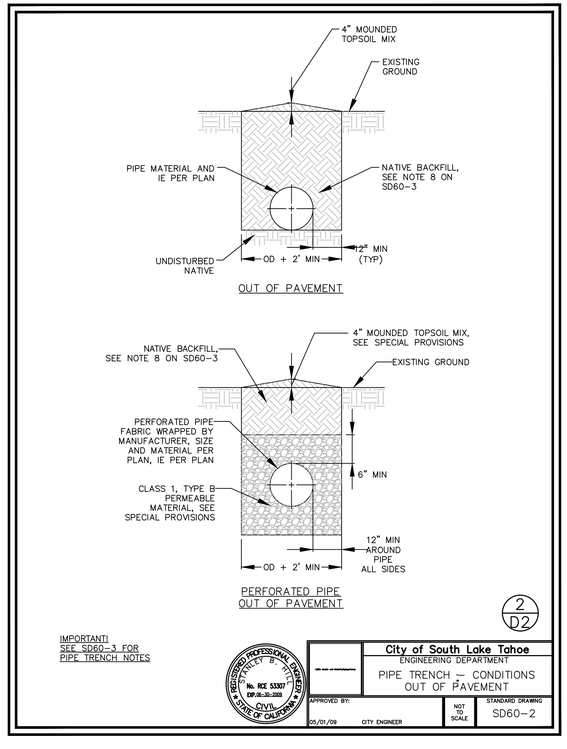
REV	DATE	DESCRIPTION	BY

30% SUBMITTAL

D1

DATE:	NOVEMBER 2016
DRAWN BY:	JTC
DESIGNED BY:	BM/JC
CHECKED BY:	BM
JOB NO.:	8937.000



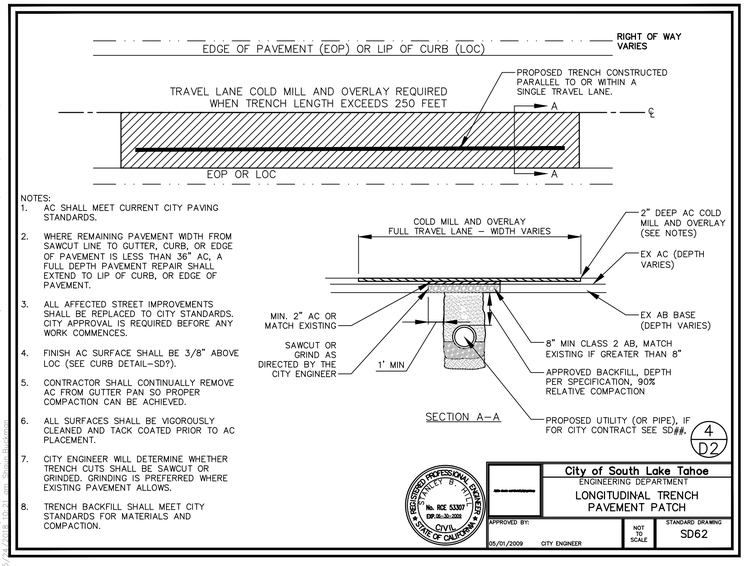


NOTES:

1. MINIMUM COVER* FROM CROWN OF PIPE TO FINISH GRADE SHALL BE AS FOLLOWS:
   CULVERTS 18 INCHES
   STORM DRAINS 18 INCHES FOR RCP
   24 INCHES FOR HDPE
   *UNLESS OTHERWISE APPROVED. SEE ALSO SD64.
2. GRIND PAVEMENT A MINIMUM OF 1 FOOT BEYOND EACH SIDE OF THE LONGITUDINAL OR TRANSVERSE EXCAVATION AFTER TRENCH BACKFILL AND FIRST LIFT OF HOT MIX AC.
3. REPLACE PAVEMENT TO EDGE OF PAVEMENT (EP) IF THE EXCAVATION IS WITHIN 3 FEET OF THE EP.
4. IN WET OR ROCKY MATERIAL THE DEPTH OF THE TRENCH BEDDING SHALL BE INCREASED TO THE LARGER OF EITHER 6 IN. OR 1/4 DIA OF PIPE.
5. FOR CULVERTS/STORM DRAINS THE MINIMUM DISTANCE BETWEEN THE SIDE OF THE TRENCH AND THE SIDE OF THE PIPE SHALL BE 1/2 OD OR 12", WHICHEVER IS GREATER.
6. STORM DRAINS AND CULVERTS INSTALLED WITHIN FILL SHALL BE 95% RELATIVE COMPACTION UP TO A MINIMUM OF 12 INCHES ABOVE THE TOP OF PIPE.
7. IN AREAS WITH MINIMUM COVER, BACKFILL ABOVE BEDDING SHALL BE CLASS 2 AGGREGATE BASE UNLESS BACKFILLING WITH CEMENT SLURRY.
8. IN AREAS OF NATURAL VEGETATION OR LANDSCAPING, REMOVE TOP 12 INCHES OF MATERIAL, STOCKPILE & REPLACE ON TRENCH IN A MOUND. BACKFILL COMPACTED BETWEEN 80% AND 85% RELATIVE COMPACTION.
9. ALL LANDSCAPING CONDUITS WITHIN THE ROADWAY PRISM AND/OR TRAFFIC AREAS MUST HAVE MINIMUM OF 30 INCHES COVER.
10. AC PATCH SHALL BE HOTMIX ASPHALT A MINIMUM COMPACTED THICKNESS OF 4 INCHES AND PLACED IN A MINIMUM OF 2 LIFTS.
11. COLD MIX ASPHALT MAY BE PLACED TEMPORARILLY, BUT MUST BE COMPLETELY REMOVED BEFORE PLACING THE PERMANENT HOT MIX ASPHALT.
12. PLACE ASPHALT BASE (AB) AT THE TOP OF THE EXCAVATION WHERE THE EXCAVATION IS WITHIN 2' OF EP OR IF AB PRESENTLY EXISTS ABOVE THE EXCAVATION. IF THE EXCAVATION IS AT THE BOTTOM OF A ROADSIDE DITCH, BEYOND A ROADSIDE DITCH, OR BEHIND A CURB, THE REQUIREMENT FOR AB CAN BE WAIVED.
13. TRANSVERSE EXCAVATION ON ROADWAYS PAVED WITHIN 2 YEARS ARE NOT ALLOWED AND MUST BE BORED. LONGITUDINAL EXCAVATIONS ON ROADWAYS PAVED WITHIN 5 YEARS OR ON COLLECTOR ROADS WITH A HIGH QUALITY RIDING SURFACE REQUIRE A 2" OVERLAY WHICH CONFORMS OR A 2" GRIND AND OVERLAY OF THE TRAVEL LANE.
14. STORM DRAIN BACKFILL TO BE STRUCTURAL BACKFILL.
15. EXCESSIVE TRANSVERSE CUTS MAY REQUIRE A GRIND AND REPAVE OF ENTIRE TRAVEL LANE BETWEEN CUTS.
16. NO SAWCUTS WILL BE ALLOWED IN WHEEL PATHS. SAWCUT LINES SHALL BE PLACED AT ROAD CL, WITHIN SHOULDER OR MIDDLE OF TRAVEL LANE, AND OUTSIDE WHEEL PATHS.
17. MINIMUM PATCH WIDTH SHALL BE 3' WIDE.
18. PATCH WORK SHALL NOT RESULT IN "RIBBON" STRIPS OF PAVEMENT (LESS THAN 3 FEET WIDE). EXISTING PAVEMENT WIDTHS LESS THAN 3 FEET WIDE SHALL BE REMOVED AND PAVED WITH THE PATCH WORK.

3
D2

REGISTERED PROFESSIONAL ENGINEER STANLEY B. WITT No. RCE 53307 EXP.06-30-2009 CIVIL STATE OF CALIFORNIA
City of South Lake Tahoe
ENGINEERING DEPARTMENT
PIPE TRENCH NOTES
APPROVED BY:
05/01/09 CITY ENGINEER
NOT TO SCALE
STANDARD DRAWING
SD60-3



NOTES:

1. AC SHALL MEET CURRENT CITY PAVING STANDARDS.
2. WHERE REMAINING PAVEMENT WIDTH FROM SAWCUT LINE TO GUTTER, CURB, OR EDGE OF PAVEMENT IS LESS THAN 36" AC, A FULL DEPTH PAVEMENT REPAIR SHALL EXTEND TO LIP OF CURB, OR EDGE OF PAVEMENT.
3. ALL AFFECTED STREET IMPROVEMENTS SHALL BE REPLACED TO CITY STANDARDS. CITY APPROVAL IS REQUIRED BEFORE ANY WORK COMMENCES.
4. FINISH AC SURFACE SHALL BE 3/8" ABOVE LOC (SEE CURB DETAIL-SD?).
5. CONTRACTOR SHALL CONTINUALLY REMOVE AC FROM GUTTER PAN SO PROPER COMPACTION CAN BE ACHIEVED.
6. ALL SURFACES SHALL BE VIGOROUSLY CLEANED AND TACK COATED PRIOR TO AC PLACEMENT.
7. CITY ENGINEER WILL DETERMINE WHETHER TRENCH CUTS SHALL BE SAWCUT OR GRINDED. GRINDING IS PREFERRED WHERE EXISTING PAVEMENT ALLOWS.
8. TRENCH BACKFILL SHALL MEET CITY STANDARDS FOR MATERIALS AND COMPACTION.

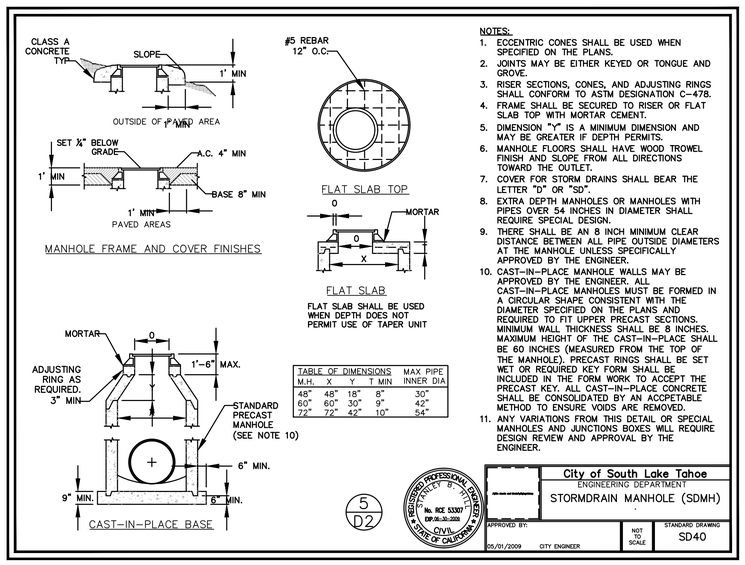
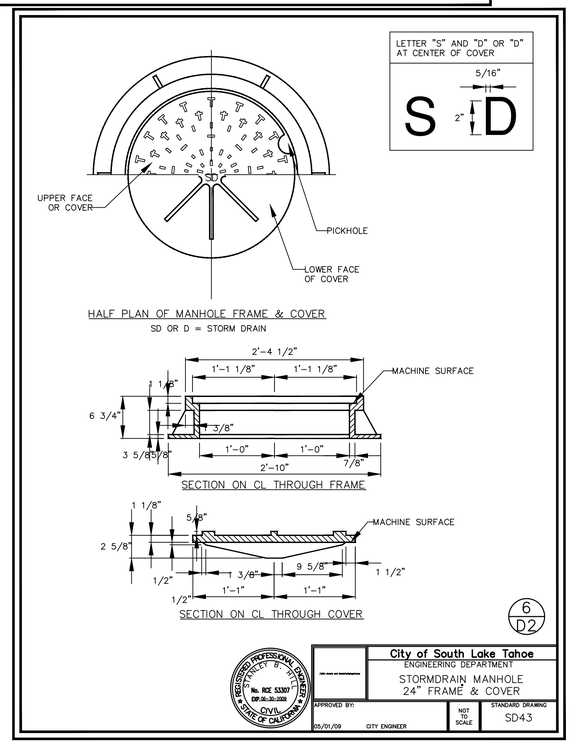


TABLE OF DIMENSIONS				MAX PIPE
M.H.	X	Y	T MIN	INNER DIA
48"	48"	18"	8"	30"
60"	60"	30"	9"	42"
72"	72"	42"	10"	54"

NOTES:

1. ECCENTRIC CONES SHALL BE USED WHEN SPECIFIED ON THE PLANS.
2. JOINTS MAY BE EITHER KEYED OR TONGUE AND GROVE.
3. RISER SECTIONS, CONES, AND ADJUSTING RINGS SHALL CONFORM TO ASTM DESIGNATION C-478.
4. FRAME SHALL BE SECURED TO RISER OR FLAT SLAB TOP WITH MORTAR CEMENT.
5. DIMENSION "Y" IS A MINIMUM DIMENSION AND MAY BE GREATER IF DEPTH PERMITS.
6. MANHOLE FLOORS SHALL HAVE WOOD TROWEL FINISH AND SLOPE FROM ALL DIRECTIONS TOWARD THE OUTLET.
7. COVER FOR STORM DRAINS SHALL BEAR THE LETTER "D" OR "SD".
8. EXTRA DEPTH MANHOLES OR MANHOLES WITH PIPES OVER 54 INCHES IN DIAMETER SHALL REQUIRE SPECIAL DESIGN.
9. THERE SHALL BE AN 8 INCH MINIMUM CLEAR DISTANCE BETWEEN ALL PIPE OUTSIDE DIAMETERS AT THE MANHOLE UNLESS SPECIFICALLY APPROVED BY THE ENGINEER.
10. CAST-IN-PLACE MANHOLE WALLS MAY BE APPROVED BY THE ENGINEER. ALL CAST-IN-PLACE MANHOLES MUST BE FORMED IN A CIRCULAR SHAPE CONSISTENT WITH THE DIAMETER SPECIFIED ON THE PLANS AND REQUIRED TO FIT UPPER PRECAST SECTIONS. MINIMUM WALL THICKNESS SHALL BE 8 INCHES. MAXIMUM HEIGHT OF THE CAST-IN-PLACE SHALL BE 60 INCHES (MEASURED FROM THE TOP OF THE MANHOLE). PRECAST RINGS SHALL BE SET WET OR REQUIRED KEY FORM SHALL BE INCLUDED IN THE FORM WORK TO ACCEPT THE PRECAST KEY. ALL CAST-IN-PLACE CONCRETE SHALL BE CONSOLIDATED BY AN ACCPETABLE METHOD TO ENSURE VOIDS ARE REMOVED.
11. ANY VARIATIONS FROM THIS DETAIL OR SPECIAL MANHOLES AND JUNCTIONS BOXES WILL REQUIRE DESIGN REVIEW AND APPROVAL BY THE ENGINEER.



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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

DETAILS

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

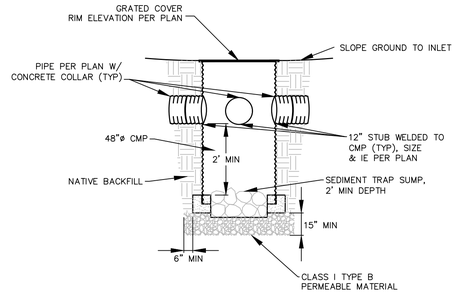
REV	DATE	DESCRIPTION	BY

30% DESIGN

D2

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

T:\Reno Projects\Active Projects\CSLT, Tahoe Valley Stormwater and Greenbelt\AutoCAD\From Lumos\8937.000 30%cad files 10-23-17\8937000 DETAILS.dwg\D2 DETAILS, 05/

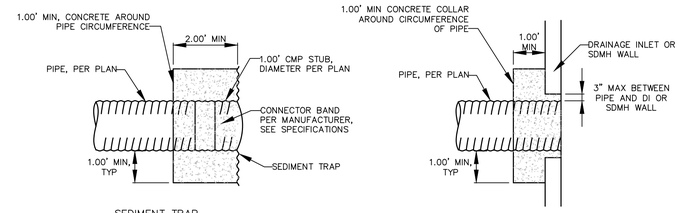


1 D3

REGISTERED PROFESSIONAL ENGINEER STANLEY B. HILL No. RCE 53307 EXP.06-30-2008 CIVIL STATE OF CALIFORNIA

City of South Lake Tahoe
ENGINEERING DEPARTMENT
SEDIMENT TRAP – SINGLE

APPROVED BY: 05/01/2009 CITY ENGINEER | NOT TO SCALE | STANDARD DRAWING SD50



SEDIMENT TRAP

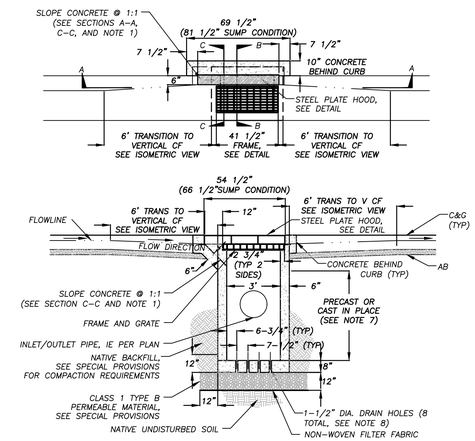
DI OR SDMH

2 D3

REGISTERED PROFESSIONAL ENGINEER STANLEY B. HILL No. RCE 53307 EXP.06-30-2008 CIVIL STATE OF CALIFORNIA

City of South Lake Tahoe
ENGINEERING DEPARTMENT
CONCRETE COLLAR

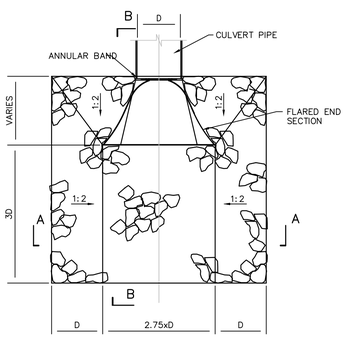
APPROVED BY: 05/01/2009 CITY ENGINEER | NOT TO SCALE | STANDARD DRAWING SD63



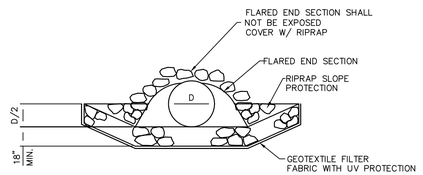
HOODED DI DETAIL

SCALE: N.T.S.

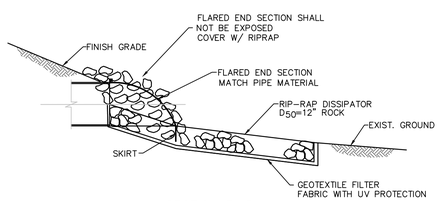
3 D3



PLAN



SECTION A–A

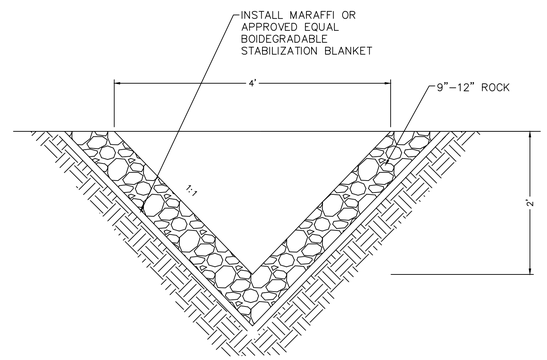


SECTION B–B

NOTE:
FLARED END SECTION INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

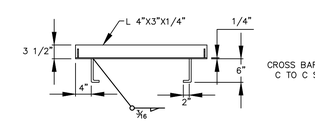
FLARED END SECTION W/ RIPRAP APRON 4 D3

SCALE: N.T.S.



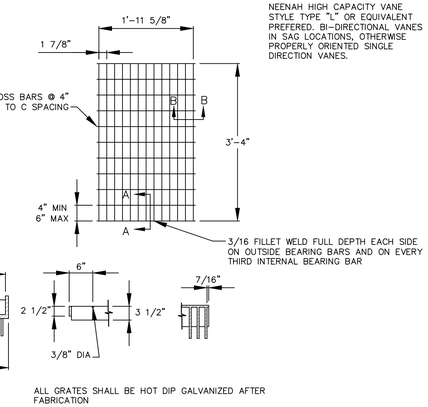
ROCK LINED CHANNEL 5 D3

SCALE: N.T.S.



SECTION B–B

NOTE:
TYPE 24–13 GRATE (WELDED STEEL) BEARING BARS TO BE 3–1/2" X 1/4" BARS ON 1–7/8" CENTERS. 3/8" DIA. CROSS BARS MAY BE FILLET WELDED RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.
WEIGHT OF 24" GRATE = 141 LBS.



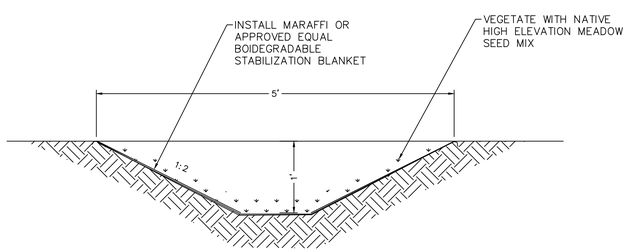
NEENAH HIGH CAPACITY VANE STYLE TYPE "L" OR EQUIVALENT PREFERED. BI–DIRECTIONAL VANES IN SAG LOCATIONS, OTHERWISE PROPERLY ORIENTED SINGLE DIRECTION VANES.

SECTION A–A

ALL GRATES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION

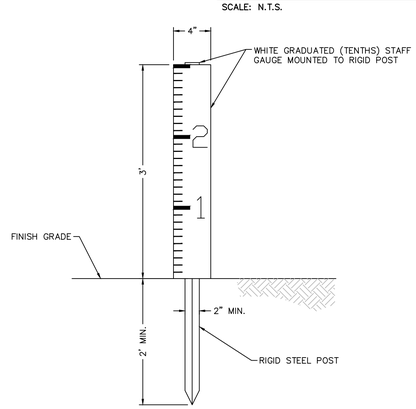
FRAME & GRATE 6 D3

SCALE: N.T.S.



VEGETATED CHANNEL 7 D3

SCALE: N.T.S.



BASIN STAFF GAUGE 8 D3

SCALE: N.T.S.

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05/24/2018 10:21 am Shaun.Buckman

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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER
AND GREENBELT IMPROVEMENT PROJECT
DETAILS

SOUTH LAKE TAHOE | EL DORADO | CALIFORNIA

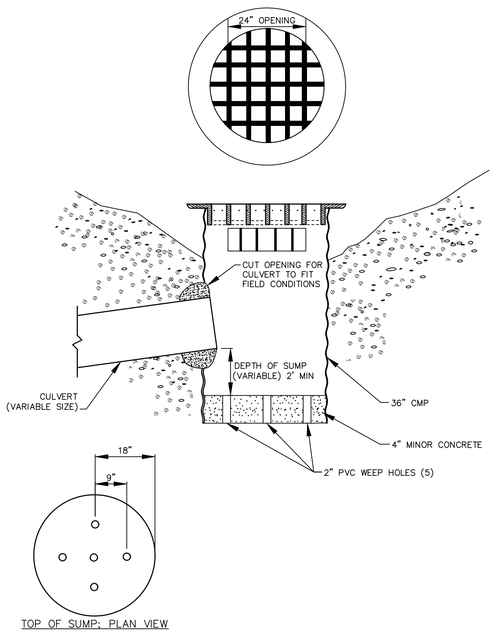
REV	DATE	DESCRIPTION	BY

30% DESIGN

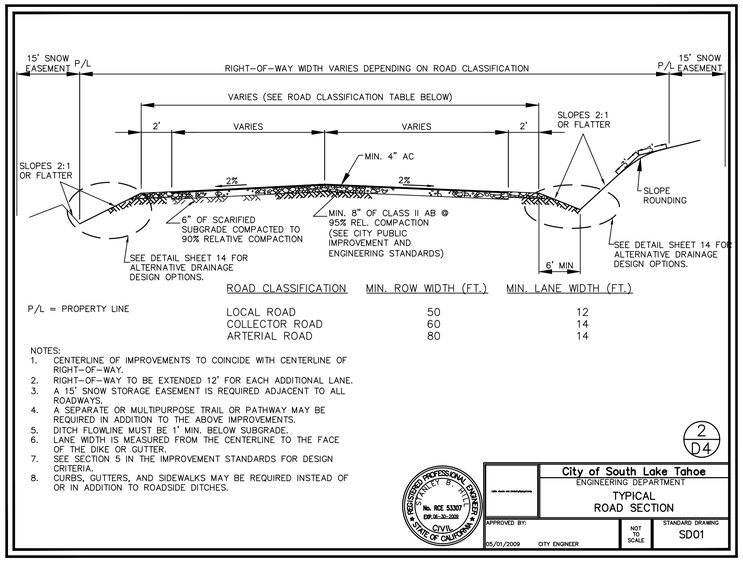
D3

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

36" CMP WITH SIDE INLET



SIDE ENTRY SAND TRAP DETAIL (1/D4)
SCALE: N.T.S.



P/L = PROPERTY LINE

ROAD CLASSIFICATION	MIN. ROW WIDTH (FT.)	MIN. LANE WIDTH (FT.)
LOCAL ROAD	50	12
COLLECTOR ROAD	60	14
ARTERIAL ROAD	80	14

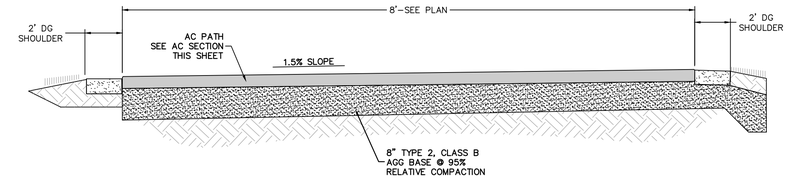
NOTES:
1. CENTERLINE OF IMPROVEMENTS TO COINCIDE WITH CENTERLINE OF RIGHT-OF-WAY.
2. RIGHT-OF-WAY TO BE EXTENDED 12' FOR EACH ADDITIONAL LANE.
3. A 15' SNOW STORAGE EASEMENT IS REQUIRED ADJACENT TO ALL ROADWAYS.
4. A SEPARATE OR MULTIPURPOSE TRAIL OR PATHWAY MAY BE REQUIRED IN ADDITION TO THE ABOVE IMPROVEMENTS.
5. DITCH FLOWLINE MUST BE 1' MIN. BELOW SUBGRADE.
6. LANE WIDTH IS MEASURED FROM THE CENTERLINE TO THE FACE OF THE DIKE OR GUTTER.
7. SEE SECTION 5 IN THE IMPROVEMENT STANDARDS FOR DESIGN CRITERIA.
8. CURBS, GUTTERS, AND SIDEWALKS MAY BE REQUIRED INSTEAD OF OR IN ADDITION TO ROADSIDE DITCHES.

(2/D4)

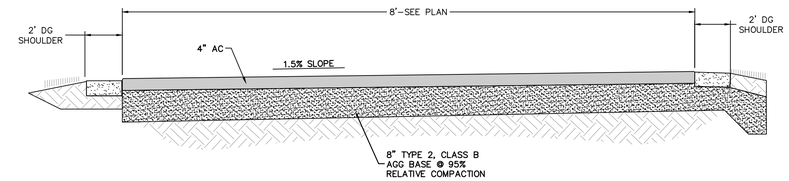
REGISTERED PROFESSIONAL ENGINEER — STACEY B. STITZER — No. RCE 53307 — EXP. 06-30-2009 — CIVIL — STATE OF CALIFORNIA

City of South Lake Tahoe
ENGINEERING DEPARTMENT
TYPICAL ROAD SECTION

APPROVED BY: 05/01/2009 CITY ENGINEER
NOT TO SCALE
STANDARD DRAWING SD01



TYPICAL AC MULTI-USE PATH DETAIL (4/D4)
SCALE: N.T.S.



AC MULTI-USE PATH/MAINTENANCE ACCESS DETAIL (6/D4)
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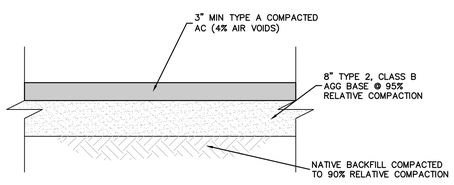

TYPICAL AC PAVEMENT SECTION (4/D4)
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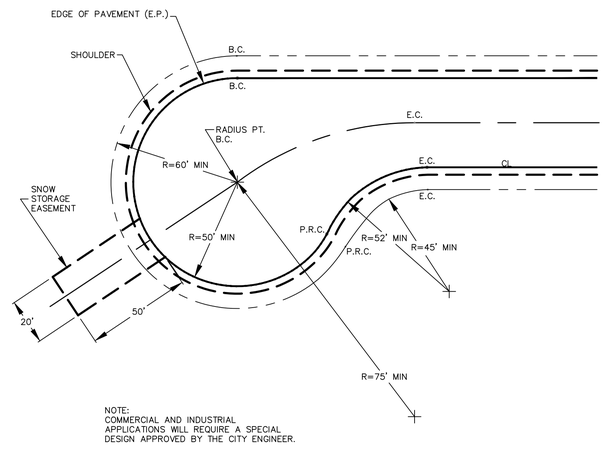
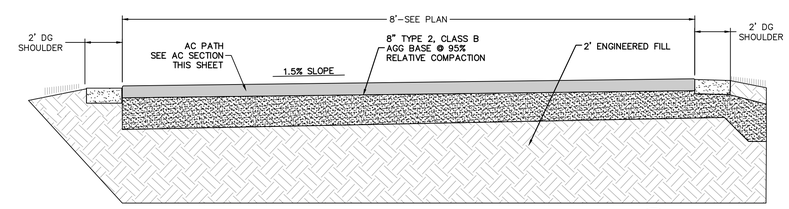


NOTE:
COMMERCIAL AND INDUSTRIAL APPLICATIONS WILL REQUIRE A SPECIAL DESIGN APPROVED BY THE CITY ENGINEER.

OFFSET CUL-DE-SAC DETAIL (5/D4)
SCALE: N.T.S.



TYPICAL AC MULTI-USE PATH IN MEADOW DETAIL (7/D4)
SCALE: N.T.S.

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Address 295 US 50, Suite 1,
Stateline, NV 89449

CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

DETAILS

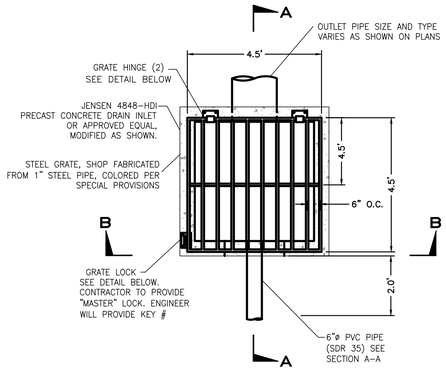
SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

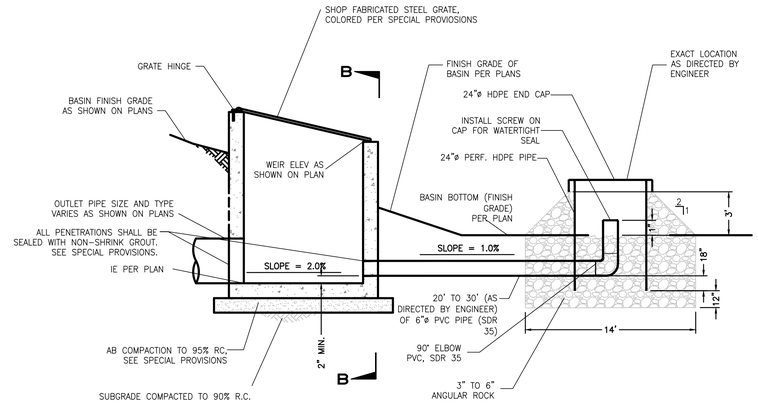
30% DESIGN

D4

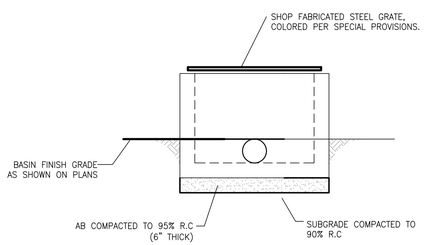
DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



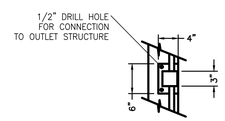
PLAN

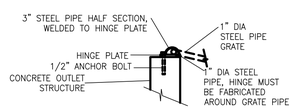


SECTION A-A

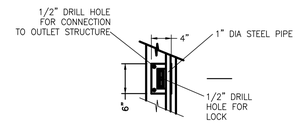


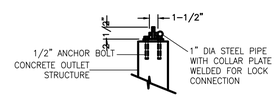
SECTION B-B





GRATE HINGE DETAIL

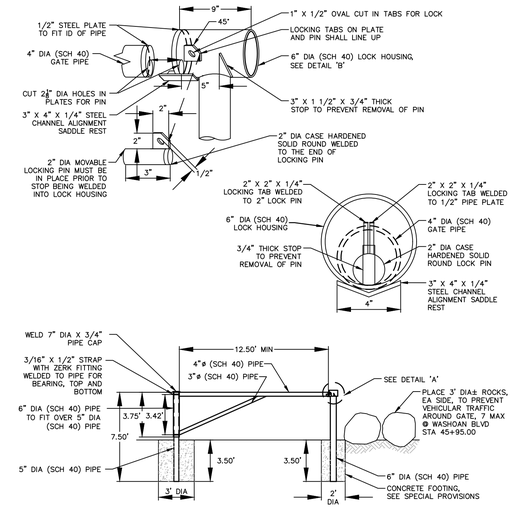




GRATE LOCK DETAIL

BASIN OUTLET STRUCTURE (1 / D5)

SCALE: N.T.S.



NOTE: ALL PIPES SHALL BE POWDER COATED DARK GREEN AT SHOP PRIOR TO INSTALLATION.

SINGLE BARRIER GATE (2 / D5)

SCALE: N.T.S.

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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

DETAILS

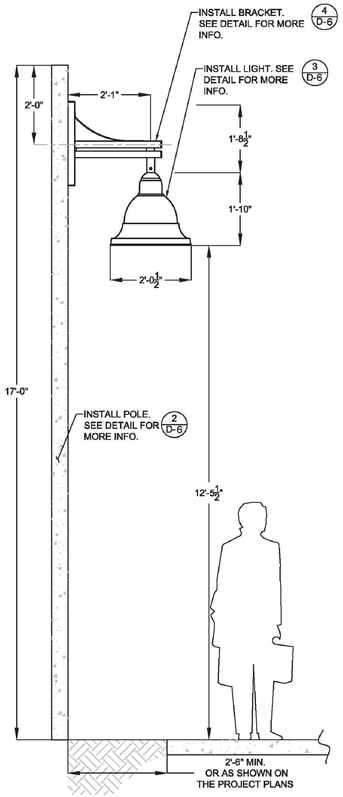
SOUTH LAKE TAHOE — EL DORADO — CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

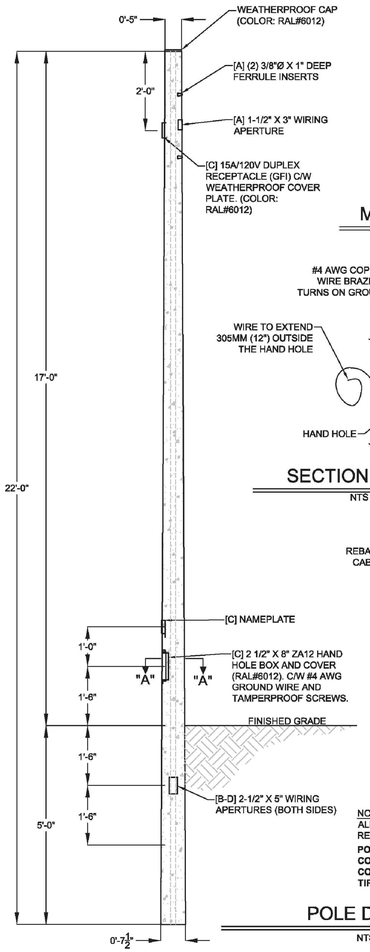
D5

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000



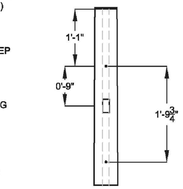
FINISHED POLE PROFILE (TYP.) 1 D-6

NTS



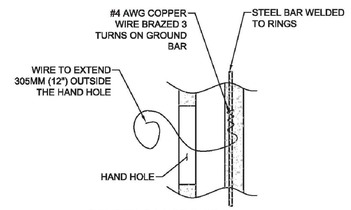
POLE DETAIL 2 D-6

NTS



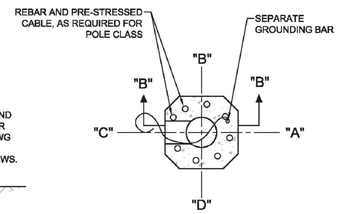
MOUNTING DETAIL

NTS



SECTION "B"-"B"

NTS

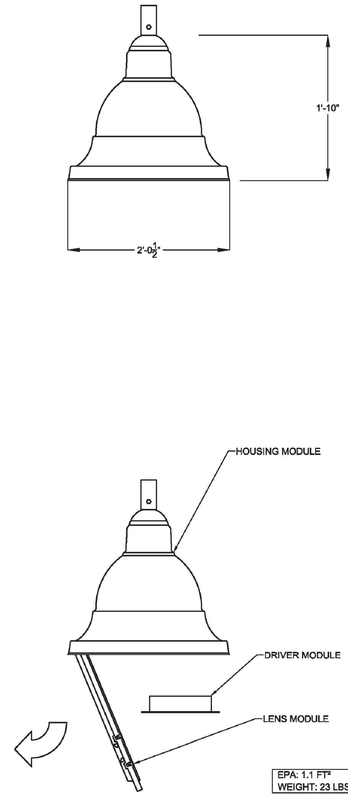


SECTION "A"-"A"

NTS

NOTE:
ALL POLES TO BE MANUFACTURES TO CSA A14 (LATEST REVISION) SPECIFICATION FOR SPUN CONCRETE POLES.

POST STYLE: THOMPSON OR EQUIV. **LENGTH:** 22'-0"
COLOR: DARK BRONZE **FINISH:** ETCHED
COATING: ACRYLIC SEALER **APPROX.** WEIGHT: 580 LBS.
TIP DIA.: 5" FL/FL **BUTT DIA.:** 7-1/2" FL/FL



LIGHT DETAIL 3 D-6

NTS

LUMINAIRE COMPONENTS

HOUSING MODULE: ROUND SHAPE, ONE-PIECE SPUN ALUMINUM HOUSING, SUSPENDED ON TENON AND LOCKED WITH LOCKING BOLT AND SET SCREWS. COMPLETE WITH "STREET SIDE" STICKER. FOR BRACKET HAVING A 2-2/8" (6CM)Ø TENON WITH 0.154" (4MM) OF WALL THICKNESS.

FLAT LENS MODULE (FT1GC): A CLEAR TEMPERED GLASS FLAT LENS IS ASSEMBLED ON A CAST ALUMINUM FRAME. THIS MODULE IS EQUIPPED WITH THE TOOL FREE OPENING SYSTEM WHICH CONSISTS OF THREE LATCHES (TLS), EASILY ACCESSIBLE FOR A FAST ACCESS TO THE INSIDE COMPONENTS. THIS ENTIRE LUMINAIRE IS ip66 CERTIFIED, THANKS TO THE ONE PIECE "V" SHAPE INJECTION MOLDED WEATHERPROOF GASKET, MADE OF HEAT RESISTANT SILICONE (287°C(550°F)).

OPTICAL / ELECTRICAL COMPONENTS

LAMP: 84 WATTS, 4000K (WHITE), SUPER HIGH FLUX OUTPUT AND HIGH LUMINANCE, DESIGN FOR HIGH CURRENT OPERATION. FAST TOOL-FREE MAINTENANCE (LED QUICK) THAT ALLOWS INDIVIDUAL REPLACEMENT OF A DEFECTIVE LED BY PULLING OUT THE PROPER UNIT.

OPTIC: IES TYPE III (3L3HS). THE OPTICS REFLECTOR IS MADE OF PRE-ANODIZED ALUMINUM REFLECTING SHEETS (86% MIN. REFLECTION), SEGMENTED IN MULTIPLE FACETS AND VENTILATED BY MULTIPLE PERFORATIONS AND BY HEAT SINK RADIATOR TO KEEP THE LED'S TEMPERATURE DOWN AND INCREASE THEIR LONGEVITY. THE ORIENTATION OF EACH FACET HAS BEEN METICULOUSLY CALCULATED TO OPTIMIZE THE LIGHT DISTRIBUTION FOR EACH APPLICATION.

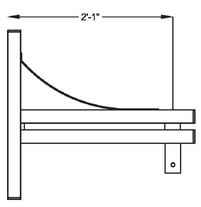
**OPTION: HSS - 120°, SHIELD SHIP SEPARATE, MECHANICALLY ASSEMBLED TO THE HOUSING ON SITE.

DRIVER MODULE: WITH DRIVER, PRIMARY VOLTAGE WIRED AT 240 VOLTS. 60 HZ. HIGH POWER FACTOR OF 90%. MINIMUM STARTING TEMPERATURE: COMPLETE WITH A SURGE PROTECTOR.

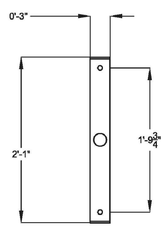
GENERAL OPTIONS:

WIRING / HARDWARE: TYPE TEW 14-7 3" (7CM) MINIMUM EXCEEDING FROM LUMINAIRE. ALL ELECTRICAL CONNECTIONS BETWEEN MODULES ARE WITH QUICK-DISCONNECT CONNECTORS FOR EASY MAINTENANCE. ALL EXPOSED HARDWARE IS STAINLESS STEEL. SILICONE GASKETS ARE USED FOR A WEATHER SEAL.

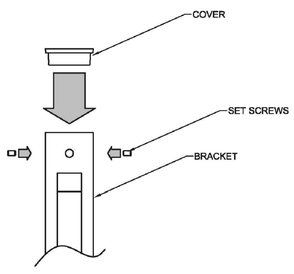
COLOR: RAL6012SM (BLACK GREEN)/ FINISH: SMOOTH TEXTURE. APPLICATION OF A POLYESTER POWDER COAT OF PAINT. (5 MILS / 127 MICRONS). THE FINISH MEETS THE ASTM G7, B117 AND D1654 REQUIREMENTS RELATIVE TO SALT SPRAY AND HUMIDITY RESISTANCE.



SIDE VIEW DETAIL



ANCHOR PLATE DETAIL



INSTALLATION DETAILS

COMPONENTS

BRACKET: ANCHORING TUBE HAVING 2"X3" WITH REINFORCED INTERNAL SLEEVED WITH (2) ARMS 2"X3" (5X7CM) AND DECORATIVE ELEMENT, WELDED TOGETHER. TO BE INSTALLED ON POLE BY OTHERS. ANCHOR BOLTS 3/8"Ø BY OTHERS. **C/W REMOVABLE COVERS SECURED ON BOTH ENDS OF BRACKET WITH (2) 5/16-18 UNC SET SCREWS.**

SUSPENSION SYSTEM: RETAIN LUMINAIRE WITH ONE LOCKING BOLT.

NOTE: NO DRILLING IS REQUIRED ON EXISTING BRACKET.

GENERAL / OPTIONS

HARDWARE: ALL EXPOSED HARDWARE IS STAINLESS STEEL. EPDM AND / OR SILICONE GASKETING IS APPLIED.

COLOR: RAL6012SM (BLACK GREEN)
FINISH: SMOOTH. APPLICATION IF A POLYESTER POWDER COAT OF PAINT. **(5 MILS / 127 MICRONS).** THE FINISH MEETS THE ASTM G7, B117 AND D1654 REQUIREMENTS RELATIVE TO SALT SPRAY AND HUMIDITY RESISTANCE.

BRACKET DETAIL 4 D-6

NTS

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CITY OF SOUTH LAKE TAHOE

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENT PROJECT

DETAILS

SOUTH LAKE TAHOE EL DORADO CALIFORNIA

REV	DATE	DESCRIPTION	BY

30% DESIGN

D6

DATE:	JAN 2018
DRAWN BY:	JTC
DESIGNED BY:	JTC
CHECKED BY:	BEM
JOB NO.:	8937.000

Tahoe Valley Stormwater and Greenbelt Improvement Project, CEQA and TRPA Environmental Documentation

APPENDIX B

EMISSIONS MODEL SPREADSHEET

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Tahoe Valley Stormwater and Greenbelt

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.90	19.76	3.68	10.17	0.17	10.00	2.19	0.11	2.08	0.04	3,553.95	0.61	0.04	3,581.90
Grading/Excavation	1.08	24.12	4.01	10.21	0.21	10.00	2.22	0.14	2.08	0.04	4,147.45	0.84	0.05	4,182.78
Drainage/Utilities/Sub-Grade	1.06	23.84	4.33	10.20	0.20	10.00	2.23	0.15	2.08	0.04	3,803.10	0.71	0.04	3,831.97
Paving	1.13	26.64	4.83	0.25	0.25	0.00	0.19	0.19	0.00	0.04	3,947.83	0.86	0.04	3,980.93
Maximum (pounds/day)	4.16	94.37	16.85	30.84	0.84	30.00	6.82	0.58	6.24	0.16	15,452.33	3.03	0.17	15,577.57
Total (tons/construction project)	0.14	3.16	0.56	1.15	0.03	1.12	0.25	0.02	0.23	0.01	519.77	0.10	0.01	523.99

Notes:	
Project Start Year ->	2020
Project Length (months) ->	12
Total Project Area (acres) ->	175
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	3	20	50	50	600	15
Grading/Excavation	160	5	80	5	900	15
Drainage/Utilities/Sub-Grade	25	5	10	5	600	15
Paving	0	20	0	5	900	5

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Tahoe Valley Stormwater and Greenbelt

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.26	0.05	0.13	0.00	0.13	0.03	0.00	0.03	0.00	46.91	0.01	0.00	42.89
Grading/Excavation	0.06	1.27	0.21	0.54	0.01	0.53	0.12	0.01	0.11	0.00	218.99	0.04	0.00	200.35
Drainage/Utilities/Sub-Grade	0.05	1.10	0.20	0.47	0.01	0.46	0.10	0.01	0.10	0.00	175.70	0.03	0.00	160.61
Paving	0.02	0.53	0.10	0.01	0.01	0.00	0.00	0.00	0.00	0.00	78.17	0.02	0.00	71.51
Maximum (tons/phase)	0.06	1.27	0.21	0.54	0.01	0.53	0.12	0.01	0.11	0.00	218.99	0.04	0.00	200.35
Total (tons/construction project)	0.14	3.16	0.56	1.15	0.03	1.12	0.25	0.02	0.23	0.01	519.77	0.10	0.01	475.36

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Tahoe Valley Stormwater and Greenbelt Improvement Project, CEQA and TRPA Environmental Documentation

APPENDIX C

BIOLOGICAL RESOURCE DATA

WESTERN BOTANICAL SERVICES, INC.

TECHNICAL MEMORANDUM

To: Jason Dukes, P.E., Cardno

CC: Stephen Peck, P.E. Cardno

From: Julie Etra, Western Botanical Services, Inc.

Date: November 7, 2016

RE: TAHOE VALLEY WATER QUALITY IMPROVEMENTS PROJECT: EXISITING VEGETATION SURVEY, RESULTS, AND PRELIMINARY RECOMMENDATIONS

1. INTRODUCTION

This Technical Memorandum documents existing vegetation communities and evaluates their condition as they pertain to potential water quality and other environmental improvements that are components of the Tahoe Valley Storm Water Improvement Project (TVSWIP). The purpose of the project is to reduce pollutant loads in a commercial area of South Lake Tahoe. The project is in the preliminary stages of analysis. The project area and land ownership is illustrated on Figure 1.

Preliminary surveys conducted by botanists Julie Etra and Kris Kuyper on June 23, 2016, focused on the existing Helen Avenue basin and proposed expansions of Stream Environment Zones (SEZs) (Figure 2). The entire project area was surveyed, including U.S Forest Service Lake Tahoe Basin Management Unit (LTBMU), City of South Lake Tahoe (CSLT), and California Tahoe Conservancy CTC) parcels during the initial survey and a follow-up survey on November 2nd.

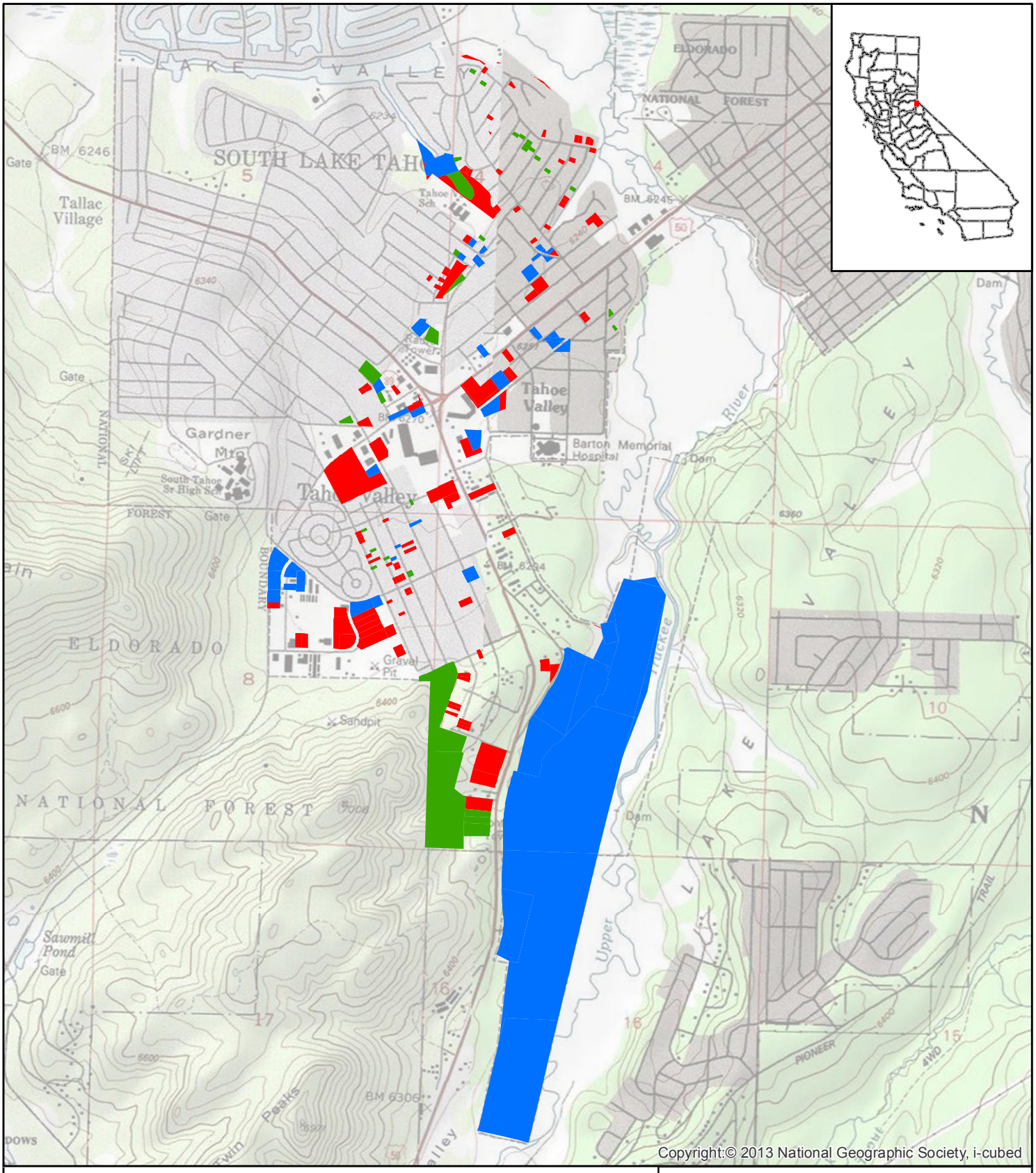
2. METHODS

2.1. Pre-field

Prior to conducting field surveys, a data base search was conducted for special status plant species that occur or have the potential to could occur in the project area.

Special status plant taxa are species that fall into one or more of the following categories:

- Officially listed by the State of California or the federal government as Endangered, Threatened, or Rare;



Explanation

- CALIFORNIA TAHOE CONSERVANCY
- CITY OF SOUTH LAKE TAHOE
- UNITED STATES OF AMERICA

0 1,000 2,000 Feet

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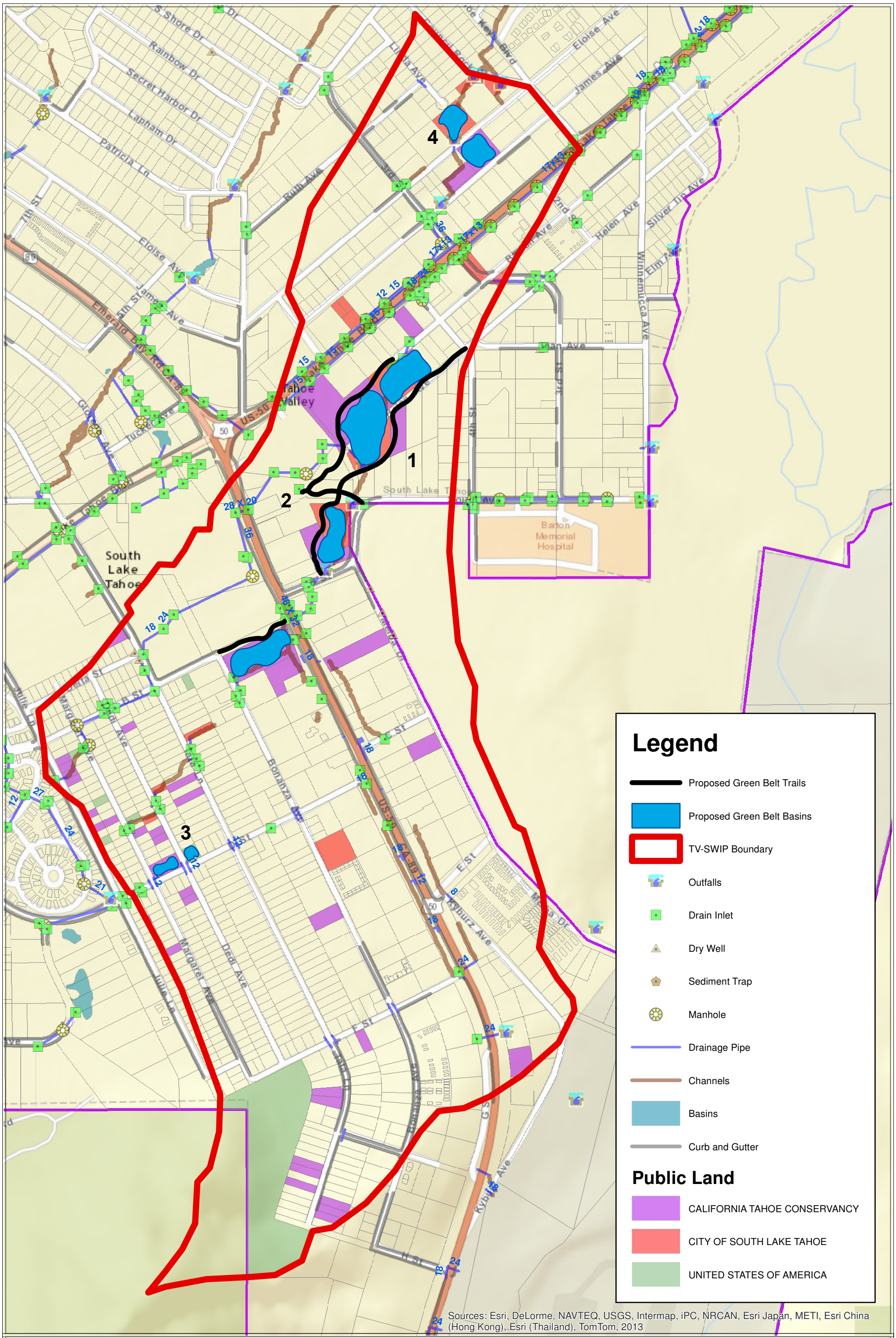
TAHOE VALLEY PROJECT

Project Location and Parcels

Figure 1

Date: 11/09/2016	Drawn By: JDB		
Revised:	Project No.: 3703		
Base Map: USGS 7.5' quads: Emerald Bay, South Lake Tahoe			
File Name: 3703G_TahoeValley_Fig1_Location.mxd			

Envirosciences, Inc.



Department of Public Works - Engineering Division

Tahoe Valley Storm Water Improvement Project

0 250 500 1,000 Feet

Figure 2

N

Eric Friedlander
CSLT
8/11/2015

- A Candidate for state or federal listing as Endangered, Threatened, or Rare;
- Taxa that meet the criteria for listed per Section 15280 of the California Environmental Quality Act (CEQA);
- Designated as Sensitive, of Special Interest or Threshold species as defined by the Tahoe Regional Planning Agency (TRPA) (TRPA Special Interest Species, Regional Plan for the LTBMU: Goals and Policies (1986) and Code of Ordinances (1987));
- Designated as Sensitive or a Species of Interest by the US Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU) (http://www.fs.usda.gov/detail/ltbmu/home/?cid=fsm9_046611); or
- Taxa considered by the California Native Plant Society (CNPS) to be 'rare, threatened, or endangered in California (Lists 1B and 2) (http://www.rareplants.cnps.org/).

The California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base Electronic Inventory (CNDDB) provided information on the known occurrences of special status species in the project area and vicinity (Figure 3).

2.2. Field Surveys

All parcels located within the proposed project area were thoroughly surveyed on foot and all taxa identified to the lowest taxonomic level possible (Table 1). Occurrences of wetland indicator plants, noxious weeds, and sensitive plant species were recorded.

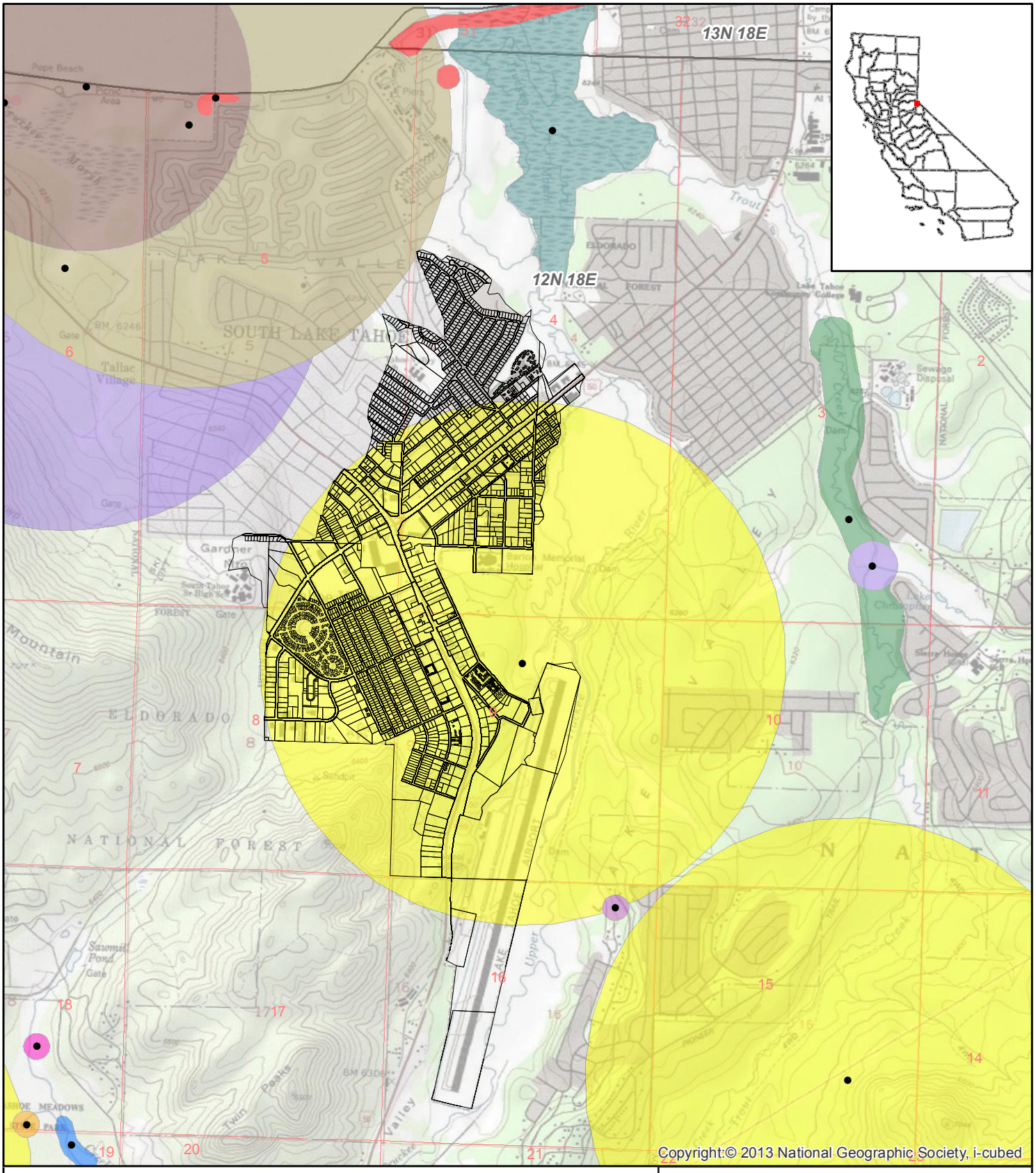
3. RESULTS

A species list for the entire project area, with Wetland Indicator Status, is included in Table 1, along with their location. The pre-field data search revealed no occurrences nor habitat for any special status plant species, not surprising given the urban setting of the project area. No special status species were located during the field survey.

No Noxious and Invasive Weeds, as defined by El Dorado County Department of Agriculture (https://www.edcgov.us/Ag/Invasive_Weeds.aspx) and the Lake Tahoe Basin Weed Coordinating Group (http://tahoeinvasiveweeds.org/weeds/priority.php) were in the project area. Although non-natives were purposefully seeded and some invasive species such as cheatgrass occur, they are not considered problematic.

<u>Existing Helen Basin and Adjacent SEZs</u>

This site is depicted as Site 1 on Figure 2 and Photos 1-4. It is unclear when this existing basin was constructed, although given the presence of many non-native species, is it presumed in the early 1980s before more native species became available and preferred. The basin is well vegetated. South of the basin, (north and south of South Avenue) occur healthy, robust SEZs, with scattered pieces of concrete and asphalt, presumably from construction clean out associated with the adjacent shopping center or other near-by developments (Photo 4). This is the only site where wetlands delineation may be desirable, if future plans include grading for expansion or filling.



Explanation

- Parcels
- cnddbpnt
- Great Basin rams-horn
- Lake Tahoe amphipod
- Lake Tahoe benthic stonefly
- Lake Tahoe stygobromid
- Tahoe yellow cress
- bank swallow
- broad-nerved hump moss
- long-eared owl
- marsh skullcap
- northern goshawk
- northern leopard frog
- sharp-shinned hawk
- watershield
- western bumble bee
- willow flycatcher
- yellow-headed blackbird

0 1,000 2,000 Feet

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TAHOE VALLEY PROJECT

Project Location, Parcels, and CNDDB Occurrences

Figure 3

Date: 11/09/2016	Drawn By: GSL		
Revised:	Project No.: 3703		
Base Map: USGS 7.5' quads: Emerald Bay, South Lake Tahoe			
File Name: 3703GX_TahoeValley_CNDDB.mxd			

Envirosciences, Inc.

City South Lake Tahoe Parcels Behind Factory Outlet Stores

This site is depicted as Site 2 on Figure 2, and Photo 5. These upland parcels are well vegetated with upland vegetation and occur in well-drained sandy soils.

Southwest Y Parcels

This site is depicted as Site 3 on Figure 2, and Photos 6 and 7. These parcels included existing SEZs and upland plant communities that have potential for water quality improvements where water tables are not too high, and there is capacity for treatment.

A parcel located on Bonanza Avenue and B St. has been identified as a possible treatment basin. It is in an upland plant community, with sandy well-drained soils.

Sky Meadows 'SEZ' Tahoe Keys

This site is depicted as Site 4 on Figure 2. These parcels, managed as a neighborhood park by the Tahoe Keys Homeowner's Association, are dominated by turf grass.

3. RECOMMENDATIONS

- Limit disturbance of existing SEZs.
- Remove hard coverage (concrete, asphalt) Increase infiltration where opportunities exist.
- Prior to construction, conduct surveys to confirm the presence or absence and extent of noxious weeds and invasive species that could compromise project success.
- Prior to construction, conduct surveys to confirm the non-existence of special status species in areas designated for construction.

4. SITE PHOTOS

Photo 1. Helen Basin.

Photo 2. SEZ southwest of Helen Basin.

Photo 3. Proposed basin expansion area adjacent to Helen Basin.

Photo 4. SEZ adjacent to Helen Basin with concrete slab in foreground.

Photo 5. Sandy, bare area behind factory outlet stores.

Photo 6. Undersized culvert, CTC parcel, Julie Lane.

Photo 7. CTC parcel, Julie Lane and B. Existing SEZ.

Photo 8. Barton Ave., between 2nd and 3rd Streets.

TABLE 1. Tahoe Valley Water Quality Improvement Project Species List

FAMILY	SCIENTIFIC NAME	COMMON NAME	WETLAND INDICATOR STATUS[1]	Location (Sites 1-4)
ASTERACEAE	*Achillea millefolium*	Yarrow	FACU	1,3
	Agoseris glauca	Pale agoseris	FAC	1
	Anaphalis margaritacea	Pearly everlasting	FACU	1
	Antennaria rosea	Rosy pussytoes	UPL	1
	Artemisia tridentata ssp vaseyana	Mtn. sagebrush	UPL	1
	Cirsium andersonii	Anderson's thistle	UPL	1,3
	Lactuca seriola	Prickly lettuce	UPL	1,2,3
	Senecio integerrimus	Lambstongue ragwort	UPL	1
	Symphyotrichum ascendens	Western aster	FAC	1,3
	Taraxacum offiniale	Dandelion	FACU	1
	Tragopogon dubius	Oysterplant	UPL	1,3
	Wyethia mollis	Mule's Ears	UPL	1,3
BERBERIDACEAE	*Mahonia repens*	Oregon grape	UPL	1
BORAGINACEAE	*Cryptantha affinis*	Popcorn flower	UPL	1
BRASSICACEAE	*Arabis holboellii*	Holboell's rockcress	UPL	1
	Descurrainia pinnata	Tansy mustard	UPL	1
	Erysimum capitatum	Western wallflower	UPL	1
	Thlaspi arvense	Field pennycress	UPL	1
CAPRIFOLICAEAE	*Symphoricarpos mollis*	Creeping snowberry	UPL	1
CHENOPODIACEAE	*Chenopodium album*	Lamb's quarter	UPL	1
CUPRESSACEAE	*Calocedrus decurrens*	Incense cedar	UPL	1
CYPERACEAE	*Carex douglasii*	Douglas' sedge	FAC	1,3
	Carex athrostachya	Slenderbeak sedge	FACW	1
	Carex nebrascensis	Nebraska sedge	OBL	1
	Carex praegracilis	Slender sedge	FACW	1
	Eleocharis macrostachya	Pale Spikerush	OBL	1
ERICACEAE	*Arctostaphylos patula*	Greenleaf manzanita	UPL	3
E	*Pterospera andromedea*	Pinedrops	UPL	1
FABACEAE	*Astragalus cicer*	Cicer milkvetch	UPL	1
	Lupinus lepidus	Pacific lupine	UPL	
	Lupinus breweri	Brewer's lupine	UPL	1
	Lupinus grayi	Gray's lupine	UPL	1
	Medicago sativa	Alfalfa	UPL	1
	Melilotus officinlais	Yellow sweet blossom clover	FACU	1
	Trifolium longipes	Long-stemmed clover	FAC	1
	Vicia americana	American vetch	FAC	3
GROSSULARIACEAE	*Ribes cereum*	Wax currant	UPL	1
HYDROPHYLLACEAE	*Phacelia hastata*	Silverleaf phacelia	UPL	1,3
JUNCACEAE	*Juncus balticus*	Baltic rush	OBL	1,3
	Juncus ensifloius	Swordleaf rush	FACW	1

[1] National Wetland Plant List Indicator Rating Definitions. July 2012, US Army Corp of Engineers: Western Mountains, Valleys, and Coast

Upland (UPL): 1–33% occurrence. Occur in wetlands in another region, but occur almost always under natural conditions in non-wetlands in the region specified.

Facultative Upland (FACU). 34–66% occurrence. Usually occur in non-wetlands but occasionally found in wetlands

Facultative (FAC). 67–99% occurrence. Equally likely to occur in wetlands and nonwetlands.

Obligate (OBL). 99% occurrence. Occur almost always under natural conditions in wetlands.

FAMILY	SCIENTIFIC NAME	COMMON NAME	WETLAND INDICATOR STATUS[1]	Location (Sites 1-4)
MONTIACEAE	*Calyptridium umbellatum*	Pussypaws	UPL	1
ONAGRACEAE	*Gayophytum diffusum*	Groundsmoke	UPL	1
	Rumex crispus	Curly dock	FAC	1
PINACEAE	*Abies concolor*	White fir	UPL	1
	Pinus contorta	Lodgepole pine	UPL	1,3,4
	Pinus jeffreyi	Jeffrey pine	UPL	1
POACEAE	*Achnatherum occidentalis*	Western needegrass	UPL	1
	Bromus carinatus	California brome	UPL	1
	Bromus tectorum	Cheatgrass	UPL	1
	Dactylis glomerata	Orchardgrass	FACU	1,2,3
	Elymus elymoides	Squirreltail	UPL	1
	Festuca breviplila	Hard fescue	UPL	3
	Hordeum brachyantherum	Meadow barley	--	1
	Phleum pratense	Timothy	FAC	1
	Poa bulbosa	Bulbous bluegrass	FACU	1
	Poa pratensis	Kentucky bluegrass	FAC	1,3,4
	Poa secunda	Sandberg bluegrass 'Sherman'	UPL	
	Thinopyrum intermedium	Intermedaite wheatgrass	UPL	1,2,3
POLEMONIACEAE	*Microsteris gracilis*	Graceful phlox	UPL	1
	Phlox diffusa	Spreading phlox	UPL	1
POLYGONACEAE	*Eriogonum umbellatum*	Sulfur buckwheat	UPL	1
	Rumex crispus	Curly dock	FAC	1
RANUNCULACEAE	*Aquilegia formosa*	Western columbine	FAC	1
RHAMNACEAE	*Ceanothus prostratus*	Mahala mat	UPL	1
ROSACEAE	*Amelanchier alnifolia*	Western serviceberry	FACU	1
	Fragaria vesca ssp americana	Woodland strawberry	UPL	1
	Potentilla glandulosa	Sticky cinquefoil	UPL	1
	Potentilla gracilis	Cinquefoil	FAC	1
	Purshia tridentata	Bitterbrush	UPL	1
	Rosa woodsii	Woods' rose	FACU	1
RUBIACEAE	*Kelloggia galioides*	Mile kelloggia	UPL	1
SALICACEAE	*Populus tremuloides*	Quaking aspen	FACU	4
	Salix geyeriana	Geyer's willow	OBL	1
	Salix lucida var lasiandara	Pacific willow	OBL	1
	Salix lemmonii	Lemmon's willow	OBL	1,4
	Salix scouleriana	Scouler's willow	FAC	1
SCROPHULAREACEAE	*Castilleja applegatei*	Applegate's Indian paintbrush	UPL	1
	Collinsia parviflora	Blue-eyed Mary	UPL	1
	Penstemon sp.	Penstemon		3

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

Last login April 17, 2018 11:29 AM MDT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Tahoe Valley Stormwater and Greenbelt Improvement Project

LOCATION

El Dorado County, California

DESCRIPTION

Located
in South Lake Tahoe, California. Improvements will be made to stormwater drainage system and use of infiltration basins to improve water quality. Project includes bike trail improvements.

Local office

Reno Fish And Wildlife Office

(775) 861-6300
(775) 861-6301

1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147

http://www.fws.gov/nevada/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
North American Wolverine Gulo gulo luscus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Amphibians

NAME	STATUS
Sierra Nevada Yellow-legged Frog Rana sierrae There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/9529	Endangered

Fishes

NAME	STATUS
Lahontan Cutthroat Trout Oncorhynchus clarkii henshawi No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3964	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

MIGRATORY BIRD INFORMATION IS NOT AVAILABLE AT THIS TIME

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the counties which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird entry on your migratory bird species list indicates a breeding season, it is probable that the bird breeds in your project's counties at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the BGEPA should such impacts occur.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

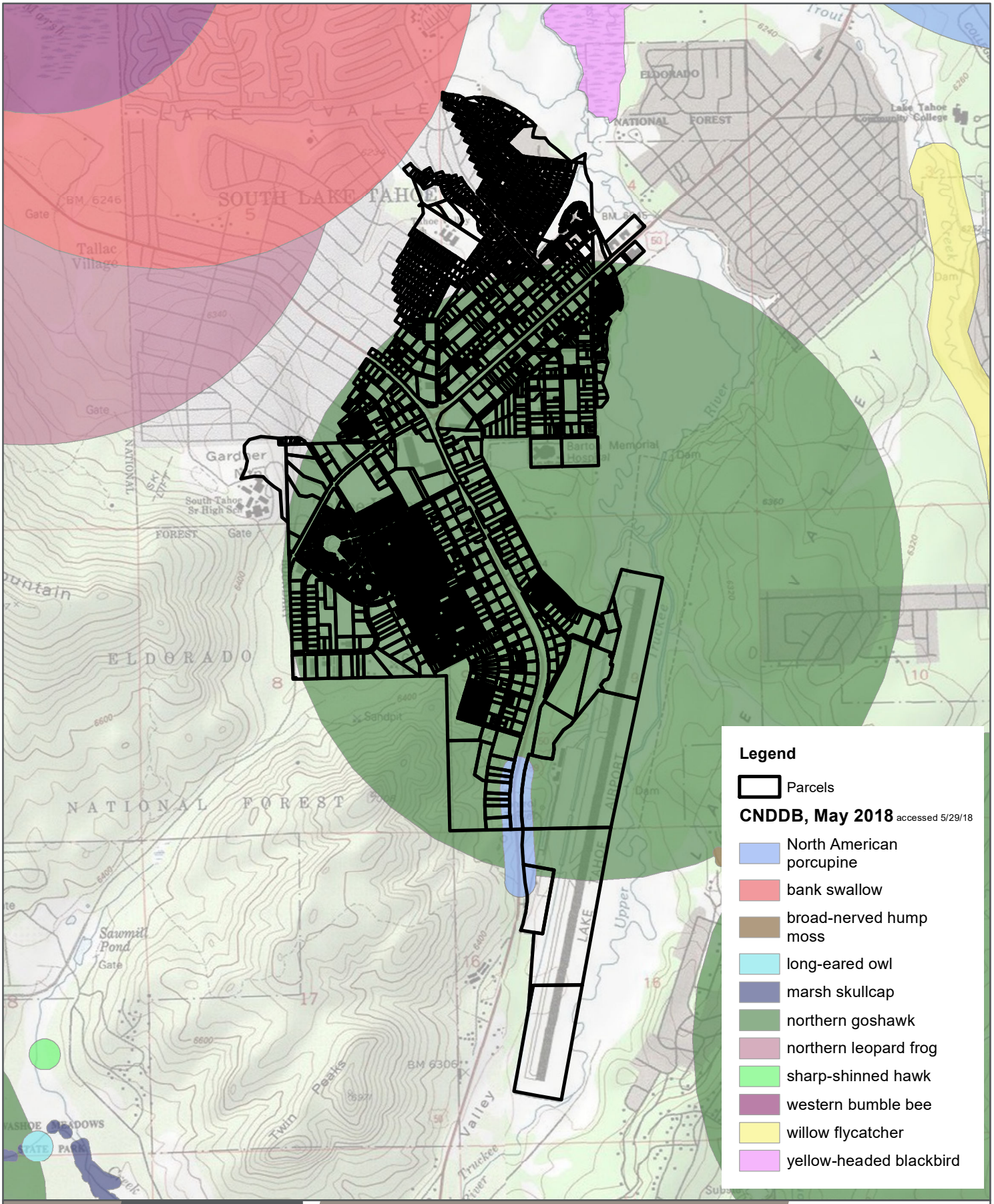
Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



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GIS Analyst: Anna.Clare

Tahoe Valley Stormwater and Greenbelt Improvement Project, CEQA and TRPA Environmental Documentation

APPENDIX D

TERRA SCIENCE TVAP SEZ REPORT

TERRA SCIENCE, INC.
Soil, Water & Wetland Consultants

Stream Environment Zone Report
For Tahoe Valley Area Plan

July 2014

4710 S.W. Kelly Avenue, Suite 100 / Portland, Oregon 97239 / Phone: 503-274-2100 / Fax: 503-274-2101

Document Information

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Tahoe Regional Planning Agency (TRPA) and
Lake Tahoe Sustainable Communities Program
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CSLT Project: Tahoe Valley Area Plan

Funded by: Lake Tahoe Sustainable Communities Program (Grant)

Prepared by: Phil Scoles, CPSS
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4710 S.W. Kelly Avenue, Portland, OR 97239
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Report Date: July 2014

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Appendices

Appendix A – Project Figures: Vicinity, Study Area, 1940 Aerial Photo, 1968 Aerial Photo, 1974 NRCS Soil Mapping, 2007 NRCS Soil Mapping, Bailey Land Capability Mapping, 2014 Mapping of SEZ Historical Extent, 2014 Mapping of SEZ Current Extent
Appendix B – TSI Soil Profile Descriptions
Appendix C – Cardno ENTRIX Soil Profile Descriptions
Appendix D – Selected TSI and Cardno ENTRIX Photographs

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Stream Environment Zone Report
For Tahoe Valley Area Plan

1.0 Introduction

This report identifies current and historic extents of Stream Environment Zones (SEZs) for the Tahoe Valley Area Plan (TVAP). Terra Science, Inc. (TSI) examined and documented SEZs within TVAP boundaries (herein study area) at the request of the City of South Lake Tahoe (CSLT) and Tahoe Regional Planning Agency (TRPA). This report was funded by a grant from the Lake Tahoe Sustainable Communities Program (administered via TRPA). TSI conducted a field investigation, reviewed aerial photographs, and related materials to prepare maps of current and historical extents of SEZs within the study area. This report contains those maps and aerials, along with field documentation and selected photographs as evidence of (or basis for) adopting refined SEZ boundaries for this plan area.

CSLT and TRPA intend to supersede the "Bailey Overlay Map" for SEZs with this work product and related materials. This revised SEZ mapping, like the Bailey Overlay maps, would be considered a planning-level tool (albeit highly refined) that represents best available information regarding SEZs within TVAP. Parcel-specific TRPA land capability and SEZ verifications are still required to determine development potential and parcel entitlements.

1.1 Regulatory Background

SEZs are defined by TRPA Code of Ordinances (Chapter 90) as "generally an area that owes its biological and physical characteristics to the presence of surface or ground water."[1] These seasonally wet and riparian areas are shown on the "Bailey Land Capability Overlay maps". The Bailey mapping of SEZs (and other land capabilities) was largely based on the Soil Survey of Tahoe Basin, California-Nevada (Rogers and Soil Conservation Service, 1974) soils mapping, historic aerial photographs and corresponding field reconnaissance. The soil survey maps were created at a scale of 1 inch equals 2000 feet, and Bailey maps were enlargements from that base scale (hence, best available information at that time). Since the

[1] SEZ differ from "wetlands" by encompassing riparian and other transition zones, in addition to wetlands and streams. Thus, wetlands and streams are a subset of SEZs. Wetland are defined and delineated using the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2).

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Bailey SEZ mapping is a planning-level tool, site-specific TRPA land capability verifications to confirm the extent of SEZ on a given parcel or larger study area are required. Over the past 40 years, significant technology improvements now allow incorporation of digital information (Aerials, LIDAR) and mapping techniques (GPS, GIS, AutoCAD). Such improvements increase the accuracy of mapping work, but do not change the fundamental standards to define SEZs or the required field data to substantiate revised boundaries. Consequently, revised SEZ should be considered an improved level of best available information.

SEZs can be obvious features, like perennial/intermittent streams, meadows and seepage areas. SEZs can also be subtle, like swales, depressions, hillside hollows, footslopes, ditches, and most notably, riparian zones adjacent to all of these features. Chapter 53 specifies the exact criterion for SEZ identification, which includes one of the following key indicators: 1) Evidence of surface water flow, including perennial, ephemeral and intermittent streams; 2) Primary riparian vegetation community (as per "Vegetation of the Lake Tahoe Region, A Guide for Planning", 1971); 3) Near surface ground water (within 20 inches of surface); 4) Lakes and ponds; 5) Beach soil; and 6) Specific soils having a seasonal high water table. When none of the key indicators are present, then secondary indicators are relied upon for identification, which include: A) Designated flood plain; B) Ground water between 20 and 40 inches from the surface; C) Secondary riparian vegetation (as per "Vegetation of the Lake Tahoe Region"); D) Additional specific soils having a seasonal high water table.

SEZs are recognized by TRPA's land capability system as Class 1b. Allowable coverage for SEZs is 1 percent and only for a specific set of uses (such as driveways and underground utilities). Restoration of SEZs is very important to the water quality and habitat around Lake Tahoe, since SEZs provide exceptional functioning for sediment trapping, nutrient uptake, carbon sequestration, aquatic and terrestrial habitat, wildlife feeding and nesting areas, flood storage and desynchronization, and open space. In urban areas, portions of SEZs have been drained, ditched, filled, excavated and often paved; thus, their function is lost or greatly diminished in such circumstances. Federal, state and local governments each participate in restoration of SEZs, such as removal of culverts, removal of fill material, re-establishment of native plant communities, and similar actions that restore near-original landscape conditions. These entities use previously generated maps showing SEZ extent, based on 1974 soil mapping (now obsolete), visual evidence (plant community) and TRPA land capability maps.

When examined on a site-specific basis, the Bailey land capability maps often show larger (wider) areas of SEZ than actually meet TRPA's key and/or secondary SEZ indicators. This has been documented hundreds of times by trained professionals and revised SEZ boundaries approved on case-by-case basis for over 30 years. With the adoption of the TRPA Regional Plan Update in 2012, one of the update's new provisions allows for land capability classes to be examined in closer detail on a local basis. Specifically, the TVAP is an Alternative Comprehensive Coverage

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Management System, as described in Chapter 13. When approved, the TVAP would utilize SEZ documentation provided in this report to demonstrate a more precise mapping of SEZs. In turn, this refined SEZ mapping would be utilized by the CSLT to identify specific parcels and/or areas where SEZ restoration should be prioritized. In some cases, the SEZ restoration would be done in conjunction with local storm water management projects. In other situations, the SEZ restoration would focus on habitat and connectivity functioning. Lastly, the refined SEZ mapping would help identify specific locations where the CSLT or individual property owners may opt to administratively designate as man-modified in accordance with Chapter 30.

1.2 Location

The TVAP consists of approximately 320 acres located in the southwest part of the City of South Lake Tahoe (CSLT). CSLT is situated in the northeast part of El Dorado County, California (Figure 1A). The focal point of the study area is the intersection of U.S. Highway 50 and California Highway 89. These roads are locally known as Lake Tahoe Boulevard and Emerald Bay Road (Figure 1B). The study area boundaries encompass the majority of commercial and industrial businesses in this portion of CSLT, as well as some residential housing, municipal services, and community hospital/medical offices.

2.0 Environmental Setting

The TVAP study area is part of a large glacial outwash terrace that is bounded by the mountain slopes to the south and west, Upper Truckee River to the east, and Lake Tahoe to the north. A glacial outwash terrace in the Lake Tahoe Basin, compared to a simple alluvial terrace, is a landform primarily created when glacial recession (melting) deposited massive amounts of sand (with lesser amounts of silt and clay). The glacial outwash terraces are typically broad, somewhat level terraces that gently sloped toward the center of the lake. Over the past 10,000 years, these terraces became dissected by creeks and swales, ranging from a few feet deep to over 10 feet deep. The Upper Truckee River is the most prominent example of a naturally incised stream system meandering through the glacial outwash sediments. While urban development and other disturbances have changed the surface of the terrace landform, the fundamental landscape undulations are still evident, albeit as fragments and relicts.

2.1 SEZ Overview

The TVAP contains four (4) SEZ drainage systems (Figure 4). In general, the SEZs slope from southwest to northeast. Some are well defined by topographic changes, while others are mostly obscured by roads, buildings and ongoing disturbance. Each system is considered a complex, since each mapped SEZ polygon contains

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varying degrees of hydrologic alteration, urban development and vegetated segments. The largest system (herein SEZ-A) originates southwest of Bonanza Avenue and slopes northeast through the east-center of the TVAP. SEZ-A continues north of the TVAP, where it merges with the Upper Truckee River floodplain. The next largest SEZ system (herein SEZ-B) is mostly parallel and immediately west of larger SEZ. This SEZ originates just south of Julie Lane and slopes northeasterly through commercial, industrial and residential lands. SEZ-B is hydrologically discontinuous due to interception by curbs, gutters, storm sewers, and urban development. It continues outside of the TVAP and merges with the open waters of the Tahoe Keys subdivision.

Further west, there is a smaller SEZ system (herein SEZ-C) that originates near Emerald Bay Road and Eighth Street and slopes to the northeast. This SEZ has been hydrologically altered with construction of several detention basins / swales to treat urban runoff from nearby lands. SEZ-C continues north of TVAP and eventually merges with SEZ-B – just northwest of Tahoe Valley Elementary School. The TVAP includes a fourth SEZ system (herein SEZ-D) associated with the Upper Truckee River floodplain. A significant portion of SEZ-D is filled for commercial uses and there was no publicly held lands to collect soils data. While the Upper Truckee River flows in a north to northwest direction, localized surface drainage can flow to the east and northeast (around old fill material).

3.0 Field Approach and Mapping Personnel

To map the historical SEZ extent, CSLT and TRPA contracted with Phil Scoles of Terra Science, Inc. to conduct a detailed field investigation that describes soil conditions, documents plant communities, and maps SEZ extent for the TVAP study area. Phil Scoles is Certified Professional Soil Scientist (CPSS) that has examined and documented thousands of soil profiles in California, Nevada, Oregon, Idaho and Washington. He has conducted numerous land capability evaluations and challenges in the Lake Tahoe Basin, both as a private sector consultant and as a TRPA subcontractor. He is also a former Soil Conservation and SEZ Program manager for TRPA.

3.1 Sample Locations and Evaluation Parameters

CSLT initially retained Cardno ENTRIX (Tim Hagan, soil scientist) to document SEZs within the TVAP, among other soils and storm water related topics. When Mr. Hagan left employment with Cardno ENTRIX, CSLT retained TSI to collect additional data, complete mapping of the SEZs and compile a summary report. Data for this report includes 18 soil locations reviewed by Cardno ENTRIX, plus 11 additional locations examined by TSI.
Collectively, all of the sample locations represent field conditions in, and adjacent to, the SEZ systems within the study area. The TSI field investigation occurred in May 2014, while the Cardno ENTRIX field work was done in August-September

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2013. Together, the TSI and Cardno ENTRIX soil descriptions document a wide range of SEZ and adjacent upland (non-SEZ). This range of soil descriptions facilitates a correlation between observed soil conditions, topographic setting, slope changes and subtle plant community changes. Soil profiles indicate depths below the surface where water persists for weeks or months in the growing season, as evident by redoximorphic features and high value/low chroma matrix colors.

The 11 locations examined by TSI occur on publicly held lands – either owned by California Tahoe Conservancy (CTC) or CSLT. Each location was examined above the surface for evidence of disturbance, plant community and changes in topography. Sampling locations were selected on basis of low topographic setting (where applicable), lack of recent disturbance, and ability to hand auger to 40 inches or more. Soils below the surface were examined with a standard bucket auger that typically retrieved soil in 3-inch intervals. Overall, retrieved soil was moist and in good condition to be evaluated for the following properties: Soil horizon and depth, color, texture, approximate gravel content, soil structure, consistence, plasticity, root presence, pore distribution, redoximorphic features and abundance, and lower boundary. In addition, the surface organic layer was documented, along with slope and landform interpretation. Fill material was evident at several locations – typically placed more than 30 years ago. Detailed descriptions of the soil profiles and corresponding photographs are included in Appendix B (for TSI soil pits) and Appendix C (for Cardno ENTRIX soil pits). Appendix D contains photographs for most sample locations (both TSI and Cardno ENTRIX).

3.2 Historic and Current Aerial Interpretation

In addition to soil sampling, three aerial photographs were utilized to supplement the field mapping of the historical SEZ extent. While the analysis focused on three aerial photographs from 1940 (Figure 2A), 1968 (Figure 2B) and 2012 (Figure 2C), additional historical aerial images from Google Earth were examined to better understand vegetation clearing, past grading and related disturbances. On historic and current aerial photographs, SEZs tend to have increased plant growth, due to wetter soil conditions in spring and early summer. They often contain deciduous shrubs (and scattered trees) that can be distinguished from the conifer-dominated uplands. The table on the following page itemizes useful observations and interpretations from these historical photographs.

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Table 1. Land use interpretation using historic and current aerial photographs.

Year	Land Use Condition	SEZ Correlation
1940 (Black and white, USGS)	Few roads and buildings within TVAP. Hwy. 50 is most prominent created landmark. Where undeveloped, density of tree cover is moderate; however, such cover is roughly 40 percent less than 1968.	Tree and shrub density significantly higher in SEZ mapped areas.
1968 (Black and white, USGS)	Most roads within TVAP constructed. Increased tree cover due to natural forest regeneration (tree growth). About 20 percent of residential land occupied by dwellings. Approximately 40 percent of commercial and industrial land developed. Substantial increase in impervious cover along and within one block of Hwy. 50, Emerald Bay Road and Lake Tahoe Boulevard. Portion of Upper Truckee River floodplain filled for commercial development.	Due to urban vegetation clearing, SEZ mapped areas have lower correlation to tree and shrub densities. Minor, but not significant, tonal variation between SEZ and nearby pine-dominated lands.
2013 (Color, Google Earth)	Few additional roads constructed since 1968. Greater than 85 percent of residential lands now have homes, while roughly 80 percent of commercial and industrial lands developed. Most notable vegetative change is overall decrease in tree and shrub cover within 2 to 3 blocks of arterial streets.	Due to increased urban development and vegetation removal (disturbance), SEZ mapped areas have lower correlation to aerial tones, patterns and natural areas (when compared to earlier aerials).

3.3 SEZ and Previous Soil Mapping Correlation

Lastly, the project team examined the correlation between the TSI 2014 SEZ mapping, 1974 SCS soil map (Figure 3A), 2007 NRCS soil map (Figure 3B) and Bailey Land Capability map (Figure 3C). The 1974 soil survey was published by the Soil Conservation Service (SCS), which served as the basis for the Bailey Land Capability map (U.S. Forest Service in cooperation with TRPA). Specifically, the Bailey Land Capability map (and adjoining report) utilized the SCS soil mapping and slope classes, but also integrated other factors such as near-surface water, stoniness, and erosion hazard to assign allowable maximum land coverage standards. The 2007 soil survey was digitally published by Natural Resources Conservation Service (NRCS) and supplemented field sampling with historic and current aerial photography. The table on the following page itemizes useful observations and interpretations from the soil surveys and Bailey report.

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Table 2. SEZ mapping comparison to original and current soil mapping and Bailey land capability report.

Year	Soil Map Units	SEZ Correlation / Comparison
1974 Soil Survey (SCS)	EfB – Elmira-Gefo loamy coarse sand Ev -- Elmira loamy coarse sand, wet variant (SEZ) Lo – Loamy alluvial land (SEZ)	SEZ mapping typically 50 percent narrower than Elmira loamy coarse sand, wet variant soil map unit. High correlation with Loamy alluvial land mapping (Upper Truckee River floodplain)
2007 Soil Survey (NRCS)	7041 – Tahoe complex (SEZ) 7043 – Tahoe mucky silt loam, drained (SEZ) 7444 – Christopher-Gefo complex 7461 – Jabu coarse sandy loam 7471 – Marla loamy coarse sand (SEZ) 7541 – Ubaj sandy loam	SEZ mapping typically 30 percent narrower than Marla loamy coarse sand soil map unit; however, SEZ mapping extends further southwest than NRCS map unit. High correlation with Tahoe complex and mucky silt loam mapping (Upper Truckee River floodplain)
Bailey Land Capability Map (1974, USFS)	Class 1b -- Elmira loamy coarse sand, wet variant and Loamy alluvial land (SEZ) Class 7 – Elmira-Gefo loamy coarse sand	Same correlation / comparison as 1974 soil survey.

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4.0 Results and Discussion

Figures 4 and 5 in Appendix A show the historic and current SEZ extent as determined by the TSI and Cardno ENTRIX investigations. The maps were prepared in AutoCAD, using linework transcribed from field maps (aerials and parcel maps). Such SEZ mapping utilized multiple parameters to assure accurate boundaries, particularly for situations having naturalistic conditions. Said differently, the refined SEZ mapping is the product of several layers of investigation, not reliance only soils and/or vegetation observations. In addition, the refined SEZ mapping reflects over 60 hours of field examination for the 320 acre study area. Such effort is substantially greater and more detailed than previous soil mapping and vegetation observations for the same area.

4.1 Historic SEZ Extent

Figure 4 shows the historical extent of SEZ within the Tahoe Valley Area Plan study zone. For regulatory purposes, TRPA relies upon the historical SEZ mapping extent (rather than current conditions). Such mapping verifies that the study area contained the same four SEZ complexes, as described in Section 2 of this report. These SEZs were sustained by a combination of rainfall, snowmelt and seasonal high water table. They were historically wettest in winter and spring. Except for the lower portions of the Upper Truckee flood plain, these SEZs became dry in summer when the elevation of the seasonal water table would drop in response to increasing evapotranspiration and decreasing rainfall. The following table compares the SEZ acreages determined by this report to currently adopted, TRPA land capability maps (Bailey Class Ib).

Table 3. Acreage comparison for historic, current SEZ mapping and Bailey land capability mapping.

Year	Report/Mapping Source	SEZ Acreage
1940	Historic SEZ Extent (TRPA regulated) *[from 2014 Terra Science and Cardno ENTRIX investigations]*	50.35
1974	Bailey Land Capability Class 1b [from USFS and TRPA]	122.4
2014	Current, Vegetated SEZ Extent (for restoration and potential man-modified purposes) *[from 2014 Terra Science and Cardno ENTRIX investigations]*	10.0

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Without the aid of a time machine, it is impossible to positively assert that the refined historical SEZ extent met criteria in Chapter 53 of TRPA Code of Ordinances. Still, SEZs are the product of changes in natural landforms, presence of seasonal high water table, and a plant community typically adapted to seasonally moist to wet soil conditions. Over the span of almost 75 years (1940 to present), the natural landforms in the TVAP have been modified in some places and not in others. There is sufficient number of locations having intact natural landforms that a qualified professional can "stitch together" the historic drainage patterns. Similarly, a qualified soil scientist can typically differentiate between natural and disturbed/created soils, as well as conclude on presence/absence of a seasonal high water table. And using current and historical aerial images, it is possible to track changes in vegetative cover, tonal patterns and land use. Consequently, the refined historic SEZ extent shown on Figure 4 is reliable and well documented.

4.2 Current SEZ Extent

Figure 5 shows the current extent of vegetated SEZ that likely meets the criterion specified in TRPA Chapter 53. That is, the field investigation for this report confirmed presence of key and/or secondary indicators for each of these polygons. Specifically, vegetated SEZs are differentiated from adjacent uplands on the basis of topographic setting, plant community, soil conditions, water table in the upper part, and similar attributes. It is self-evident that only scattered remnants of SEZ exist (when compared to the historic SEZ extent). Some of the remnants are hydrologically connected, while others are isolated or terminate at a storm sewer or edge of urban development.

The field investigation also confirmed that the cross-hatched areas are places where historic SEZ was filled, ditched, or otherwise removed and no longer meet SEZ identification criteria. Further analysis, such as shallow hydrology monitoring, is necessary to determine potential for restoring SEZ function, since field conditions differ on basis of adjacent land use, presence of underground utilities, presence/ absence of old fill material, opportunity to receive treated storm water, and related factors. NOTE: The cross-hatched areas in Figure 5 do not infer that such lands have been administratively changed to a different land capability classification using the man-modified procedures. TRPA maintains a database of site-specific locations where man-modified procedures have been applied and approved by a hearings officer.

5.0 Limitations of this Report

Terra Science, Inc. did not investigate or describe existing conditions beyond the study area (Figure 1B). The data presented in this report was collected, analyzed and interpreted using standards of skill, care, and diligence ordinarily provided by a qualified earth science professional, in accordance with TRPA Code of Ordinances.

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The report findings are based on information from CSLT, TRPA, the observations of the project team, and limitations of bucket auger soil sampling. The report findings and their significance should not be extrapolated beyond the scope of this field study. Terra Science, Inc. shall not be liable beyond the fees paid for its services for errors and omissions.
This report was generated for the express use of City of South Lake Tahoe, Tahoe Regional Planning Agency, Lake Tahoe Sustainable Communities, and their designates. These parties shall not interpret the report findings or conclusions any differently than stated without prior discussion with Terra Science, Inc.

Respectfully submitted,

Phil Scoles, CPSS
Soil and Water Scientist

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South Lake Tahoe. 38º54'51.08" N and -120º00'06.15" W. December 31, 1968 (Aerial Image). U.S. Geological Survey. Accessed May 2014 (via Google Earth program).

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Appendix A

Project Figures

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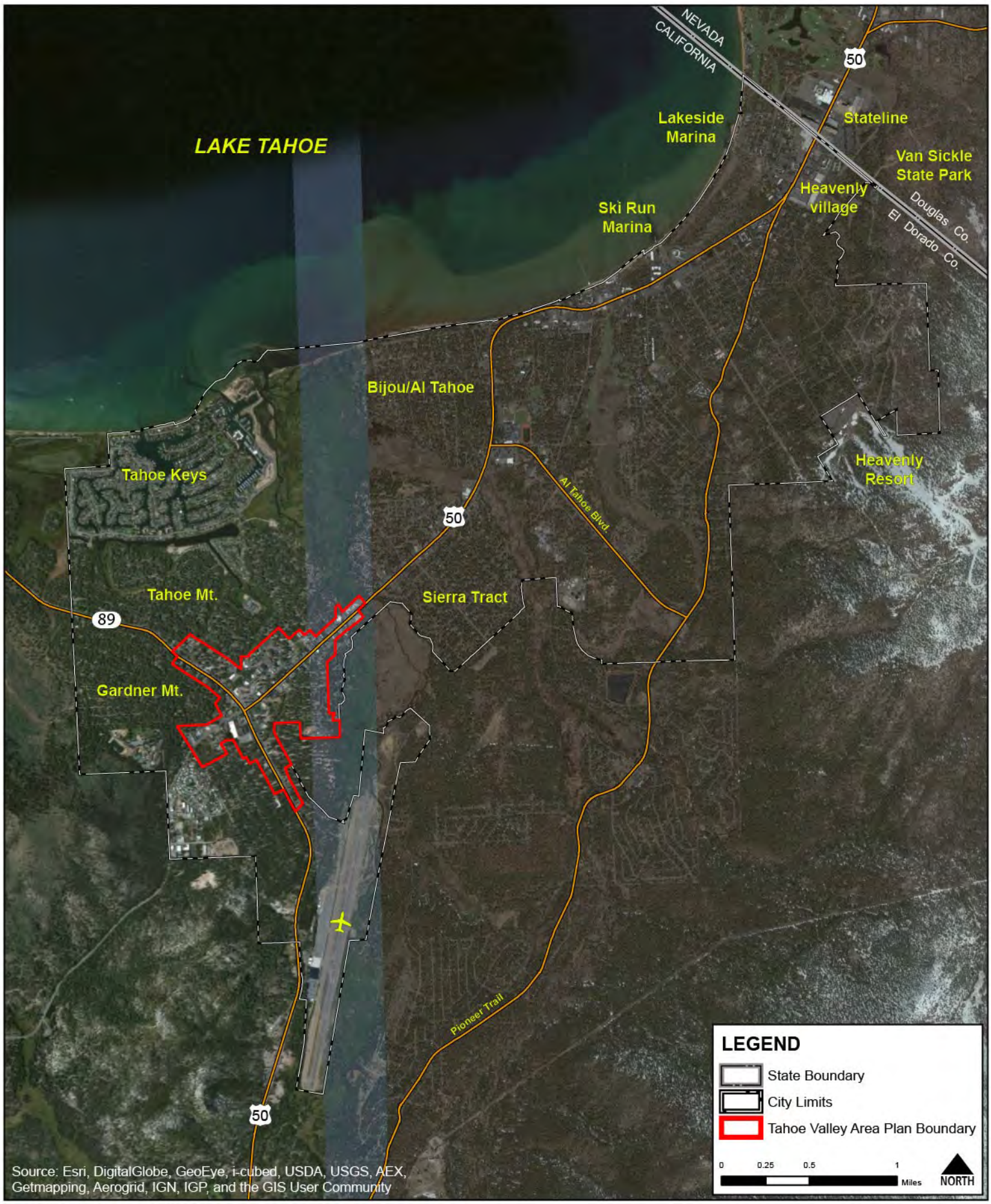
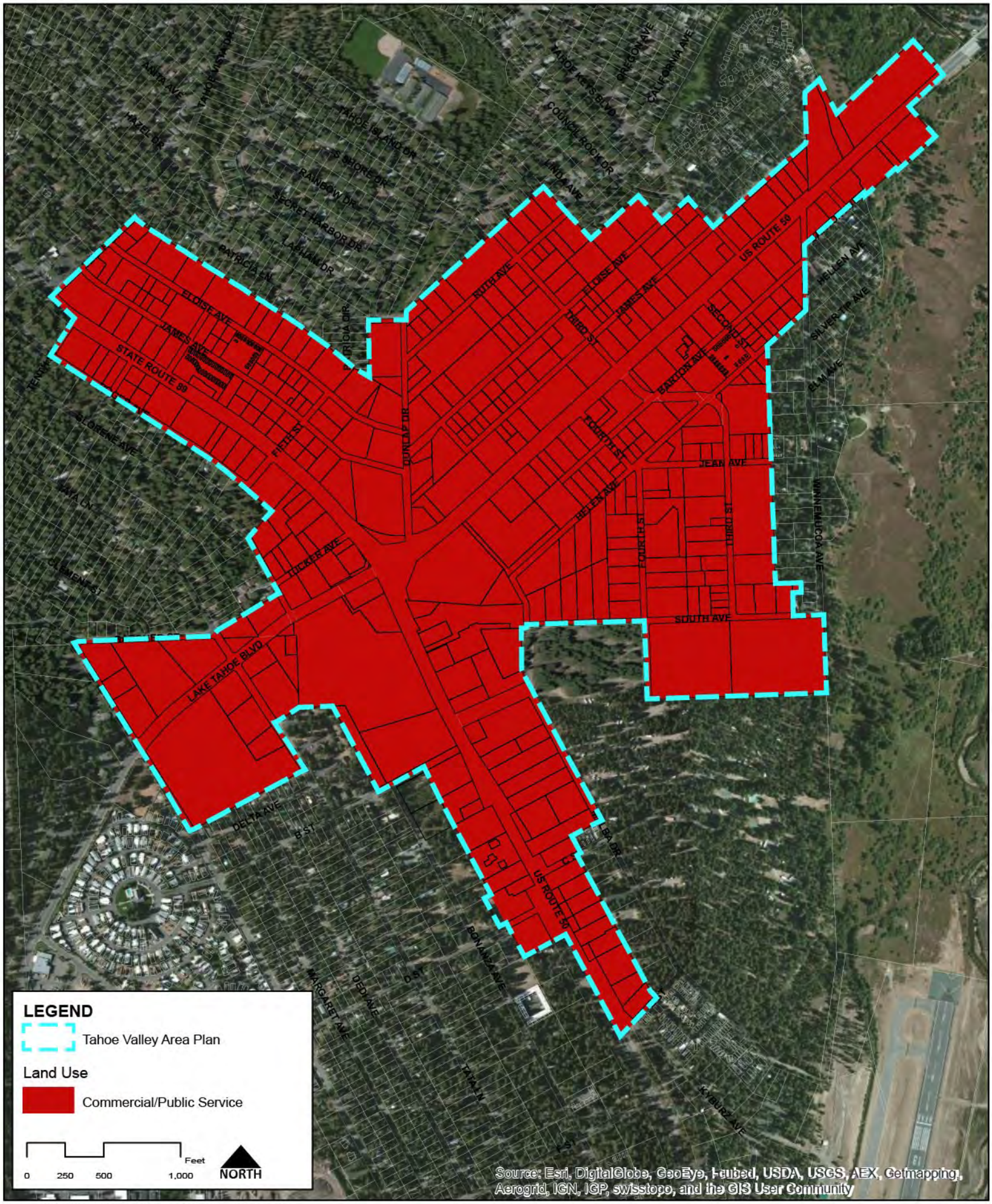


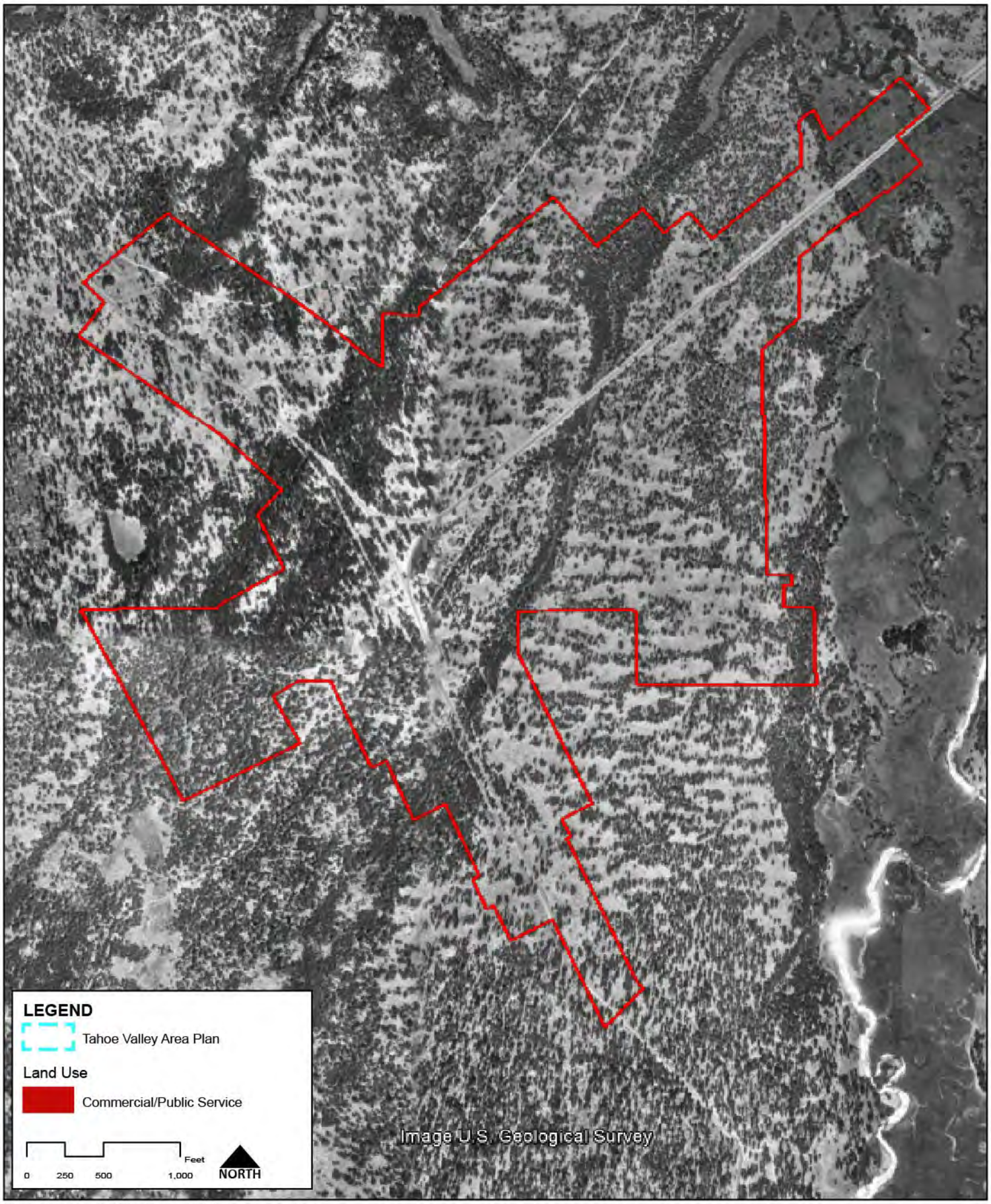
Source: TRPA GIS, 2014; adapted by City of South Lake Tahoe.

Figure 1A
Vicinity Map
Stream Zone Report for the Tahoe Valley Area Plan



Source: TRPA GIS, 2014; adapted by City of South Lake Tahoe.

Figure 1B
Study Area
Stream Zone Report for the Tahoe Valley Area Plan



Source: Google Earth, 2014; adapted by City of South Lake Tahoe.

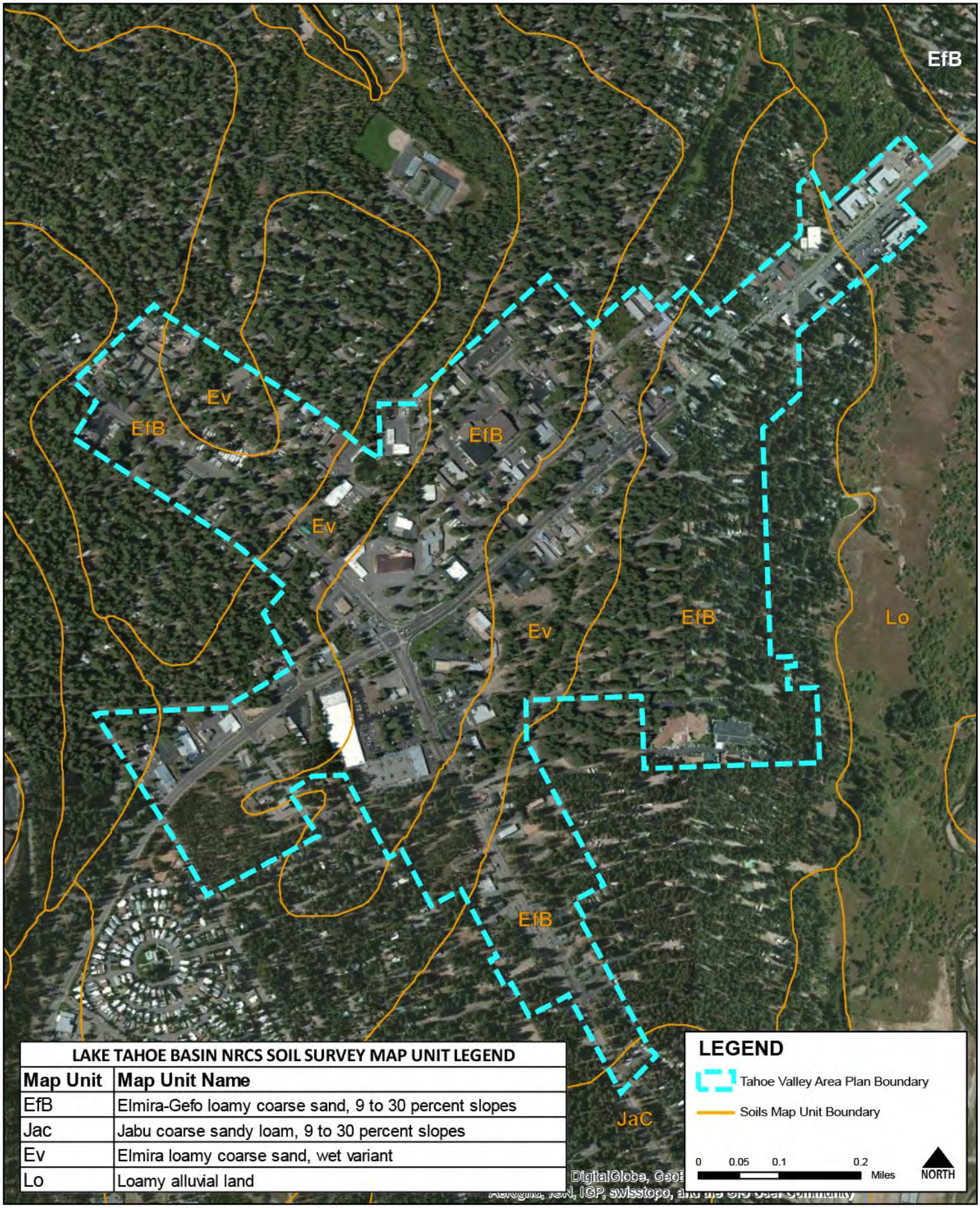
Figure 2A
1940 Aerial Photograph
Stream Zone Report for the Tahoe Valley Area Plan

Source: Google Eearth, 2014; adapted by City of South Lake Tahoe.

Figure 2B
1969 Aerial Photograph
Stream Zone Report for the Tahoe Valley Area Plan

Source: Google Earth, 2014; adapted by City of South Lake Tahoe.

Figure 2C
2012 Aerial Photograph
Stream Zone Report for the Tahoe Valley Area Plan



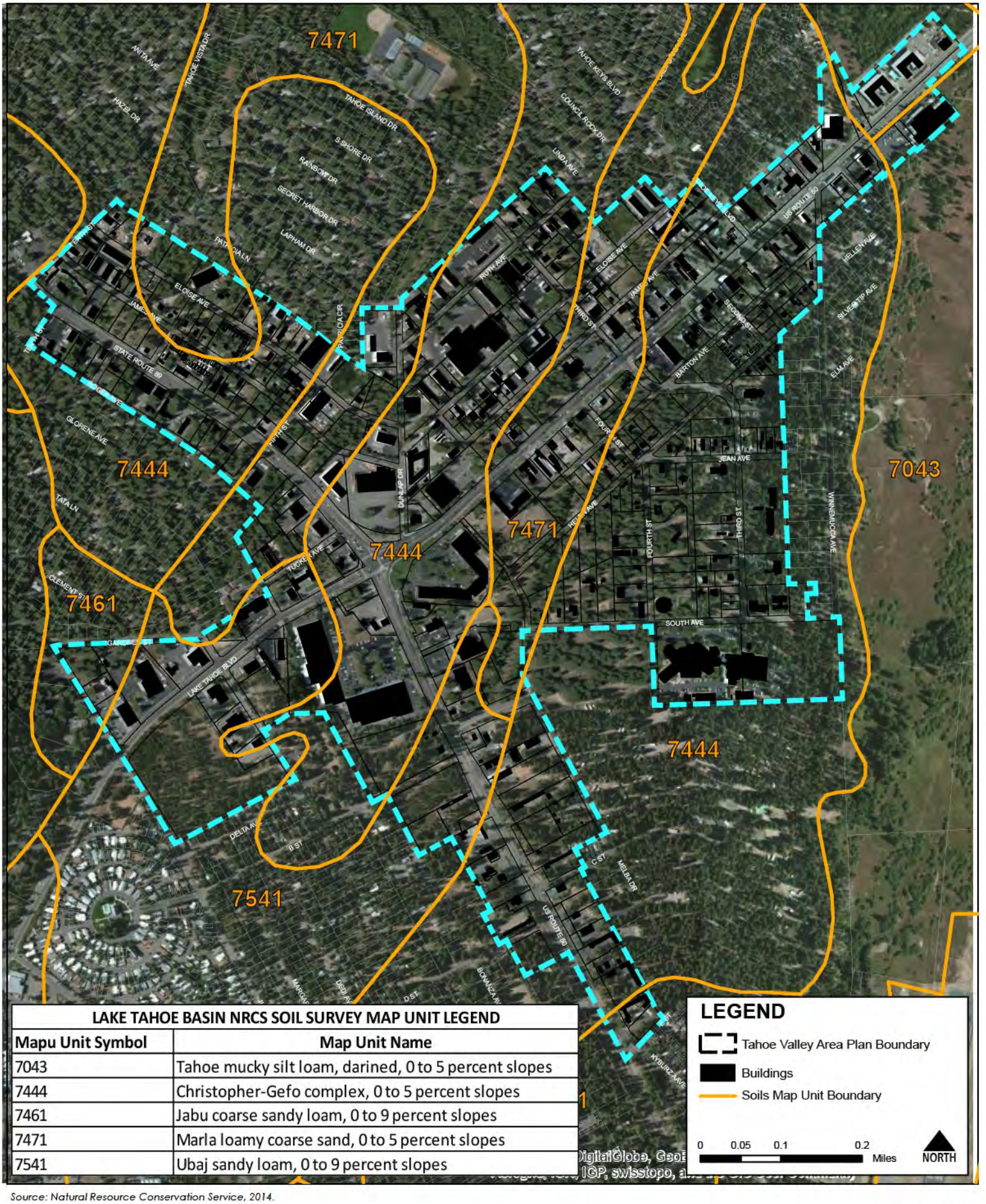
LAKE TAHOE BASIN NRCS SOIL SURVEY MAP UNIT LEGEND	
Map Unit	**Map Unit Name**
EfB	Elmira-Gefo loamy coarse sand, 9 to 30 percent slopes
Jac	Jabu coarse sandy loam, 9 to 30 percent slopes
Ev	Elmira loamy coarse sand, wet variant
Lo	Loamy alluvial land

Source: Natural Resource Conservation Service, 2014 & TRPA GIS, 2014.

Figure 3A

1974 NRCS Soil Mapping

Stream Zone Report for the Tahoe Valley Area Plan



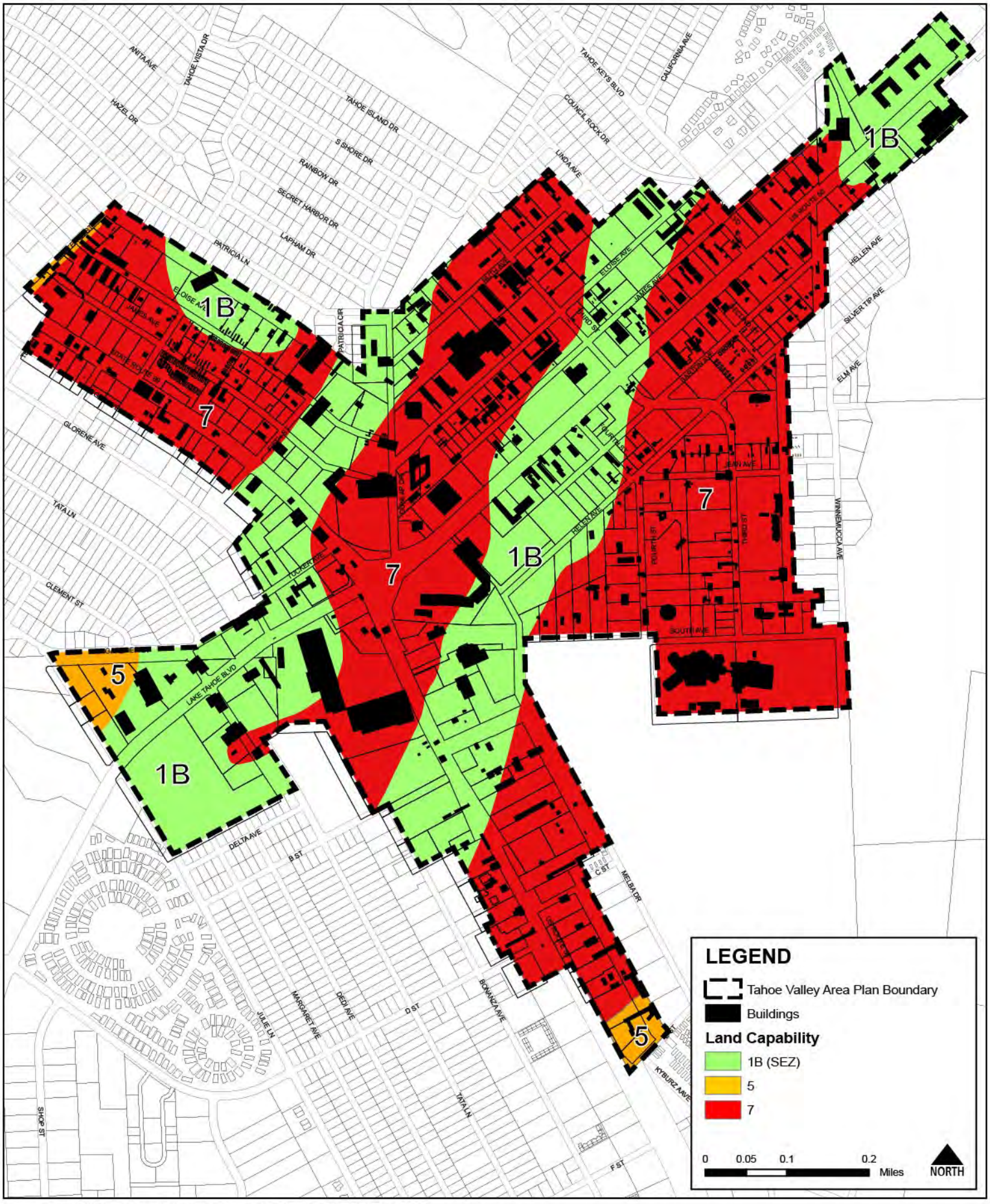
LAKE TAHOE BASIN NRCS SOIL SURVEY MAP UNIT LEGEND	
Mapu Unit Symbol	**Map Unit Name**
7043	Tahoe mucky silt loam, darined, 0 to 5 percent slopes
7444	Christopher-Gefo complex, 0 to 5 percent slopes
7461	Jabu coarse sandy loam, 0 to 9 percent slopes
7471	Marla loamy coarse sand, 0 to 5 percent slopes
7541	Ubaj sandy loam, 0 to 9 percent slopes

Source: Natural Resource Conservation Service, 2014.

Figure 3B

2007 NRCS Soil Mapping

Stream Zone Report for the Tahoe Valley Area Plan

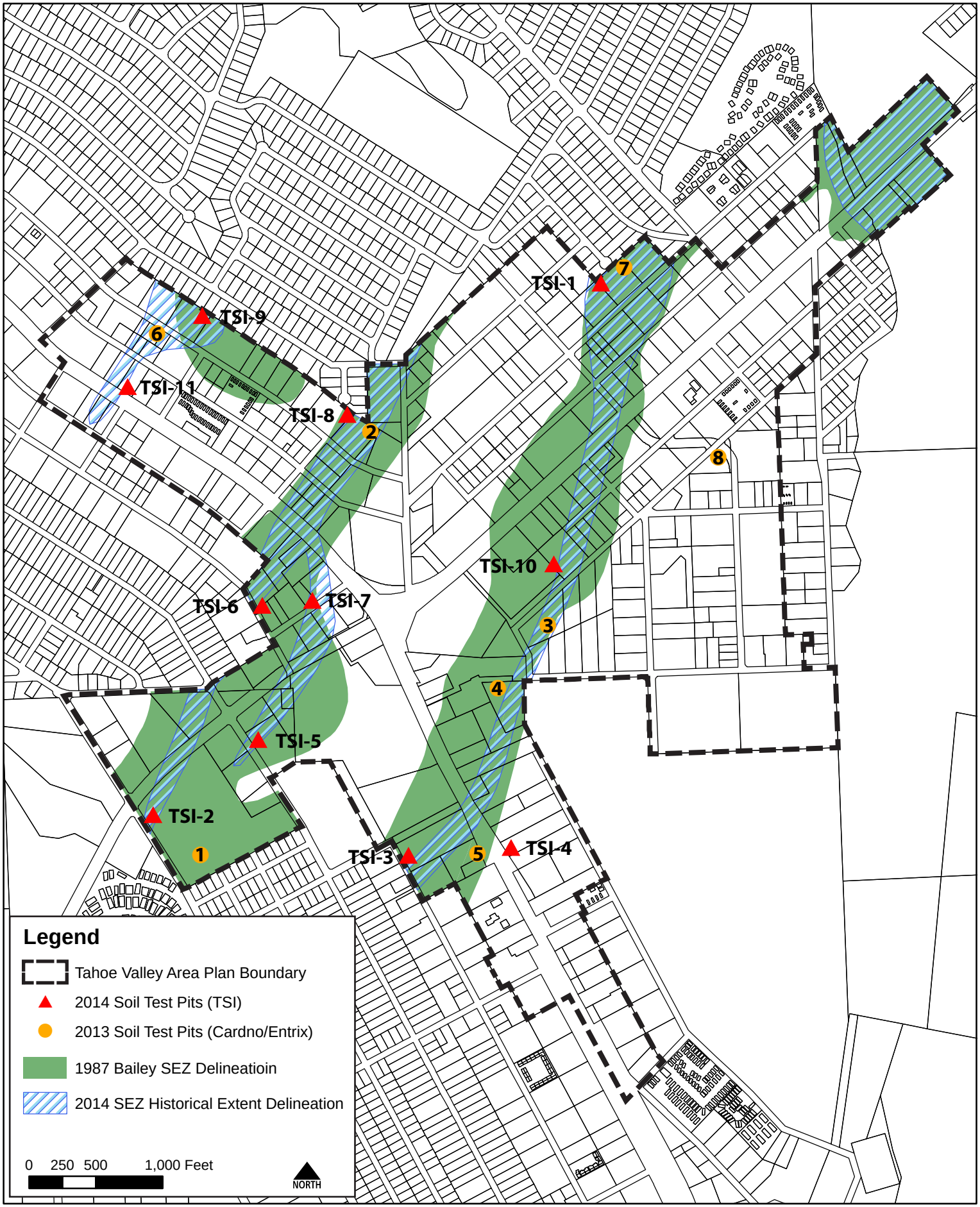


Source: TRPA 1987 Land Capability Maps; adpated by the City of South Lake Tahoe.

Figure 3C

Bailey Land Capability Mapping

Stream Zone Report for the Tahoe Valley Area Plan

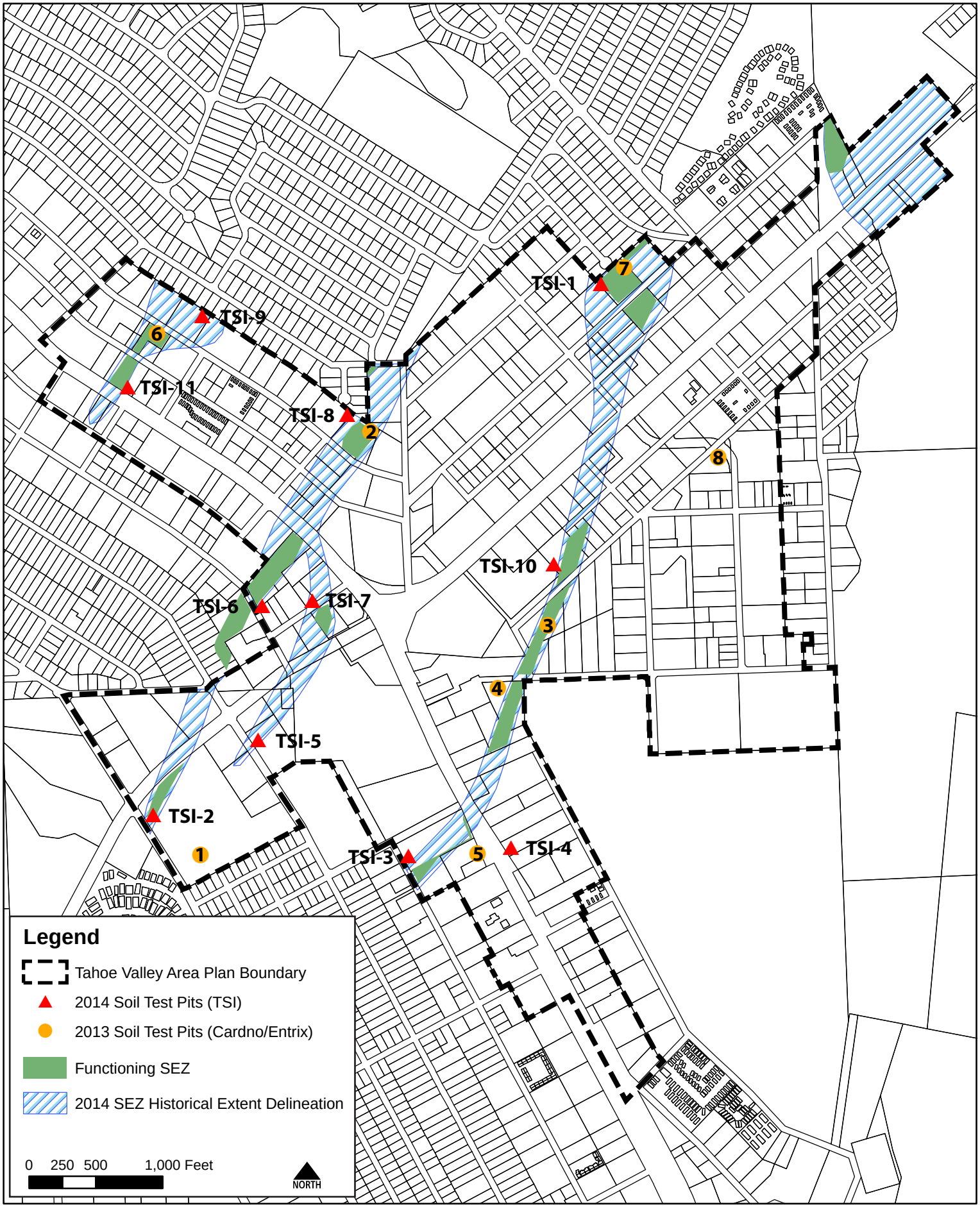


Source: Cardo/Entrix, 2013; TSI, 2014 and TRPA GIS, 2014.

Figure 4

2014 Mapping of Historic SEZ Extent

Stream Zone Report for the Tahoe Valley Area Plan



Source: Cardo/Entrix, 2013; TSI, 2014; and TRPA GIS, 2014.

Figure 5

2014 Mapping of Current (Vegetated) SEZ Extent

Stream Zone Report for the Tahoe Valley Area Plan

Appendix B

TSI Soil Profile Descriptions

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TSI-1 Soil Profile Description: (Stream Environment Zone)

Location: CTC lot, northwest of Eloise Street, southeast of Ruth Street, south of Linda Street terminus. Sample plot in west corner – about 15 feet northeast of cobble-boulder fill slope (3 feet high). Driest part of site.

Landform: Broad swale flanked by lake terrace (18 to 24 inches higher)
Slope: 2%, sloping to northeast
Surface Complexity: Smooth, subtle undulations

Plant Community: Pinus contorta and saplings (FAC), Salix spp. (FACW, est.), Carex spp. (FACW, est.), Juncus spp. (FACW, est.), Poa compressa (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla coarse loamy sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [2]
Verified Soil Map Unit: Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained
Hydrologic Soil Group: D (season high water table at 5 inches below surface)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 4.5 inches; dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine roots, common very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; abrupt boundary.

Bw 4.5 to 13.5 inches ; brown (10YR 4/3) to dark yellowish brown (10YR 4/4) moist; loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; common fine and medium roots; many very fine and fine interstitial pores; many, medium to coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; <5 percent gravel; gradual boundary.

C1 13.5 to 35 inches; grayish brown (2.5Y 5/2) moist; loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; common fine, and few, medium roots; many very fine and fine interstitial pores; common to many, fine to medium, prominent brown (7.5YR 4/4) to strong brown (7.5YR 3/ 4) iron redox soft masses; <5 percent gravel; gradual boundary.

C2 35 to 47 inches; light olive brown (2.5Y 5/3) moist, loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; no roots observed but few, coarse roots likely; many very fine and fine interstitial pores; many, fine and medium, prominent brown (7.5 YR 3/4) iron redox soft masses; <5 percent gravel; gradual boundary.

C3 47 to 51+ inches; dark yellowish brown (10YR 4/4) moist, loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; no roots observed but few, coarse roots likely; many very fine and fine interstitial pores; few, fine and medium, prominent brown (7.5 YR 3/4) iron redox soft masses; <5 percent gravel.

[2] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-2 Soil Profile Description: (Stream Environment Zone – Partially Drained)

Location: CTC lot, south of Lake Tahoe Boulevard and northeast of Julie Street. Sample plot in west corner – about 125 feet southeast of Lake Tahoe Blvd. and 110 feet northeast of Julie Street (3 feet high). Plot representative of broad swale that slopes from southwest to northeast.

Landform: Broad swale flanked by lake terrace (12 to 18 inches higher)
Slope: 1%, sloping to northeast
Surface Complexity: Smooth, no significant undulations

Plant Community: Pinus contorta and saplings (FAC), Rosa spp. (FAC, est.), Ribes sanguineum (FACU), Potentilla spp. (FAC, est.), Poa compressa (FACU), Plantago spp. (FAC, est.), Achillea millefolium (FACU), Fragaria spp. (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7541 – Ubaj sandy loam, 0 to 9 percent slopes
2007 Soil Classific.: Fine-loamy, mixed, superactive, frigid Ultic Haploxeralfs[3]
Verified Soil Map Unit: Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained (historically) to Somewhat Poorly Drained (currently)
Hydrologic Soil Group: D (season high water table at 11.5 inches below surface)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 5.5 inches; dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

A2 5.5 to 11.5 inches ; very dark grayish brown (10YR 3/2) moist; sandy loam; weak fine granular parting to single grain structure; very friable, nonsticky and nonplastic; many fine and medium roots; many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C1 11.5 to 31 inches; grayish brown (2.5Y 5/2) to light olive brown (2.5Y 5/3) moist; loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; common fine, and few, medium roots; many very fine and fine interstitial pores; common to many, fine to medium, prominent strong brown (7.5YR 4/6) iron redox soft masses; <5 percent gravel; clear boundary.

C2 31 to 52+ inches; grayish brown (2.5Y 5/2) to light olive brown (2.5Y 5/3) moist, loamy coarse sand; single grain structure; very friable, nonsticky and nonplastic; very few fine and few medium roots, no roots observed below 43 inches, but few coarse roots likely; many very fine and fine interstitial pores; few to many, fine and medium, prominent strong brown (7.5 YR 4/6) iron redox soft masses; <5 percent gravel.

[3] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-3 Soil Profile Description: (Stream Environment Zone – Previously Filled)

Location: CTC lot, west of Emerald Bay Road (Calif. Hwy. 89), east of Bonanza Avenue, south of Barton Ranch property. Sample plot in south corner – about 75 feet northeast of Bonanza Avenue and 75 feet northwest of small ditch along south property line (about 2 feet deep). South side of broad swale that slopes from southwest to northeast. NOTE: Vicinity was previously graded – cut slopes to the north, fill areas to the east and south.

Landform: Fill terrace over broad swale (flanked by lake terrace, 18 to 24 inches higher)
Slope: <1%, sloping to northeast
Surface Complexity: Smooth, no significant undulations (post-graded condition)

Plant Community: Pinus contorta (FACU), Pinus jeffreyi saplings (UPL), Rosa spp. (FAC, est.), Carex spp. (FACW, est.), Poa compressa (FACU), Plantago spp. (FAC, est.), Lupinus spp. (FAC-FACU, est.), Wyethia mollis (UPL), plus 70 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7541 – Ubaj sandy loam, 0 to 9 percent slopes
2007 Soil Classific.: Fine-loamy, mixed, superactive, frigid Ultic Haploxeralfs [4]
Verified Soil Map Unit: Old fill material over Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained (historically) to Somewhat Poorly Drained (currently)
Hydrologic Soil Group: D (historically), C (currently)

Oi 0.25 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

AC1 0 to 1.5 inches; very dark grayish brown (10YR 3/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine plus few, medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

AC2 1.5 to 8 inches ; dark yellowish brown (10YR 4/4) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine plus few, medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; abrupt boundary.

AC3 8 to 20 inches; brown to strong brown (7.5YR 4/4 to 4/6) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

Ab 20 to 29 inches; brown to strong brown (10YR 4/3) moist; fine sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; many, medium and coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; 10 percent gravel; clear boundary.

C 29 to 37+ inches; dark brown (10YR 3/3) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine and very fine roots, many very fine and fine interstitial pores; common, medium, prominent strong brown (7.5YR 4/6) iron redox soft masses; 10 percent gravel. Rock refusal at 37 inches.

[4] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-4 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Emerald Bay Road (Calif. Hwy. 89), southwest of Melba Avenue, and southwest of B Street. Sample plot near west edge of lot – about 70 feet northeast of Emerald Bay Road. NOTE: Vicinity appears historically disturbed for vehicle access (not significantly graded), but recovering for past 20 years.

Landform: Lake terrace (no adjacent SEZ)
Slope: <1%, sloping to west
Surface Complexity: Smooth, no significant undulations

Plant Community: Pinus jeffreyi and saplings (UPL), Wyethia mollis (UPL), Poa bulbosa (FACU), Elymus glaucus (FACU), plus 15 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7444 – Christopher-Gefo complex, 0 to 5 percent slopes
2007 Soil Classific.: Mixed, frigid Dystric Xeropsamments and sandy, mixed, frigid Humic Dystroxerepts [5]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 3 inches; very dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

A2 3 to 12 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

Bw 12 to 22 inches; dark brown (7.5YR 3/3) moist; loamy sand, single grain structure; loose, nonsticky, nonplastic; few fine, medium and coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

C 22 to 49+ inches; reddish brown (5YR 4/4) to dark yellowish brown (10YR 4/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine, medium and coarse roots, very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel.

Rock refusal at 49 in.

[5] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-5 Soil Profile Description: (Stream Environment Zone – Previously Filled)

Location: CTC lot, northeast of Tata Lane, one-half block southeast of Lake Tahoe Boulevard, and north of Kmart garden center. Sample plot in south corner of lot – about 45 feet northeast of Tata Lane and 40 feet northwest of small parking lot. NOTE: Vicinity was previously filled and graded (prior to 1969), some disturbance thereafter, but recovering since 1987.

Landform: Fill terrace over broad swale (lake terrace to south, about 12 inches higher)
Slope: <1%, sloping to northwest
Surface Complexity: Smooth with subtle undulations (post-filled and graded condition)

Plant Community: Pinus jeffreyi and saplings (UPL), Pinus contorta and saplings (FACU), Salix spp. (FACW, est.), Mahonia aquifolium (FACU), Elymus glaucus (FACU), Poa compressa (FACU), Taraxacum officinale (FACU), plus 15 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7541 – Ubaj sandy loam, 0 to 9 percent slopes
2007 Soil Classific.: Fine-loamy, mixed, superactive, frigid Ultic Haploxeralfs [6]
Verified Soil Map Unit: Old fill material over Elmira, wet variant (1974); Marla (2007)
Drainage: Poorly Drained (historically) to Somewhat Poorly Drained (currently)
Hydrologic Soil Group: D (historically), C (currently)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

AC1 0 to 4 inches; very dark brown (10YR 2/2) moist; gravelly sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine roots, many very fine and fine interstitial pores; no redoximorphic features; 15 percent gravel; clear boundary.

AC2 4 to 19 inches ; dark brown (7.5YR 3/2) to dark grayish brown (10YR 3/2) moist; gravelly sandy loam, weak fine subangular blocky structure; very friable, nonsticky, nonplastic; common fine plus few, medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 to 15 percent gravel; abrupt boundary.

Ab 19 to 29 inches; dark yellowish brown (10YR 4/4) moist; sandy loam, weak fine subangular blocky structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; common, medium and coarse, prominent yellowish red (7.5YR 4/6) iron redox soft masses; <5 percent gravel; clear boundary.

C1 29 to 52 inches; dark yellowish brown (10YR 4/6) to yellowish brown (10YR 5/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; few to common, medium, prominent yellowish red (5YR 4/6 and 5/8) iron redox soft masses; <5 percent gravel; abrupt boundary.

C2 52 to 58+ inches; grayish brown to olive brown (2.5Y 5/2 and 5/3) moist; sandy loam to very fine sandy loam, massive structure; friable, nonsticky, nonplastic; no observed roots, many very fine and fine interstitial pores; many, medium, prominent to coarse yellowish red (5YR 4/6 and 5/8) iron redox soft masses; <5 percent gravel.

[6] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-6 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Glorene Avenue, northwest of Tucker Avenue, and 2 blocks southwest of Emerald Bay Road (Hwy. 89). Sample plot in southeast corner of lot – about 50 feet northeast of Glorene Avenue. NOTE: Vicinity appears relatively disturbed for past 40 years.

Landform: Lake terrace (southeast of SEZ that is 1 to 2 feet lower)
Slope: 2%, sloping to northwest
Surface Complexity: Smooth, no significant undulations

Plant Community: Pinus jeffreyi and saplings (UPL), Abies concolor and saplings (UPL, est.), Rosa spp. (FAC, est.), Ribes sanguineum (FACU), Poa compressa (FACU), plus 85 percent twigs, thatch, pine needles, etc.

1974 Soil Series: EfB -- Elmira-Gefo loamy coarse sand, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla coarse loamy sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [7]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 3 inches; very dark grayish brown (10YR 3/2) moist; fine sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine, plus few medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; abrupt boundary.

A2 3 to 13.5 inches; dark brown (10YR 3/3) to dark brown (10YR 3/3) moist; fine sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine and few medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

Bw 13.5 to 23 inches; dark brown (10YR 3/3) to dark yellowish brown (10YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common fine and few medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 to 15 percent gravel; clear boundary.

C1 23 to 53 inches; dark yellowish brown (10YR 4/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few fine and coarse roots, many very fine and fine interstitial pores; few to many, medium and coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; 15 percent gravel; abrupt boundary.

C2 53 to 57+ inches; dark gray (5Y 4/1) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; no roots observed, many very fine and fine interstitial pores; many, medium and coarse, prominent yellowish red (5YR 4/6) iron redox soft masses; 15 percent gravel.

[7] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-7 Soil Profile Description: (Stream Environment Zone – Previously Filled)

Location: CTC lot, northwest of Tucker Avenue, southwest of Emerald Bay Road (Calif. Hwy. 89), and northeast of Glorene Avenue. Sample plot in southeast corner of lot (lowest point) – about 30 feet northwest of Tucker Avenue. NOTE: Lot was unvegetated in 1969, but recovering for past 40+ years. Vicinity of sample plot contains 14 inches fill material.

Landform: Fill terrace over broad swale (remnant SEZ 100 feet to southeast)
Slope: <1%, sloping to east
Surface Complexity: Smooth, no significant undulations (likely post-restored condition)

Plant Community: Pinus jeffreyi (UPL), Pinus contorta (FAC), Prunus virginiana (FACU), Wyethia mollis (UPL), Lupinus spp. (FACU, est.), Poa compressa (FACU), Dactylis glomerata (FACU), plus 55 percent mulch and twigs.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7444 – Christopher-Gefo complex, 0 to 5 percent slopes
2007 Soil Classific.: Mixed, frigid Dystric Xeropsamments and sandy, mixed, frigid Humic Dystroxerepts [8]
Verified Soil Map Unit: Old fill material over Elmira, wet variant (1974); Marla (2007)
Drainage: Somewhat Poorly (historically) to Moderately Well Drained (currently)
Hydrologic Soil Group: C (historically), D (currently)

Oi 0.25 to 0 inches; mulch and twigs; abrupt boundary.

AC 0 to 14 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; abrupt boundary.

Ab 14 to 28 inches; dark brown (10YR 3/3) moist; fine sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; common fine and few medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

Bw 28 to 35 inches; very dark yellowish brown (10YR 4/4) moist; fine sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; few fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C 35 to 54+ inches; olive brown (2.5Y 4/3 and 4/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; no roots observed, many very fine and fine interstitial pores; few to common, medium and coarse, prominent strong brown (7.5YR 4/6) iron redox soft masses; <5 percent gravel.

[8] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-8 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Eloise Avenue, west of Dunlap Drive, and at northeast terminus of Fifth Street (Right-of-Way). Sample plot near north end of Right-of-Way and roughly 10 feet southwest of chain-link fence. NOTE: Vicinity appears historically disturbed (and potential minor surface grading), but planted and undisturbed for past 20 years.

Landform: Lake terrace (northwest of SEZ that is 4 to 6 feet lower)
Slope: 1%, sloping to southeast
Surface Complexity: Smooth, with subtle undulations (may be post-graded condition)

Plant Community: Pinus jeffreyi and few saplings (UPL), Pinus contorta (FAC), Elymus glaucus (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla loamy coarse sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [9]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 10 inches; very dark brown (10YR 2/2) moist; sandy loam, moderate medium granular structure; very friable, nonsticky, nonplastic; common fine roots, many very fine and fine interstitial pores; no redoximorphic features; 10 percent gravel; clear boundary.

C1 10 to 26 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; common fine and medium roots, plus few coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; abrupt boundary.

C2 26 to 46 inches; dark yellowish brown (10YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C3 46 to 53+ inches; dark brown (7.5YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; few medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel.

[9] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-9 Soil Profile Description: (Stream Environment Zone)

Location: CTC lot, northeast of Eloise Avenue, southwest of Patricia Lane, and north of Seventh Street terminus (at Eloise Ave.). Sample plot in northeast corner – about 175 feet northeast of Eloise Avenue and 30 feet southeast of fence line. NOTE: Vicinity previously cleared prior to 1969, but recovering for past 40+ years.

Landform: Outer edge of broad swale adjacent to lake terrace (12 to 24 inches higher)
Slope: 3%, sloping to north
Surface Complexity: Smooth with subtle significant undulations

Plant Community: Pinus contorta and saplings (FAC), Pinus jefferyi saplings (UPL), Salix lasiandra (FACW), Ribes sanguineum (FACU), Rosa spp. (FAC, est.), Dactylis glomerata (FACU), Poa compressa (FACU), Elymus glaucus (FACU), Solidago Canadensis (FACU), Taraxacum officinale (FACU), Achillea millefolium (FACU), plus 10 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla coarse loamy sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [10]
Verified Soil Map Unit: Elmira, wet variant (1974); Marla (2007)
Drainage: Somewhat Poorly Drained
Hydrologic Soil Group: C (season high water table at 17 inches below surface)

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A 0 to 8 inches; dark grayish brown (10YR 4/2) to brown (10YR 4/3) moist; loamy fine sand, moderate to weak medium granular structure; very friable, nonsticky, nonplastic; many fine, medium and coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

Bw 8 to 24 inches ; dark brown (10YR 3/3) to dark yellowish brown (10YR 3/4) moist; loamy fine sand to fine sandy loam; weak fine to medium subangular blocky structure (parting to massive structure at 30 inches); very friable, nonsticky and nonplastic; many fine and medium, plus common coarse roots; many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

C 24 to 38 inches; olive brown (2.5Y 4/3) moist; fine to very fine sandy loam; weak, medium subangular blocky structure; very friable, nonsticky and nonplastic; few fine and medium roots; many very fine and fine interstitial pores; common to many, fine to medium, prominent strong brown (7.5YR 4/6) iron redox soft masses; <5 percent gravel; abrupt boundary.

2C 38 to 54+ inches; olive gray (5Y 5/2) to olive (5Y 5/3) moist, sandy clay loam; massive structure; friable, slightly sticky and slightly plastic; no observed roots; common very fine and fine interstitial pores; few to many, fine and medium, prominent yellowish red (5 YR 4/6) iron redox soft masses; <5 percent gravel.

[10] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-10 Soil Profile Description: (Upland)

Location: CSLT lot, southwest of Helen Avenue (Right-of-Way), northwest of South Avenue, and west of Fourth Street. Sample plot in west part of lot – about 35 feet northwest of SEZ boundary. NOTE: Land area to west extensively filled with 1 to 4 feet deep (greater than 40 years ago; prior to 1969); however, subject location has only superficial evidence of surface disturbance.

Landform: Lake terrace (northwest of SEZ that is 1.5 to 5 feet lower)
Slope: 4%, sloping to southeast
Surface Complexity: Smooth, slight undulations

Plant Community: Pinus jeffreyi and saplings (UPL), Purshia spp. (UPL, est.), Rosa spp. (FACU, est.), Carex spp. (FAC, est.), Poa compressa (FACU), Elymus glaucus (FACU), plus 35 percent twigs, thatch, pine needles, etc.

1974 Soil Series: Ev -- Elmira loamy coarse sand, wet variant, 0 to 5 percent slopes
2007 Soil Series: 7471 – Marla loamy coarse sand, 0 to 5 percent slopes
2007 Soil Classific.: Sandy, mixed, frigid Aquic Dystroxerepts [11]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 0.5 to 0 inches; conifer needles, twigs, thatch and duff; abrupt boundary.

A1 0 to 2 inches; very dark grayish brown (10YR 3/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 5 percent gravel; clear boundary.

A2 2 to 10 inches; very dark grayish brown (10YR 3/2) to very dark brown (7.5YR 2.5/2) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; 5 percent gravel; clear boundary.

C 10 to 39+ inches; dark brown (7.5R 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common to few to common fine and medium, plus few coarse roots, many very fine and fine interstitial pores; no redoximorphic features; 5 percent gravel.

Rock refusal at 39 inches (after several similar attempts).

[11] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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TSI-11 Soil Profile Description: (Upland)

Location: CSLT lot, northeast of Emerald Bay Road (Calif. Hwy. 89), southeast of Tenth Street, and southwest of James Avenue. Sample plot in south-center of lot – about 50 feet northeast of Emerald Bay Road. NOTE: Vicinity appears historically disturbed (but not significantly graded), but recovering for past 10 years.

Landform: Lake terrace (southeast of SEZ that is 2 to 3 feet lower)
Slope: <1%, sloping to northeast
Surface Complexity: Smooth, no significant undulations (may be post-graded condition)

Plant Community: Pinus jeffreyi and saplings (UPL), Arcotostaphylos patula (UPL, est.), Chrysothamnus nauseosus (UPL), Artemisia spp. (FACU, est.), Ceanothus prostratus (UPL, est.), Wyethia mollis (UPL), Poa bulbosa (FACU), Poa compressa (FACU), plus 20 percent twigs, thatch, pine needles, etc.

1974 Soil Series: EfB -- Elmira-Gefo loamy coarse sand, 0 to 5 percent slopes
2007 Soil Series: 7444 – Christopher-Gefo complex, 0 to 5 percent slopes
2007 Soil Classific.: Mixed, frigid Dystric Xeropsamments and sandy, mixed, frigid Humic Dystroxerepts [12]
Verified Soil Map Unit: Elmira-Gefo (1974); Christopher (2007)
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 0.25 to 0 inches; conifer needles, twigs, thatch (minimal) and duff; abrupt boundary.

A1 0 to 3 inches; very dark brown (10YR 2/2) moist; sandy loam, weak medium granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; abrupt boundary.

A2 3 to 11 inches; very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) moist; sandy loam, weak fine granular structure; very friable, nonsticky, nonplastic; many fine and medium roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; clear boundary.

Bw 11 to 29 inches; dark yellowish brown (10YR 3/4) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common to few fine, medium and coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

C1 29 to 40 inches; dark yellowish brown (10YR 4/6) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; common fine, plus few coarse roots, many very fine and fine interstitial pores; no redoximorphic features; <5 percent gravel; gradual boundary.

C2 40 to 55+ inches; dark yellowish brown (10YR 4/6) moist; loamy coarse sand, single grain structure; loose, nonsticky, nonplastic; no roots observed, many very fine and fine interstitial pores; few to common, medium and coarse, prominent dark red (2.5YR 3/6) iron redox soft masses; <5 percent gravel.

[12] Soil taxonomy from NRCS official series description (https:// soilseries.sc.egov.usda.gov/osdnamequery.asp)

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Appendix C

Cardno ENTRIX Soil Profile Descriptions

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Appendix A: Narrative Soil Profile Descriptions

In the following Appendix, one may notice that no APN location is listed for each soil description. The soil descriptions were spatially distributed to capture and characterize specific areas within the project area. In all cases, soil descriptions were generated on publically owned parcels in the same map unit vicinity in order to corroborate a soil map unit boundary. Please refer to the marked soil sample locations identified on the adjoining study area maps for further clarification.

Soil Profile Description # 1:

Soil Map Units: Christopher-Gefo Complex, 0 to 5 percent slopes
Soil Classification: Mixed, frigid Dystric Xeropsamments
Verified Soil Series: Christopher
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 7 inches; brown (10YR 4/3) loamy coarse sand, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear smooth boundary.

A2 7 to 14 inches; yellowish brown (10YR 5/4) loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bw1 14 to 28 inches; grey brown (10YR 5/2) loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bw2 28 to 48 inches; very pale brown (10YR 6/3) loamy coarse sand, yellowish brown (10YR 5/3) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel.

Soil Profile Description # 2: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 4 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 4 to 12 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 12 to 20 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 20 to 35 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 35 to 48 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 3: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 7 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 7 to 16 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 16 to 25 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 25 to 36 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 36 to 48 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common

medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 4:

Soil Map Units: Gefo gravelly loamy coarse sand 2 to 9 percent slopes
Soil Classification: Sandy, mixed, frigid Humic Dystroxerept
Verified Soil Series: Gefo
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0; leaf litter and organic detritus

A1 0 to 4 inches; brown (10YR 5/3) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel; clear smooth boundary.

A2 4 to 10 inches; brown (10YR 5/3) gravelly coarse sand, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, friable, nonsticky and nonplastic; few coarse roots; few medium and common very fine and fine roots, many very fine and fine interstitial pores; 15 percent gravel; gradual smooth boundary.

C1 10 to 30 inches; pale brown (10 YR 6/3) gravelly coarse sand, brown (10YR 4/3) moist; moderate medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine interstitial and tubular pores; 15 percent gravel; gradual wavy boundary.

C2 30 to 40+ inches; reddish brown (7.5 YR 4/4) gravelly coarse sand, dark yellowish brown (7.5 YR 4/3) moist; moderate medium subangular structure; soft, friable, nonsticky and nonplastic; few very fine, fine and medium roots; many very fine and fine interstitial and tubular pores; 15 percent gravel.

Soil Profile Description # 5:

Soil Map Units: Ubaj sandy loam, 0 to 9 percent slopes
Soil Classification: Fine-loamy, mixed, frigid Ultic Haploxeralfs
Verified Soil Series: Ubaj
Drainage: Well Drained
Hydrologic Soil Group: B

Oi 1 to 0 inches; needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 15 percent gravel; clear smooth boundary.

A2 5 to 11 inches; yellowish brown (10YR 5/4) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bt1 11 to 18 inches; grey brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bt2 18 to 29 inches; very pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/3) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; clear wavy boundary.

Bt3 29 to 40 inches; very pale brown (10 YR 6/3) sandy loam, dark yellowish brown (10 YR 4/6) moist; moderate, massive; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 6: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 5 to 11 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 11 to 21 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 21 to 32 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 32 to 42 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 7: (Stream Environment Zone)

Soil Map Unit: Marla loamy coarse sand
Soil Classification: Sandy, mixed, frigid Aquic Dystroxerepts
Soil Series: Marla
Drainage: Poorly Drained
Hydrologic Soil Group: D

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

A2 5 to 13 inches ; brown (10YR 5/3) loamy coarse sand; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; clear wavy boundary.

C1 13 to 19 inches; pale brown (10YR 6/3) loamy coarse sand; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel, gradual wavy boundary.

C2 19 to 34 inches; light brown (10YR 6/3) loamy coarse sand; dark brown (10 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Cg 34 to 43 inches; light grey to greenish gray (10YR 7/1, 5G 5/1) loamy coarse sand; moderate, medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, distinct red-brown (7.5 YR 5/6) masses of oxidized iron; 10 percent gravel.

Soil Profile Description # 8:

Soil Map Units: Christopher-Gefo Complex, 0 to 5 percent slopes
Soil Classification: Mixed, frigid Dystric Xeropsamments
Verified Soil Series: Gefo
Drainage: Somewhat Excessively Well Drained
Hydrologic Soil Group: A

Oi 1 to 0 inches; conifer needles and duff.

A1 0 to 5 inches; brown (10YR 4/3) gravelly loamy coarse sand, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 15 percent gravel; clear smooth boundary.

A2 5 to 11 inches; yellowish brown (10YR 5/4) gravelly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel; clear wavy boundary.

Bw1 11 to 25 inches; grey brown (10YR 5/2) gravelly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel; clear wavy boundary.

Bw2 25 to 38 inches; very pale brown (10YR 6/3) very gravelly loamy coarse sand, yellowish brown (10YR 5/3) moist; moderate, medium subangular structure; soft, friable, nonsticky and nonplastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel.

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Appendix D

Selected TSI and Cardno ENTRIX Photographs

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Photo D-1A – View to east at sample location TSI-1 (SEZ). Sample location situate to left of fill slope (transitions up to fill pad to south on neighboring lot).

Photo D-1B – Soil profile at TSI-1 (SEZ). Soil is extensively mottled in upper part and becomes grayer at 19- to 35-inch depth.

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Photo D-2A – View to southeast at sample location TSI-2 (SEZ). Sample location situated in center of subtle swale (higher topography to north and south).

Photo D-2B – Soil profile at TSI-2 (SEZ). Soil profile indicates soil location was historically wetter, but plant community indicates drier current conditions.

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Photo D-3A – View to northeast at sample location TSI-3 (SEZ). Sample location situated in area previously filled and graded.

Photo D-3B – Soil profile at TSI-3 (SEZ). Soil profile indicates the upper 20 inches is fill material. The underlying soil appears to be truncated profile (topsoil removed before filled).

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Photo D-4A – View to east at sample location TSI-4 (Upland). Sample location situated in area that has minor surface disturbance, but subsoil appears undisturbed.

Photo D-4B – Soil profile at TSI-4 (Upland). Soil profile indicates no extended wetness in upper 49 inches.

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Photo D-5A – View to northeast at sample location TSI-5 (SEZ). Sample location situated subtle low spot between Tata Lane, parking lot (to south) and commercial building.

Photo D-5B – Soil profile at TSI-5 (SEZ). Soil profile indicates presence of old fill atop native soil (beginning at approximately 19 inches).

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Photo D-6A – View to west at sample location TSI-6. Sample location situated northeast of Glorene Lane and northwest of Tucker Avenue, about 30 feet from SEZ edge.

Photo D-6B – Soil profile at TSI-6 (Upland). Soil profile indicates lack of significant disturbance and lack of extended wetness in the upper 25 inches.

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Photo D-7A – View to northeast at sample location TSI-7 (Upland). Sample location situated about 35 feet northwest of Tucker Avenue and 1 block west of Hwy. 89.

Photo D-7B – Soil profile at TSI-7 (Upland). While sample location was historically cleared (minor disturbance), profile indicates lack of extended wetness in upper 35 inches.

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Photo D-8A – View to south at sample location TSI-8 (Upland). Sample location situated about 400 feet north of Eloise and Fifth Street intersection.

Photo D-8B – Soil profile at TSI-8 (Upland). While sample location has trees planted, profile appears undisturbed and lacks indication of extended wetness in upper 53 inches.

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Photo D-9A – View to northwest at sample location TSI-9 (SEZ). Sample location situated about halfway between Eloise Ave. and Patricia Ln., and north of Seventh St.

Photo D-9B – Soil profile at TSI-9 (SEZ). Soil profile indicates extended wetness rises to 24 inches, while plant community qualifies as SEZ. Hydrology monitoring recommended.

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Photo D-10A – View to north at sample location TSI-10 (Upland). Sample location situated about 25 feet from SEZ (beyond right edge of photo).

Photo D-10B – Soil profile at TSI-10 (Upland). Soil profile indicates lack of extended wetness within 39 inches of surface (rock refusal at 39 in.).

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Photo D-11A – View to northeast at sample location TSI-11 (Upland). Sample location situated about 40 feet from SEZ (extreme left edge of photo).

Photo D-11B – Soil profile at TSI-10 (Upland). Soil profile indicates lack of extended wetness within 40 inches of surface (2 to 20% iron RMFs from 40 to 53 in. depth)

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Tahoe Valley Stormwater and Greenbelt Improvement Project, CEQA and TRPA Environmental Documentation

APPENDIX E

TRPA LAND CAPABILITY VERIFICATION APPLICATION

TAHOE REGIONAL PLANNING AGENCY

OFFICE
128 Market St.
Stateline, NV

Phone: (775) 588-4547
Fax: (775) 588-4527

MAIL
PO Box 5310
Stateline, NV 89449-5310

trpa@trpa.org
www.trpa.org

HOURS
Mon. Wed. Thurs. Fri
9 am-12 pm/1 pm-4 pm
Closed Tuesday

New Applications Until 3:00 pm

LAND CAPABILITY VERIFICATION APPLICATION

All applications are subject to an information technologies (IT) surcharge.

How to Apply for a Tahoe Regional Planning Agency (TRPA) Permit

This packet explains the TRPA process for verification of Land Capability on a parcel. The TRPA uses the best available science and planning practices to review each project individually so that Lake Tahoe can continue to be an Outstanding National Resource Water for this and future generations. TRPA's thorough review standards are designed to balance the impacts of the built environment with the protection of Lake Tahoe's fragile, natural environment. The Agency values every applicant and works hard to serve the public promptly and fairly. Please read this packet thoroughly. We hope it answers most of your application questions. If not, please call TRPA at (775) 588-4547. Planners are available to assist you by phone or at our offices Monday through Friday, 9:00 a.m. to 5:00 p.m. Applications are received from 9:00 a.m. to 4:00 p.m.

Please be aware that we may require information beyond that presented in this packet. Once your application is submitted, TRPA will contact you if additional information is required to adequately review your project.

Please complete and sign the attached Land Capability Challenge request form and checklist and return it to TRPA offices with original signatures. Forms without an original signature from the property owner will not be accepted. **Faxed signatures and xerox copies will not be accepted.**

Getting Started

The included application checklist is your guide to a complete application and all items listed there must be included for your application to be considered. For current application fees, please refer to the filing fee schedule available at TRPA offices or online at www.trpa.org → "Permits and Documents" → under "Other Documents" → "Filing Fee Schedule" (275k pdf).

A field evaluation of your parcel will be completed as soon as possible, weather permitting, and the results will be mailed to you immediately upon completion. Please keep in mind, the season in which field evaluations are completed is normally between May and October. Due to the difficulty in knowing when the field team will be in your area, no commitments will be made with owners/agents to meet on the site. To ensure that the accurate boundaries of the parcel are evaluated, please mark all parcel corners as described in the attached flagging instructions. A topographic survey map may be required for evaluations of parcels greater than one acre, and an additional fee may be warranted.

Land capability class verification is necessary for TRPA's Project Review Division to review building addition/modification applications, but it is not the sole factor determining whether a proposed project will be approved.

If you have questions regarding your building plans or wish to have an information packet on building procedures (which include applications) sent to you, contact the TRPA Project Review Division at (775) 588-4547.

Timeline for Appeals

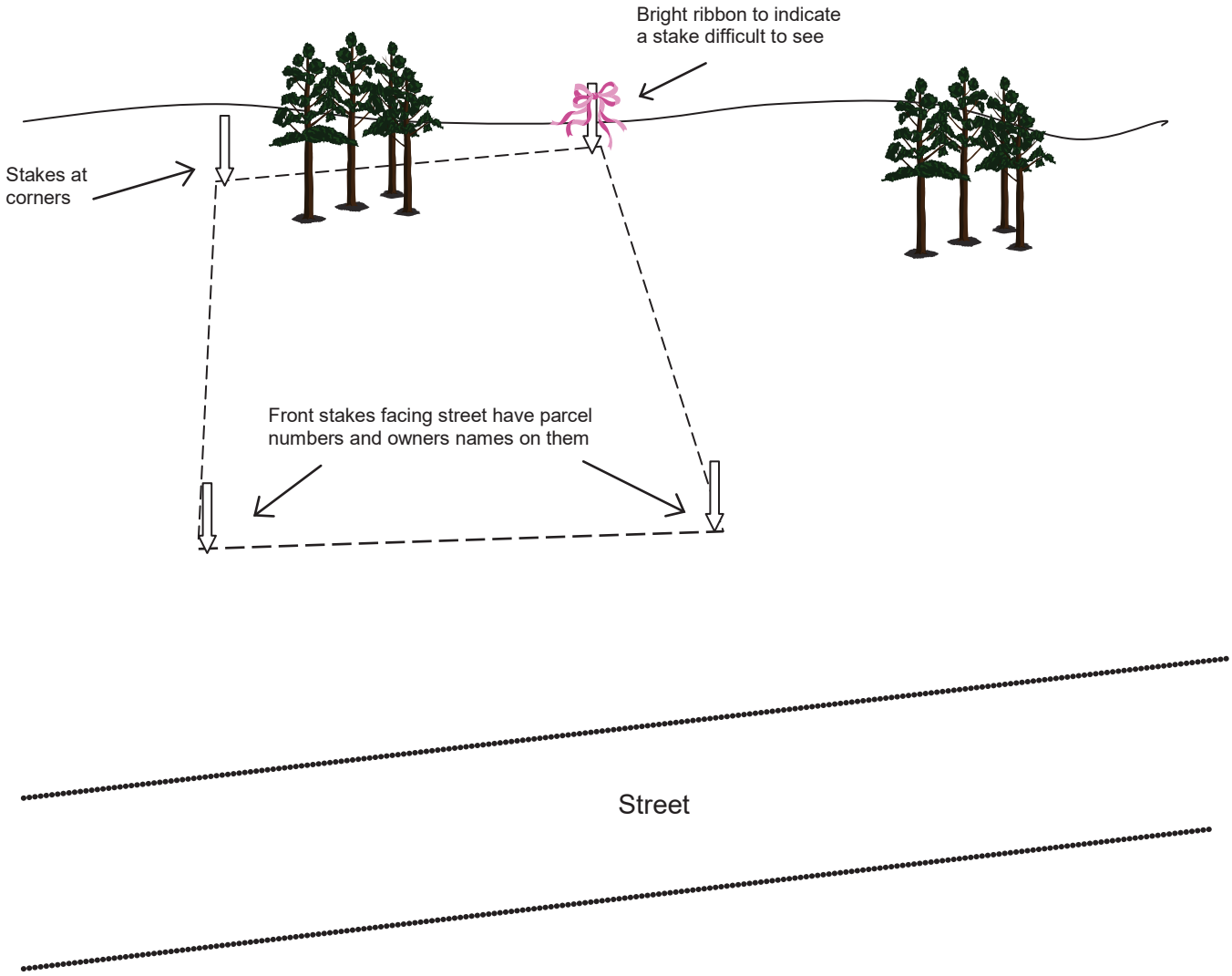
If an applicant wishes to appeal a final decision by TRPA, pursuant to Rule 11.2 of the TRPA Rules of Procedure, a Notice of Appeal form and filing fee must be submitted within twenty-one (21) days from the date TRPA issues its final decision (date on correspondence). After 21 days, no appeals can be made and the Agency's decision is final.

Flagging Of Lots

In order to locate the lots that are to be reviewed, it is necessary to “flag” them. With the varied topography of the Basin, it is difficult to write all-purpose instructions. The basic idea is to identify the lot by its parcel number and to indicate its boundaries. The TRPA field inspectors will have parcel maps with them that show the shape and approximate size of each lot.

Staking is the usual way of identifying a lot. One by two inch boards about 3 feet long are sharpened at one end and driven solidly into the ground at the corners of the property. In cases where there is heavy brush or tree cover, “surveyor tape” (brightly colored plastic ribbon) is tied to the tree or shrub nearest the stake. Information such as parcel number and last name can be written on the stakes with an indelible marker.

The diagram below indicates a properly marked lot. The assessor’s parcel number (APN) must be written on the stakes at the front of the parcel. The assessor’s parcel number (APN) is printed on your tax bill (not the street address or subdivision number). Print your last name on the stake as well.



TAHOE REGIONAL PLANNING AGENCY

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New Applications Until 4:00 pm

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LAND CAPABILITY VERIFICATION APPLICATION

Representative or Agent Jason Dukes, Cardno, Inc.

Mailing Address 295 Hwy 50 Suite 1 City Zephyr Cove State Nevada

Zip Code 89448 Email jason.dukes@cardno.com Phone 775-335-0190 FAX

Owner City of South Lake Tahoe (attn: Jason Burke) ☒ Same as Applicant

Mailing Address 1052 Tata Lane City South Lake Tahoe State CA

Zip Code 96150 Email jburke@cityofslt.us Phone 530-542-6038 FAX

Project Location/Assessor's Parcel Number (APN) multiple, refer to attached maps

Street Address Subdivision varies Lot #

County El Dorado Previous APN

(if changed by county assessor since 1987)

FOR OFFICE USE ONLY

Date Received: _____ By: _____

Fee: $_____ Receipt No: _____

Mapped Land Capability	Mapped Soil Unit
1.	1.
2.	2.
3.	3.
4.	4.

Results

Date: _____ By: _____ Verified as Mapped? Yes No

Verified Land Capability Class	Verified Soil Map Unit	Observed Slope
a.		
b.		
c.		
d.		

Verification of Stream Environment Zone(SEZ): Yes No

Extent or Amount of SEZ on Parcel: _____

Comments: _____

DECLARATION:

I hereby declare under penalty of perjury that this application and all information submitted as part of this application is true and accurate to the best of my knowledge. I am the owner of the subject property, or have been authorized in writing by the owner(s) of the subject property to represent this application, and I have obtained authorization to submit this application from any other necessary parties holding an interest in the subject property. I understand it is my obligation to obtain such authorization, and I further understand that TRPA accepts no responsibility for informing these parties or obtaining their authorization. I understand that should any information or representation submitted in connection with this application be inaccurate, erroneous, or incomplete, TRPA may rescind any approval or take other appropriate action. I hereby authorize TRPA to access the property for the purpose of site visits. I understand that additional information may be required by TRPA to review this project. (Edited 7/10)

Signature: **(Original signature required.)**

_____ At Washoe County Date 09/20/16

Person Preparing Application

AUTHORIZATION FOR REPRESENTATION (Original signatures required):

The following person(s) own the subject property (Assessor's Parcel Number(s) _____) or have sufficient interest therein to make application to TRPA:

Print Owner(s) Name(s):

City of South Lake Tahoe (attn: Jason Burke)

I/We authorize Cardno, Inc. to act as my/our representative in connection with this application to TRPA for the subject property and agree to be bound by said representative. I understand that additional information may be required by TRPA beyond that submitted by my representative, to review this project. Any cancellation of this authorization shall not be effective until receipt of written notification of same by TRPA. I also understand that should any information or representation submitted in connection with this application be incorrect or untrue, TRPA may rescind any approval or take other appropriate action. I further accept that if this project is approved, I, as the permittee, will be held responsible for any and all permit conditions.

Owner(s) Signature(s): **(Original signature required.)**

Jason Burke Date: 9/20/16

_____ Date: _____

APPLICATIONS LACKING ANY OF THE FOLLOWING ITEMS WILL NOT BE ACCEPTED. TRPA OR YOUR LOCAL JURISDICTION MAY REQUIRE ADDITIONAL INFORMATION ABOVE AND BEYOND THE CHECKLIST ITEMS TO REVIEW THIS APPLICATION.

Each item and number corresponds to TRPA's *Master Checklist* available at our offices or online at www.trpa.org Click "Permits & Documents" and look for the *Master Checklist* under "other documents." Refer to the *Master Checklist* for more information on any item.

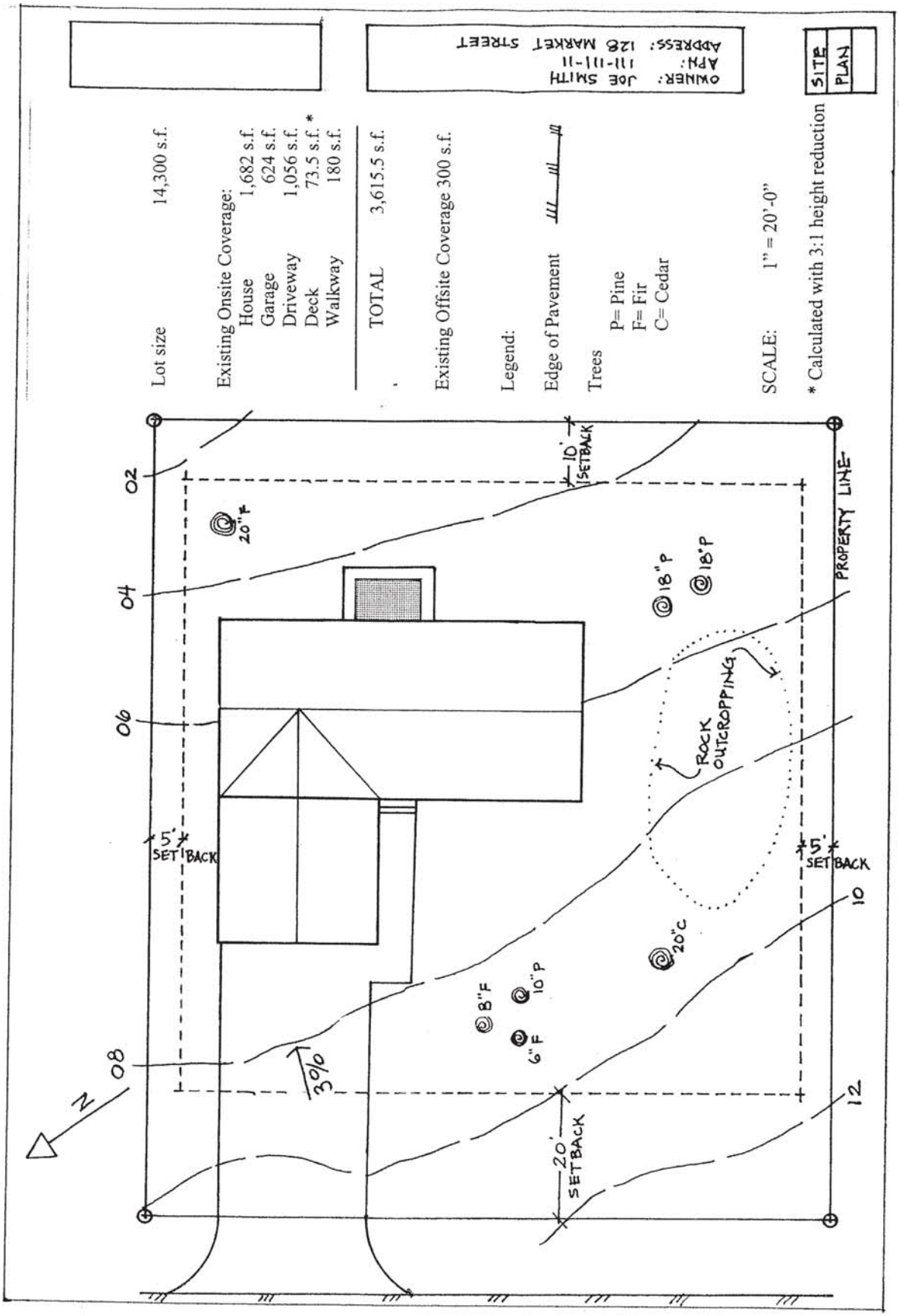
PROJECT NAME: Tahoe Valley Stormwater and Greenbelt Improvement Project (EIP# 01.01.01.0012)

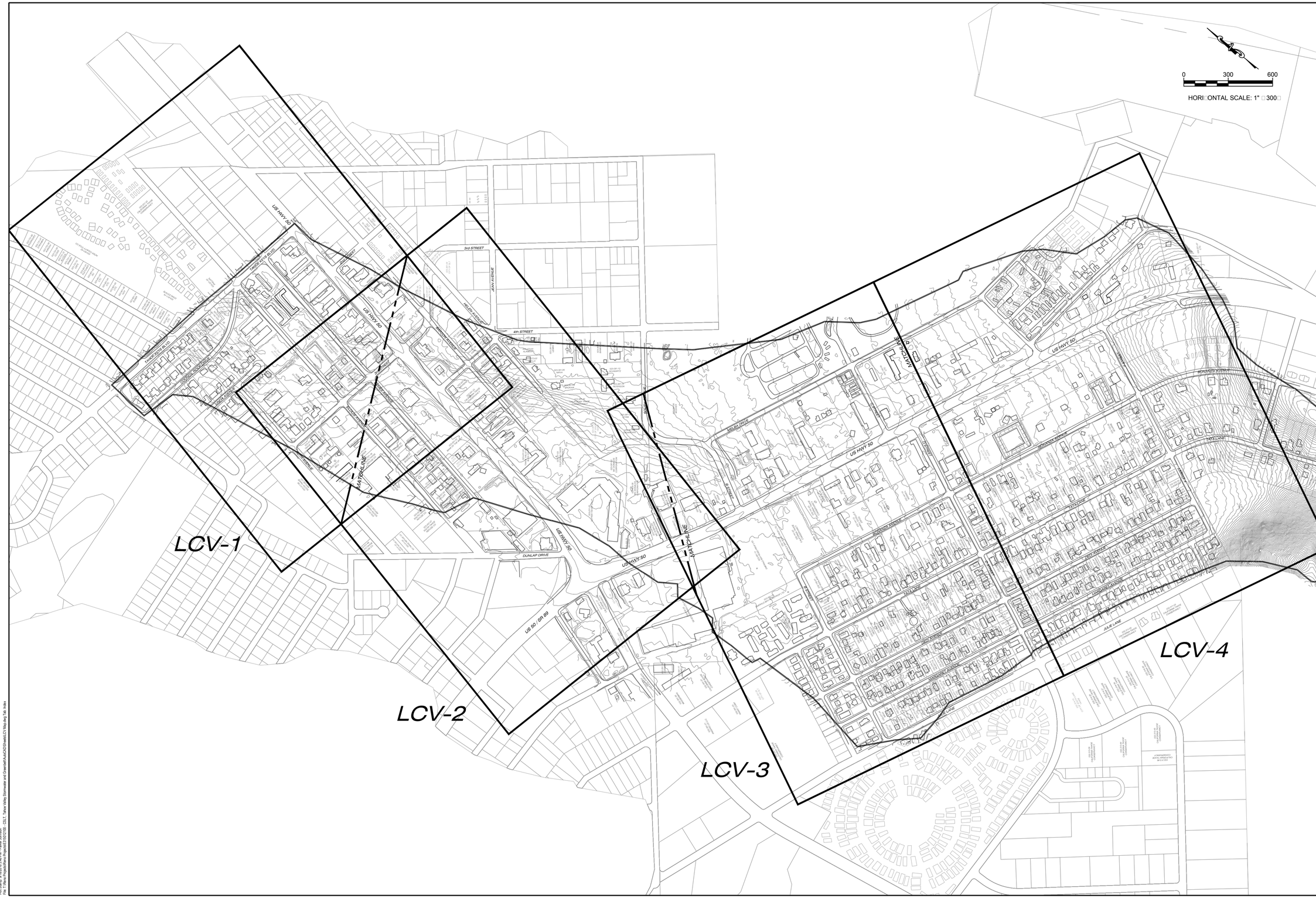
CURRENT ASSESSOR'S PARCEL NUMBER (APN): multiple (see atached maps)

PREVIOUS ASSESSOR'S PARCEL NUMBER (APN):

Applicant	TRPA		
☒	____	2.	Complete Application with original signed authorization and checklist.
☐	____	3.	Application Fee: Please refer to the TRPA Filing Fee Schedule (275k pdf) available at TRPA offices or online. Filing Fee: $ ____ + Information Technology (IT) surcharge: $ ____ = $ ____
☒	____	7.	Three (3) copies of the site plan, minimum size of 18"x24" on blackline or blueprint paper. The site plan must include the following information:
☒	____	a.	All property lines, easements, and building setbacks.
☒	____	b.	Map scale and north arrow.
☒	____	c.	Assessor's Parcel Number (APN) and property address.
☒	____	d.	Property owner's name(s).
☐	____	e.	Parcel area in square feet.
☒	____	i.	Contour lines at two feet intervals.
☐	____	51.	Parcel boundaries flagged per instructions.

On Blackline or Blueprint paper18”x 24”.





DATE

REVISIONS

NO.

Cardno
Shaping the Future
LAKE TAHOE
295 HWY 50, SUITE 1
ZEPHYR COVE, NV 89448
TEL: (775) 588-9069 FAX: (775) 588-9219
WWW.CARDNO.COM

LAND CAPABILITY VER - INDEX SHEET

TAHOE VALLEY STORMWATER & GREENBELT

SOUTH LAKE TAHOE, CALIFORNIA

DATE: SEPTEMBER 2016
DRAWN BY: PJ
CHECKED BY: JD
SCALE: AS SHOWN
CARDNO JOB NO. E315012100
FIGURE NO.
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SHEET 1 OF 5

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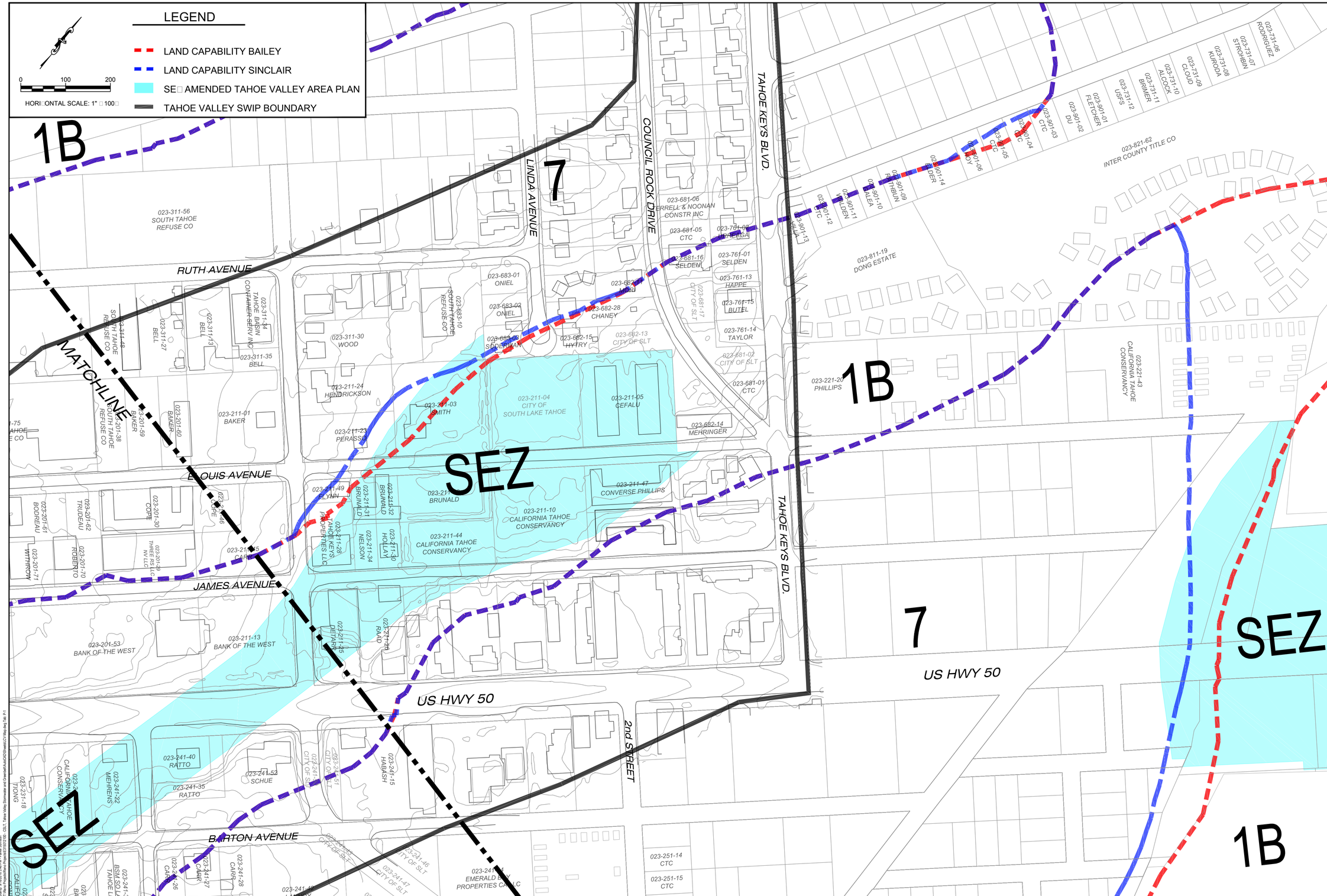

NO.	REVISIONS	DATE

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LCV SHEET 1

TAHOE VALLEY STORMWATER & GREENBELT

SOUTH LAKE TAHOE, CALIFORNIA

DATE:	SEPTEMBER 2016
DRAWN BY:	PJ
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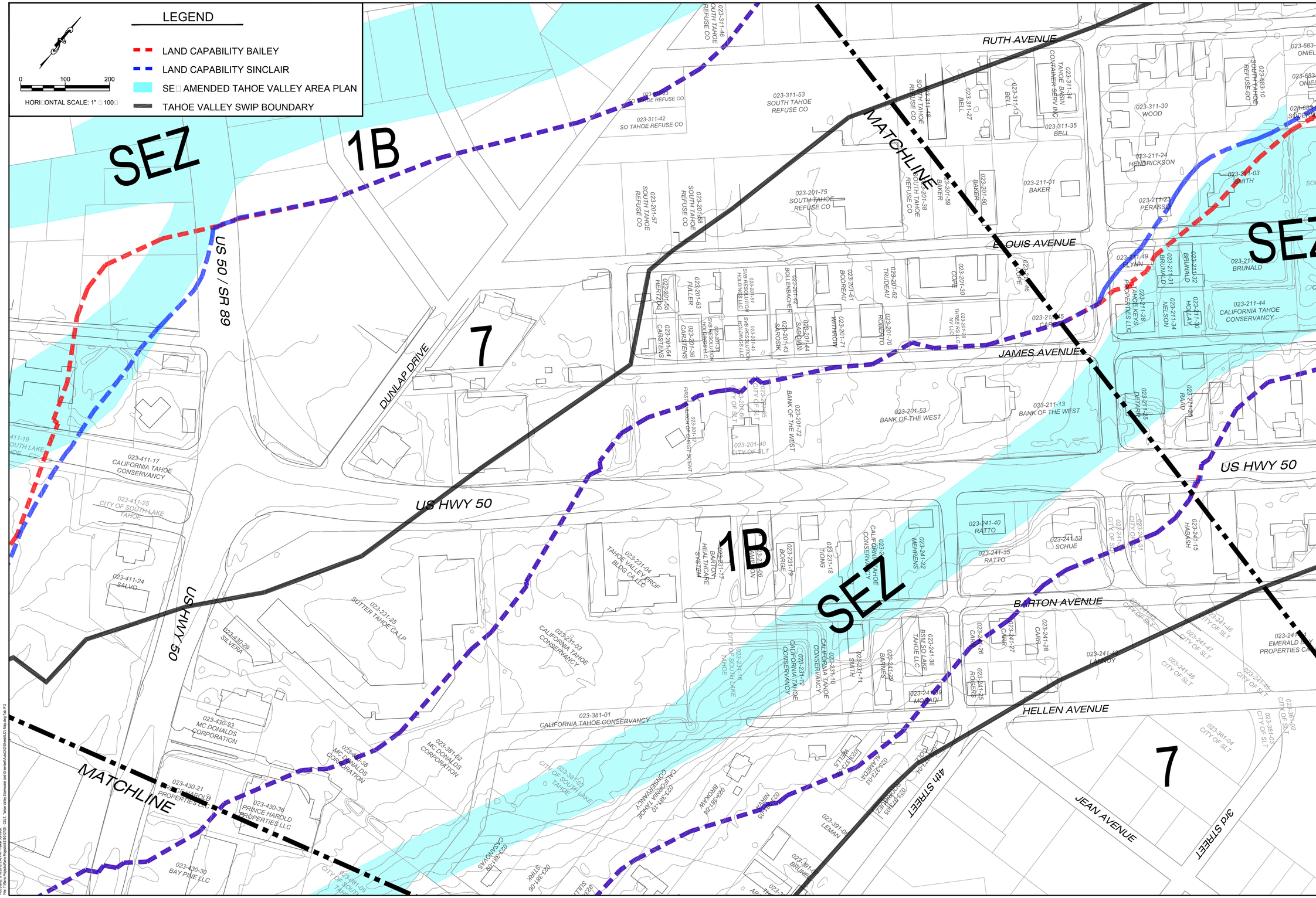
SCALE:	AS SHOWN
CARDNO JOB NO.	E315012100
FIGURE NO.	LCV-1
SHEET	2 OF 5



DATE	REVISIONS	NO.

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LCV SHEET 2

TAHOE VALLEY STORMWATER & GREENBELT

SOUTH LAKE TAHOE, CALIFORNIA

DATE:	SEPTEMBER 2016
DRAWN BY:	PJ
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SCALE:	AS SHOWN
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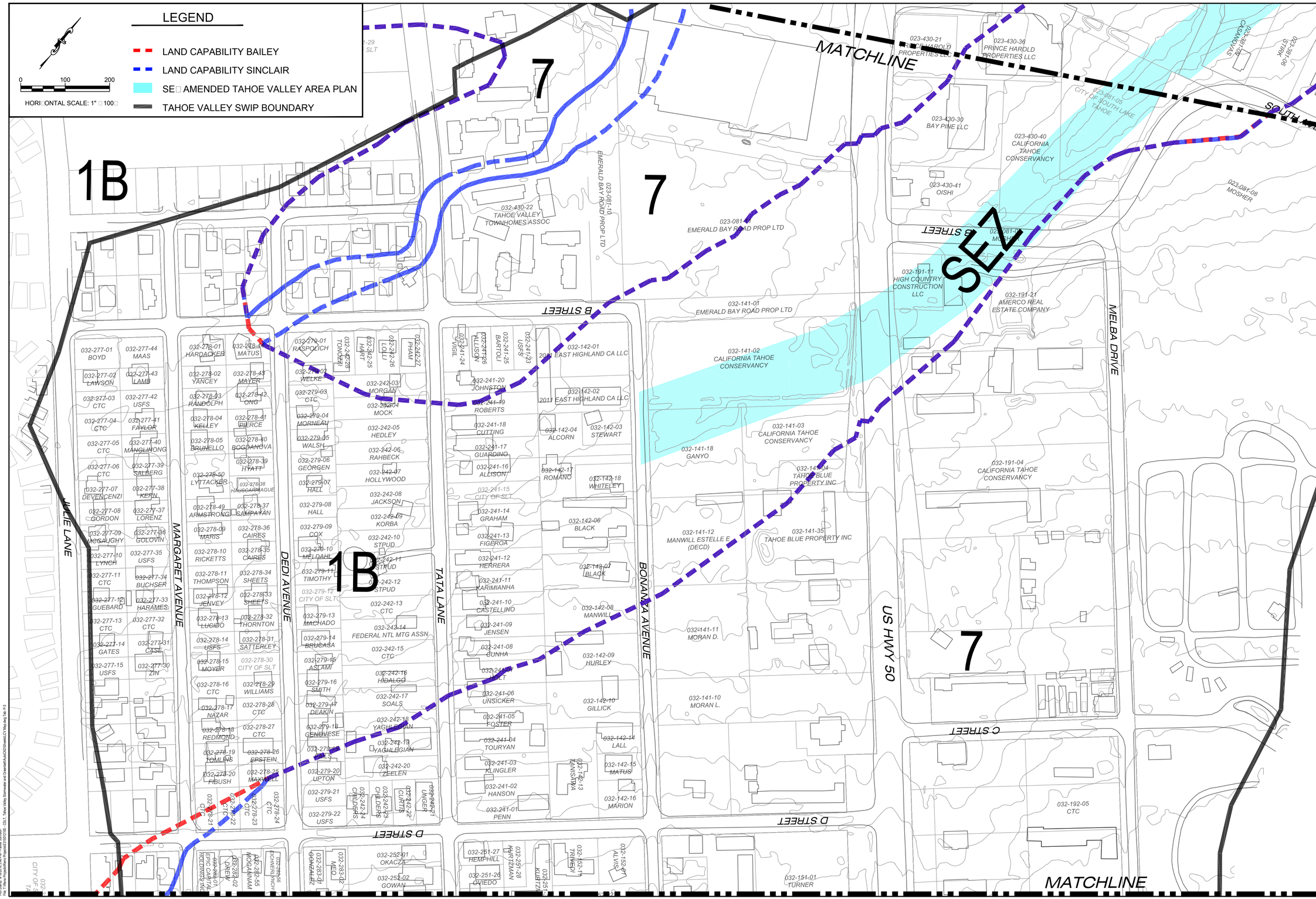
FIGURE NO.	LCV-2
SHEET	3 OF 5



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NO.	REVISIONS	DATE

LCV SHEET 3

TAHOE VALLEY STORMWATER & GREENBELT

SOUTH LAKE TAHOE, CALIFORNIA

DATE:	SEPTEMBER 2016
DRAWN BY:	PJ
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FIGURE NO.	LCV-3
SHEET	4 OF 5

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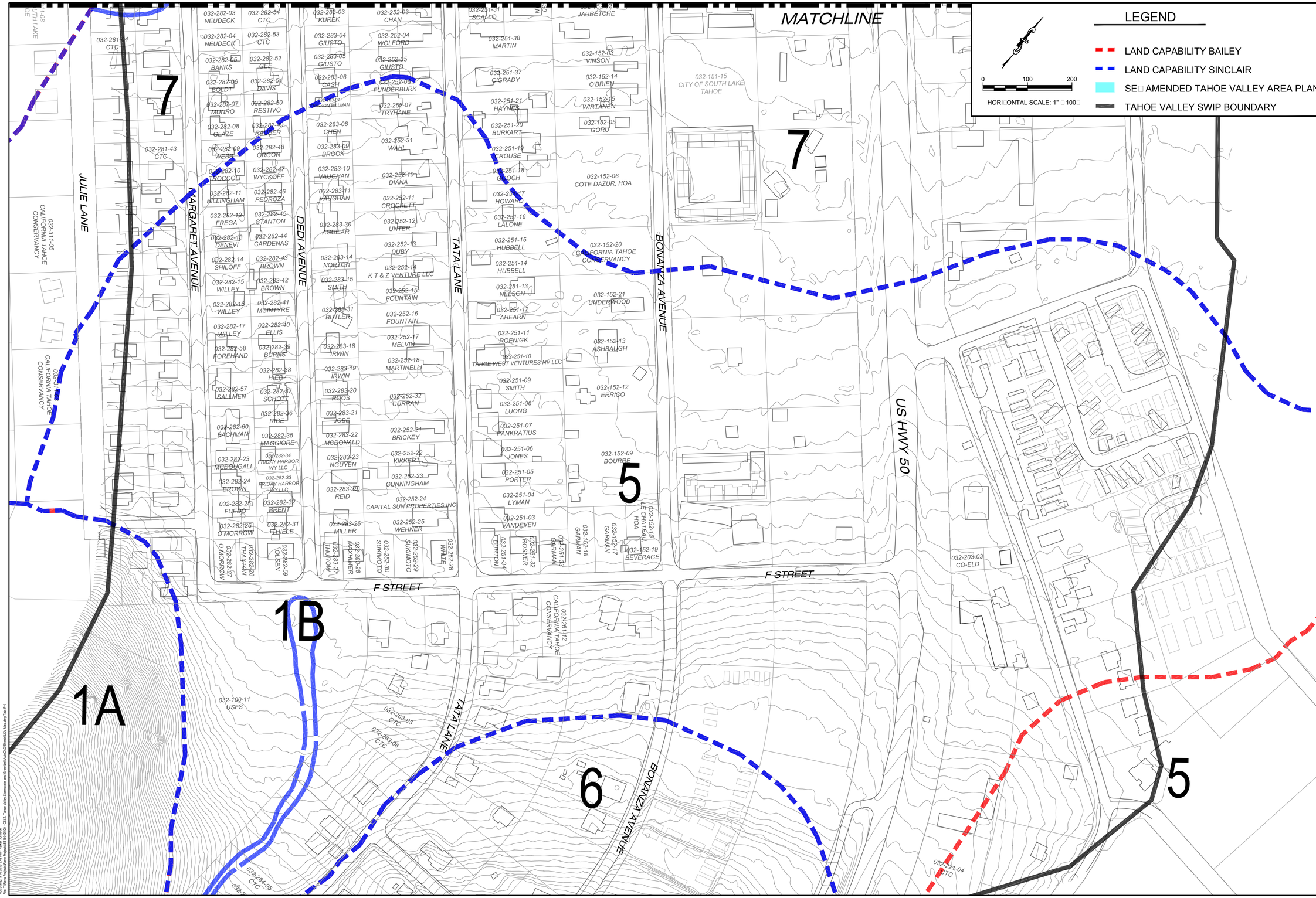

DATE	REVISIONS	NO.

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LCV SHEET 4

TAHOE VALLEY STORMWATER & GREENBELT

SOUTH LAKE TAHOE, CALIFORNIA

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Tahoe Valley Stormwater and Greenbelt Improvement Project, CEQA and TRPA Environmental Documentation

APPENDIX F

CULTURAL RESOURCES REPORT

Mr. Jason Burke
Stormwater Program Coordinator
City of South Lake Tahoe
1052 Tata Lane
South Lake Tahoe, CA 96150

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RE: Cultural Resources Investigations for the Tahoe Valley Stormwater and Greenbelt Improvement Project

Dear Mr. Burke -

The purpose of this letter report is to provide documentation of the cultural resources investigations of 78 acres of land associated with The Tahoe Valley Stormwater and Greenbelt Improvement Project within the City of South Lake Tahoe, El Dorado County, California.

Project Description

Cardno Inc. (Cardno) was contracted by the City of South Lake Tahoe (the "City") to conduct cultural resources investigations for The Tahoe Valley Stormwater and Greenbelt Improvement Project (Project) located in the City that will incorporate both stormwater and recreational improvements in one comprehensive project. Land use within the project area includes commercial and residential areas, open space, and the alignment of U.S. Highway 50. The open space is currently under-utilized for water quality treatment and recreation benefits. Project area constraints consist primarily of property ownership, unknown groundwater depth, location of Highway 50 and State Route 89, minimal collection and treatment system for storm water runoff, and an unplanned and under-utilized recreation component. The project area has these and many other opportunities and constraints which must be taken into consideration in the planning process in order to develop a concept/preliminary design which can be permitted and constructed.

Cardno conducted a cultural resources field investigation and reporting to: (1) confirm the location of previously recorded archaeological sites and/or historic structures and update site forms as necessary; (2) formally record any previously undiscovered archaeological and/or historical resources; and (3) identify and characterize areas with a higher probability for encountering cultural resources should the project call for construction in such areas.

Project Location

The project area is located on the United States Geological Survey (USGS) Emerald Bay and South Lake Tahoe 7.5-minute topographic quadrangle maps in Township 12N, Range 18E, sections 3, 4, 8 and 9. The project area is situated in the City of South Lake Tahoe and encompasses commercial and residential areas, and open space in and around the intersection of Highway 50 and State Route 89 (Attachment A).

29 August 2016

Regulatory Framework

California Environmental Quality Act

The cultural resources investigation for this project was completed under the California Environmental Quality Act (CEQA) and Tahoe Regional Planning Agency (TRPA) regulations. CEQA requires public agencies to consider the effects of their actions on both "historical resources" and "unique archaeological resources." If it can be demonstrated that a project will impact a historical or unique archaeological resource, the lead agency must require reasonable efforts to permit these resources to be preserved in place or left in an undisturbed state. Mitigation measures are required to the extent that said resources cannot be left undisturbed (Public Resources Code [PRC] Sections 21083.2[a], [b], and [c]). A *historical resource* is defined as any cultural resource that is presently listed or recommended eligible for listing on the California Register of Historical Resources (CRHR). A cultural resource may be eligible for CRHR listing if it:

a. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

b. Is associated with the lives of persons important to our past;

c. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possess high artistic value; or

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

Section 21083.2 (g) of the PRC describes an "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability the site meets the following criteria:

1. It contains information needed to answer important scientific research questions, about which there is a demonstrable public interest,

2. It has a special and particular quality such as being the oldest of its type or best available example of its type; or

3. It is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tahoe Regional Planning Agency

The Tahoe Regional Planning Agency (TRPA) Code of Ordinances has similar requirements as outlined above for CEQA but focused on a more local/regional level. Although there are no formal TRPA significant criteria for cultural resources, the Goals and Policies of the Regional Plan for the Lake Tahoe Basin provides for the identification and preservation of culturally and historically significant sites within the region. Chapter 29 of the Code of Ordinances states:

Sites, objects, structures, districts, or other resources eligible for designation as resources of historical, cultural, archaeological, paleontological, or architectural significance locally, regional, statewide, or nationally, shall meet at least one of the following criteria to be considered significant:

- The resource is associated with historically significant events and sites:
    1. Associated with an important community function in the past;
    2. Associated with a memorable happening in the past; or
    3. Contains outstanding qualities reminiscent of an early stage of development of the region.

- The resource is associated with significant persons:
    1. Buildings, or structures associated with a locally, regionally, or nationally known person;
    2. Notable examples, or best surviving works of pioneer architect, designer, or builder, or;
    3. Structures associated with the life or work of significant persons.

- The resource embodies distinctive characteristics:

    Resources that embody the distinctive characteristics of a type, period, or method of construction, that possess high artistic values, or that represent a significant or distinguishable entity but whose components may lack individual distinction, are eligible. Works of a master builder, designer, or architect, are also eligible. Resources may be classified as significant if they are a prototype of, or a representative example of, a period style, architectural movement, or method of construction unique in the region, the states, or the nation.

- The resource is recognized by state and federal guidelines as significant:

    Archaeological or paleontological resources protected, or eligible for protection, under state or federal guidelines.

- Prehistoric Sites:

    Sites where prehistoric archaeological or paleontological resources, which may contribute to the basic understanding of early cultural or biological developed in the region.

Project Setting and Background Context

Environmental Context

The project area is situated in the Sierra Nevada range approximately 1.6 miles south of the shore of Lake Tahoe at an elevation of 6,237 feet above mean sea level (USGS 2016). Area climate is characterized by dry summers with warm days and cooler nights, and moist cold winters with most winter precipitation falling as snow. High winter temperatures average 45 degrees Fahrenheit and summer highs reach an average of 90 degrees Fahrenheit (Weatherbase 2016). The current highland climate in this portion of the Sierra Nevada is dryer and warmer than the earliest recorded conditions and is continuing that trend (Coats 2010).

The project area is characterized by urban, residential, open space, and commercial uses, and therefore vegetation within the project area itself is dominated by intentionally landscaped areas of grasses and shade trees. The dominant natural vegetation communities in the area include mixed conifer and oak forests, montane riparian communities, and wet meadowlands (Mayer and Laudenslayer 1988). Vegetation observed in open space areas included regional grasses, overgrown shrubs and weeds, and several types of fir trees.

Prehistoric Archaeological Context

The cultural chronology for the Lake Tahoe region recognizes four distinct phases or patterns that were originally defined by the presence of specific resources on archaeological sites throughout the history of research in the region. They are, from oldest to most recent:

- Pre-Archaic/Tahoe Reach Phase (ca. 10,000 to 8000 years before present [B.P.])
- Early Archaic/Spooner Phase (ca. 8000-5000 B.P.)
- Middle Archaic/Martis Phase (ca. 5000-1300 B.P.)
  - Early Martis Phase (ca. 5000-3000 B.P)
  - Late Martis Phase (cs. 3000-1300 B.P)
- Late Archaic/Kings Beach Phase (1300-150 B.P.)
  - Early Kings Beach Phase (ca. 1300-800 B.P.)
  - Late Kings Beach Phase (ca. 800-150 B.P.)

Pre-Archaic/Tahoe Reach Phase (ca. 10,000 to 8000 B.P.)

This phase has been identified as generally representative of smaller, mobile populations of people whose economy and subsistence practices were focused on game hunting. Very few sites of this phase have been found in the Sierra Nevada but its presence in the region has been postulated based on sites of this age at lower elevations (Elston et al. 1977; Fredrickson 1973, 1974, 1994).

Early Archaic/Spooner Phase (ca. 8000-5000 B.P.)

This cultural phase has been mainly characterized by the presence of projectile points of the Pinto and Humboldt variety, commonly found in the Great Basin (Elston et al. 1977). Paleo-environmental conditions during this period reflect a widespread middle Holocene warming and drying trend (Ascent Environmental 2012). General cultural patterns during this era include hunting of small game, an increase in processing of hard seeds by milling, and hunting and foraging subsistence strategy (Kowta 1988).

Middle Archaic/Martis Phase (ca. 5000-1300 B.P.)

This phase occurred during a cooler and wetter climatological interim and coincides with the presence of many new sites exhibiting a heavy reliance on flaked basalt implements and an increase in usage of tabular milling stones for vegetal processing (Elston 1971). This era was designated by Hieser and Elsasser (1953) and divided into Early Martis (5000-3000 BP) and Late Martis (3000-1300 BP) by Elsasser (1978); however, these designations within the broader cultural chronology have since been redefined and reworked by many researchers (Elston et al. 1977; McGuire et al. 1997; McGuire et al. 2006; Perry and Griffin 2015; Rondeau 1982). The predominance of flaked and ground stone on archaeological sites of this time period appears to reflect an economic focus on

hunting and seed gathering. The cooler and wetter climate of this era led to population increase and diversification, and is similar to that of the climate experienced today (Elston et al. 1994).

Late Archaic/Kings Beach Phase (1300-150 B.P.)

The King Beach Complex is marked by the introduction of the bow and arrow as evidenced by smaller projectile points in increased numbers during the Late Holocene (Hieser and Elsasser 1953). The complex is characterized by seasonal campsites with assemblages of flaked obsidian and silicate tools, small projectile points, occasional scrapers, and bed rock mortars. It is marked by subsistence strategies of even greater intensity and diversity than previous periods and emphasized fishing, pine nut harvesting, seed gathering, and hunting using the bow and arrow (Elston 1982; Moratto 1984).

Ethnographic Context

The project area is within the traditional territory of the ancestral Washoe, whose ethnographic area includes the entirety of Lake Tahoe and stretches from the Pine Nut Mountains, the Virginia Range, and the Pah Rah Range to the east, and to the crest of the Sierra Nevada in the west (d'Azevedo 1986). Seasonally, their range extended to a much larger peripheral area as their resource procurement strategy was expanded to collect a wider variety of resources. Although there were some conflict with neighboring tribes in these peripheral resource procurement zones, intergroup relations were basically cooperative as the peripheral areas were not defended by the Washoe (Price 1980).

As a result of the variety of resources gained by their procurement strategies, the Washoe had the luxury of being more sedentary than their neighbors (d'Azevedo 1986). There were several large permanent settlements around Lake Tahoe, with smaller satellite settlements in surrounding areas for temporary use (Freed 1966). Summer months were spent fishing, hunting, and gathering plant resources around Lake Tahoe, and in autumn groups would move to the western foothills of the Sierra Nevada and the Pine Nut Hills to harvest acorns and pine nuts. Some Washoe may have stayed year round at the Lake Tahoe sites, procuring resources through ice fishing and plant caches (Downs 1966; Freed 1966).

The Washoe lived largely without invasion or interruption from Euro-American settlers until the discovery of the Comstock Lode in 1858. This discovery led settlers to stream by the thousands into Nevada from the California side of the Sierra Nevada, with aspirations of mining silver and gold or beginning ranging and agricultural endeavors. This mass movement devastated the most prolific Washoe gathering lands (Downs 1966). Despite the increasing displacement of the Washoe through the rest of the 19th century, some were able to retain traditional lifeways through the use of varied ecological zones in their territory and by avoiding Euro-Americans when possible (d'Azevedo 1986; Downs 1966).

Historic Context

The earliest documented Euro-American presence in the Lake Tahoe area occurred in the 1840s during the establishment of the California Emigrant Trail (Landauer 1996). James Marshal's 1848 gold discovery in El Dorado County prompted people to flock to region for mining (Hoover et al. 2002). It was the discovery of the Comstock Lode in 1859 that prompted people to flock to Nevada from the California side of the Sierra Nevada, the most significant population influx to the region (Kostura 1998). Ranching, logging, and mining have been the primary forces which drew people to the area. The City of South Lake Tahoe was founded in 1965 with the incorporation of several communities existing along the south shore of Lake Tahoe (Landauer 1996).

29 August 2016

Cultural Resources Review

This cultural resources review consisted of:

- A records search of the California Historic Resources Information System (CHRIS) to identify any previously recorded cultural resources that could be affected by the proposed Project,
- Contacting Heritage Resources specialist John Maher of the U.S. Forest Service, Lake Tahoe Basin Management Unit (LTBMU) to request any records in their possession,
- Native American community outreach, and
- A field survey to locate any other resources that may exist but have not yet been recorded and to update any known resources if needed.

CHRIS Records Search

Cardno archaeologist Evan Elliott, M.A., RPA, conducted a search of the CHRIS files on July 11th 2016 at the North Central Information Center in Sacramento, California. The records search area encompassed a ¼-mile buffer around the project area. The search did not identify previously recorded resources within the project area, but identified three within a ¼-mile radius. The search also identified three studies conducted within the project area and five studies conducted within a ¼-mile radius.

Previously Recorded Cultural Resources

Table 1 (below) provides information on the previously documented cultural resources located in the vicinity of the project area. Site P-09-000809 consists of segments of roads, trails, and other transportation alignments between Sacramento and Nevada. All currently used or abandoned portions of the route are now dominated by Highway 50. Previously recorded portions of these routes exist approximately 0.24 mile northwest of the project area as well as 0.22 mile to the southeast. Site P-09-04993 is a historical commercial building known as Mercury Cleaners – constructed around 1955. It is located at 1151 Emerald Bay Road, approximately 0.13 mile east of the project area. Site P-09-003396 includes a house foundation, stone fire pit, and two piles of rubble circa 1950-1970. It is located approximately 0.21 mile southeast of the project area. Although none of these sites or features are located within the project area, their presence indicates general levels of historic-era occupation in the vicinity, similar traces of which would be found during a Project cultural resources investigation.

Table 1. Previously Recorded Cultural Resources within 0.25-mile radius of the Project area

Primary Number	Trinomial	Description	Project Area	Year Recorded
P-09-000809	CA-ELD-721H	Highway 50	0.24 mile	1974-2014
P-09-004993	None	Historical building circa 1955	0.13 mile	2007
P-09-003396	CA-ELD-2206-H	Site consisting of house foundation, stone fire pit, and rubble circa 1950-1970	0.21 mile	2005

Previously Conducted Archaeological Studies

Three previous studies were conducted within the project area and an additional five studies were conducted within the ¼ mile search radius (Table 2). Study S-002850 consisted of an archaeological ground survey running northeast-southwest through a portion of the northeastern end of the project area. Study S-007044 covered an area extending northeast-southwest through a portion of the northeastern end of the project area. Study S-000206 is a linear study consisting of an archaeological survey running northwest to southeast through a portion of the center of the project area. None of these investigations documented any cultural resources within the project area.

Table 2. Previous Studies within 0.25 mile radius of the Project area

Study No.	Project area	Citation
S-002850	Within	Chavez, David 1981: An Archaeological Survey of the South Lake Tahoe Bike Trail Project, El Dorado County, California. Prepared for Creegan & D'Angelo, EDAW Inc. San Francisco, California.
S-007044	Within	State of California Department of Transportation 1999: Historic Property Survey Report for the Proposed Improvement of US Highway 50 in South Lake Tahoe, EL Dorado County, California. North Region, District 3, Office of Environmental Management. Marysville, California.
S-000206	Within	State of California Department of Transportation 1985: Negative Archaeological Survey Report. District 3, Marysville, California.
S-009380	0.2 mile	Billot, Scott 2002: Letter Report, Nextel Communications Wireless Telecommunications Service Facility at Lake Tahoe Airport. Prepared for Dr. Knox Mellon, State Historic Preservation Officer. Sacramento, California.
S-004395	0.12 mile	Lindstrom, Susan 2001: Cellular Communications Tahoe Sites Heritage Resource Inventory, Placer and El Dorado Counties. Prepared for Terracon, Sparks, Nevada.
S-002815	0.1 mile	No Author 1997: CE-Section 106 Checklist/Memo to File. On file at the North Central Information Center, Sacramento, California.
S-000027	0.17 mile	Storm, Donald J. and Gloria M. Caddell 1975: Archaeological Investigations within the City of South Lake Tahoe, EL Dorado County, California. Final Report. Prepared for J. B. Gilbert and Associates.
S-007055	0.24 mile	Lindstrom, Susan 2004: Heritage Resource Inventory Sierra Tract Project Erosion Control Project (US Forest Service Report HRR TB 2005-08). Prepared for City of South Lake Tahoe, California.

Lake Tahoe Basin Management Unit Coordination

Cardno archaeologist Brian Ludwig, Ph.D., contacted John Maher, lead Heritage Resources contact at the LTBMU on August 22nd, 2016 to request access to any heritage resources records or other archived documents. Mr. Maher informed Dr. Ludwig that the LTBMU has no records of previously documented prehistoric or historic-era sites, features, or artifacts within the project area.

Native American Community Coordination

Cardno, acting as a consultant on behalf of the City, contacted Mr. Darrel Cruz (Tribal Historic Preservation Officer) of the Washoe Tribe of Nevada and California on August 22nd and August 23rd 2016 via telephone to inform him of the Project and request that he relay any knowledge of known Washoe resources within the project area. Mr. Cruz sent an email responding that he does not have any knowledge of cultural resources within the project area, but requested to be informed if any resources were discovered by Cardno's survey (Attachment D).

Gene Whitehouse of the United Auburn Indian Community (UAIC) contacted the South Lake Tahoe Public Utility District in November of 2015 to request formal notice of any projects within their "Geographic Area of Traditional and Cultural Affiliation." The Lake Tahoe area was included in UAIC's Cultural Affiliation map. Therefore, Cardno acted on behalf of the City and notified UAIC's Cultural Resource Manager Mr. Marcos Guerrero by telephone on August 22nd 2016 to inform him of the cultural survey (Attachment D).

Cultural Resources Survey

In order to determine if any potentially significant (per CEQA and TRPA criteria) were located within or immediately adjacent to the project area, Cardno archaeologists conducted a pedestrian reconnaissance archaeological survey on August 24th 2016. Cardno archaeologists Ms. Thea Fuerstenberg, M.A., and Mr. Tyrell Milliron, B.A., conducted the pedestrian survey employing 15 meter surface transects on all accessible parcels, excluding paved areas, within the project area. The total area surveyed consisted of approximately 57 acres and non-surveyable parcels totaled approximately 21 acres. Ground cover and ground surface visibility varied slightly between parcels, but overall visibility was fair at between 20 percent and 60 percent. Cardno's archaeologists also closely inspected all visible soils in areas exposed by bioturbation, in cut-banks, and along riparian corridors.

Survey Results

The archaeological survey located two previously undocumented segments of a previously recorded liner resource; P-09-00809 (Highway 50), and one isolated artifact (TV-TF-ISO-01), a ceramic insulator, within the project area (Attachment C).

The two segments of US Highway 50 within the boundaries of the current survey were recorded under P-09-00809 as Segment TV-TF-01 and Segment TV-TF-02 in a site record update. Segment TV-TF-01 is a 465-foot-long segment of Highway 50 also known as Lake Tahoe Boulevard, between 3rd Street and just southwest of 4th street. Segment TV-TF-02, also known as Emerald Bay Road, is a 1,250-foot-long segment located between the McDonald's Restaurant at 1035 Emerald Bay Road and California Tahoe Conservancy parcel 032-191-04. Both segments are made of asphalt concrete, which consists of mineral aggregate bound together with asphalt, laid in layers, and compacted. This portion of the Highway 50 alignment was constructed in 1949 (Lindstrom 2004) and is currently heavily trafficked and maintained.

Although Highway 50 may be a significant historical inter-state transportation route potentially eligible for CRHR listing, the segments within the project area do not appear to be associated with any specific historical event or person. In addition, they are unremarkable highway segments exhibiting no indications of a design or construction by a recognized master. In addition, comparable highway segments can be found throughout California and the nation and neither segment documented by Cardno represents a particularly early or outstanding example of its kind. In addition, the full research potential of these Highway 50 segments has been

realized through the current level of documentation. As a result, Cardno recommends that Highway 50 segments designated TV-TF-01 and TV-TF-02 not eligible for CRHR listing.

Isolated artifact TV-TF-ISO-01 consists of a ceramic insulator on a ferrous wire nail, approximately 3 inches long and 1 inch in diameter, located in a grass-covered empty lot of California Tahoe Conservancy parcel 032-242-15. As an isolated artifact retaining no historical associations or data potential, Cardno recommends TV-TF-ISO-01 not eligible for CRHR listing.

Project Area Archaeological Sensitivity

The project area consist primarily of soils dating to the Older Pleistocene (1.9 million to 22,000 years ago) and the Latest Pleistocene (22,000 to 11,500 years ago), but contains a few small areas of soil northeast of the US Highway 50/State Route 89 intersection dating to the Late Holocene (4,000 to 150 years ago) (Meyer and Rosenthal 2008:129). Pleistocene soils have low potential to contain buried archaeological resources, but Holocene soils have a high potential (Meyer and Rosenthal 2008:129). Based on this information, parcels within the project area that may be characterized as having a higher probability to contain buried cultural resources are those areas around consistent water sources northeast of the US Highway 50/State Route 89 intersection and outside of the project area. Therefore, all surface areas of the project that were inspected can be characterized as having a low probability for exhibiting archaeological remains.

Summary

Archival research, coordination with the Native American community, and a reconnaissance archaeological survey were conducted for the purpose of identifying potentially significant cultural resources within and immediately adjacent to the project area that could be subject to Project impacts. No previously recorded sites, features, or artifacts were identified within the project area by the archival research. Communication with representatives of the Washoe Tribe of Nevada and California indicated that the Tribe had no specific concerns regarding potential Project impacts on known culturally sensitive properties or locations. One isolated artifact, a porcelain electrical line insulator, and one historic era resource, two segments of Highway 50, were identified and recorded within the project area during Cardno's survey. None of these cultural resources are recommended eligible for CRHR listing.

If you have any questions or require additional information regarding Cardno's investigation, please do not hesitate to contact me at your convenience. I can be reached by phone at 916-386-3816 or vial email at Theadora.Fuerstenberg@cardno.com.

Sincerely,

Thea Fuerstenberg, M.A.
Senior Staff Scientist
Cardno, Inc.

29 August 2016

Enc:

Attachment A: Project Location Map, Project Vicinity Map, Survey Coverage Map
Attachment B: Resource Location Map (CONFIDENTIAL-DO NOT DISTRIBUTE)
Attachment C: Site Records (CONFIDENTIAL-DO NOT DISTRIBUTE)
Attachment D: Native American Community Coordination
Attachment E: Survey Field Photographs

*Records search results available upon request

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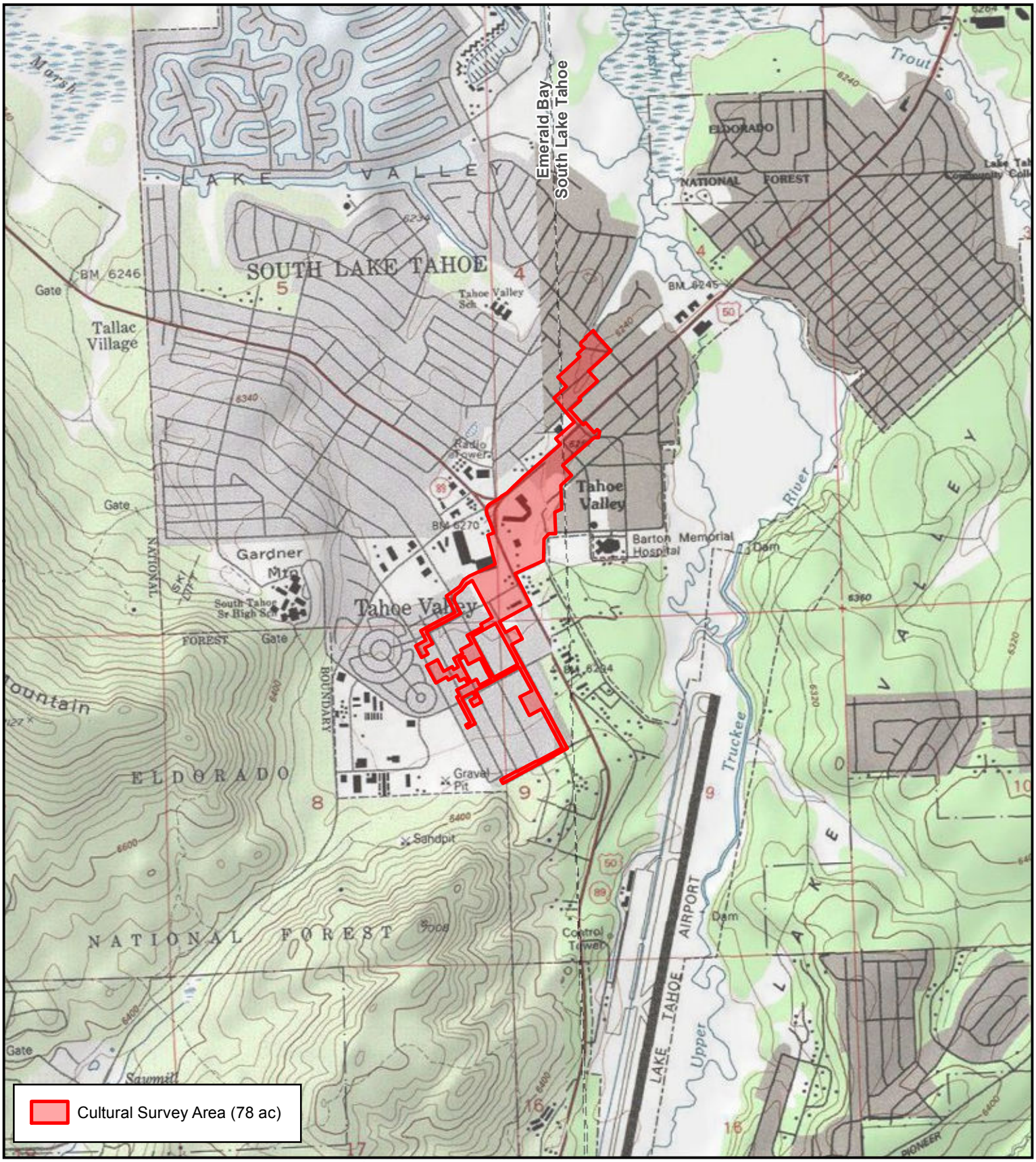
Cultural Resource Investigations for the Tahoe Valley Stormwater and Greenbelt Improvement Project

ATTACHMENT

A

PROJECT LOCATION MAP, PROJECT VISCINITY MAP, SURVEY COVERAGE MAP



0 0.25 0.5 0.75 Miles

0 0.25 0.5 0.75 1 Kilometers

1:24,000

Project Location Map

Tahoe Water Quality and Greenbelt Improvement Project
El Dorado County, California

USGS 7.5' Quads:
Emerald Bay, CA-NV 1992
South Lake Tahoe, CA-NV 1992
T12N, R18E, Sec 4, 5, 8, 9

Map Prepared By T. Milliron
8/29/2016

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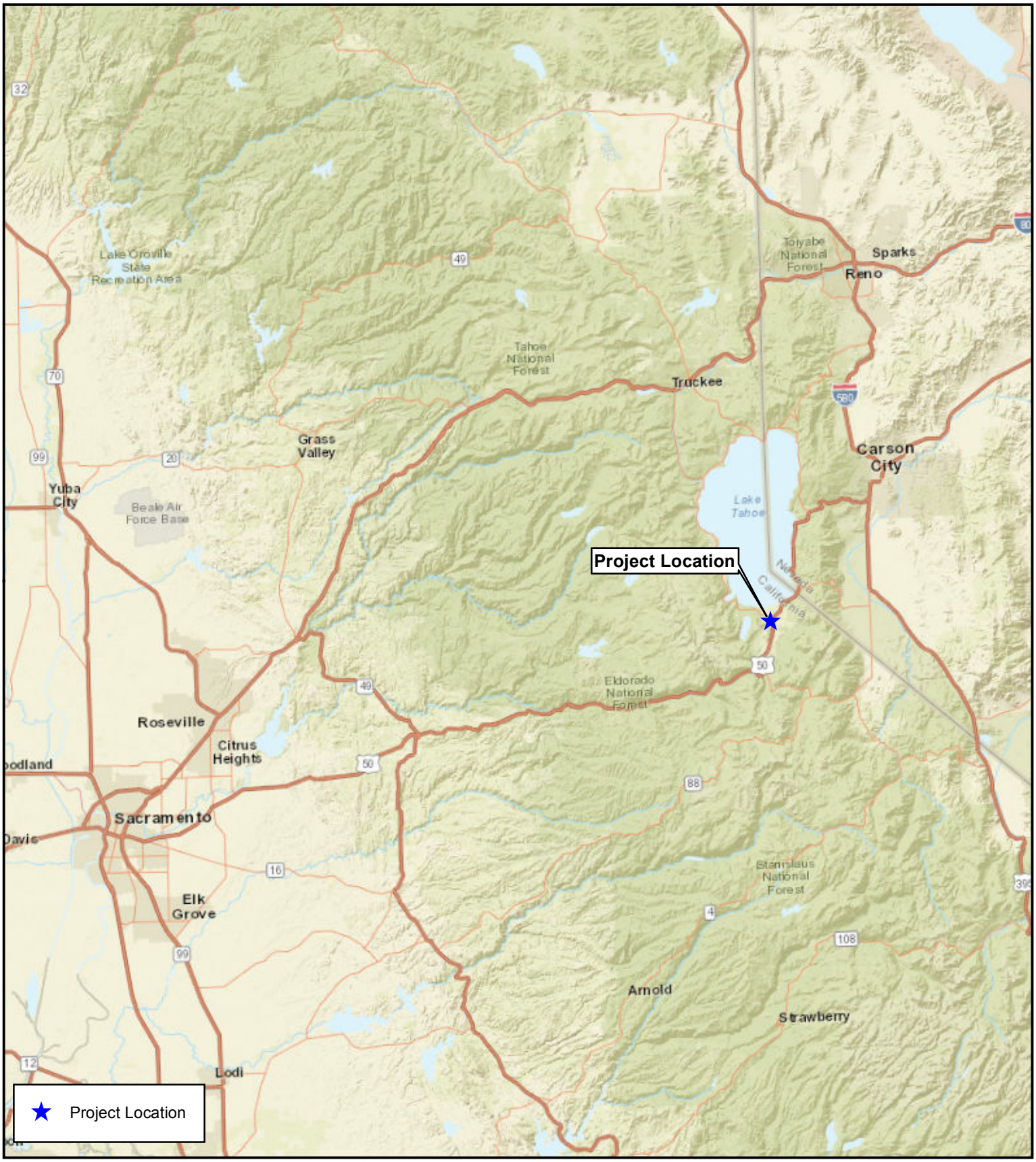
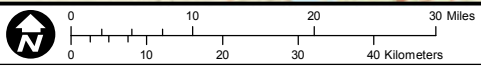
fax (916) 923-6251
www.cardno.com

Map Projection: NAD 1983 UTM Zone 10N





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Project Vicinity Map

Tahoe Water Quality and Greenbelt Improvement Project
El Dorado County, California

Map Prepared By T. Milliron
8/29/2016

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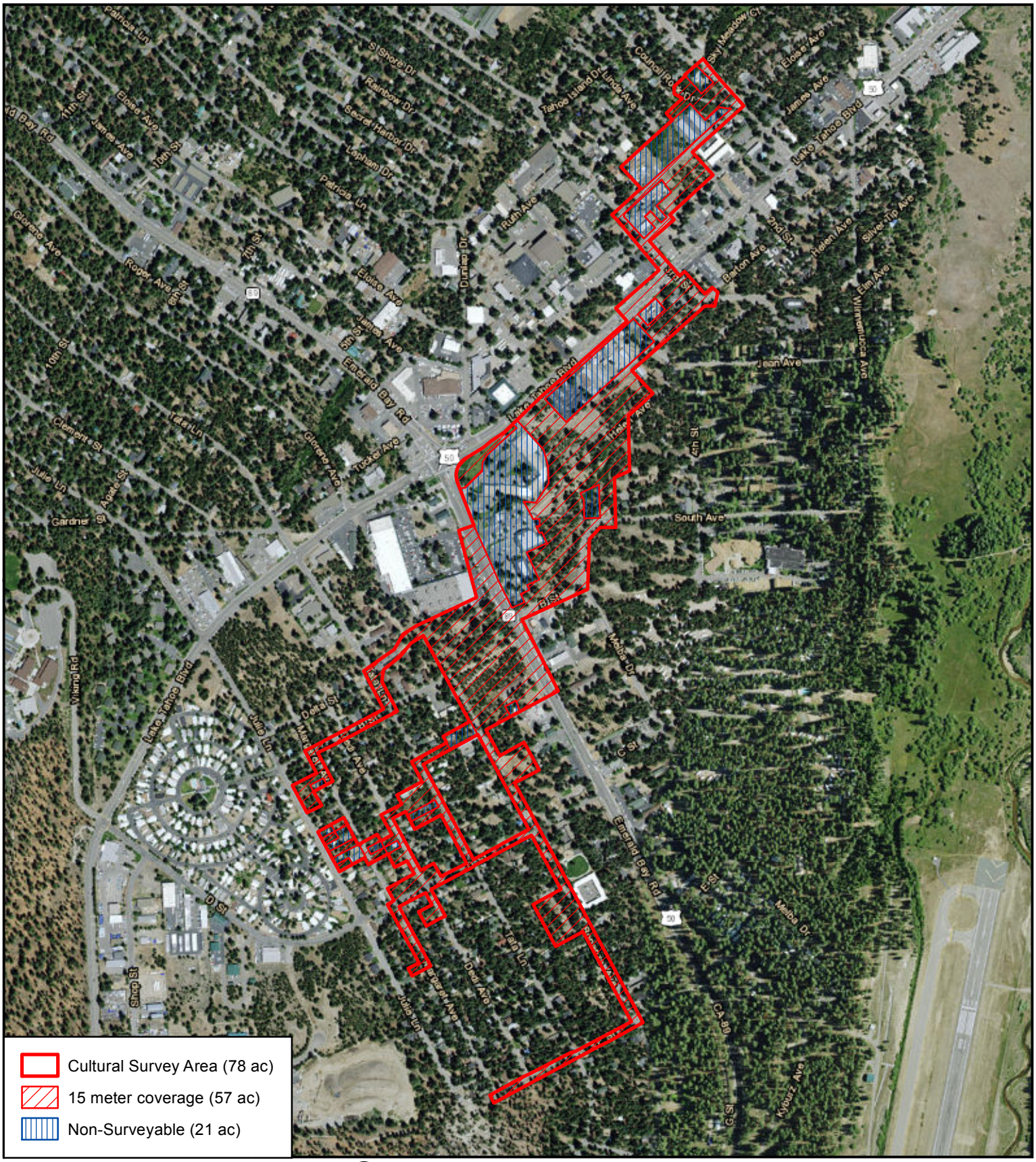

Survey Coverage Map

Tahoe Water Quality and Greenbelt Improvement Project
El Dorado County, California

USGS 7.5' Quads:
Emerald Bay, CA-NV 1992
South Lake Tahoe, CA-NV 1992
T12N, R18E

Map Prepared By T. Milliron
8/25/2016

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Map Projection: NAD 1983 UTM Zone 10N

Cultural Resource Investigations for the Tahoe Valley Stormwater and Greenbelt Improvement Project

ATTACHMENT

B

RESOURCE LOCATION MAP

CONFIENTIAL- DO NOT DISTRIBUTE

Cultural Resource Investigations for the Tahoe Valley Stormwater and Greenbelt Improvement Project

ATTACHMENT

C

SITE RECORDS

CONFIDENTAIL-DO NOT DISTRIBUTE

Cultural Resource Investigations for the Tahoe Valley Stormwater and Greenbelt Improvement Project

ATTACHMENT D

NATIVE AMERICAN COMMUNITY COORDINATION

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CONVERSATION RECORD

■ Telephone

☐ Personal Contact (i.e., lunch, meeting, etc.)

Date:	08/22/16	By:	T. Fuerstenberg
Conversed With:	Marcos Guererro	Time:	12:47 pm
Company:	UAIC	Project Name:	Tahoe Valley
Phone No.:	1-530-883-2364	Project No.:	E315012100

Subject: AB52 contact for head's up on project survey

Remarks:

I got voicemail and left a message relaying that we received a letter from UAIC pursuant to AB52 consultation, and are responding to let them know we are working with Darrel Cruz of the Washoe Tribe, and that we are doing the cultural survey probably this week, and the lead agency is Tahoe Regional Planning Agency. I told him to call me back he has any questions or needs to Tahoe regional planning agency's contact info.

Follow-up:

cc: _____

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CONVERSATION RECORD

■ Telephone

☐ Personal Contact (i.e., lunch, meeting, etc.)

Date:	08/22/2016	By:	T. Fuerstenberg
Conversed With:	Darrel Cruz	Time:	1:19pm
Company:	Washoe Tribe	Project Name:	Tahoe Valley
Phone No.:	775-265-8600	Project No.:	E315012100

Subject: Tahoe Stormwater Greenbelt Improvement Project Cultural Pedestrian Survey

Remarks:

Sheila at the tribal office answered, said Darrel was in a meeting and then transferred me to his voicemail. I left him a voicemail with the project details and the lead agency information, as well as my direct line and cell number. Told him looking forward to any insight he may want to provide or if he is interested in being involved. Mentioned we planned to do the survey on Wednesday and Thursday and that the area has been surveyed before.

Follow-up:

cc: _____

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CONVERSATION RECORD

■ Telephone

☐ Personal Contact (i.e., lunch, meeting, etc.)

Date:	08/23/2016	By:	T. Fuerstenberg
Conversed With:	Darrel Cruz	Time:	12:20pm
Company:	Washoe Tribe	Project Name:	Tahoe Valley
Phone No.:	775-265-8600	Project No.:	E315012100

Subject: Tahoe Stormwater Greenbelt Improvement Project Cultural Pedestrian Survey

Remarks:

I spoke with Darrel. He said he got my message yesterday but he has been busy with phone calls all day. I read him the project description, and told him that a records search did not indicate any sites, prehistoric or historic-era, within the Project Area. Also buried site sensitivity indicates a low probability there are prehistoric sites buried due to landform. I also got his e mail address, Darrel.cruz@washoetribe.us, and sent him the project area map and the RS results map that Tyrell made. I told him we are going to do the pedestrian survey tomorrow and he would like the letter memo report, as well. I told him that would be fine. He told me he would look at the maps I sent him and that he would get back to me if he had any concerns via e mail.

Follow-up:

_____

_____

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cc: _____

_____

Theadora Fuerstenberg

From: Darrel Cruz <Darrel.Cruz@washoetribe.us>
Sent: Tuesday, August 23, 2016 12:33 PM
To: Theadora Fuerstenberg
Subject: RE: Tahoe Valley

Hello Theodora,
Thank you for consulting with the Tribal Historic Preservation Office of the Washoe Tribe and providing the supporting documentation.
The project is within the ancestral lands of the Washoe Tribe.
I DO NOT have any knowledge of cultural resources with the area of potential effect that may be affected by the proposed undertaking.
However if any new archaeological resources are discovered during your survey we wish to be kept informed
Thank you and I hope this email will be satisfactory for our response
Darrel

Darrel Cruz, Director
Tribal Historic Preservation Office
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV. 89410
Office 775-265-8600 Ext. 10714
Cell 775-546-3421
darrel.cruz@washoetribe.us

From: Theadora Fuerstenberg [mailto:Theadora.Fuerstenberg@cardno.com]
Sent: Tuesday, August 23, 2016 12:22 PM
To: Darrel Cruz <Darrel.Cruz@washoetribe.us>
Subject: Tahoe Valley

Hi

Theadora Fuerstenberg
SENIOR STAFF SCIENTIST/CULTURAL RESOURCES SPECIALIST
NATURAL RESOURCES & HEALTH SCIENCES DIVISION
CARDNO

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Direct +1 916 386 3816
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Cultural Resource Investigations for the Tahoe Valley Stormwater and Greenbelt Improvement Project

ATTACHMENT

E

SURVEY FIELD PHOTOGRAPHS

Field Photographs: Cultural Resource Investigations for the Tahoe Valley Stormwater and Greenbelt Improvement Project

Photo 101-0125 Overview from Tahoe Keys Blvd and James Ave looking northwest towards the northwestern portion of the survey area. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0126 Overview from Tahoe Keys Blvd and James Ave looking west southwest towards the northwestern portion of the survey area. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0127 Overview of the northwestern survey parcels at Eloise Ave and Tahoe Keys Blvd, facing northwest. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0128 Overview of northwestern survey parcels taken from Eloise Ave and Tahoe Keys Blvd, facing northwest. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0129 Parcel 023-211-04, locked. UTMs: 760206mE/4312075mN. Facing north northwest. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0129 Parcel 023-211-04, locked. Close-up of locked gate. Facing north northwest. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0131 Overview of parcel 032-211-44, picturing vegetation cover and condition typical of most parcels in the northwestern half of the project area. Facing northeast. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0132 Northeastern end of Segment TV-TF-01 of P-09-000809, U.S. Highway 50, at 760170mE/4311833mN. Facing south, picturing entirety of recorded segment within our survey area. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0133 Segment TV-TF-01 of P-09-000809, U.S. Highway 50, taken near center of recorded segment within our survey area. Facing south. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0134 Southwestern end of Segment TV-TF-01 of P-09-000809, U.S. Highway 50, picturing entirety of recorded segment within our survey area. Facing north. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0135 Southwestern end of Segment TV-TF-01 of P-09-000809, U.S. Highway 50, picturing entirety of recorded segment within our survey area; stoplight in background marks northwestern end of recorded segment. UTMs: 760090mE/4311746mN. Facing north. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0136 Overview of survey area near center of project area at the intersection of U.S. Highway 50 and State Route 89 adjacent of Factory Outlet Store. UTMs: 759744mE/4311418mN. Facing northeast. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0137 Overview of survey area near center of project area at the intersection of U.S. Highway 50 and State Route 89 adjacent of Factory Outlet Store. UTMs: 759744mE/4311418mN. Facing southeast toward construction activity. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0138 Concrete structure; uncertain age, association or function, in parcel 023-381-03. UTMs: 760065mN/4311436mN. Facing northwest. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0139 Parcel 023-381-09 showing locked gate. Facing north northeast. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0140 Segment TV-TF-02 of P-09-000809, U.S. Highway 50, taken from center of recorded segment at B Street. UTMs: 759861mE/4311149mN. Facing northwest. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0141 Segment TV-TF-02 of P-09-000809, U.S. Highway 50, taken from center of recorded segment at B Street. UTMs: 759861mE/4311149mN. Facing southeast. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0142 Segment TF-TV-02 of P-09-000809, taken from southern end of segment. UTMs: 759953mE/4310972mN. Facing northwest. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0143 Segment TF-TV-02 of P-09-000809, taken from northern end of segment. UTMs: 759785mE/4311320mN. Facing southeast. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0144 Overview of parcel 023-081-11, picturing vegetation cover and condition typical of parcels west and southwest of U.S. Highway 50. Facing south southeast. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0145 Parcel 032-142-18, locked. Facing west. Taken 08/24/16, T. Fuerstenberg.

Photo 101-0146 TV-TF-ISO-01 ceramic insulator on ferrous wire nail. Detail. UTMs: 759680mE/4310714mN. Taken 08/24/16, T. Milliron.

Photo 101-0147 TV-TF-ISO-01 ceramic insulator on ferrous wire nail. Detail of embossing. UTMs: 759680mE/4310714mN. Taken 08/24/16, T. Milliron.

Photo 101-0148 Overview of location of TV-TF-ISO-01, ceramic insulator on ferrous wire nail, in parcel 032-242-15. Pink flagging depicts isolate location. Facing northeast. Taken 08/24/16, T. Milliron.

Photo 101-0149 Overview of location of TV-TF-ISO-01, ceramic insulator on ferrous wire nail, in parcel 032-242-15. Pink flagging depicts isolate location. Facing northeast. Taken 08/24/16, T. Milliron.

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CONVERSATION RECORD

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☐ Personal Contact (i.e., lunch, meeting, etc.)

Date:	08/22/16	By:	T. Fuerstenberg
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Follow-up:

cc: _____

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Follow-up:

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Follow-up:

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cc: _____

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Theadora Fuerstenberg

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Sent: Tuesday, August 23, 2016 12:33 PM
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Subject: RE: Tahoe Valley

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Thank you and I hope this email will be satisfactory for our response
Darrel

Darrel Cruz, Director
Tribal Historic Preservation Office
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV. 89410
Office 775-265-8600 Ext. 10714
Cell 775-546-3421
darrel.cruz@washoetribe.us

From: Theadora Fuerstenberg [mailto:Theadora.Fuerstenberg@cardno.com]
Sent: Tuesday, August 23, 2016 12:22 PM
To: Darrel Cruz <Darrel.Cruz@washoetribe.us>
Subject: Tahoe Valley

Hi

Theadora Fuerstenberg
SENIOR STAFF SCIENTIST/CULTURAL RESOURCES SPECIALIST
NATURAL RESOURCES & HEALTH SCIENCES DIVISION
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Tahoe Valley Stormwater and Greenbelt Improvement Project, CEQA and TRPA Environmental Documentation

APPENDIX G

GEOTECHNICAL REPORT

GEOTECHNICAL INVESTIGATION REPORT

for

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENTS

South Lake Tahoe, California

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October, 2016

JN: 8937.000

GEOTECHNICAL INVESTIGATION REPORT

TAHOE VALLEY STORMWATER AND GREENBELT IMPROVEMENTS

South Lake Tahoe, California

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GEOTECHNICAL INVESTIGATION REPORT
for
TAHOE VALLEY STORMWATER AND
GREENBELT IMPROVEMENTS
South Lake Tahoe, California

INTRODUCTION

Submitted herewith are the results of Lumos and Associates, Inc. (Lumos) geotechnical investigation for the Tahoe Valley Stormwater and Greenbelt Improvement project to be located in South Lake Tahoe, California (Plate 1). The project site boundaries are as far north as Council Rock Drive and as far south as F Street, west to Margaret Avenue, and east to Melba Drive.

It is our understanding that the proposed Tahoe Valley Stormwater and Greenbelt Improvement project will consist of stormwater diversion and collection upgrades that will consist of water quality treatment/infiltration basins and stormwater improvements.

The purpose of our investigation was to characterize the site geology and soil conditions, describe the native soils, and determine their engineering properties as they relate to the proposed construction. The investigation was also intended to identify possible adverse geologic, soil, and or water table conditions. However, this study did not include an environmental assessment, a fault study, or an evaluation for soil and/or groundwater contamination at the site.

This report concludes with recommendations for site grading, storm drain pipe construction, and Portland cement concrete. In addition, information such as logs of all exploratory test pits, laboratory test data, and percolation test results are provided in this report.

The recommendations contained herein have been prepared based on our understanding of the proposed construction, as outlined above. Re-evaluation of the recommendations presented in this report should be conducted after the final site grading and construction plans are completed, if there are any variations from the assumptions described herein.

It is possible that subsurface discontinuities may exist between and beyond exploration points. Such discontinuities are beyond the evaluation of the Engineer at this time. No guarantee of the consistency of site geology and sub-surface conditions is implied or intended.

GEOLOGIC SETTING

South Lake Tahoe is located at the southern end of the Lake Tahoe Basin, a large fault-bounded valley within the eastern portion of the Sierra Nevada geomorphic province. Lake Tahoe is one of the world's largest and deepest alpine lakes, approximately 22 miles long and at least 1,600 feet deep. The Sierra Nevada is geographically characterized by a steep eastern slope that separates the Sierra Nevada and Great Basin geomorphic provinces and a gentle western slope that eases down into the Great Valley.

The surface geology of the project has been mapped by George J. Saucedo (2005). The project encompasses a large area and the mapping indicates that alluvial soils (Q) from the Holocene and Pleistocene periods underlie the site, that flood plain deposits (Qfp) from the Holocene period underlie the site, and that Lacustrine terrace deposits (Qlt) from the Pleistocene period underlie the site. The map also indicated an inferred fault is located within the site boundary at the extreme southern end. The fault may be within 50 feet of the proposed improvements, the customary setback from a potentially active fault to a structure. Holocene faults (less than 12,000 years old) are considered active. This fault is not shown on the "Earthquake Hazard Map, South Lake Tahoe Quadrangle" by Dennis Trexler and John W. Bell (1979), therefore, we understand this fault to be older than a Holocene (Plate 5).

The geologic evolution of the Sierra Nevada province is extremely complex and involved a long sequence of events. First, subduction and abduction of oceanic plates below and across the continental plate began. This interaction between the two plates created different metamorphic rock complexes at the collision area known as a trench. Then, the deep continental crust began to melt into granite magma and volcanoes began to erupt above the granite batholiths. The basin and range to the east began to widen and open. Finally, the Sierra Nevada began to rise and tilt a few degrees to the west.

Glaciers have played an active roll in shaping the Sierra Nevada Mountains, particularly during the past two (2) million years. Alpine glaciers were present around Lake Tahoe during much of this period and extended below the current level of the Lake along the west shoreline (i.e., at Emerald Bay). The large U-shaped valleys surrounding the Lake were carved out by ice and display typical glacial features such as polished rock, lateral moraines and glacial lakes (tarns).

SEISMIC CONSIDERATIONS

South Lake Tahoe, similar to many areas of California, is located near active faults, which are capable of producing significant earthquakes. This area can be described as an area that may experience major damage due to earthquakes having intensities of VII or more when evaluated using the Modified Mercalli Intensity Scale of 1931 (Plate 3).

South Lake Tahoe is located within the Sierra Nevada-Great Basin seismic belt and at least two (2) major earthquakes, with magnitudes equal to or greater than 6.0 (Plate 4), have occurred historically within thirty miles of the site (DePolo and DePolo, 1999).

No evidence of Holocene faulting was found in the field or on published fault maps, which would indicate faulting on this site. However, the approximate location of the inferred fault (Saucedo, 2005) older than 1.6 million years (which is not considered active) is located along the southern border of the site. It is worth noting that the potential for surface rupture at or near these faults is inferred to be low. The largest active fault in the area, however, is the Genoa Fault with its surface trace, located approximately 7 miles east of the site. The Genoa Fault System is reported to have had activity within the past five hundred (500) years and be capable of producing earthquakes with a maximum moment magnitude of 6.9 (California Department of Conservation, 1996).

Ground shaking should be anticipated at the site and intensities should be governed by a design earthquake occurring within a few miles of the site on faults belonging to the Sierra Nevada – Great Basin seismic belt that crosses the Tahoe region. For design purposes, ground-shaking intensities should be based on a design earthquake occurring on the Genoa Fault Zone with a maximum credible earthquake of 7.5 in moment magnitude.

Liquefaction is the phenomena where more commonly loose saturated sands or silty sands lose their shear strength when subjected to cyclic loading, and become unstable.

Large earthquakes, as described above, may provide that type of cyclic loading. This condition was not encountered on this site during our field investigation. The native sands encountered were medium dense during our field exploration. Therefore, in our opinion, the potential for liquefaction to occur at the site is very low.

2012 IBC Design: The mapped maximum considered earthquake spectral response acceleration at short periods (S_S) is 1.791g corresponding to a 0.2 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC 1613.3.1). The mapped maximum considered earthquake spectral response acceleration at a 1-second period (S_1) is 0.611g corresponding to a 1.0 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC 1613.3.1). According to section 1613.3.2, when the soil properties are not known in sufficient detail to a depth of 100 feet, site Class D shall be assumed. Therefore, the spectral response accelerations must be adjusted for Site Class effects. The site coefficient for spectral response accelerations adjustment at short periods (F_a) is 1.0 (IBC Table 1613.3.3(1)). The site class effect for spectral response accelerations adjustment at 1-second periods (F_v) is 1.5 (IBC Table 1613.3.3(2)). The maximum considered earthquake spectral response acceleration parameter for short periods (S_{MS}) is 1.791g and for 1-second periods (S_{M1}) is 0.917g. This corresponds to design spectral response acceleration parameters of 1.194g for short periods (S_{DS}) and of 0.611g for 1-second periods (S_{D1}).

It is emphasized that the above values are the minimum requirements intended to maintain public safety during strong ground shaking. These minimum requirements are meant to safeguard against loss of life and major structural failures, but are not intended to prevent damage or insure the functionality of the structure during and/or after a large seismic event. Additionally, they do not protect against damage to non-structural components or the contents of the structure.

SITE CONDITIONS AND FIELD EXPLORATION

At the time of our investigation, the site is currently developed with residences/businesses with associated roadways, paths, and utilities and generally slopes downwards towards Lake Tahoe from south to north. The proposed storm water treatment/infiltration locations are currently vacant, undeveloped lots within residential/commercial areas.

Field exploration included a site reconnaissance and subsurface soil-exploration. During the site reconnaissance, surface conditions were noted and the locations of the exploratory test pits were determined. They were located using existing features and a conceptual plan available to Lumos as a guide. Locations and elevations of the exploratory test pits should be considered accurate only to the degree implied by the method used.

Eleven (11) exploratory test pits were excavated within the proposed improvement area to a maximum depth of nine and a half (9.5) feet below-ground-surface (bgs). The approximate locations of the exploratory test pits within the site are shown on Plate 2. The subsurface soils were continuously logged and visually classified in the field by our Geotechnical Engineering Intern in accordance with the Unified Soil Classification System. Representative soil samples were collected at regular intervals within the exploratory test pits and subsequently transported to our Carson City geotechnical laboratory for testing and analysis.

The subsurface soils consisted generally of silty sands, silty sands with gravel, poorly graded sands with silts, and well graded sands with silts and gravel to the total depths explored for this project. Groundwater was encountered at the time of our field investigation. This occurred in Percolation Test Pit (Perc-6) at a depth of 9.2 feet. Mottling, which indicates previous ground water presence, was observed in Percolation Test Pit (Perc-6) at a depth of 8 feet and Test Pit 1 at a depth of 4 feet. Seasonal groundwater (water table) fluctuations should be anticipated at the site.

FIELD AND LABORATORY TEST DATA

Field and laboratory data was developed from samples taken and tests conducted during the field exploration, field testing, and laboratory testing phases of this project. The test pits were excavated using a Mini Excavator (CAT 35D). Representative samples of each native soil type encountered were collected using bulk-sampling techniques. All samples were subsequently transported to our Carson City geotechnical laboratory for testing and analysis.

Laboratory tests performed on representative samples included sieve analysis, Atterberg limits, moisture-density curve, and direct shear. Much of this data is displayed on the "logs" of the exploratory test pits to facilitate correlation. Field descriptions presented on the logs have been modified, where appropriate, to reflect laboratory test results. The logs of the exploratory test pits are included in Appendix A of this report as Plates A-1 through A-11. Plate A-12 describes the various symbols and nomenclature shown on the logs.

Individual laboratory test results are presented in Appendix B as Plates B-1 through B-5. Laboratory testing was performed per ASTM standards, except when test procedures are briefly described and no ASTM standard is specifically referenced in the report. Atterberg limits were determined using the dry method of preparation (Plate B-2). Special testing conducted for this project is described below.

Percolation tests were performed in test pits Perc 1 through Perc 6. The results are included in Appendix C

The soil samples obtained during this investigation will be held in our laboratory for 30 days from the date of this report. The samples may be retained longer at an additional cost to the client or obtained from this office upon request.

DISCUSSION AND RECOMMENDATIONS

General

From a geotechnical viewpoint, the site is considered suitable for the proposed improvements when prepared as recommended herein.

During earthwork, any existing improvements within the proposed improvements should be demolished and/or removed offsite, or salvaged if to remain. Demolition/ salvage activities, where applicable, should be conducted in general accordance with the specifications presented in Appendix E.

The following recommendations are based upon the construction and our understanding of this project, as outlined in the introduction of this report. If changes in the construction are proposed, they should be presented to the Lumos Geotechnical Department, so that these recommendations can be reviewed and modified in writing, as necessary. As a minimum, final construction drawings should be submitted to the Lumos Geotechnical Department for review prior to actual construction and verification that our geotechnical design recommendations have been implemented.

General Site Grading

Root- or organic-laden soils encountered during excavations, should be stockpiled in a designated area on site for later use in landscaping, or removed off site as directed by the owner. Excavated soils free from any organics, debris or otherwise unsuitable material and with particles no larger than three (3) inches in maximum dimension may be stockpiled and moisture conditioned for later use as compacted fill and backfill provided it meets the criteria for structural fill/ trench backfill soils. It is anticipated all site soils will be suitable for reuse as structural fill/trench backfill.

Existing fill and trench backfill shall be completely removed, replaced, moisture conditioned, and recompacted. Removals should extend horizontally beyond the

perimeter of the improvements equidistant to the depth of vertical removal. Exposed surfaces to receive fill shall be scarified to a depth of 12 inches, oversize particles (+3") removed, moisture conditioned to within two percent (2%) of optimum moisture content, and recompacted to a minimum of ninety percent (90%) of the ASTM D1557 standard. The overexcavated materials shall be replaced with structural fill and prepared as discussed later in the report. The removed material may be reused as structural fill provided the material meets the structural fill/trench backfill specifications.

All surfaces to receive fill, should be observed and approved by a Lumos representative prior to placement of the fill. The surfaces shall be scarified to a minimum depth of twelve (12) inches, particles over three (3) inches removed, moisture conditioned to within two percent (2%) of optimum, and re-compacted to at least ninety percent (90%) of the ASTM D1557 standard. Fill material should not be placed, spread or compacted while the ground is frozen or during unfavorable weather conditions. When site grading is interrupted by heavy rain or snow, grading or filling operations should not resume until a Lumos representative approves the moisture content and density conditions of the subgrade or previously placed fill.

Unstable conditions due to yielding and/or pumping soils may be encountered on site. If yielding or pumping conditions are encountered, the soils should be scarified in place, allowed to dry as necessary and re-compacted, where applicable. Alternatively, the unsuitable or saturated soil should be removed, the exposed surface leveled and compacted/tamped as much as practical without causing further pumping, and covered (including the sides) with geotextile stabilizing fabric (Mirafi HP370 or other equivalent). The fabric should then be covered with at least 12 inches of 4 to 8 inch **angular rock fill** with enough fines to fill the inter-rock pore spaces. Placement should be by end dumping. No traffic or other action should be allowed over the fabric, which may cause it to deflect/deform prior to cobble placement. Test sections should be used to determine the minimum thickness and/or number of layers required for stabilization. If there is water present at the bottom of the excavation de-watering may be necessary.

Stabilization should be evaluated by proof-rolling standards commensurate with the

equipment used, and approved by a Lumos representative. The placement of the stabilizing rock-fill may require additional over-excavation to maintain appropriate grading elevations. A filter fabric (Mirafi 180N or equal) should also be placed over the cobble rock fill to prevent piping of fines from covering soils into the stabilizing rock matrix.

Structural fill and trench backfill soils to be used for this project should consist of non-expansive material (LL less than 35 and/or a PI less than 12, and/or an Expansion Index less than 20), and should be free of contaminants, organics (less than two percent (2%)), rubble, or natural rock larger than three (3) inches in largest dimension. The structural fill shall have a minimum "R-value" of 45, a soluble sulfate content of less that 0.1%, and meet the following gradation specifications (see Table 1). Any import soils should be tested and approved prior to being placed or delivered on-site (seven day advanced notice).

TABLE 1
STRUCTURAL FILL/TRENCH BACKFILL GRADATION SPECIFICATION

Sieve Size	% Passing
3"	100
¾"	70-100
#40	15-65
#200	10-25

Compacted structural fill/trench backfill should be placed only on compacted sub-grade or on compacted structural fill in lifts not exceeding eight (8) inches in loose thickness, moisture conditioned to within two percent (2%) of optimum, and compacted to at least ninety percent (90%) relative compaction, as determined by the ASTM D1557 standard.

Landscaped areas should be cleared of all organic and objectionable material such as wood, root stumps, etc., if any. In landscape fill areas, fill should be placed in loose lifts not exceeding eight (8) inches, and compacted to at least ninety percent (90%) relative compaction to prevent erosion.

Percolation test results indicate that many of the site soils are relatively permeable (percolation <60 min/inch) (refer to Appendix C and following table). However, cemented soils were encountered in a few of the test pits (refer to logs), which increases the percolation rate. In order to decrease the percolation in the cemented soils, we recommend the scarification of the soils in the bottom of the infiltration basins to a depth of 12 inches. Percolation testing should be performed to insure the scarification of the cemented soils has been effective and to verify the design percolation rate for the pond.

TABLE 2: SATURATED HYDRAULIC CONDUCTIVITY AND PERCOLATION RATES***

Saturated Hydraulic Conductivity (Ksat)			Percolation Rate
cm/day	cm/hr	µm/sec	min/in
>864.0	>36.00	>100.08	<1
50.0 to 864.0	2.08 to 36.00	5.79 to 100.08	5
25.0 to 50.0	1.04 to 2.08	2.90 to 5.79	10
17.4 to 25.0	0.73 to 1.04	2.02 to 2.90	15
15.9 to 17.4	0.66 to 0.73	1.84 to 2.02	20
14.6 to 15.9	0.61 to 0.66	1.69 to 1.84	25
13.3 to 14.6	0.55 to 0.61	1.54 to 1.69	30
12.0 to 13.3	0.50 to 0.55	1.39 to 1.54	35
11.0 to 12.0	0.46 to 0.50	1.27 to 1.39	40
10.0 to 11.0	0.42 to 0.46	1.16 to 1.27	45
9.1 to 10.0	0.38 to 0.42	1.05 to 1.16	50
8.3 to 9.1	0.35 to 0.38	0.96 to 1.05	55
<8.3	<0.35	<0.96	>60

***Adapted from the State of Virginia, Virginia Department of Health, September 20, 2001, Footprint Committee Meeting. See References at the end of this document.

A representative of Lumos should be present during all site clearing, excavation removals, and grading operations to ensure that any unforeseen or concealed conditions within the site are identified and properly mitigated, and to test and observe earthwork construction. This testing and observation is an integral part of our services as acceptance of earthwork construction and is dependent upon compaction and stability of the subgrade soils. The Geotechnical Engineer may reject any material that does not meet acceptable fill, compaction, and stability requirements. Further, recommendations in this report are provided upon the assumption that earthwork construction will conform to recommendations set forth in this section of the report.

SLOPE STABILITY AND EROSION CONTROL

The results of our exploration, testing, and analysis confirm that 1.5:1 (H:V) maximum slopes will be stable for on-site materials both in cut and fill. Calculations are in Appendix F. All slopes shall incorporate a brow ditch to direct surface drainage away from the slope face. Slopes steeper than 1.5:1 will require stabilization, such as retaining walls.

The potential for dust generation is high at this project. Dust control will be mandatory on this project in order to comply with air quality standards. The contractor shall be responsible for submitting a dust control plan and securing any required permits.

Stabilization of all slopes and areas disturbed by construction will be required to prevent erosion and to control dust. Stabilization may consist of rip-rap, revegetation, or dust pallative, depending on the inclination of the slope.

In order to minimize storm water discharge from this site, best management practices should be implemented.

PORTLAND CEMENT CONCRETE

Portland cement concrete utilized on site (curbs, gutters, walkways, etc.) shall have a minimum compressive strength of 4,000 psi, a maximum water/cement ratio of 0.45, an entrained air content of between 5.5 and 8.0%, a slump of between 1-4 inches, a minimum of seven (7) sacks of cement per cubic yard and contain polypropylene fiber at a rate of 1.5 pounds per cubic yard. All Portland cement concrete shall be underlain by Class 2 aggregate base compacted to at least ninety-five percent (95%) (ASTM D1557). The underlying subgrade shall be prepared and compacted as discussed earlier in this report.

UTILITY EXCAVATIONS

On-site soils are anticipated to be excavatable with conventional construction equipment. Compliance with OSHA regulations should be enforced for Type C soils. Excavated soils may be suitable for backfill of utility trenches after screening any oversize (+3") material and debris, provided they meet the requirements of structural fill/trench backfill as provided earlier in the report. However, on-site soils will not meet the minimum requirements for trench bedding and should be imported, where required. If groundwater is encountered, 3/4 inch "Drain Rock" shall be utilized as bedding to a depth of 1 foot above the water level. The "Drain Rock" shall be encapsulated with a Geofilter Fabric (Mirafi 180N or equivalent).

MOISTURE PROTECTION, EROSION AND DRAINAGE

The finish surfaces around all structures should slope away from any foundations and toward appropriate drop inlets or other surface drainage devices. It is recommended that within ten (10) feet of the foundations a minimum slope of five percent (5%) be used for soil subgrades and two percent (2%) be used for pavements. These grades should be maintained for the life of the structures.

CONSTRUCTION SPECIFICATIONS

All work shall be governed by the City of South Lake Tahoe Public Improvements and Engineering Standards, except as modified herein.

LIMITATIONS

This report has been prepared in accordance with the currently accepted engineering practices in Northern Nevada. The analysis and recommendations in this report are based upon exploration performed at the locations shown on the site plan, the proposed improvements as described in the Introduction section of this report and upon the property in its condition as of the date of this report. Lumos makes no guarantee as to the continuity of conditions as subsurface variations may occur between or beyond exploration points and over time. Any subsurface variations encountered during construction should be immediately reported to Lumos so that, if necessary, Lumos' recommendations may be modified.

This report has been prepared for and provided directly to the Cardno, Inc. ("The Client"), and any and all use of this report is expressly limited to the exclusive use of the Client. The Client is responsible for determining who, if anyone, shall be provided this report, including any designers and subcontractors whose work is related to this project. Should the Client decide to provide this report to any other individual or entity, Lumos shall not be held liable for any use by those individuals or entities to whom this report is provided. The Client agrees to indemnify, defend and hold harmless Lumos, its agents and employees from any claims resulting from unauthorized users.

This report shall not be utilized to create a maximum cost estimate for the costs associated with construction as costs may vary depending upon any subsurface variations encountered. Further, this report is not intended for, nor should it be utilized for, bidding purposes. All additional plans and specifications should be submitted to Lumos for review, comment and approval, prior to submission of such plans or specifications to the building department or commencement of construction pursuant to such plans or specifications. A failure to submit to Lumos additional plans and specifications related to this report, thereafter relied upon by any person, shall be deemed an unauthorized use of this report. Any unauthorized use of this report, including bidding, releases Lumos from any and all liability related to the unauthorized use. The Client agrees to indemnify, defend and hold harmless Lumos, its agents and

employees from any and all claims, causes of action or liability arising from any claims resulting from an unauthorized use of this report.

As explained above, subsurface variations may exist and as such, beyond the express findings located in this report, no warranties express, or implied, are made by this report. No affirmation of fact, including but not limited to statements regarding suitability for use of performance shall be deemed to be a warranty or guaranty for any purpose.

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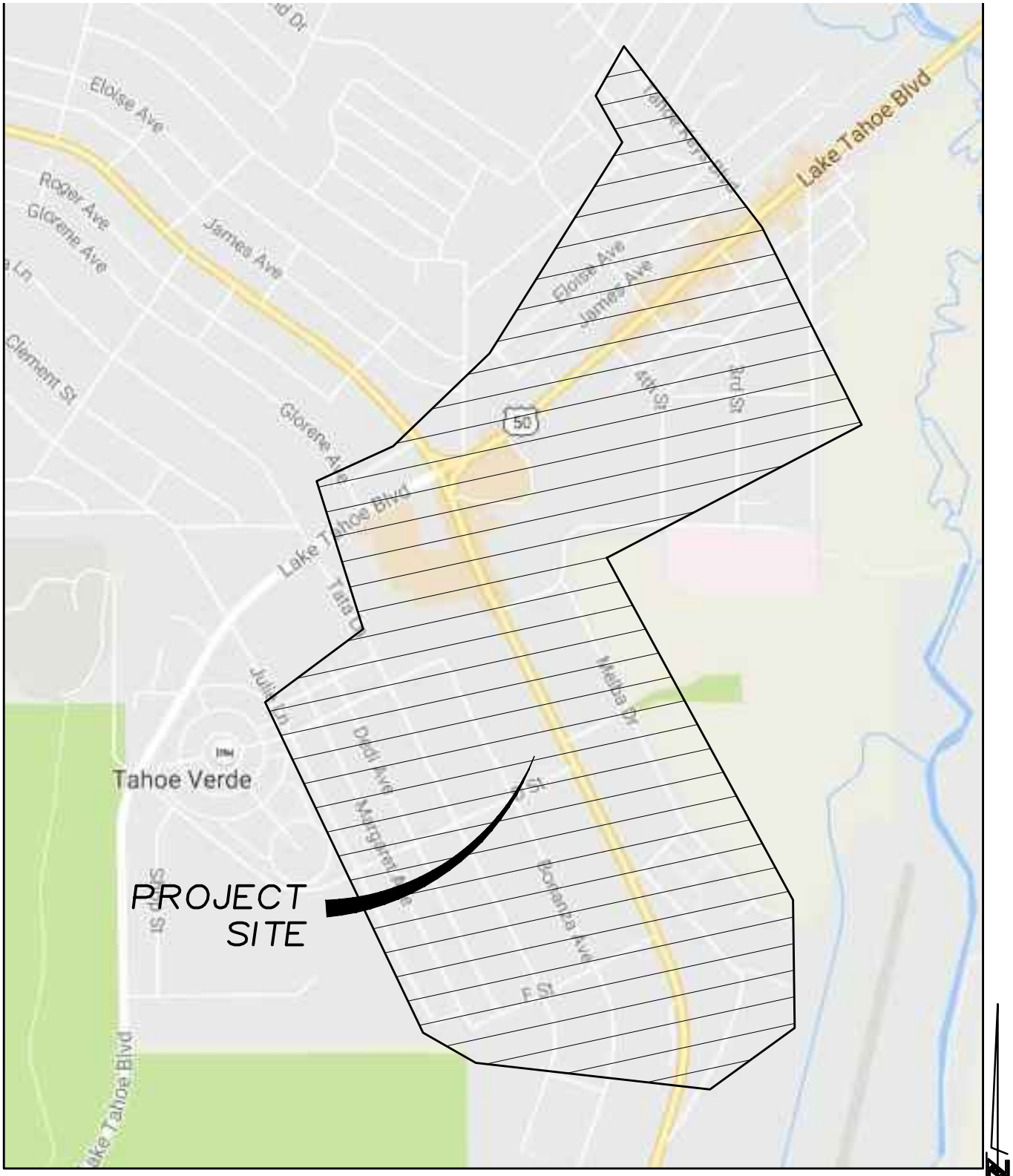

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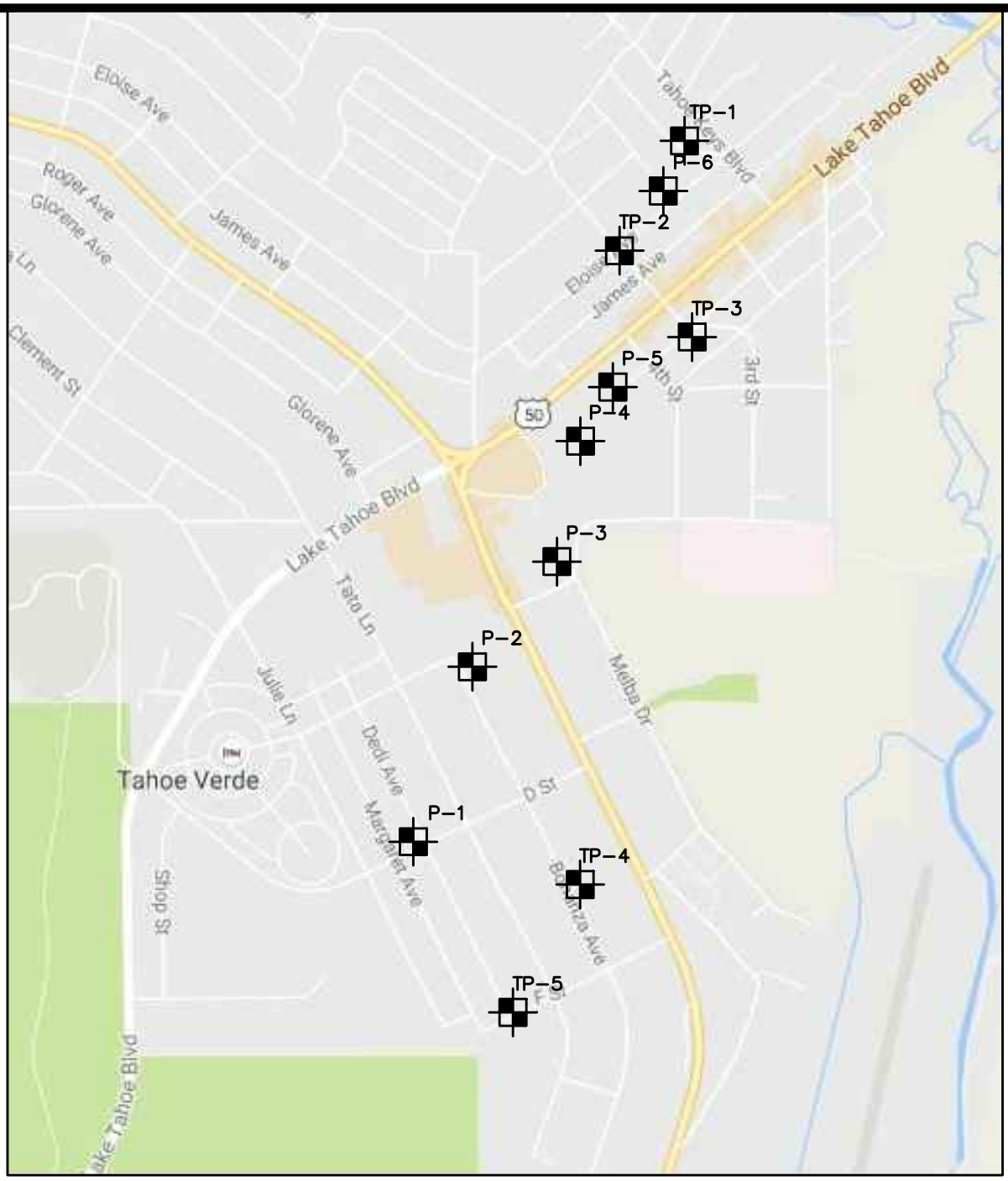
TAHOE VALLEY STORM WATER AND GREEN BELT IMPROVEMENTS

VICINITY MAP

EL DORADO COUNTY **CALIFORNIA**

Date:	OCT 2016
Scale:	N.T.S.
Job No:	8937.000
PLATE	1



LEGEND

TP- = APPROXIMATE EXPLORATORY TEST PIT LOCATION

P- = APPROXIMATE EXPLORATORY PERK TEST LOCATION

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TAHOE VALLEY STORM WATER AND GREEN BELT IMPROVEMENTS

SITE MAP

ELDORADO COUNTY CALIFORNIA

Date:	OCT 2016
Scale:	N.T.S.
Job No:	8937.000
PLATE	2

MODIFIED MERCALLI INTENSITY SCALE

INTENSITY	EFFECTS
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeable indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.
IV	During the day felt indoors by many, outdoors by few. At night some awaken. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building; standing motor cars rock noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well- built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Disturbs persons driving motor cars.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures with foundations destroyed; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (sloped) over banks.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipe lines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

From Wood and Newman, 1931, by U.S. Geological Survey, 1974, Earthquake Information Bulletin, v. 6, no. 5, p. 28

Richter Magnitude	Intensity (maximum expected Modified Mercalli)
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - VIII
7.0 - 7.9	IX - X
8.0 - 8.9	XI - XII

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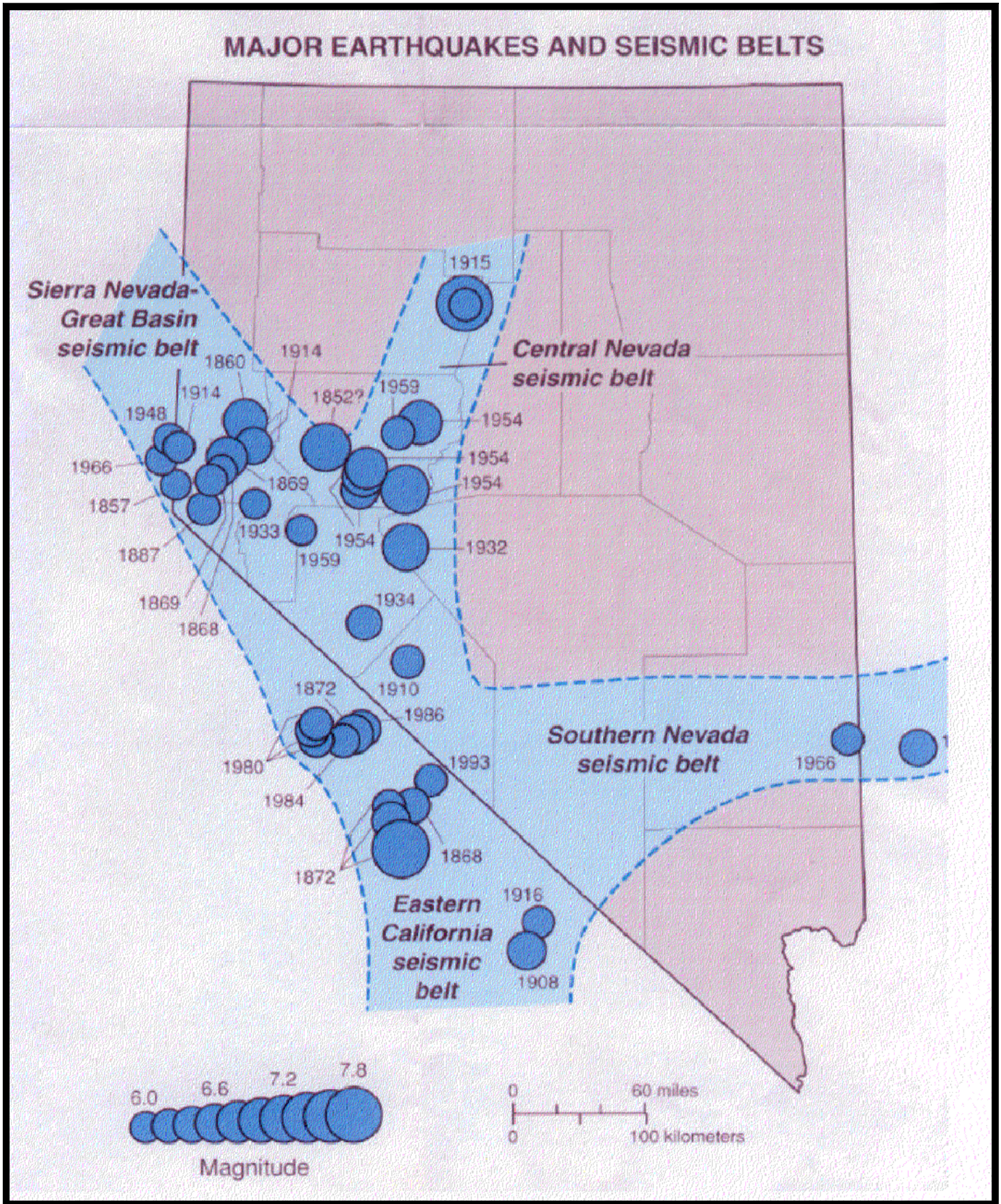
TAHOE VALLEY STORM WATER AND GREEN BELT IMPROVEMENTS

MODIFIED MERCALLI SCALE

ELDORADO COUNTY CALIFORNIA

Date: OCT 2016
Scale: N.T.S.
Job No: 8937.000
PLATE 3



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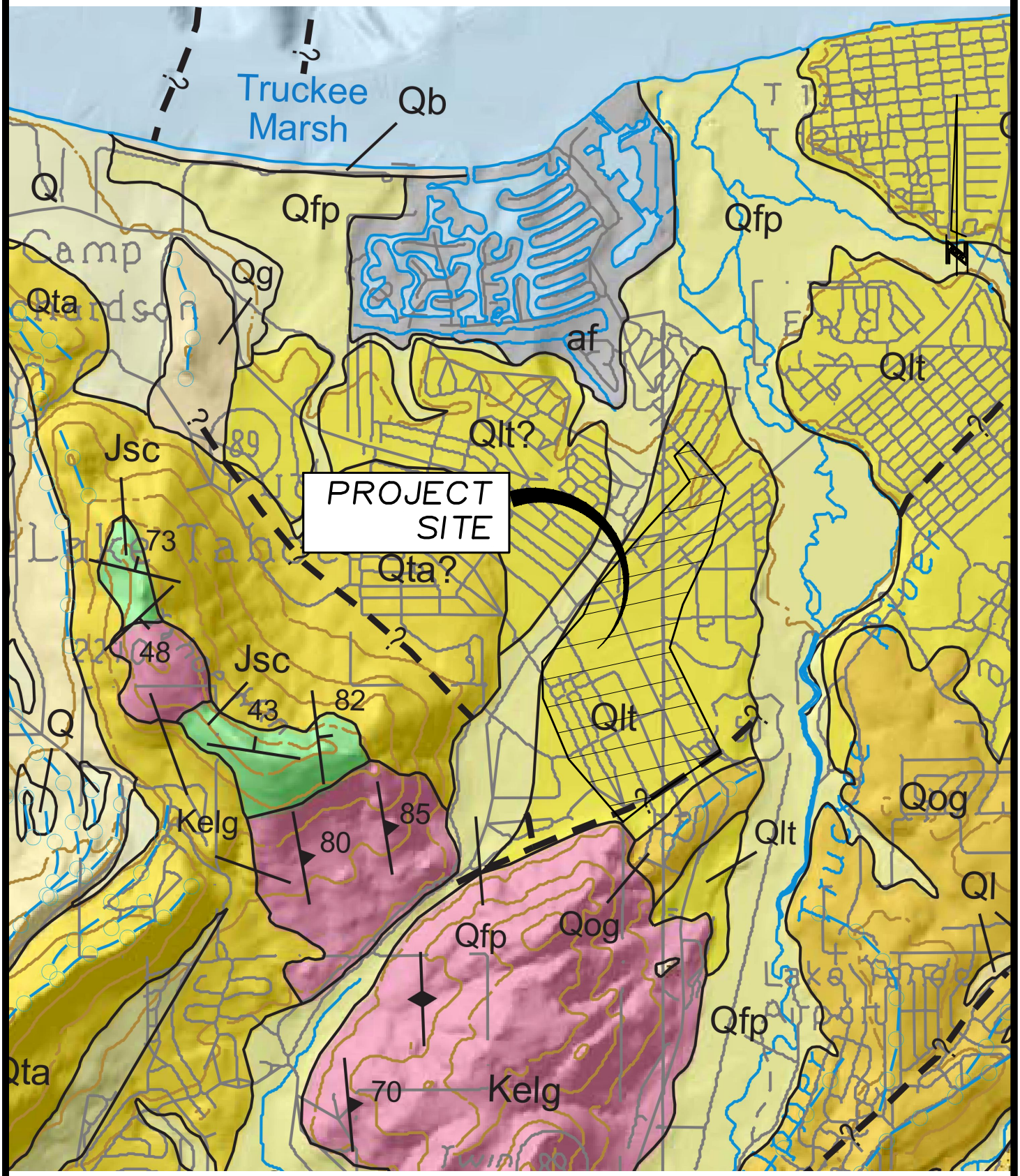
TAHOE VALLEY STORM WATER AND GREEN BELT IMPROVEMENTS

MAJOR EARTHQUAKES/ SEISMIC BELTS

ELDORADO COUNTY CALIFORNIA

Date:	OCT 2015
Scale:	N.T.S.
Job No:	8937.000
PLATE	4



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PH. (775) 883-7077 FAX (775) 883-7114

TAHOE VALLEY STORM WATER AND GREEN BELT IMPROVEMENTS

FAULT MAP

ELDORADO COUNTY CALIFORNIA

Date:	OCT 2015
Scale:	N.T.S.
Job No:	8937.000
PLATE	5

APPENDIX A

LUMOS
& ASSOCIATES

TEST PIT No. 1

Logged By:	**B. Sexton**	Total Depth:	**9.5 feet**
Date Logged:	**10-12-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			2" Asphalt Concrete 0.2										
			8" Decomposed Granite 0.8										
1		B	**Munsell Color 10YR 6/3, Pale Brown, Silty SAND (SM),** Slightly Moist, Medium Dense, Weakly Cemented. Roots to 4', Estimated: 70% Sand, 30% Silt										
2													
3		B											
4			Mottling at 4'										
5													
6			**Munsell Color 5YR 4/4, Reddish Brown, Poorly Graded SAND (SP),** Moist to Wet, Medium Dense, Estimated: 5% Gravel, 90% Sand, 5% Silt 6.0										
7													
8		B											
9			9.0										

Test pit terminated at 9.5 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE

A-7

TEST PIT No. 2

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-12-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Munsell Color 5YR 5/2, Reddish Gray, Silty SAND with Gravel (SM), Dry, Medium Dense, Roots to 5', Estimated: 10% Gravel, 65% Sand, 25% Silt										
1													
2		B											
3													
4													
5													
6													
7			Munsell Color 10YR 5/2, Grayish Brown, Moist, Medium Dense										
8		B											
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-8

TEST PIT No. 3

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-12-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Munsell Color 5YR 4/6, Yellowish Red, Silty SAND (SM),** Dry, Medium Dense, Weakly Cemented, Roots, Estimated: Trace Gravel, 80% Sand, 20% Silt										
2		B											
3													
4			4.5										
5			**Munsell Collor 5YR 6/6, Reddish Yellow, Silty SAND with Gravel (SM),** Slightly Moist, Medium Dense, Subrounded to Subangular, Estimated 10% Gravel, 65% Sand, 25% Silt										
6													
7		B											
8													
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-9

TEST PIT No. 4

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-12-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Munsell Color 10YR 5/6, Yellowish Brown, Silty SAND (SM),** Dry, Medium Dense, Estimated: 80% Sand, 20% Silt										
2		B											
3													
4													
5													
6													
7			7.0										
		B	**Munsell Color 10YR 6/4, Light Yellowish Brown, Poorly Graded SAND with Silt (SP-SM),** Dry, Medium Dense	1.7	1.7		NP	NP	2.9	89.7	6.7		
8													
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-10

TEST PIT No. 5

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-12-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Munsell Color 7.5YR 5/4, Brown, Poorly Graded SAND with Silt (SP-SM), Dry, Medium Dense										
1													
2													
3		B		0.9	0.9		NP	NP	9.0	78.2	11.0		
4													
5													
6													
7													
8													
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-11

TEST PIT No. Perc-1

Logged By:	**B. Harer**	Total Depth:	**9 feet**
Date Logged:	**10-11-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Duff 0.5										
1			**Munsell Color 10 YR 5/8, Yellowish Brown, Silty SAND (SM),** Dry, Medium Dense, Slightly Cemented										
2		B	Percolation Test Result = 6.7 min//in (Test Hole #2)	2.2	2.2		NP	NP	7.9	71.1	15.1		
3													
4			Percolation Test Result = 16.0 min/in (Test Hole #1)										
5			Munsell Color 2.5Y 5/6, Light Olive Brown, Dry, Medium Dense										
6													
7		B											
8													
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-1

TEST PIT No. Perc-2

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-11-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Duff 0.5										
1			**Munsell Color 10 YR 7/4, Very Pale Brown, Silty SAND with Gravel (SM),** Dry, Rounded, Estimated: 10% Gravel, 65% Sand, 35% Silt										
2		B											
3			Percolation Test Result = 5.7 min/in (Test Hole #4)										
4			4.5										
5			**Munsell Color 2.5Y 5/4, Light Olive Brown, Well Graded SAND with Silt and Gravel (SW-SM),** Slightly Moist, Medium Dense, Rounded Percolation Test Result = 4.0 min/in (Test Hole #3)										
6		B		3.5	3.5		NP	NP	9.7	71.9	9.0		
7													
8													
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-2

TEST PIT No. Perc-3

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-11-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Duff 0.5										
1			**Munsel Color 7.5 YR 5/6, Strong Brown, Silty SAND (SM),** Dry, Medium Dense										
2		B		1.9	1.9		NP	NP	13.3	73.2	13.5		
3			Percolation Test Result = 2.3 min/in (Test Hole #6)										
4			Percolation Test Result = 30.0 min/in (Test Hole #5)										
5			Munsell Color 10YR 5/6, Yellowish Brown, Slightly Moist, Medium Dense, More Coarse Than Above Material										
6		B											
7													
8													
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-3

TEST PIT No. Perc-4

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-11-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Duff 0.5										
1			**Munsell Color 10YR 4/6, Dark Yellowish Brown, Silty SAND with Gravel (SM),** Dry, Medium Dense, Estimated: 10% Gravel, 70% Sand, 20% Silt										
2		B											
3			Percolation Test Result = 1.7 min/in (Test Hole #8)										
4			Percolation Test Result = 3.8 min/in (Test Hole #7)										
5			Munsell Color 2.5Y 6/4, Light Yellowish Brown, Slightly Moist, Medium Dense, More Course Than Above Material										
6		B											
7													
8													
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-4

TEST PIT No. Perc-5

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**10-11-16**	Water Depth:	**No groundwater encountered**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Sample Type: Percolation Test; Split Spoon; Ziplock Sample; California Sampler; Bulk Sample; Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Duff 0.5										
1			**Munsell Color 10YR 6/3, Pale Brown, Silty SAND (SM),** Dry, Medium Dense, Weakly Cemented										
2		B											
3			Percolation Test Result = 80.0 min/in (Test Hole #10)										
4													
5			Munsell Color 2.5Y 6/2, Light Brownish Gray, Moist to Very Moist, Medium Dense Percolation Test Result = 26.7 min/in (Test Hole #9)										
6		B		16.6	16.6		NP	NP	1.6	80.9	16.5		
7													
8			Gravel Below 8'										
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

LUMOS & ASSOCIATES

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-5

TEST PIT No. Perc-6

Logged By:	**B. Sexton**	Total Depth:	**9.5 feet**
Date Logged:	**10-11-16**	Water Depth:	**9.2 feet ±**
Equipment Type:	**Caterpiller 35D**	Ground Elev.:	**Not Surveyed**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
			Munsell Color 10YR 5/6, Yellowish Brown, Silty SAND (SM), Slightly Moist, Dense, Moderately Cemented										
1													
2		B		4.1	4.1		NP	NP	1.3	77.9	20.5		
3			Percolation Test Result = 8.0 min/in (Test Hole #12)										
4													
5			Munsell Color 2.5Y 6/2, Light Brownish Gray, Moist to Very Moist, Medium Dense, Moderately Cemented										
			Percolation Test Result = 240.0 min/in (Test Hole #11)										
6		B											
7													
8			Mottling at 8'										
9			9.5										

Test pit terminated at 9.5 feet.
Test Pits backfilled without compaction verification

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Tahoe Valley Stormwater and Greenbelt Imp.

LOG OF EXPLORATORY TEST PIT

Job Number: 8937.000 Date: October 2016

PLATE A-6

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Other Tests

AN	ANALYTICAL TEST (pH, Soluble Sulfate, and Resistivity)
C	CONSOLIDATION TEST
DS	DIRECT SHEAR TEST
MD	MOISTURE DENSITY CURVE

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Tahoe Valley Stormwater and Greenbelt Improvements

LEGEND

Job Number: 8937.000

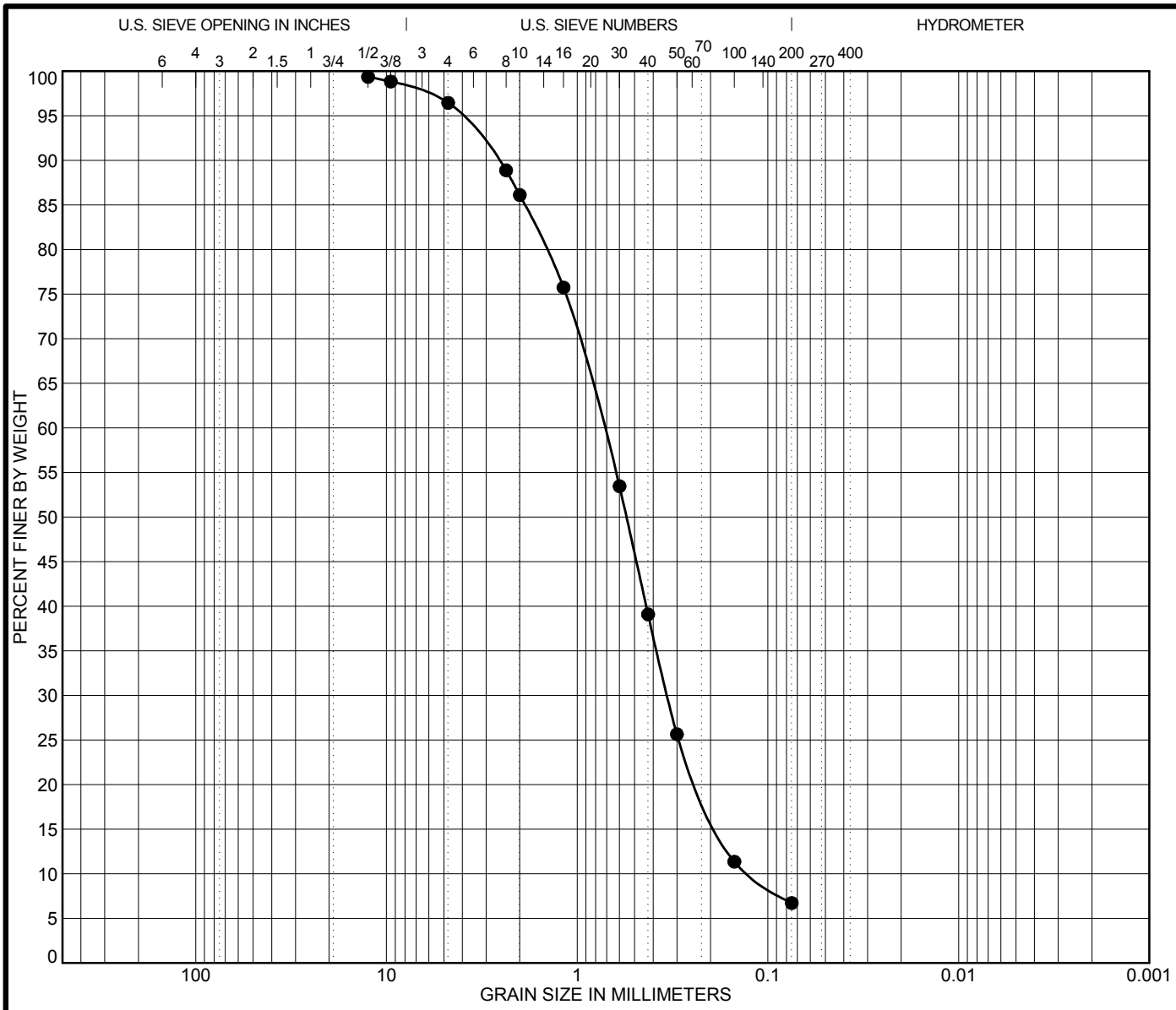
Date: October 2016

PLATE

A-12

APPENDIX B

LUMOS
& ASSOCIATES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-20-16					
●	4	Classification	LL	PL	PI	Cc	Cu
	Depth: 7	Poorly Graded SAND with Silt (SP-SM)	NP	NP	NP	1.3	6.0
	Sample Location	TP-4 at 7'					
	USCS	SP-SM					
	AASHTO						

	Specimen Identification								
●	4	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 7	12.5	0.732	0.336	0.122	2.9	89.7	6.7	

Natural Moisture	1.7 %		**S.E.**		**Absorption %**	
Density			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

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Tahoe Valley Stormwater and Greenbelt Imp.

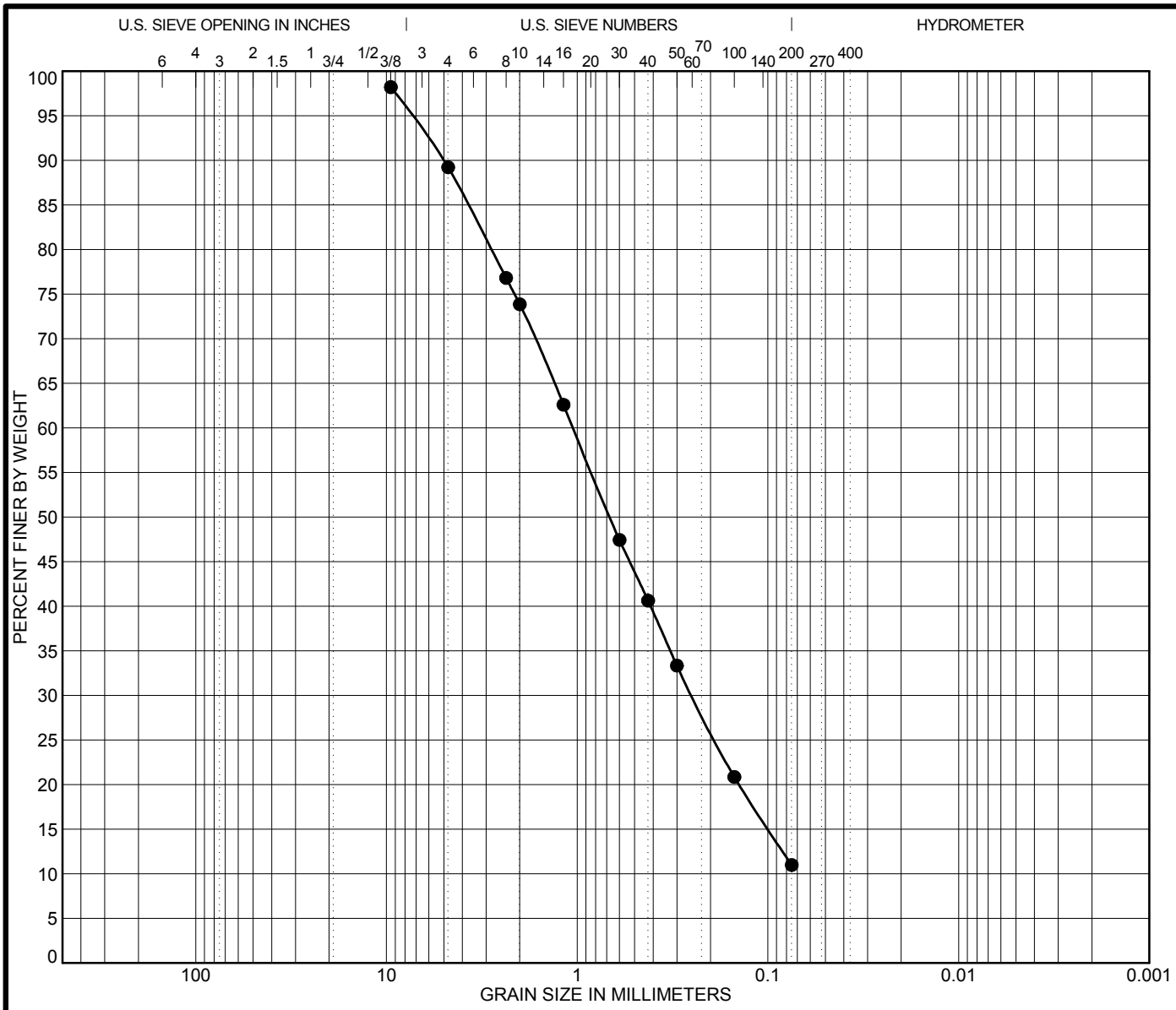
GRAIN SIZE DISTRIBUTION

Job Number: 8937.000

Date: October 2016

PLATE

B-1.1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-20-16					
●	**5**	Classification	LL	PL	PI	Cc	Cu
	Depth: 3	Poorly Graded SAND with Silt (SP-SM)	NP	NP	NP	0.8	15.0
	Sample Location	TP-5 at 3'					
	USCS	SP-SM					
	AASHTO						

	Specimen Identification								
●	**5**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	9.5	1.051	0.249		9.0	78.2	11.0	
	Natural Moisture	0.9 %		**S.E.**		**Absorption %**			
	Density			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

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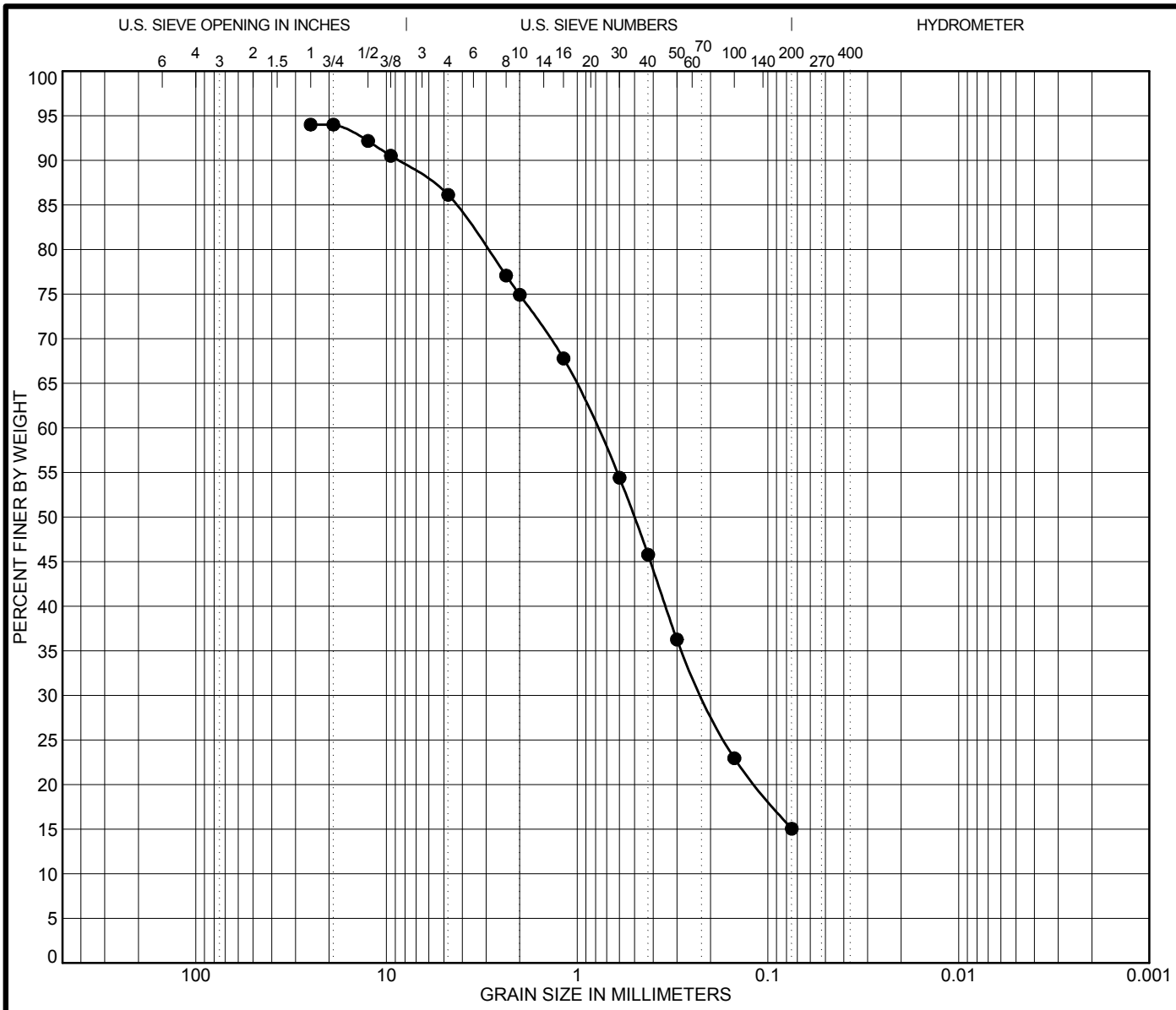
GRAIN SIZE DISTRIBUTION

Job Number: 8937.000

Date: October 2016

PLATE

B-1.2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-21-216					
●	**Perc-1**	Classification	LL	PL	PI	Cc	Cu
	Depth: 2	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Perc-1 at 2'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**Perc-1**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 2	25	0.796	0.216		7.9	71.1	15.1	
	Natural Moisture	2.2 %		**S.E.**		**Absorption %**			
	Density			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

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Tahoe Valley Stormwater and Greenbelt Imp.

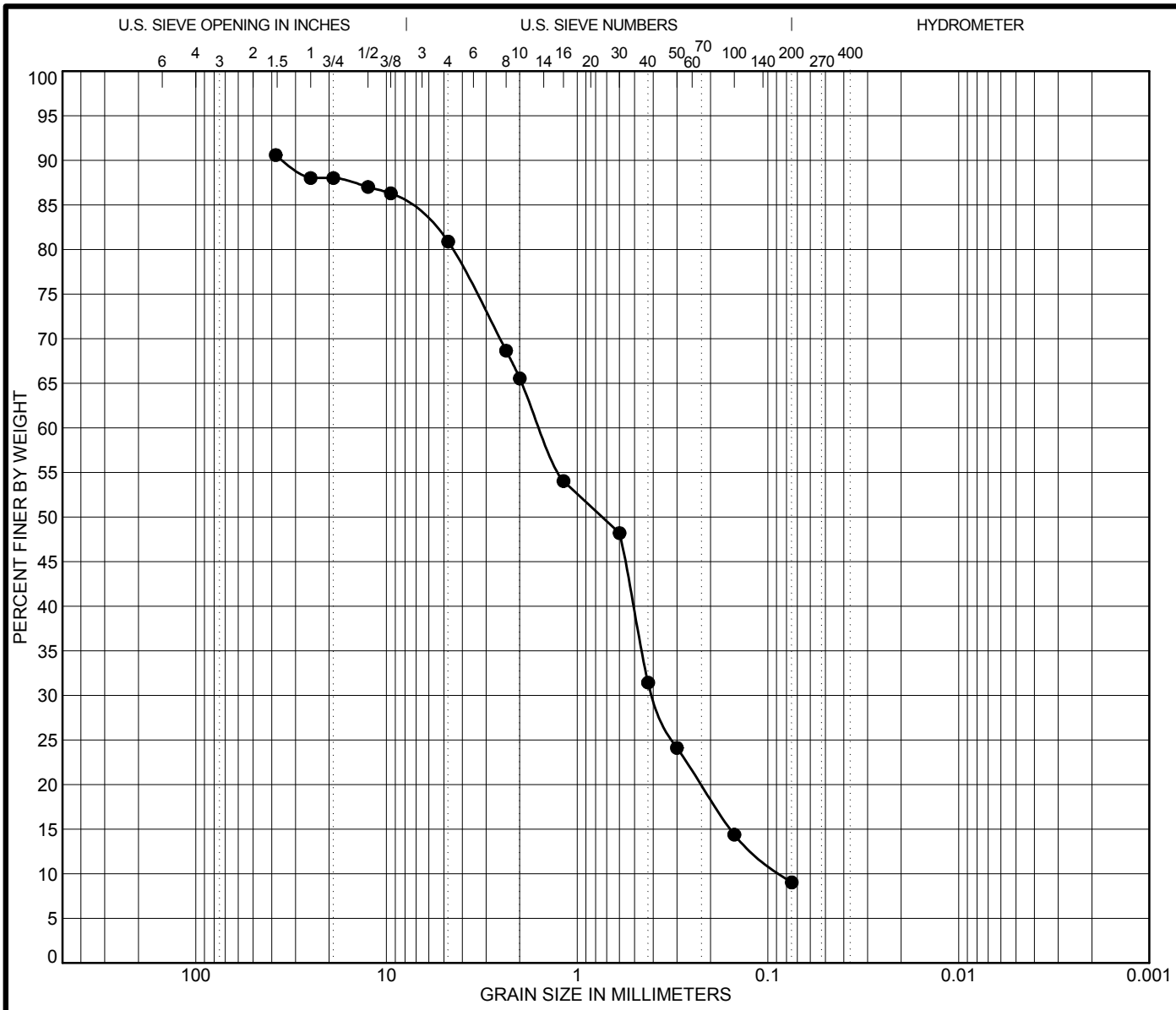
GRAIN SIZE DISTRIBUTION

Job Number: 8937.000

Date: October 2016

PLATE

B-1.3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Date: 10-20-16					
● **Perc-2**	Classification	LL	PL	PI	Cc	Cu
Depth: 6	Well Graded SAND with Silt and Gravel (SW-SM)	NP	NP	NP	1.2	18.2
Sample Location	Perc-2 at 6'					
USCS	SW-SM					
AASHTO						

Specimen Identification								
● **Perc-2**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
Depth: 6	38.1	1.551	0.397	0.085	9.7	71.9	9.0	

Natural Moisture	3.5 %		**S.E.**		**Absorption %**		
Density			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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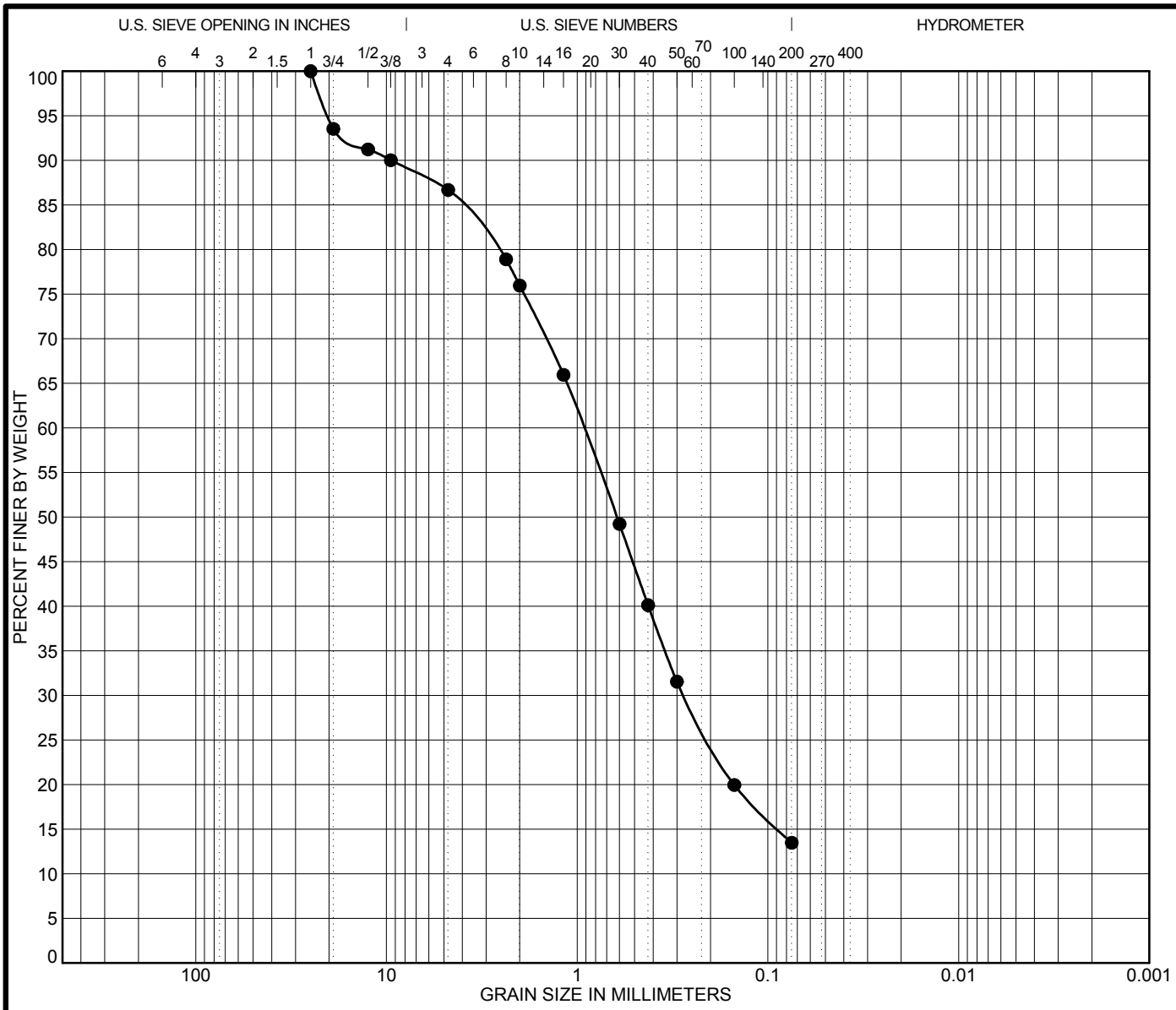
Tahoe Valley Stormwater and Greenbelt Imp.

GRAIN SIZE DISTRIBUTION

Job Number: 8937.000 Date: October 2016

PLATE

B-1.4



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-20-16					
●	**Perc-3**	Classification	LL	PL	PI	Cc	Cu
	Depth: 2	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Perc-3 at 6'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**Perc-3**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 2	25	0.928	0.274		13.3	73.2	13.5	
	Natural Moisture	1.9 %		**S.E.**		**Absorption %**			
	Density			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

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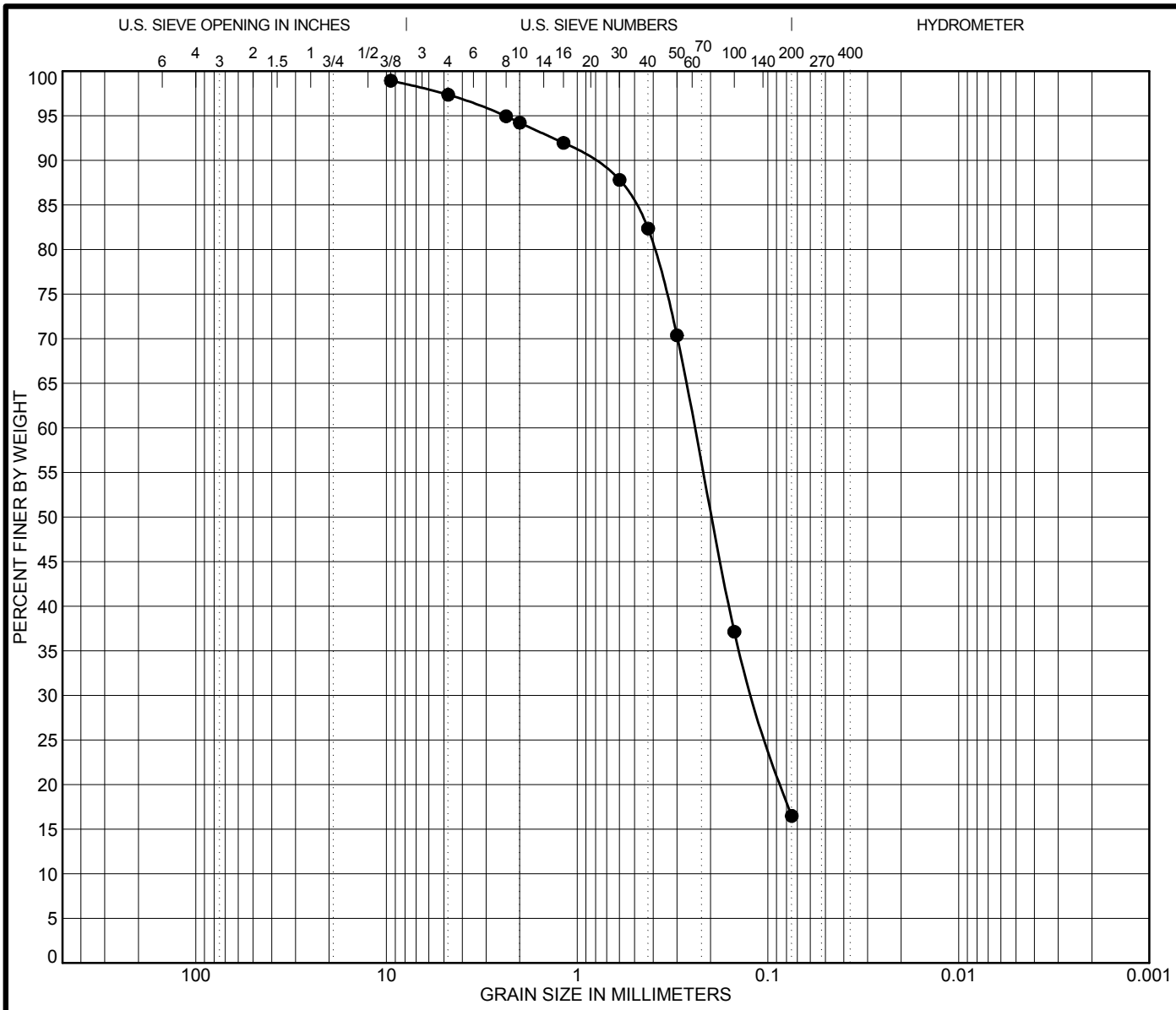
GRAIN SIZE DISTRIBUTION

Job Number: 8937.000

Date: October 2016

PLATE

B-1.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-20-16					
●	**Perc-5**	Classification	LL	PL	PI	Cc	Cu
	Depth: 6	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Perc-5 at 6'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**Perc-5**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 6	9.5	0.242	0.118		1.6	80.9	16.5	

Natural Moisture	16.6 %		**S.E.**		**Absorption %**		
Density			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

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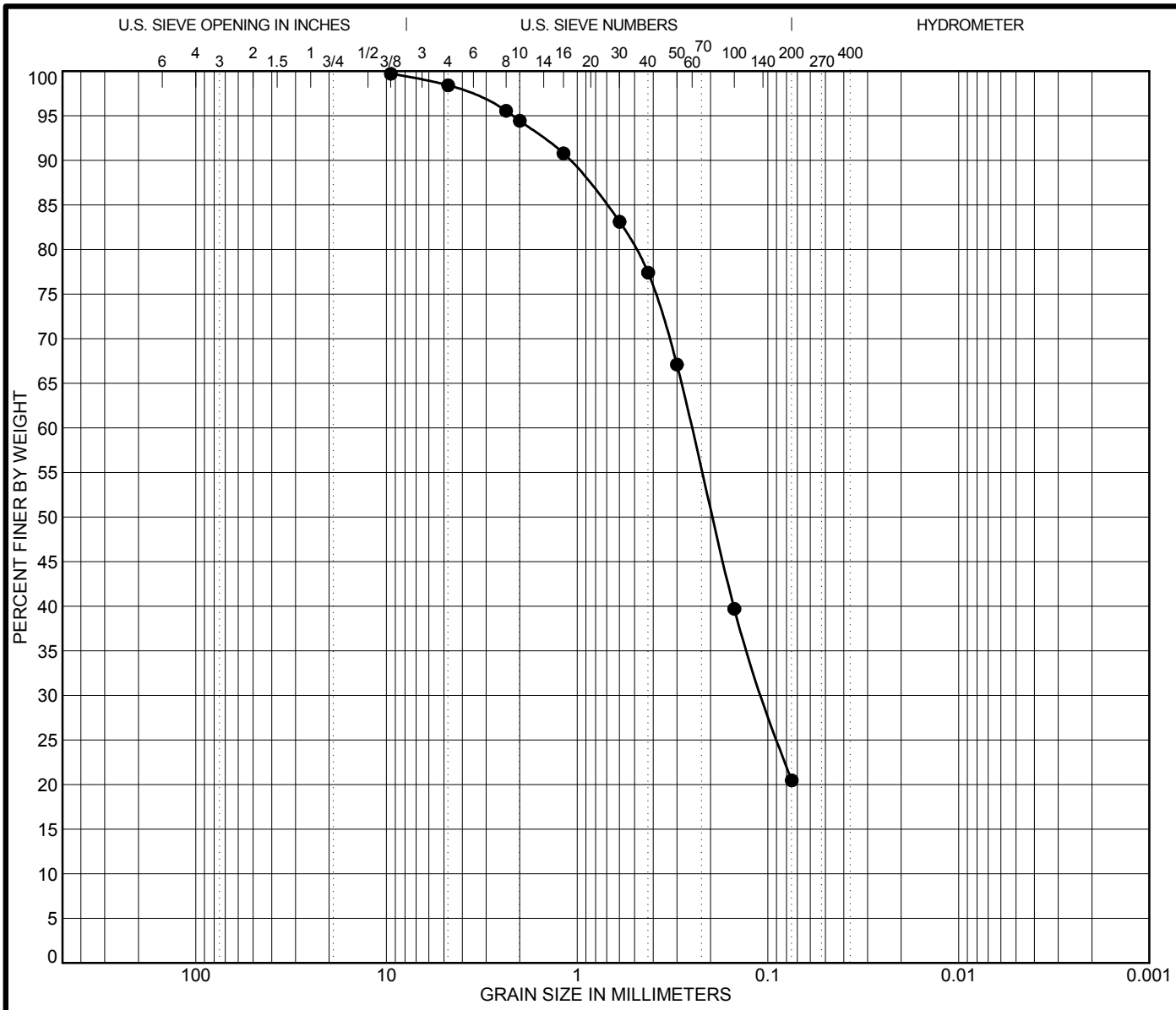
GRAIN SIZE DISTRIBUTION

Job Number: 8937.000

Date: October 2016

PLATE

B-1.6



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-20-16					
●	**Perc-6**	Classification	LL	PL	PI	Cc	Cu
	Depth: 2	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Perc-6 at 2'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**Perc-6**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 2	9.5	0.251	0.106		1.3	77.9	20.5	
	Natural Moisture	4.1 %		**S.E.**		**Absorption %**			
	Density			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

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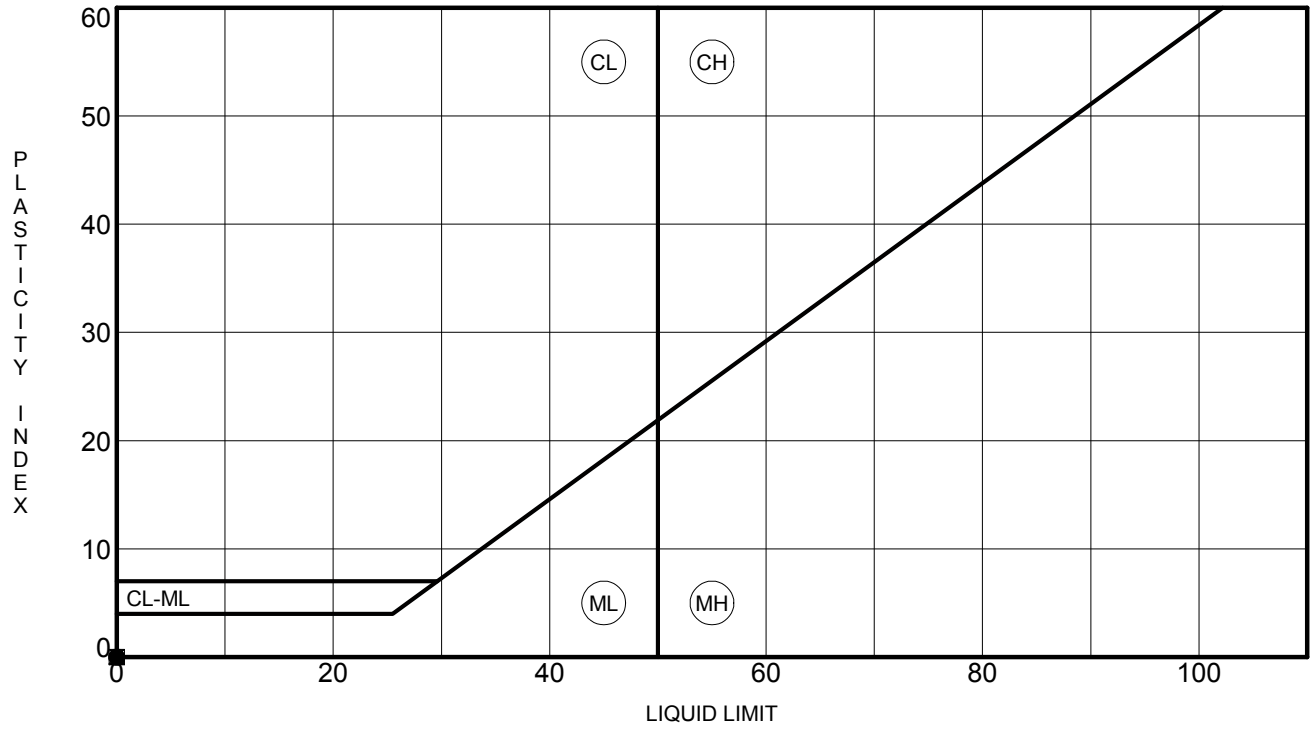
GRAIN SIZE DISTRIBUTION

Job Number: 8937.000

Date: October 2016

PLATE

B-1.7



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**4**	**7.0**	**NP**	**NP**	**NP**	**7**	Poorly Graded SAND with Silt (SP-SM)
⊠	**5**	**3.0**	**NP**	**NP**	**NP**	**11**	Poorly Graded SAND with Silt (SP-SM)
▲	**Perc-1**	**2.0**	**NP**	**NP**	**NP**	**15**	Silty SAND (SM)
★	**Perc-2**	**6.0**	**NP**	**NP**	**NP**	**9**	Well Graded SAND with Silt and Gravel (SW-SM)
⊙	**Perc-3**	**2.0**	**NP**	**NP**	**NP**	**13**	Silty SAND (SM)
✿	**Perc-5**	**6.0**	**NP**	**NP**	**NP**	**16**	Silty SAND (SM)
○	**Perc-6**	**2.0**	**NP**	**NP**	**NP**	**20**	Silty SAND (SM)

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Tahoe Valley Stormwater and Greenbelt Imp.

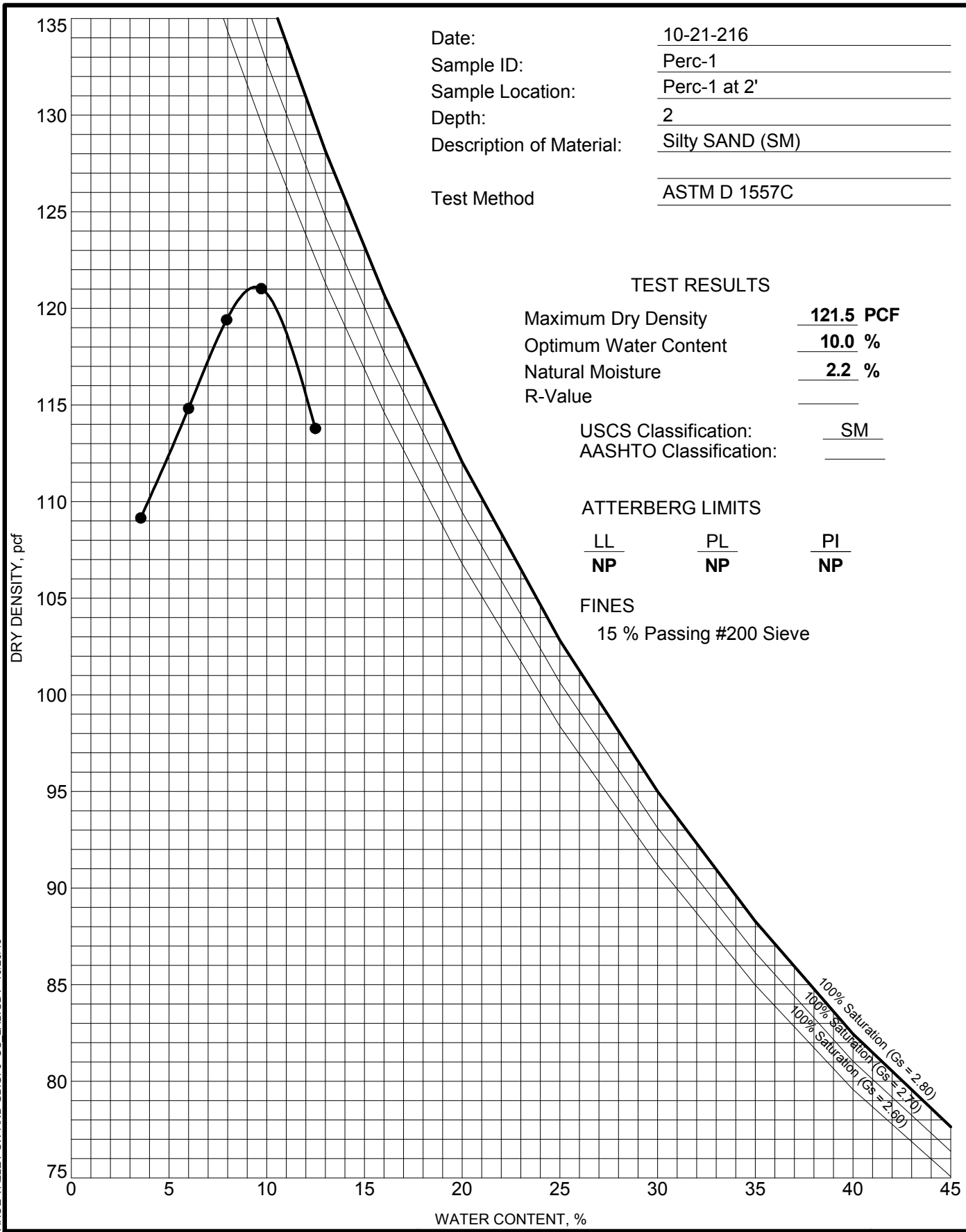
ATTERBERG LIMITS' RESULTS

Job Number: 8937.000

Date: October 2016

PLATE

B-2



Date:	10-21-216
Sample ID:	Perc-1
Sample Location:	Perc-1 at 2'
Depth:	2
Description of Material:	Silty SAND (SM)
Test Method	ASTM D 1557C

TEST RESULTS

Maximum Dry Density	**121.5**	**PCF**
Optimum Water Content	**10.0**	**%**
Natural Moisture	**2.2**	**%**
R-Value		

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES

15 % Passing #200 Sieve

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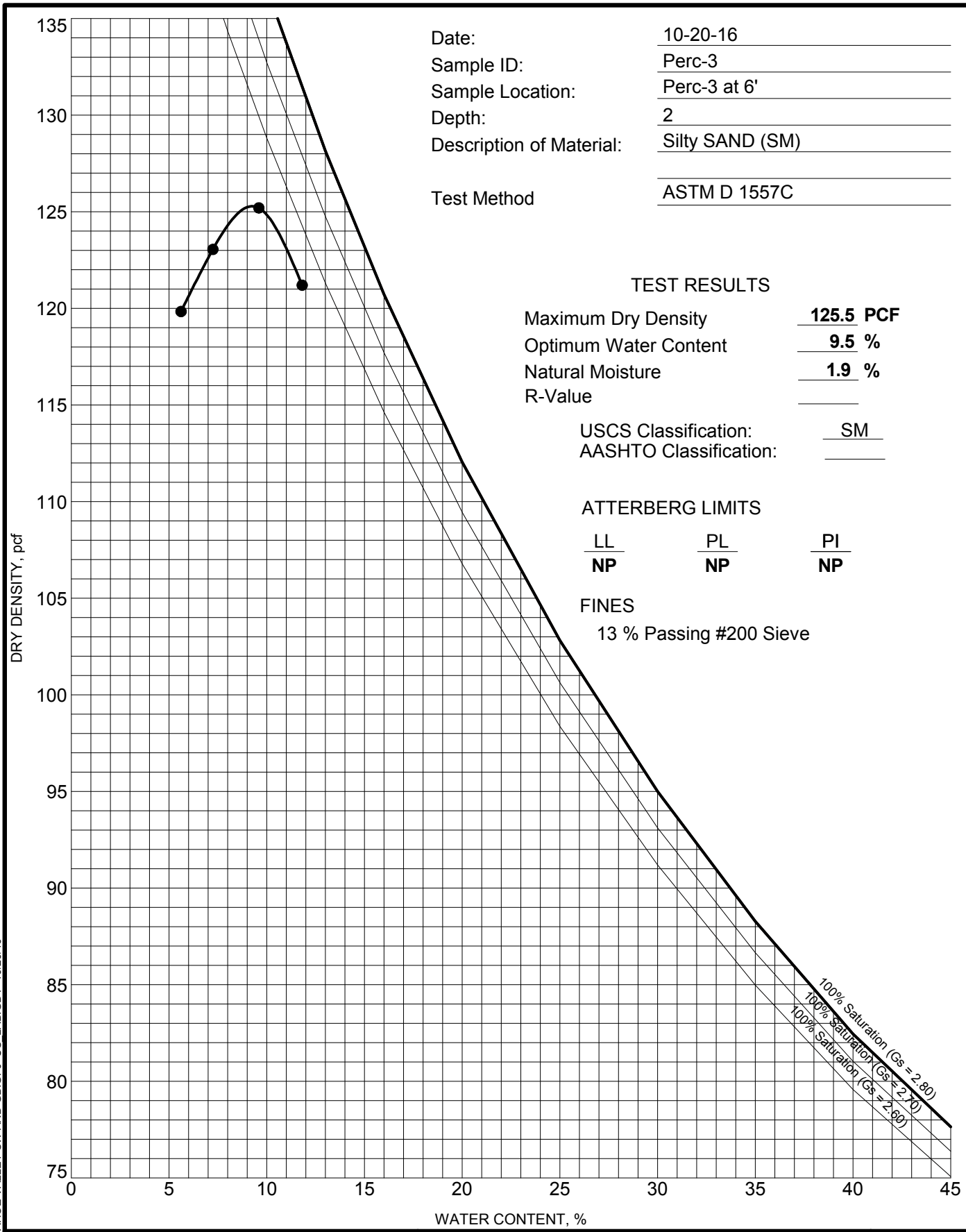
Tahoe Valley Stormwater and Greenbelt Imp.

MOISTURE-DENSITY CURVE

Job Number: 8937.000 Date: October 2016

PLATE

B-3.1



Date:	10-20-16
Sample ID:	Perc-3
Sample Location:	Perc-3 at 6'
Depth:	2
Description of Material:	Silty SAND (SM)
Test Method	ASTM D 1557C

TEST RESULTS

Maximum Dry Density	**125.5**	**PCF**
Optimum Water Content	**9.5**	**%**
Natural Moisture	**1.9**	**%**
R-Value		

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES

13 % Passing #200 Sieve

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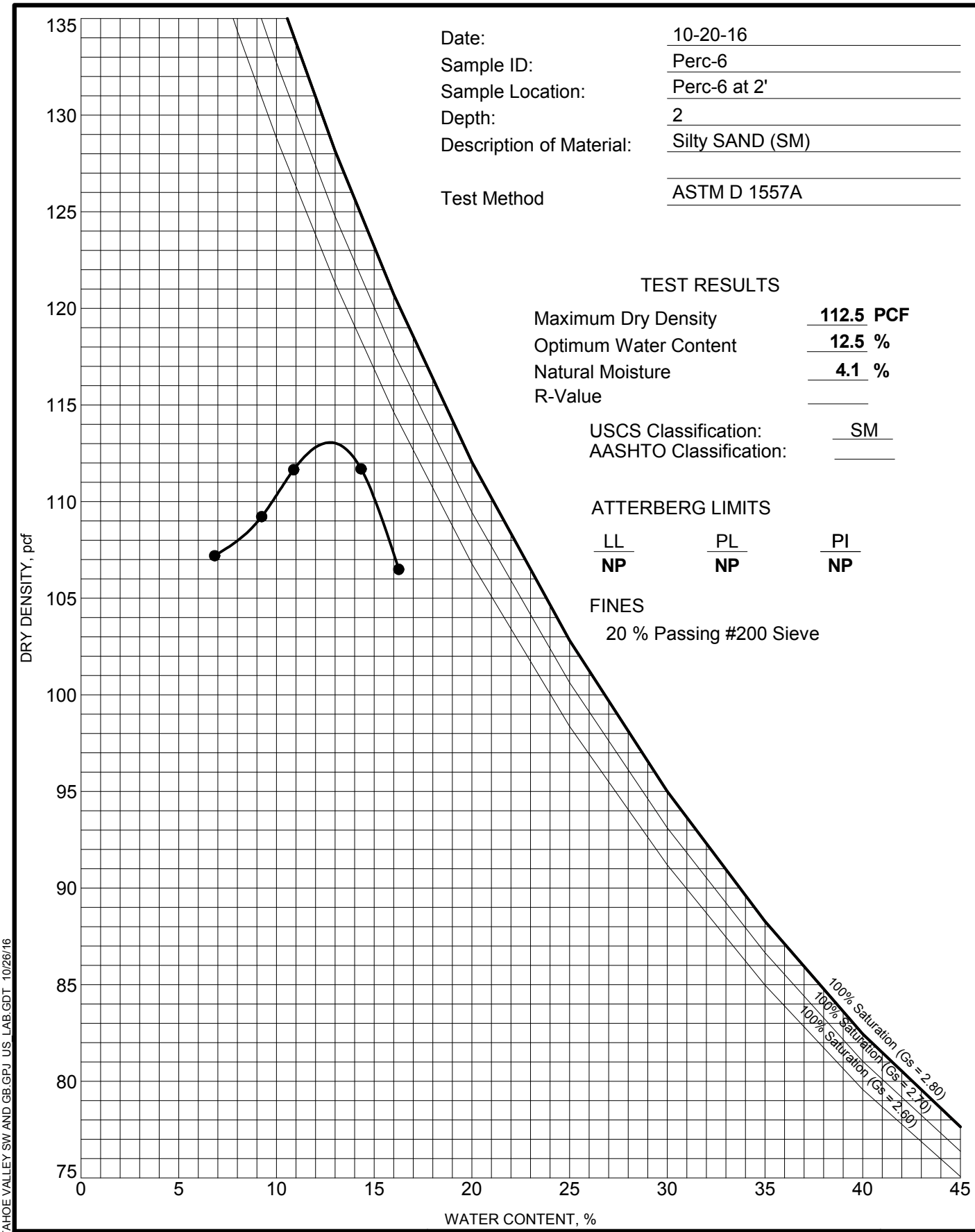
MOISTURE-DENSITY CURVE

Job Number: 8937.000 Date: October 2016

PLATE

B-3.2



Date:	10-20-16
Sample ID:	Perc-6
Sample Location:	Perc-6 at 2'
Depth:	2
Description of Material:	Silty SAND (SM)
Test Method	ASTM D 1557A

TEST RESULTS

Maximum Dry Density	**112.5**	**PCF**
Optimum Water Content	**12.5**	**%**
Natural Moisture	**4.1**	**%**
R-Value		

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES

20 % Passing #200 Sieve

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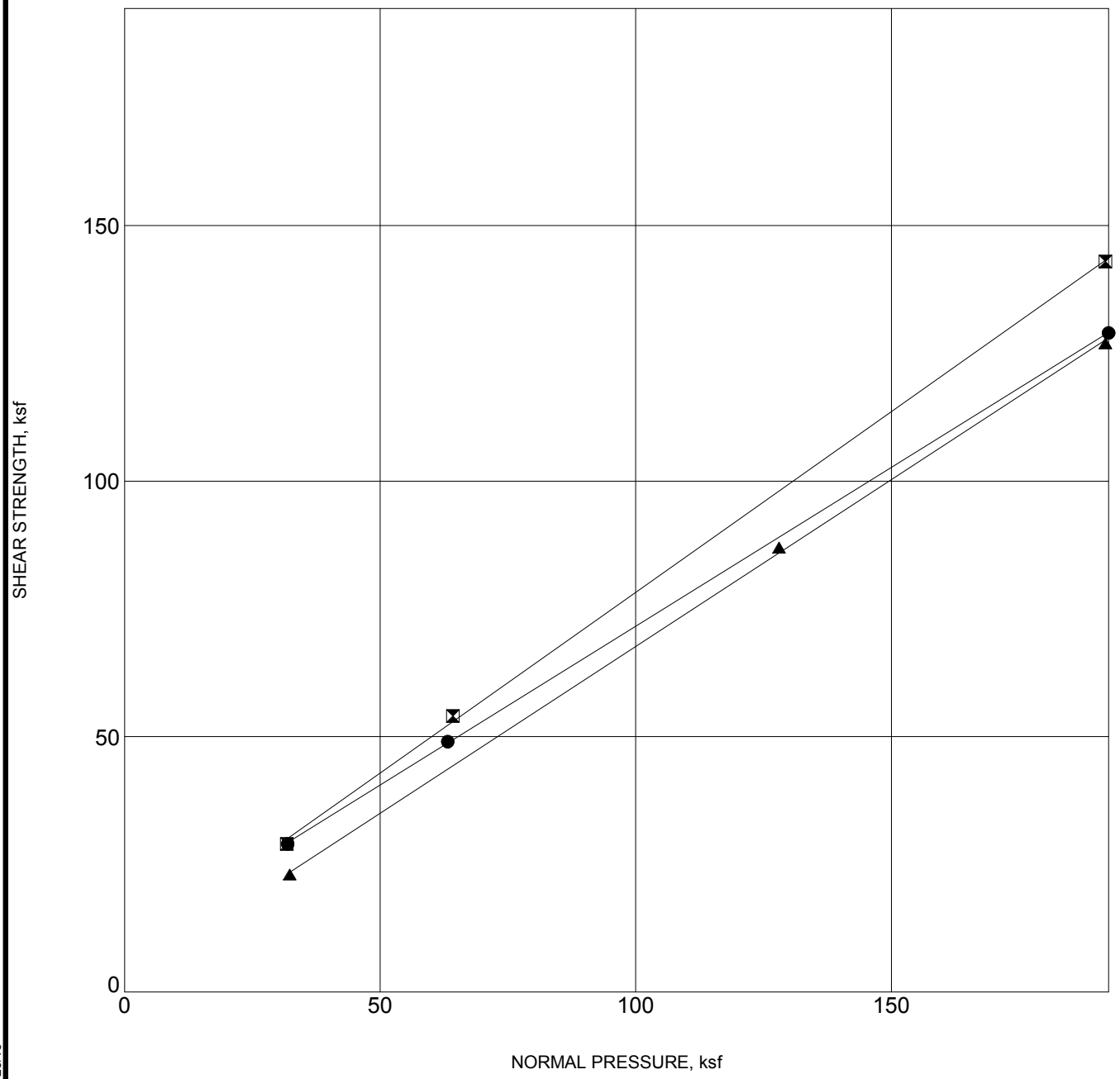
Tahoe Valley Stormwater and Greenbelt Imp.

MOISTURE-DENSITY CURVE

Job Number: 8937.000 Date: October 2016

PLATE

B-3.3



Specimen Identification			Classification	γ_d	MC%	c	ϕ
●	**Perc-1**	**2.0**	**Silty SAND (SM)**	**122**	**10**	**9.42**	**31.9**
⊠	**Perc-3**	**2.0**	**Silty SAND (SM)**	**126**	**9**	**7.46**	**35.3**
▲	**Perc-6**	**2.0**	**Silty SAND (SM)**	**127**	**13**	**2.34**	**33.1**

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Tahoe Valley Stormwater and Greenbelt Imp.

DIRECT SHEAR TEST

Job Number: 8937.000 Date: October 2016

PLATE

B-4

APPENDIX C

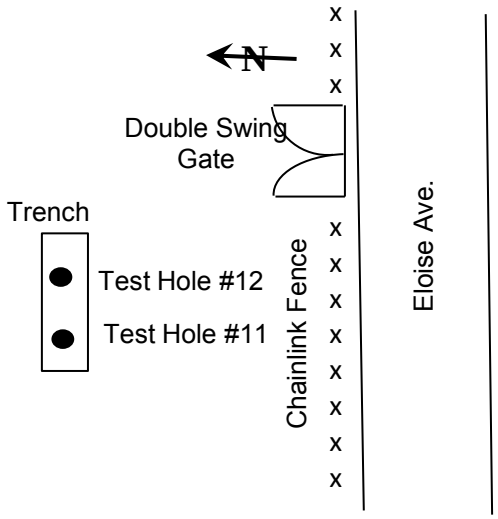
LUMOS
& ASSOCIATES

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 12 LOCATION: Eloise Ave. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
	Test
5	
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 3'

TIME OF 1st SATURATION (12" WATER) (1) 5:02

TIME WATER DISAPPEARS 5:25

TIME OF REFILL 5:26 **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS >10 min TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
10:24	10		6 1/2	5.500	1.8
10:54			12		
12:10	10	REFILL TO	6 1/8	2.375	4.2
12:20			8 1/2		
12:20	10	REFILL TO	6 7/8	1.625	6.2
12:30			8 1/2		
12:30	10	REFILL TO	8 1/2	0.625	16.0
12:40			9 1/8		
12:40	10	REFILL TO	7 1/8	1.750	5.7
12:50			8 7/8		
12:50	10	REFILL TO	5 3/4	1.875	5.3
1:00			7 5/8		
1:00	10	REFILL TO	6	1.250	8.0
1:10			7 1/4		
	3 10	REFILL TO		4 1.25	8.0
		FINAL			

PERCOLATION RATE = 3 / 4 = 8.0 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

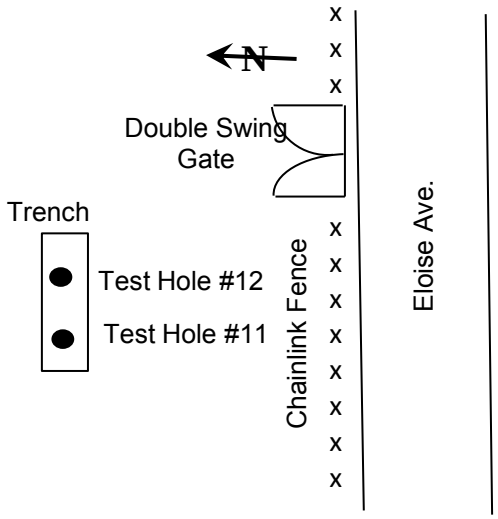
C-12

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 11 LOCATION: Eloise Ave. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
5	Test
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 5.5'

TIME OF 1st SATURATION (12" WATER) (1) 5:04

TIME WATER DISAPPEARS >10 min

TIME OF REFILL >10 min **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS >10 min TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING

10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
10:22	30		5 1/2	0.250	120.0
10:52			5 3/4		
10:58	30	REFILL TO	5 3/4	0.125	240.0
11:28			5 7/8		
11:28	30	REFILL TO	5 7/8	0.125	240.0
11:58			6		
11:58	30	REFILL TO	6	0.125	240.0
12:28			6 1/8		
12:28	30	REFILL TO	6 1/8	0.125	240.0
12:58			6 1/4		
		REFILL TO			
		REFILL TO			
	3 30	REFILL TO		4 0.125	240.0
		FINAL			

PERCOLATION RATE = 3 / 4 = 240.0 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

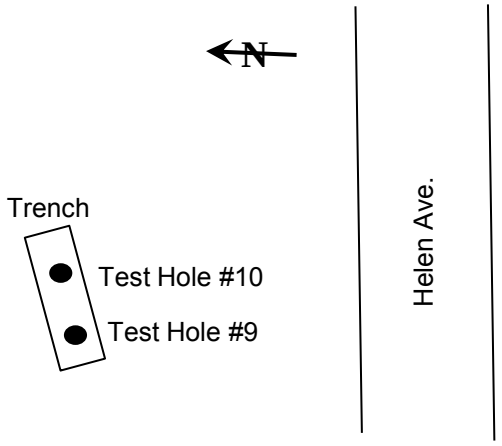
C-11

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 10 LOCATION: Helen Ave. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
	Test
5	
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 3.5'

TIME OF 1st SATURATION (12" WATER) (1) 4:14

TIME WATER DISAPPEARS >10 min

TIME OF REFILL 4:24 **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS >10 min TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
9:39	30		3 1/8	0.375	80.0
10:09			3 1/2		
10:09	30	REFILL TO	3 1/2	0.750	40.0
10:39			4 1/4		
10:39	30	REFILL TO	4 1/4	0.625	48.0
11:09			4 7/8		
11:09	30	REFILL TO	4 7/8	0.625	48.0
11:39			5 1/2		
11:39	30	REFILL TO	5 1/2	0.500	60.0
12:09			6		
12:09	30	REFILL TO	6	0.375	80.0
12:39			6 3/8		
12:39	30	REFILL TO	6 3/8	0.375	80.0
1:09			6 3/4		
	3 30	REFILL TO		4 0.375	80.0
		FINAL			

PERCOLATION RATE = 3 / 4 = 80.0 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

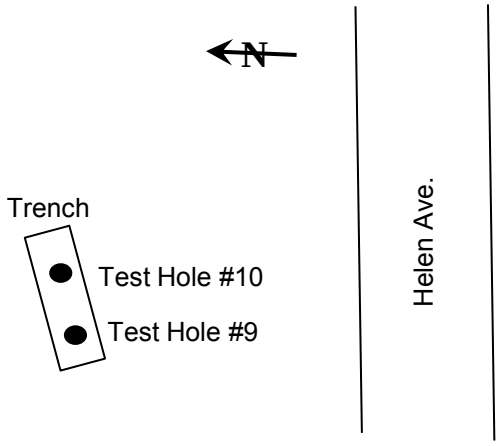
C-10

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 9 LOCATION: B St. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
5	Test
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS N/A

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 5.5'

TIME OF 1st SATURATION (12" WATER) (1) 4:13

TIME WATER DISAPPEARS 4:24

TIME OF REFILL 4:24 **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS >10 min TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING

10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
9:38	30		6	3.979	7.5
10:08			10		
10:08	30	REFILL TO	10	0.750	40.0
10:38			10 3/4		
10:41	30	REFILL TO	5	1.500	20.0
11:11			6 1/2		
11:13	30	REFILL TO	6 1/2	1.750	17.1
11:43			8 1/4		
11:43	30	REFILL TO	8 1/4	1.250	24.0
12:13			9 1/2		
12:18	30	REFILL TO	5 1/2	1.500	20.0
12:48			7		
12:48	30	REFILL TO	7	1.250	24.0
1:18			8 1/4		
1:18	3 30	REFILL TO	8 1/4	4 1.125	26.7
1:48		FINAL	9 3/8		

PERCOLATION RATE = 3 / 4 = 26.7 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

C-9

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/11/2016

TEST HOLE NO: 8 LOCATION: Bike path near Helen Ave. BY: MH/PM

LOCATION SKETCH

N

Bike Path

Trench

Test Hole #8

Test Hole #7

TEST PIT LOG

DEPTH (FT) SOIL DESCRIPTION

0 See Boring Log for Soil Description

Test

5

10

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 3'

TIME OF 1st SATURATION (12" WATER) (1) 2:35

TIME WATER DISAPPEARS 2:32

TIME OF REFILL 2:34

TIME WATER DISAPPEARS 2:43 TIME TO DRAIN (MIN.) 9 (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
2:58	5		6 1/4	4.375	1.1
3:03			10 5/8		
3:03	5	REFILL TO	4 7/8	4.000	1.3
3:08			8 7/8		
3:08	6	REFILL TO	6 5/8	4.875	1.2
3:14			11 1/2		
3:14	5	REFILL TO	6 3/4	3.000	1.7
3:19			9 3/4		
3:19	5	REFILL TO	6 3/8	4.250	1.2
3:24			10 5/8		
3:24	5	REFILL TO	6	3.750	1.3
3:29			9 3/4		
3:29	4	REFILL TO	6	2.875	1.4
3:33			8 7/8		
3:33	3 5	REFILL TO	6 1/4	4 3	1.7
3:38		FINAL	9 1/4		

PERCOLATION RATE = 3 / 4 = 1.7 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/11/16

PLATE

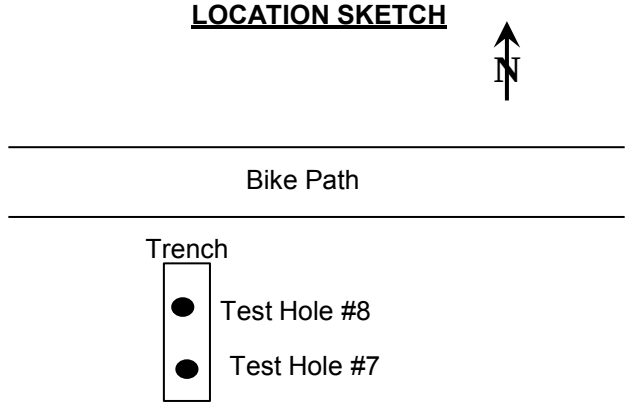
C-8

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 7 LOCATION: Bike path near Helen Ave. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
5	Test
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 4.5'

TIME OF 1st SATURATION (12" WATER) (1) 2:35

TIME WATER DISAPPEARS 2:54

TIME OF REFILL 2:54 **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS >10 min TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER	CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH	INCHES	MIN/IN
10:50	10	6 7/8	3.375	3.0
11:00		10 1/4		
11:00	10	REFILL TO 6 1/2	3.250	3.1
11:10		9 3/4		
11:10	10	REFILL TO 6 5/8	2.875	3.5
11:20		9 1/2		
11:20	10	REFILL TO 6 1/4	2.875	3.5
11:30		9 1/8		
11:30	10	REFILL TO 6 1/2	2.750	3.6
11:40		9 1/4		
11:40	10	REFILL TO 6 1/8	2.625	3.8
11:50		8 3/4		
		REFILL TO		
	3 10	REFILL TO	4 2.625	3.8
		FINAL		

PERCOLATION RATE = 3 / 4 = 3.8 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

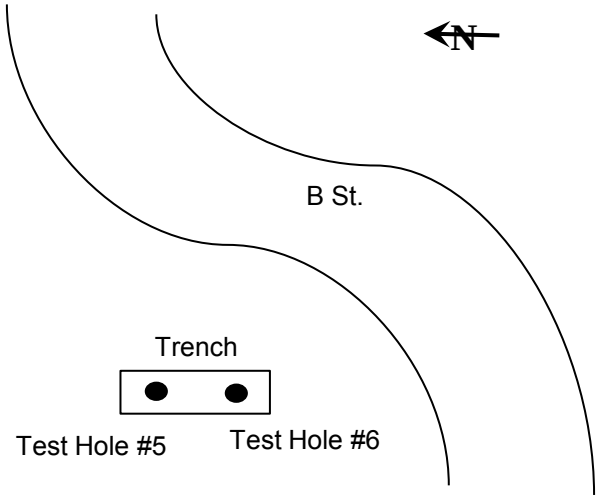
C-7

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 6 LOCATION: B St. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
5	Test
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 3.5'

TIME OF 1st SATURATION (12" WATER) (1) 12:16

TIME WATER DISAPPEARS 12:22

TIME OF REFILL 12:26 **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS >10 min TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
7:59	10		6 1/5	5.800	1.7
8:09			12		
8:10	10	REFILL TO	6 3/4	5.75	1.7
8:20			11 1/2		
8:21	10	REFILL TO	6 1/2	5.75	1.7
8:31			11 1/2		
8:32	10	REFILL TO	6 3/4	5.5	1.8
8:42			11 1/4		
8:43	10	REFILL TO	6 1/2	5.5	1.8
8:53			11		
8:54	10	REFILL TO	6 1/8	4.375	2.3
9:04			10 1/2		
		REFILL TO			
	3 10	REFILL TO		4 4.375	2.3
		FINAL			

PERCOLATION RATE = 3 / 4 = 2.3 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

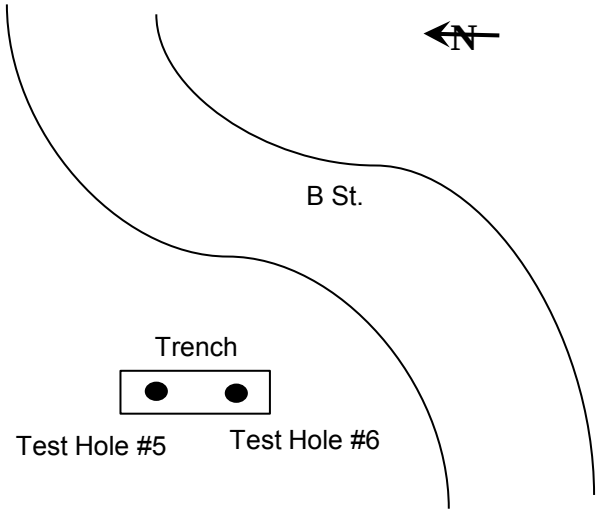
C-6

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 5 LOCATION: B St. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
5	Test
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 4.5'

TIME OF 1st SATURATION (12" WATER) (1) 12:15

TIME WATER DISAPPEARS >10 min

TIME OF REFILL 12:50 **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS >10 min TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
7:58	30		7	3.000	10.0
8:28			10		
8:29	30	REFILL TO	6 1/2	3.125	9.6
8:59			9 3/8		
9:00	30	REFILL TO	7	2.5	12.0
9:30			9 1/2		
9:31	30	REFILL TO	6 3/4	2.625	11.4
10:01			9 3/8		
10:02	30	REFILL TO	6 3/8	2.875	10.4
10:32			9 1/4		
10:33	30	REFILL TO	6 1/4	3.125	9.6
11:03			9 3/8		
11:11	30	REFILL TO	6 1/4	2.75	10.9
11:41			9		
11:41	3 30	REFILL TO	9	4 1	30.0
12:11		FINAL	10		

PERCOLATION RATE = 3 / 4 = 30.0 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

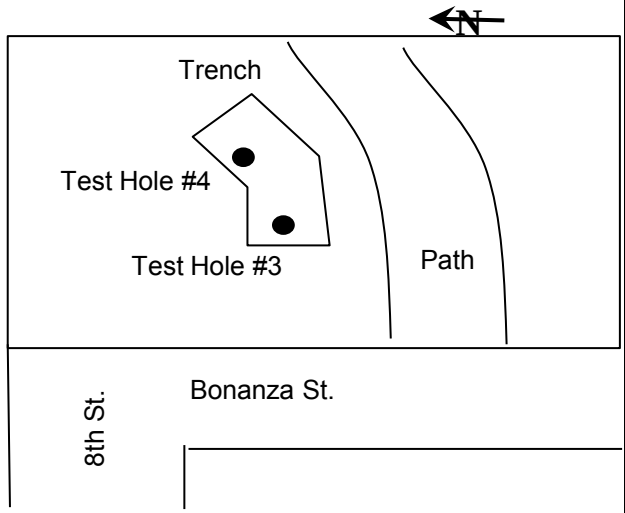
C-5

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 4 LOCATION: Corner of Bonanza St. and 8th St. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
	Test
5	
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS N/A

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 3'

TIME OF 1st SATURATION (12" WATER) (1) 10:27

TIME WATER DISAPPEARS >10 min

TIME OF REFILL N/A **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS N/A TIME TO DRAIN (MIN.) >10 min (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
8:48	10		6 1/2	2.000	5.0
8:58			8 1/2		
8:58	10	REFILL TO	5 3/4	2	5.0
9:08			7 7/8		
9:08	10	REFILL TO	6 1/4	1.25	8.0
9:18			8		
9:18	10	REFILL TO	6 1/8	1.875	5.3
9:28			8		
9:28	10	REFILL TO	6 1/8	1.875	5.3
9:38			8		
9:38	10	REFILL TO	6 5/8	1.75	5.7
9:48			8 3/8		
		REFILL TO			
	3 10	REFILL TO		4 1.75	5.7
		FINAL			

PERCOLATION RATE = 3 / 4 = 5.7 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

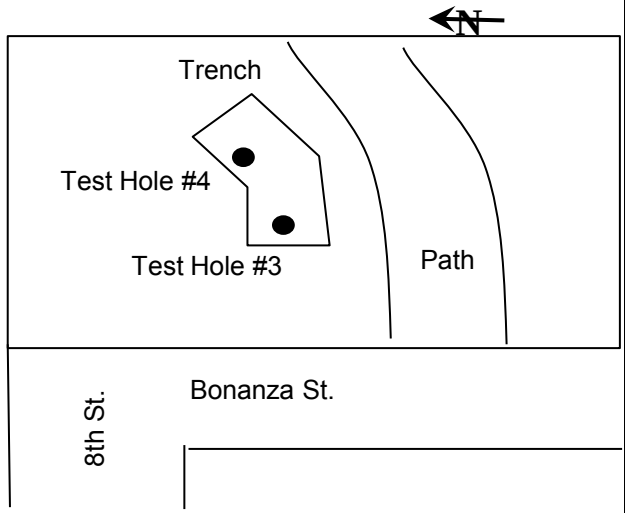
C-4

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/11/2016

TEST HOLE NO: 3 LOCATION: Corner of Bonanza St. and 8th St. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
5	Test
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS_____N/A_____

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 4.5'

TIME OF 1st SATURATION (12" WATER) (1) 10:25

TIME WATER DISAPPEARS 10:33

TIME OF REFILL 10:36

TIME WATER DISAPPEARS 10:45 TIME TO DRAIN (MIN.) 9 mins (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
10:50	10		5 3/4	4.875	2.1
11:00			10 5/8		
11:00	10	REFILL TO	5 1/8	3.5	2.9
11:10			8 5/8		
11:10	10	REFILL TO	3 1/4	3.25	3.1
11:20			7 1/2		
11:20	10	REFILL TO	5 3/4	2.375	4.2
11:30			8 1/8		
11:30	10	REFILL TO	5 3/4	2.5	4.0
11:40			8 1/4		
11:40	10	REFILL TO	6 5/8	2.5	4.0
11:50			9 1/2		
		REFILL TO			
	3 10	REFILL TO		4 2.5	4.0
		FINAL			

PERCOLATION RATE = 3 / 4 = 4.0 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/11/16

PLATE

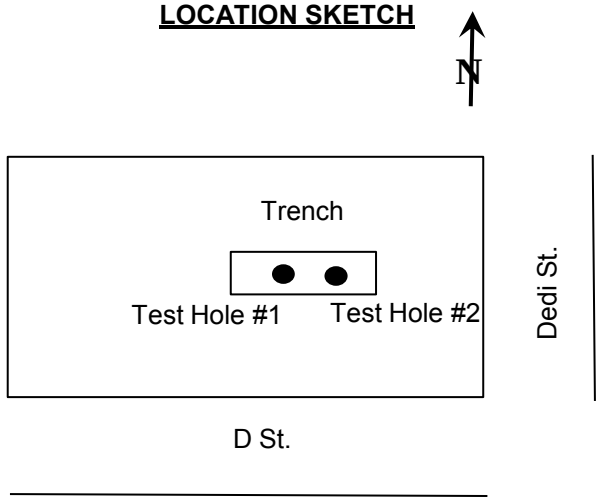
C-3

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 2 LOCATION: Corner of D St. and Dedi St. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
	Test
5	
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS N/A

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 2.5'

TIME OF 1st SATURATION (12" WATER) (1) 9:36

TIME WATER DISAPPEARS >10 mins

TIME OF REFILL N/A **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS N/A TIME TO DRAIN (MIN.) >10 mins (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
8:32	10		6 1/8	3.625	2.8
8:42			8 3/4		
8:42	10	REFILL TO	6	2	5.0
8:52			8		
8:52	10	REFILL TO	5 1/2	2.25	4.4
9:02			7 3/4		
9:02	10	REFILL TO	6 1/2	1.625	6.2
9:12			8 1/8		
9:12	10	REFILL TO	6 1/2	1.625	6.2
9:22			8 1/8		
9:22	10	REFILL TO	6	1.5	6.7
9:32			7 1/2		
		REFILL TO			
	3 10	REFILL TO		4 1.5	6.7
		FINAL			

PERCOLATION RATE = 3 / 4 = 6.7 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

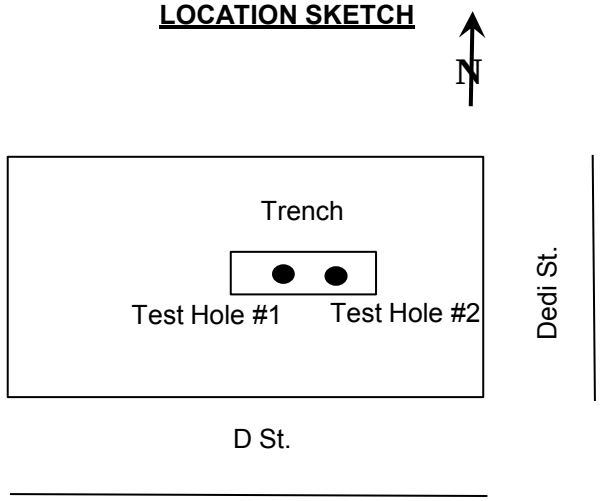
C-2

PERCOLATION TEST

PROJECT: Tahoe Valley S.W. and Greenbelt Imp. JOB # 8937.000 DATE: 10/12/2016

TEST HOLE NO: 1 LOCATION: Corner of D St. and Dedi St. BY: MH/PM

LOCATION SKETCH



TEST PIT LOG

DEPTH (FT)	SOIL DESCRIPTION
0	See Boring Log for Soil Description
5	Test
10	

GWS ENCOUNTERED? NO

DEPTH TO GWS N/A

SURFACE ELEVATION Existing Ground

DEPTH TO TEST 4.5'

TIME OF 1st SATURATION (12" WATER) (1) 9:34

TIME WATER DISAPPEARS >10 mins

TIME OF REFILL N/A **Run Presoak for 4 Hours**

TIME WATER DISAPPEARS N/A TIME TO DRAIN (MIN.) >10 mins (2)

IF 2 IS LESS THAN 10 MIN. AND TEST IS IN SANDY SOIL, IMMEDIATELY PROCEED WITH PERCOLATION TEST USING 10 MIN. READ/FILL INTERVALS. OTHERWISE, PROCEED WITH 4-HOUR TEST BETWEEN 16 AND 30 HOURS AFTER 1

TIME	INTERVAL	DEPTH TO WATER		CHANGE IN WATER	
BEGIN TEST	in Minutes	INITIAL DEPTH		INCHES	MIN/IN
8:32	30		3 5/8	2.75	10.9
9:02			6 3/8		
9:02	30	REFILL TO	6 3/8	2	15.0
9:32			8 3/8		
9:32	30	REFILL TO	5 1/4	1.875	16.0
10:02			7 1/8		
10:02	30	REFILL TO	6 1/8	1.875	16.0
10:32			8		
		REFILL TO			
		REFILL TO			
		REFILL TO			
	3 30	REFILL TO		4 1.875	16.0
		FINAL			

PERCOLATION RATE = 3 / 4 = 16.0 MIN. / INCH

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Tahoe Valley Stormwater and Greenbelt Imp.

PERCOLATION TEST

Job Number: 8973.000 Date:10/12/16

PLATE

C-1

APPENDIX D

LUMOS
& ASSOCIATES

USGS Design Maps Summary Report

User–Specified Input

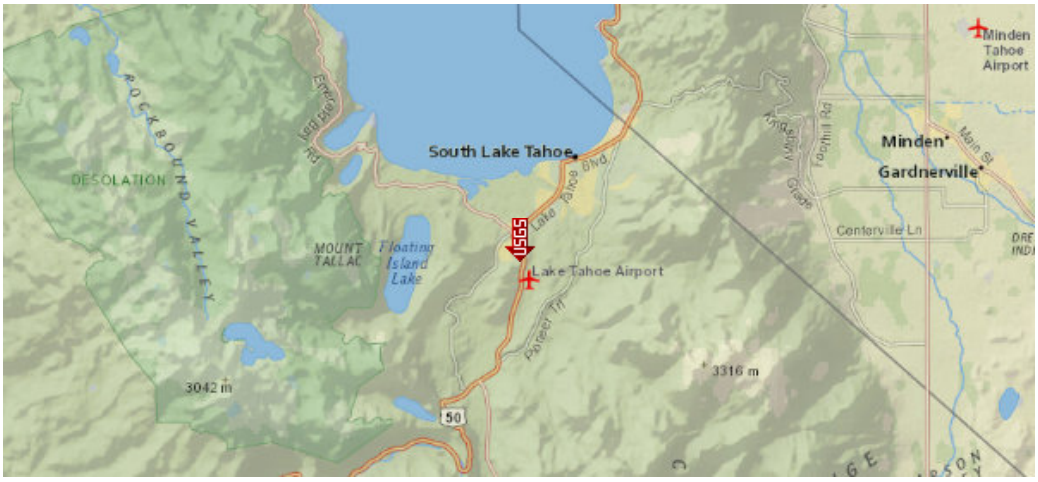
Report Title Tahoe Valley Stormwater and Greenbelt Improvements
Wed October 26, 2016 21:20:16 UTC

Building Code Reference Document 2012/2015 International Building Code
(which utilizes USGS hazard data available in 2008)

Site Coordinates 38.91045°N, 120.00089°W

Site Soil Classification Site Class D – "Stiff Soil"

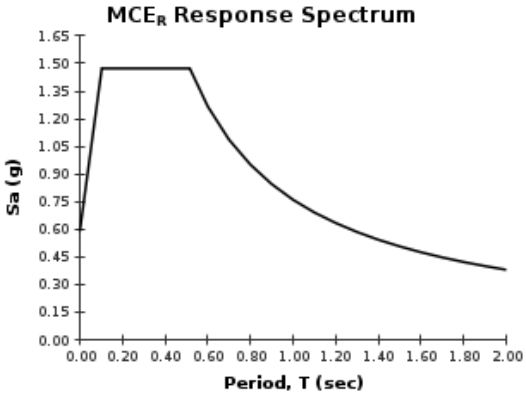
Risk Category I/II/III

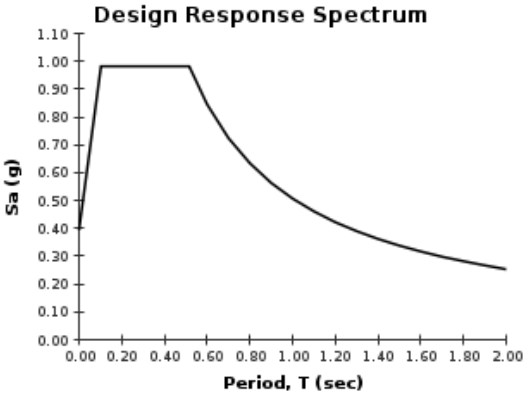


USGS–Provided Output

S_S =	1.473 g	S_{MS} =	1.473 g	S_{DS} =	0.982 g
S_1 =	0.507 g	S_{M1} =	0.760 g	S_{D1} =	0.507 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.





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Tahoe Valley Stormwater and Greenbelt Improvements

DESIGN RESPONSE SPECTRUM

Job Number: 8937.000 Date: October 2016

PLATE D-1

APPENDIX E

LUMOS
& ASSOCIATES

SPECIFICATIONS FOR DEMOLITION

Demolition shall include the removal of all designated structures/improvements to be removed, i.e. concrete structures, asphalt pavements, utilities, pipes and unsuitable material within the project area. Excavations caused by removal of existing improvements and utilities shall be cleared of all wastes, debris, and any loose/soft soils, and backfilled with properly compacted fill, as specified under the General Site Grading section of this report. All fill compaction should be performed under observation and testing by the Geotechnical Engineer.

Broken concrete, asphalt, and other materials shall be considered waste and shall be removed from the site.

Any existing drain lines, wires, utilities, etc., which are to remain on the site shall be protected from damage. Buried drain lines, pipe conduits, utilities, etc. which are necessarily cut shall be either carefully and permanently capped at the property line as specified by the City Engineer or re-routed as necessary. Utility lines not specifically noted for disposition, but which are encountered in the work area shall be capped, extended, protected or re-routed as necessary for completion of the work, as directed.

All work shall be performed in accordance with the Federal Occupational Safety and Health Administration, the local Division of Occupational Safety and Health requirements, and applicable ordinances of the governing municipality.

Care shall be taken not to damage adjoining utilities or structures to remain after completion of the work. Finished work damaged by operations during demolition and site preparation shall be repaired or replaced to the satisfaction of the Owner at no cost to the Owner.

All materials resulting from demolition and site preparation not designated by the Owner to be recovered or to be relocated by the Contractor shall be removed promptly and disposed of off the site.

Upon completion of demolition and site preparation, the site shall be "raked clean" – if applicable – and all waste, rubble, debris, etc. shall be removed and disposed of off the site.

APPENDIX F

LUMOS
& ASSOCIATES

SLOPE STABILITY CALCULATIONS (2:1)

Lowest values from direct shear test:

C = 2,340 psf

Φ = 31.9^0

$$\gamma_{AVG} \approx 120\ pcf\ \rightarrow From\ Proctor\ Test\ Results$$

$$\frac{H_w}{H} = \frac{9}{10} = 0.9\ \rightarrow assume\ 1\ foot\ of\ freeboard\ for\ 10\ feet\ deep\ basin\ \mu_w = 0.95$$

$$\frac{H_w{}'}{H} = \frac{9}{10} = 0.9\ \rightarrow assume\ no\ seepage\ \mu_w{}' = 0.95$$

$$Assume\ no\ surcharge\ or\ tension\ cracks\ (\mu_q = 1 and\ \mu_t = 1)$$

$$P_d = \frac{\gamma * H + q - \gamma_w * H_W}{\mu_q * \mu_w * \mu_t} = \frac{120pcf * 10ft - 62.4pcf * 8ft}{1 * 0.95 * 1} = 737.7$$

$$P_e = \frac{\gamma * H + q - \gamma_w * H_W{}'}{\mu_q * \mu_w{}'} = \frac{120pcf * 10ft - 62.4pcf * 8ft}{1 * 0.95} = 737.7$$

$$\lambda_{C\Phi} = \frac{P_e * tan\Phi}{C} = \frac{737.7 * \tan(31.9^0)}{2{,}340} = 0.2$$

$$X_0 = 1.1\ \rightarrow\ \underline{X}_0 = 10 * 1.1 = 11$$

$$Y_0 = 1.6\ \rightarrow\ \underline{Y}_0 = 10 * 1.6 = 16$$

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Tahoe Valley Stormwater and Greenbelt Improvements

Slope Stability Calculations

Job Number: 8937.000

Date: October 2016

PLATE

F-1.1

$$F = N_{cf} * \frac{C}{P_d} = 7.5 * \frac{2{,}340}{737.7} = 23.8 \ \rightarrow Try\ when\ Dry$$

$$P_d = P_e = 1{,}200$$

$$\lambda_{C\Phi} = \frac{1{,}200 * \tan(31.9^0)}{2{,}340} = 0.3$$

$$F = 8 * \frac{2{,}340}{1{,}200} = 15.6 \ \rightarrow ok$$

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F-1.2

SLOPE STABILITY CALCULATIONS (1.5:1)

Lowest values from direct shear test:

C = 2,340 psf

Φ = 31.9^0

$$\gamma_{AVG} \approx 120\ pcf\ \rightarrow From\ Proctor\ Test\ Results$$

$$\frac{H_w}{H} = \frac{9}{10} = 0.9\ \rightarrow assume\ 1\ foot\ of\ freeboard\ for\ 10\ feet\ deep\ basin\ \mu_w = 0.93$$

$$\frac{H_w{}'}{H} = \frac{9}{10} = 0.9\ \rightarrow assume\ no\ seepage\ \mu_w{}' = 0.93$$

$$Assume\ no\ surcharge\ or\ tension\ cracks\ (\mu_q = 1 and\ \mu_t = 1)$$

$$P_d = \frac{\gamma * H + q - \gamma_w * H_W}{\mu_q * \mu_w * \mu_t} = \frac{120pcf * 10ft - 62.4pcf * 8ft}{1 * 0.93 * 1} = 753.5$$

$$P_e = \frac{\gamma * H + q - \gamma_w * H_W{}'}{\mu_q * \mu_w{}'} = \frac{120pcf * 10ft - 62.4pcf * 8ft}{1 * 0.93} = 753.5$$

$$\lambda_{C\Phi} = \frac{P_e * tan\Phi}{C} = \frac{737.7 * \tan(31.9^0)}{2{,}340} = 0.2$$

$$X_0 = 1.1\ \rightarrow\ \underline{X}_0 = 10 * 1.1 = 11$$

$$Y_0 = 1.6\ \rightarrow\ \underline{Y}_0 = 10 * 1.6 = 16$$

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PLATE

F-2.1

$$F = N_{cf} * \frac{C}{P_d} = 7.5 * \frac{2{,}340}{753.5} = 21.7 \ \rightarrow Try\ when\ Dry$$

$$P_d = P_e = 1{,}200$$

$$\lambda_{C\Phi} = \frac{1{,}200 * \tan(31.9^0)}{2{,}340} = 0.3$$

$$F = 8 * \frac{2{,}340}{1{,}200} = 13.7 \ \rightarrow ok$$

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PLATE

F-2.2

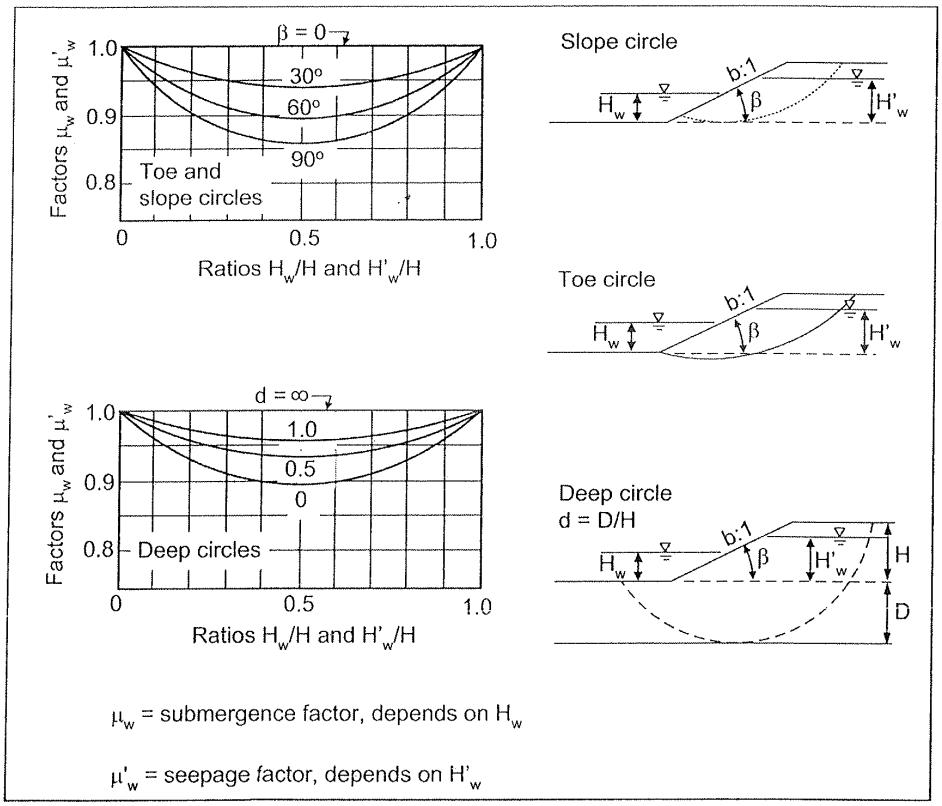

Figure E-3. Submergence and seepage adjustment factors $\phi = 0$ and $\phi > 0$ soils (after Janbu 1968)

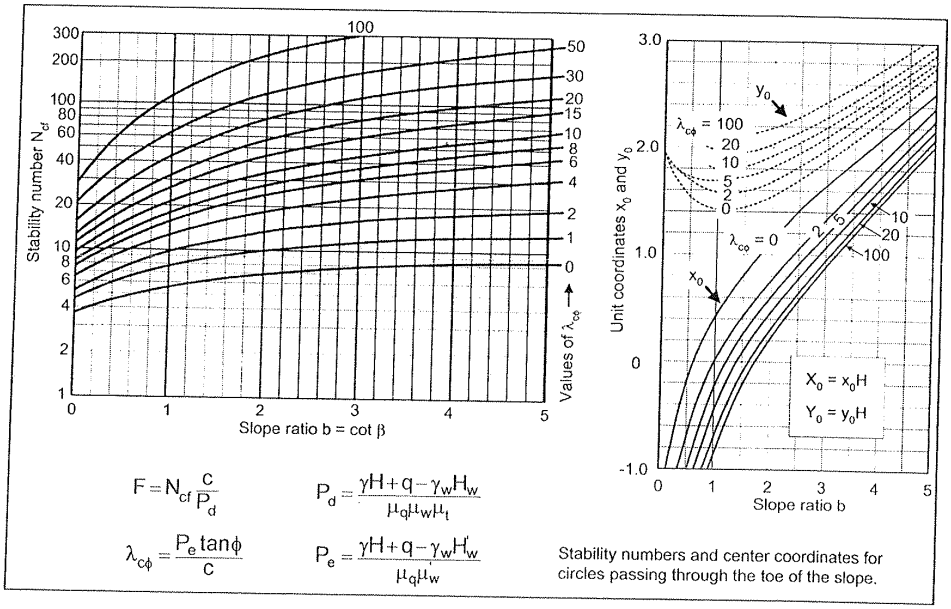

Figure E-5. Slope stability charts for $\phi > 0$ soils (after Janbu 1968)

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PLATE

F-3