

APPENDIX F

AQUATIC RESOURCES DELINEATION REPORT



Final Aquatic Resources Delineation Report

San Bernardino Class 1 Bike Path Project
August 2019



Lake Tahoe, NV
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El Dorado County, Department of Transportation

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FINAL AQUATIC RESOURCES DELINEATION REPORT

San Bernardino Class 1 Bike Path Project

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Executive Summary

NCE performed a field investigation on July 10, 2019 evaluating the potential jurisdictional status of waters of the United States for the San Bernardino Class 1 Bike Path Project in El Dorado County, California.

Within the survey area, two drainages were mapped by the United States Geological Survey (USGS) and included the Upper Truckee River and an unnamed drainage. No waters of the United States were recognized by the United States Fish and Wildlife Service National Wetlands Inventory.

NCE surveyed a total of approximately 6.74 acres. NCE delineated three drainages that are potentially jurisdictional waters of the United States due to the presence of ordinary high-water mark indicators and a connection to the Upper Truckee River, which is a tributary to Lake Tahoe, a traditional navigable waterway. NCE also delineated the Upper Truckee River which is a potentially jurisdictional waters of the United States due to the presence of ordinary high-water mark indicators and the Upper Truckee River is a tributary to Lake Tahoe. These four drainages are presented on **Appendix A, Figure 1**.

- Unnamed Drainage 1 was dry during the survey. This drainage is a non-relatively permanent water, Cowardin classified as Intermittent, Riverine, and is approximately 0.0015 acres in size within the survey area.
- Unnamed Drainage 2 contained flow during the survey. This drainage is a relatively permanent water, Cowardin classified as Lower Perennial Riverine, and is approximately 0.0025 acres in size within the survey area.
- Unnamed Drainage 3 (locally known as Osgood Creek) contained flow during the survey. The drainage is a relatively permanent water, Cowardin classified as Lower Perennial Riverine, and is approximately 0.0102 acres in size within the survey area.
- Upper Truckee River contained flow during the survey. This drainage is a relatively permanent water, Cowardin as Lower Perennial Riverine, and is approximately 0.1442 acres in size within the survey area.

The delineation was conducted in accordance with the:

- 1987 Corps of Engineers Wetland Delineation Manual; and
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), May 2010.

These findings should be considered preliminary until the United States Army Corps of Engineers makes a final approved jurisdictional determination in accordance with the United States Environmental Protection Agency.

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LIST OF ACRONYMS AND ABBREVIATIONS

NHD	National Hydrologic Dataset
NWI	National Wetlands Inventory
NRCS	Natural Resource Conservation Service
OHWM	Ordinary High-Water Mark
Project	San Bernardino Bike Path Project
RPW	Relatively Permanent Water
TNW	Traditional Navigable Waterway
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WOUS	Waters of the United States, including wetlands

b

1.0 INTRODUCTION

1.1 CONTACT AND PROJECT INFORMATION

Mr. Donaldo Palaroan of the County of El Dorado, Department of Transportation, contracted NCE to conduct a formal United States Army Corps of Engineers (USACE) aquatic resources delineation at the San Bernardino Class 1 Bike Path Project (project).

Mr. Palaroan's contact information is:

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Ms. Debra Lemke and Ms. Sarah Bryan of NCE conducted the aquatic resources delineation on July 10, 2019.

The project is located in the County of El Dorado, California, west of U.S. Highway 50 and southwest of Pioneer Trail. The Lake Tahoe Airport is northeast of the project survey area (**Appendix B, Figure 1**). The project extends approximately 0.08 miles south of the Lake Tahoe Environmental Science Magnet School along East San Bernardino Avenue and ends just before the intersection of East San Bernardino Avenue and North Upper Truckee Road. The project proposes to provide a crucial connection between the neighborhood along North Upper Truckee Road and the Community of Meyers, expanding the already established Meyers Bikeway. The purpose of the project is to provide a safe and direct year-round connection between North Upper Truckee and Meyers neighborhoods.

The survey area consists of roadway, Tahoe Paradise Park, and the Upper Truckee River (**Appendix B, Figure 2**).

The survey area is presented on United States Geological Survey (USGS) Echo Lake 7.5-minute series topographic quadrangle maps (**Appendix B, Figure 3**).

1.2 PURPOSE

The purpose of this report is to identify and describe aquatic resources and to identify known possible sensitive plant, fish, wildlife species, and cultural/historic resources in the survey area. This report facilitates efforts to:

1. Avoid or minimize impacts to aquatic resources during the project development process.
2. Document aquatic resource boundary determinations for review by the USACE.
3. Provide early indications of known sensitive species and historic/cultural properties within the survey area.
4. Provide background information.

2.0 BACKGROUND

2.1 SITE DESCRIPTION

2.1.1 Location

The project is located in the County of El Dorado, California, west of U.S. Highway 50 and southwest of Pioneer Trail. The Lake Tahoe Airport is northeast of the survey area (**Appendix B, Figure 1**). The survey area is located in Sections 29 and 30 in Township 12 North and Range 18 East of the Mt. Diablo Meridian which may be found on the USGS 7.5-minute Echo Lake quadrangle map in El Dorado County, California. The town of Meyers is south of the survey area and the City of South Lake Tahoe is north of the survey area. At the northeast corner of the survey on East San Bernardino Avenue the latitude is: 38.8592057 and the longitude is: -120.0200101.

2.1.2 Site Access

To access the project from South Lake Tahoe, continue south on U.S. Highway 50/Lake Tahoe Boulevard to the intersection of U.S. Highway 50/State Route 89/Emerald Bay Road and Lake Tahoe Boulevard. At this intersection, turn south onto U.S. Highway 50/State Route 89/Emerald Bay Road. Travel for approximately 3.8 miles, then turn right (west) onto Arapahoe Street. Then take a left in 0.2 miles onto San Diego Street. Then turn left (west) onto E San Bernardino Avenue in 0.3, this is the northeast access into the survey area.

2.1.3 Land Use

The land within the survey area contains publicly owned land by the United States Forest Service and County of El Dorado and privately-owned land by the Tahoe Paradise Recreation and Park District (Tahoe Paradise Park). The extent of the survey area is fully located within El Dorado County limits.

The survey area surrounding land uses include residential, Tahoe Paradise Park and Lake Baron north and south, the Lake Tahoe Environmental Magnet School north of the east entrance to the area, and Tahoe Paradise Golf Course east of the project.

2.1.4 Vegetation

The area within the survey area is characterized predominantly by urban land fragmented by Jeffrey pine, lodgepole pine, perennial grassland, sagebrush, and Sierran mixed conifer (**Appendix B, Figure 4**).

2.1.5 National Wetland Inventory

Within the survey area, no features are identified by the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (**Appendix B, Figure 5**).

The Upper Truckee River is recognized as a naturally occurring riverine by the USA Topographic Data (**Appendix B, Figure 3**).

2.1.6 Soils

The soils within the survey area have been mapped by the Department of Agriculture, Natural Resource Conservation Service (NRCS) and were downloaded from the Web Soil Survey (NRCS 2019a). NRCS identified four soil types within the survey area (**Appendix B, Figure 6**); two of the four soil types are on the national hydric soils list (NRCS 2019a). All four soil types and their hydric status are presented below and in **Table 1**.

2.0 BACKGROUND

Pits and dumps

Pits and dumps are a soil component that is derived from 45 percent pits, 45 percent dumps, and 10 percent minor components of arents and xerorthents. The typical profile is variable. This soil is not considered hydric (NRCS 2019b).

Tahoe complex, 0 to 5 percent slopes, gravelly

Tahoe complex is a soil component that occurs on valley flats, and flood plains. The parent material consists of alluvium derived from granitic and volcanic rock. Depth to a restrictive layer is greater than 80 inches. The natural drainage class is very poorly drained. This soil is considered hydric (NRCS 2019b).

Celio loamy coarse sand, 0 to 5 percent slopes

Celio loamy coarse sand is a soil component that occurs on outwash terraces. The parent material consists of alluvium and/or outwash. Depth to a restrictive layer is 39 to 59 inches to duripan. The natural drainage class is somewhat poorly drained. This soil is considered hydric (NRCS 2019b).

Meeks gravelly loamy coarse sand, 5 to 15 percent slopes, stony

This complex is a soil component that occurs on moraines. The parent material consists of outwash and/or till derived from granodiorite. Depth to a restrictive layer is 41 to 73 inches to duripan. The natural drainage class is somewhat excessively drained. This soil is not considered hydric (NRCS 2019b).

Table 1. Soils within the Survey Area

Map Unit Symbol	Name	Acres in Project Area	Percent of Project Area	National Hydric List
7031	Pits and dumps	0.03	0.4%	No
7042	Tahoe complex, 0 to 5 percent slopes, gravelly	0.39	5.7%	Yes
7431	Celio loamy coarse sand, 0 to 5 percent slopes	4.55	67.5%	Yes
7482	Meeks gravelly loamy coarse sand, 5 to 15 percent slopes, stony	1.77	26.3%	No
Totals for Project Area		6.74	100.0%	

2.1.7 Hydrology

The sources of water for the survey area include surface water from three unnamed drainages and the Upper Truckee River, direct precipitation and stormwater runoff from East San Bernardino Avenue. Nuisance water may include Tahoe Paradise Park north and south of the survey area.

3.0 METHODS

3.1 LITERATURE REVIEW

Available information pertaining to the natural resources of the region was reviewed. References reviewed for this delineation are listed in Section 5.0. Pertinent site-specific reports and general references utilized for the delineation include the following:

- USFWS NWI mapping.
- USGS NHD mapping.
- Google Earth.
- United States Department of the Interior, USGS. Echo Lake, California 7.5-minute series topographic quadrangle.
- United States Department of Agriculture (USDA), NRCS. 2019a. Soils survey data for the project site accessed online at: <http://websoilsurvey.nrcs.usda.gov/app/>
- USDA, NRCS. 2019b. National and State of California hydric soils for the project study area accessed online at: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>
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3.0 METHODS

3.2 RESEARCH AND FIELD METHODOLOGY

Prior to the field investigation, USGS topographic maps and NHD mapping, aerial photographs, USFWS NWI mapping, and a NRCS custom soil report of the survey area were reviewed for indications of ephemeral, intermittent, and perennial drainages as well as mapped wetlands and spring locations.

Wetlands

The survey area was delineated for the presence of wetlands utilizing the USACE 1987 three-parameter (vegetation, hydrology, and soils) methodology. This methodology was refined in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), May 2010 and requires the collection of data on soils, vegetation, and hydrology at several locations to establish the potential jurisdictional boundary of wetlands.

The team identified representative locations for data collection. Soil pits were dug and the team collected data on vegetation, hydrology, and soils. Soils were also examined and correlations were developed between the three parameters to make wetland determinations. Data points were evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species, as determined by the 2016 National Wetland Plant List, version 3.3, was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. Additionally, immediate subsurface soil conditions were examined for hydric attributes or a lack thereof. Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. Soil pit locations were recorded with a Trimble Geo7x GPS unit and were documented with representative photographs.

Roadside Ditches and Man-Made Swales

The survey area was delineated to determine if roadside ditches and/or man-made swales were constructed within jurisdictional drainages.

Drainages

The survey area was delineated for drainages utilizing the presence of ordinary high water mark (OHWM) indicators, evidence of frequent surface water flows, and a connection to a navigable waterway. These characteristics were considered to be indicative of a jurisdictional waters of the United States (WOUS). Arid West Ephemeral and Intermittent Stream OHWM Data Sheets were completed for each drainage with the presence of OHWM indicators. If the drainage had OHWM indicators present, the drainage was followed to determine if the drainage flowed into another drainage with OHWM indicators or if these indicators terminated. Where the drainage exhibited OHWM indicators, width measurements were taken to be used in determining an average width of the drainage and height measurements from the OHWM to the drainage bottom were taken. When drainages with OHWM indicators left the area, an attempt was made to follow the drainage to determine if OHWM indicators terminated or a connection to a navigable waterway. Ordinary high water mark indicator locations were recorded with a Trimble Geo7x GPS unit and representative photographs were taken.

3.3 SURVEY DATA INTEGRATION

Boundaries of the potential aquatic resources within the project survey area were mapped using a Trimble Geo7x GPS unit and digitized in ESRI ArcGIS Pro 2.4.0 software. The datum is NAD 1983.

3.0 METHODS

3.4 PRIVATE PROPERTY OWNER ACCESS

A signed letter from the Tahoe Paradise Park allowing USACE personnel to enter the property and collect samples during business hours will be needed as the project survey area is within park ownership (**Appendix C**).

4.0 RESULTS

4.1 LANDSCAPE SETTING

The survey area is approximately 6.74 acres. The entire survey area was field delineated by NCE. The survey area includes publicly owned land by the United States Forest Service and County of El Dorado, and privately-owned land by Tahoe Paradise Park. The survey area also abuts private parcels. The survey area slopes from the west to the east, with the east being 6332 feet above mean sea level, and the west being 6,405 feet above mean sea level. The lowest elevation of the survey area is located in the middle of the survey area, adjacent to Lake Baron at 6306 feet above mean sea level.

The project is on the west side of State Route 89/Emerald Bay Road/U.S. Highway 50. To the north of the project area (west of State Route 89/Emerald Bay Road), is Angora Creek and the Upper Truckee River bisects the project area.

There are no NWI mapped wetlands within the survey area (**Appendix A, Figure 5**). There are two USGS 'blue line' drainages within the survey area, Upper Truckee River and an unnamed drainage (**Appendix A, Figure 3**). Two additional unnamed drainage segments were identified within the survey area (discussed below in Section 4.2). Outside of the survey area, to the north (downstream) is one USGS 'blue line' drainage: Angora Creek.

Vegetation types were initially identified with the CALVEG GIS data (USDA 2009), and then verified based on an NCE reconnaissance botanical field survey (**Appendix D Plant List**).

4.2 AQUATIC RESOURCES

4.2.1 Wetlands

Within the survey area, a data point was taken within a meadow west of the Upper Truckee River. The data point (SP1) was collected within a representative area of the meadow. The vegetation at SP1 consisted of 40% Italian rye grass (*Festuca perennis*) which is a non-native species and 60% bare ground. Data point 1 is not within a wetland because there are no signs of wetland hydrology, hydrophytic vegetation, nor hydric soils.

Appendix B, Figure 3 depicts the location of the datapoint. **Appendix Figure 7** presents the ground photograph locations and directions. A plant list of the entire survey area is located in **Appendix D**. Representative photographs are in **Appendix E**. The wetland datasheet is in **Appendix F**.

4.2.2 Roadside Ditches and Man-Made Swales

No roadside ditches or man-made swales were identified within the survey area. The survey area contained asphalt curb and gutters.

4.2.3 Drainages

Upper Truckee River

The Upper Truckee River was identified flowing generally south to north through the middle of the survey area. This is an USA topographic drainage. This drainage was flowing at the time of the survey. Data Points OHWM UTR-L and UTR-R were collected. The Upper Truckee River's OHWM was 111.14 feet across and 18 inches deep.

The Upper Truckee River discharges into Lake Tahoe, a Traditional Navigable Waterway (TNW). Due to the presence of OHWM indicators and the drainage's connection to a TNW, NCE

believes that Upper Truckee River is a jurisdictional waterway. This drainage is Cowardin classified as Lower Perennial Riverine and is approximately 0.1442 acres in size (**Appendix A, Figure 1**).

Unnamed Drainage 1

One unnamed drainage was identified in the northern side of the project, east of Tahoe Paradise Park. Within the survey area, this unnamed drainage starts at a culvert under East San Bernardino Avenue just west of the intersection with Bakersfield Street. This culvert is a highly eroded corrugated metal pipe about 24 inches across and the downstream area of the culvert is eroded with a 7 by 8-foot depression. The culvert is partially filled with sediment, has an eroded/missing top, little to no slope, and a very shallow low flow drainage. Data Points OHWM C1a and C1b were collected for the unnamed drainage. The Unnamed Drainage 1's OHWM width was 12 inches and 0.5 inches deep.

This is not an USGS mapped drainage.

The drainage was not walked to determine if the drainage is hydrologically connected to the Upper Truckee River as the area was surrounded by private property. Per Google Earth imagery and topography, this unnamed drainage appears to eventually discharge into the Upper Truckee River. NCE believes that Unnamed Drainage 1 is federally jurisdictional. This drainage is Cowardin classified as Intermittent, Riverine, and is approximately 0.0015 acres in size (**Appendix A, Figure 1**).

Unnamed Drainage 2

One unnamed drainage was identified on the western corner of the survey area, at the intersection of West San Bernardino Avenue and Normuk Street. The culvert is made from metal approximately 52 inches in diameter. The drainage has a soft, no rock bottom. The vegetation surrounding the area is made up of horsetail and pine trees. Data point Culvert 2 was collected for this drainage; this data point contained OHWM indicators such as a break in bank slope and the presence of flow. The Unnamed Drainage 2's OHWM width was 22 inches and 1.25 inches deep.

This is not an USGS mapped drainage.

Due to the private property that surrounds the drainage, the drainage was unable to be followed out of the survey area. Per Google Earth imagery and topography, this drainage appears to be traveling southeast and will eventually discharge into the Upper Truckee River. NCE believes that Unnamed Drainage 2 is federally jurisdictional. This drainage is Cowardin classified as Lower Perennial Riverine and is approximately 0.0025 acres in size (**Appendix A, Figure 1**).

Unnamed Drainage 3 (locally known as Osgood Creek)

An unnamed drainage which is locally known as Osgood Creek was identified in the southwestern corner of the survey area. Within the survey area, this drainage flows under West San Bernardino Avenue through two metal culverts. These culverts are made from corrugated metal pipe and each are about 62 inches across. Data point Culvert 3 was collected for this drainage; this data point contained OHWM indicators such as a break in bank slope and the presence of flow.

There is an USGS mapped drainage in this location. The USGS mapped drainage depicts the drainage flowing to the northeast. During the survey, the drainage was flowing to the southeast. Osgood Creek's OHWM width was 8.0 feet and 3.0 inches deep.

Due to the private property that surrounds the drainage, the drainage was unable to be followed out of the survey area. Per Google Earth imagery and topography, this drainage appears to be traveling southeast and will eventually discharge into the Upper Truckee River. NCE believes that Osgood Creek is federally jurisdictional. This drainage is Cowardin classified as Lower Perennial Riverine and is approximately 0.0102 acres in size (**Appendix A, Figure 1**).

For all four drainages:

- **Appendix B, Figure 3** depicts the location of the data points.
- **Appendix B, Figure 7** presents the ground photograph figure
- A plant list of the entire survey area is located in **Appendix D**
- Representative photographs are in **Appendix E**
- The OHWM datasheets are in **Appendix F**

4.2.4 Aquatic Resources Types and Amounts

Below are two tables with the aquatic resources identified within the survey area (**Table 2**) and the proposed jurisdictional status (**Table 3**).

Table 2. Aquatic Resources within the Survey Area

Aquatic Resource Name	Aquatic Resources Classification		Length of Culvert Within Survey Area (acres)	Length of Drainage Within Survey Area (acres)	Aquatic Resource Size (acre) Required for all resources	Aquatic Resource Size (linear feet) (Culvert and Drainage Length)
	Cowardin	Location (lat/long)				
Unnamed Drainage 1	R4 – Intermittent Riverine	38.8579843 N -120.0236065 W	0.0004	0.0011	0.0015	67.45
Unnamed Drainage 2	R2 – Lower Perennial Riverine	38.8557421 N -120.0333043 W	0.0007	0.0018	0.0025	58.61
Osgood Creek	R2 – Lower Perennial Riverine	38.8548433 N -120.0340748 W	0.0013	0.0089	0.0102	55.79
Upper Truckee River	R2 – Lower Perennial Riverine	38.8572456 N -120.0267624 W		0.1442	0.1442	56.53
Total			0.0024	0.1560	0.1584	238.38

Table 3. Waters of the U.S Proposed Jurisdictional Status

Water Type	Total Acres	Jurisdictional	Non-Jurisdictional
Unnamed Drainage 1 – Non-Relatively Permanent Water	0.0015	0.0015	
Unnamed Drainage 2 - Relatively Permanent Water	0.0025	0.0025	
Osgood Creek - Relatively Permanent Water	0.0102	0.0102	
Upper Truckee River - Relatively Permanent Water	0.1442	0.1442	
Total	0.1584	0.1584	

4.3 SIGNIFICANT NEXUS

The U.S Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook (USACE 2007) was consulted to aid the preliminary determination whether an area would be subject to USACE jurisdiction under Section 404 of the Clean Water Act. The significant nexus test, outlined in a memorandum jointly authored by the U.S. Environmental Protection Agency and USACE, was applied to each potentially jurisdictional habitat type (Grumbles and Woodley 2008). To facilitate jurisdictional determination consistent with the guidance, each water body delineated was evaluated as a TNW, Relatively Permanent Water (RPW), or non-RPW, based on the following definitions:

- TNWs include all waters subject to the ebb and flow the tide, or waters that are presently used, have been used in the past, or may be used in the future to transport interstate or foreign commerce, and all waters that are navigable in fact under federal law for any purpose.
- RPWs are waters that flow continuously at least seasonally (typically at least 3 months of the year) and are not TNWs.
- Non-RPWs are waters that do not have continuous flow at least seasonally.

The following types of water bodies are subject to Clean Water Act jurisdiction:

- All TNWs and adjacent wetlands;
- Relatively permanent tributaries of TNWs and wetlands with a continuous surface connection to such tributaries; and
- Non-relatively permanent tributaries of TNWs and adjacent wetlands if they have a significant nexus to a TNW. Non-RPWs and adjacent wetlands are determined to have a significant nexus to a TNW if they significantly affect the chemical, physical, or biological integrity of a downstream TNW.

NCE's professional opinion is that the Unnamed Drainage 1 is a non-RPW which is an intermittent tributary of the Upper Truckee River, which is a tributary to Lake Tahoe, a TNW. NCE also believes that Unnamed Drainage 2 and Osgood Creek are RPW which are tributaries of the Upper Truckee River, which is a tributary to Lake Tahoe. The Upper Truckee River is a RPW and a tributary to Lake Tahoe. The three Drainages and the Upper Truckee River have the ability to affect the chemical, physical, and/or biological integrity of Lake Tahoe, resulting in a significant nexus to Lake Tahoe.

Appendix G contains the Aquatic Resource Excel Sheet and the GIS metadata.

The above findings should be considered preliminary until the USACE makes a final approved jurisdictional determination in coordination with the United States Environmental Protection Agency. Areas deemed jurisdictional will then be subject to the regulatory requirements of the federal Clean Water Act.

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United States Geological Survey. National Hydrography Data.
<https://nhd.usgs.gov/tools.html#MDTool>

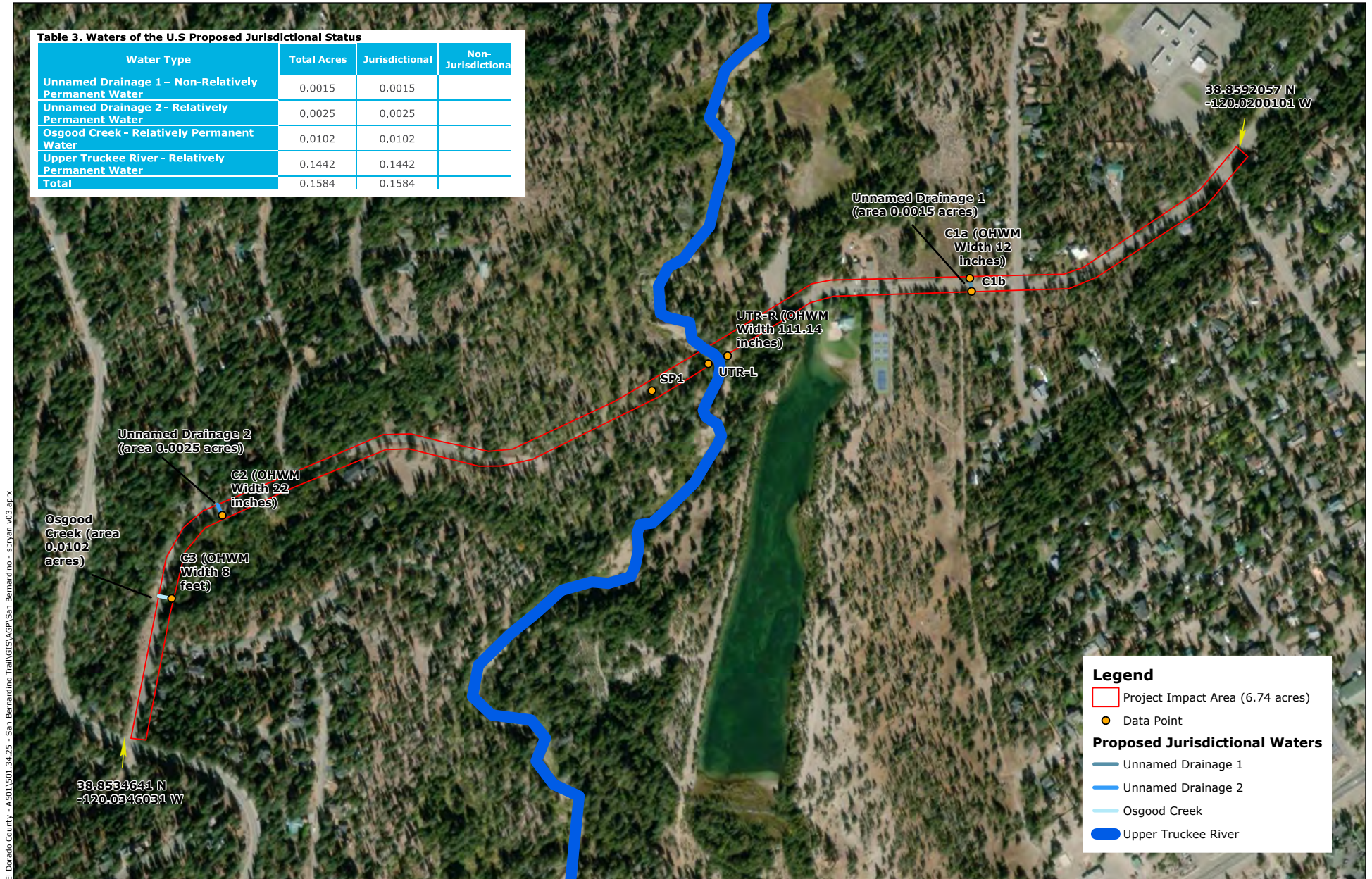
United States Geological Survey. Echo Lake, California 7.5-minute series topographic quadrangle. U.S. Department of the Interior.

Appendix A

AQUATIC RESOURCE DELINEATION MAP

Table 3. Waters of the U.S Proposed Jurisdictional Status

Water Type	Total Acres	Jurisdictional	Non-Jurisdictional
Unnamed Drainage 1 – Non-Relatively Permanent Water	0.0015	0.0015	
Unnamed Drainage 2 - Relatively Permanent Water	0.0025	0.0025	
Osgood Creek - Relatively Permanent Water	0.0102	0.0102	
Upper Truckee River - Relatively Permanent Water	0.1442	0.1442	
Total	0.1584	0.1584	



San Bernardino Class 1 Bike Path Project

Proposed Delineation Map



1 in. = 500 ft.



FIGURE

4

SOURCE

Bing Aerial Basemap; NCE 2019

JOB NUMBER

501.34.25

DRAWN

sbryan

DATE

8/26/2019

REVISED

9/6/2019

APPROVED

drios

Appendix B

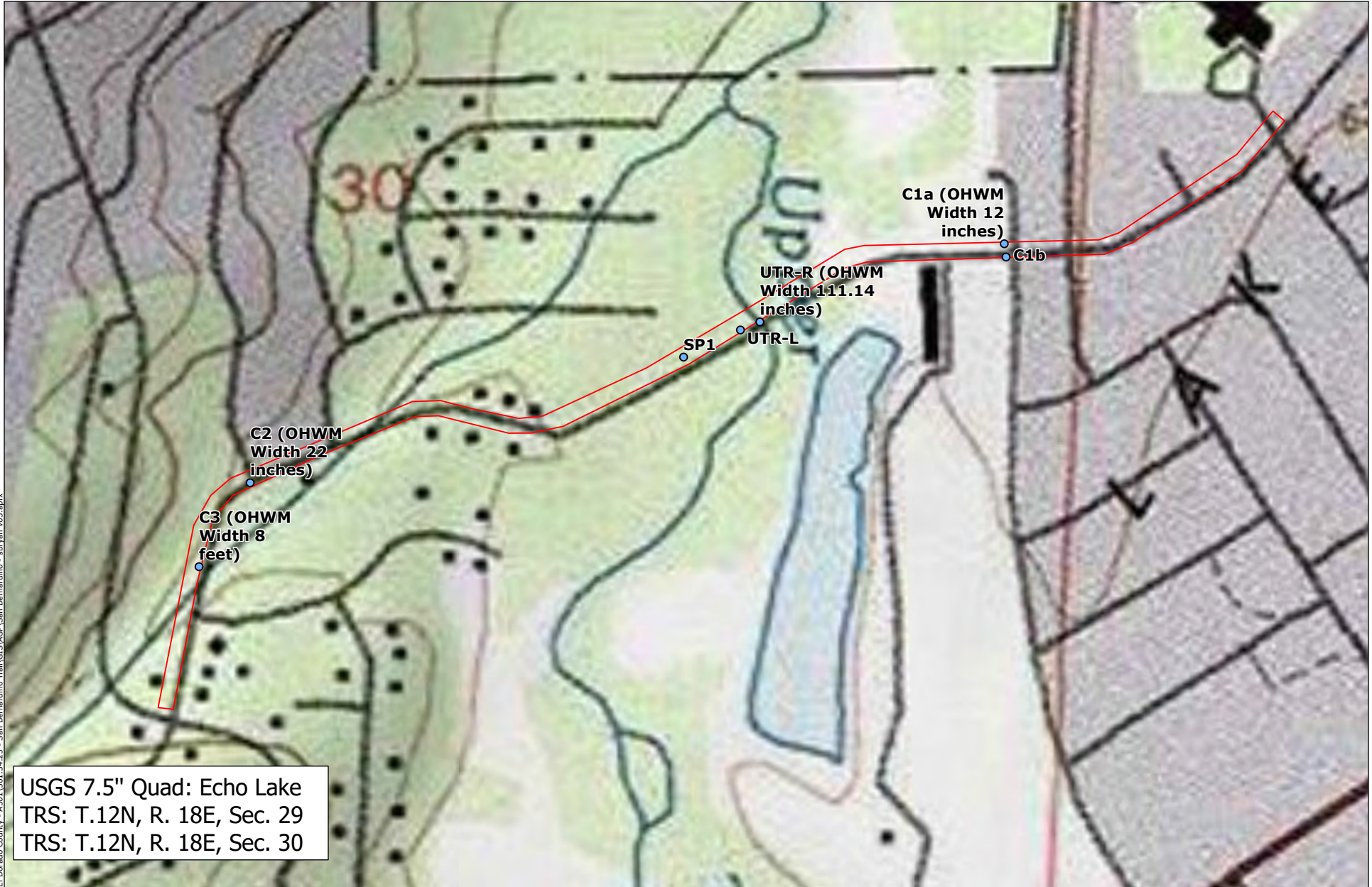
SUPPORTING MAPS



<div>Legend</div> <div><div><div></div></div>Survey Area</div>	<div><div><div><div></div><div>NCE</div></div><div><div></div><div>San Bernardino</div><div>County</div></div></div></div>	<div>San Bernardino Class 1 Bike Path Project</div> <div>Project Location Map</div>				<div><div>N</div><div>1 in. = 10,000 ft.</div><div><div>0</div><div>5,000</div><div>10,000</div><div>ft.</div></div></div>	<div>FIGURE</div> <div>1</div>				
SOURCE	Bing Aerial Basemap; NCE 2019	JOB NUMBER	501.34.25	DRAWN	sbryan	DATE	8/9/2019	REVISED	9/6/2019	APPROVED	dlemke

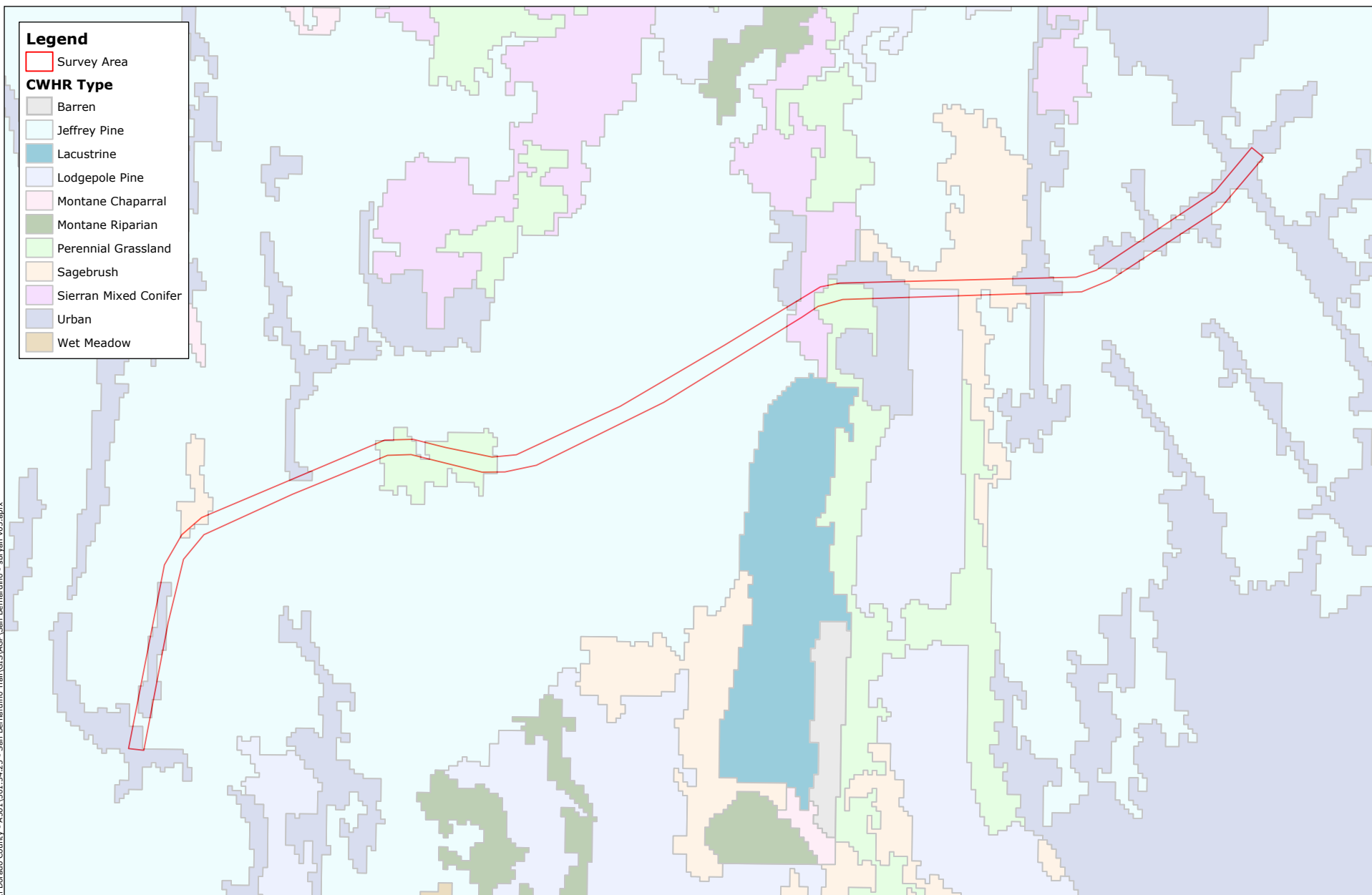


<div>Legend</div> <div><div><div></div></div>Survey Area</div>	<div><div><div><div></div><div>NCE</div></div><div><div></div><div>San Bernardino County</div></div></div></div>	<div>San Bernardino Class 1 Bike Path Project</div> <div>Project Survey Area</div>			<div><div><div>N</div><div>1 in. = 500 ft.</div><div><div>0</div><div>250</div><div>500</div><div>ft.</div></div></div></div>	<div>FIGURE</div> <div>2</div>
<div>SOURCE</div> <div>Bing Aerial Basemap; NCE 2019</div>	<div>JOB NUMBER</div> <div>501.34.25</div>	<div>DRAWN</div> <div>sbryan</div>	<div>DATE</div> <div>8/26/2019</div>	<div>REVISED</div> <div>9/6/2019</div>	<div>APPROVED</div> <div>drios</div>	



<div>Legend</div> <div><div><div></div><div>Survey Area</div></div><div><div></div><div>Data Point</div></div></div>	<div><div><div><div></div><div>NCE</div></div><div><div><div></div><div>San Bernardino</div><div>California</div></div></div></div></div>	<div>San Bernardino Class 1 Bike Path Project</div> <div>Topographic Quadrangle Map</div>				<div><div><div>N</div><div></div></div><div>1 in. = 500 ft.</div><div><div>0</div><div>250</div><div>500</div><div>ft.</div></div></div>	<div>FIGURE</div> <div>3</div>
	<div>SOURCE</div> <div>USA Topographic Data; NCE 2019</div>	<div>JOB NUMBER</div> <div>501.34.25</div>	<div>DRAWN</div> <div>sbryan</div>	<div>DATE</div> <div>8/23/2019</div>	<div>REVISED</div> <div>9/6/2019</div>	<div>APPROVED</div> <div>drios</div>	

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San Bernardino Class 1 Bike Path Project

CWHR Type (Vegetation Communities)

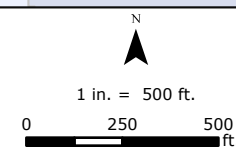


FIGURE
4

SOURCE
Bing Aerial Basemap; NCE 2019; California Wildlife Habitat Relationships Dataset

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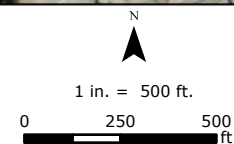
San Bernardino Class 1 Bike Path Project
National Wetland Inventory (NWI) Map

SOURCE
Bing Aerial Basemap; NCE 2019; NWI

JOB NUMBER
501.34.25

DRAWN
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DATE
8/26/2019

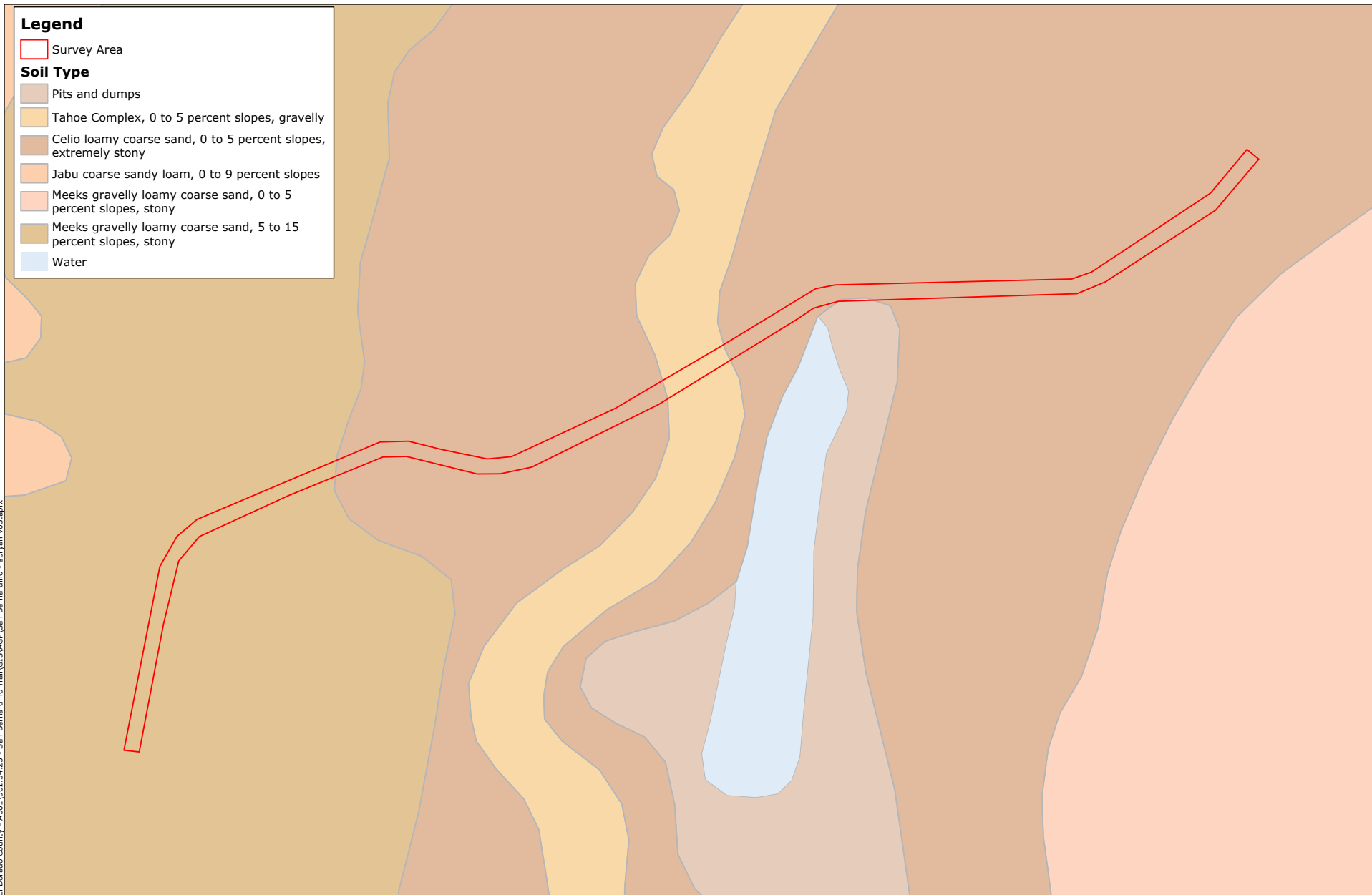


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FIGURE
5

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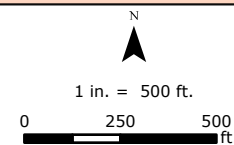
San Bernardino Class 1 Bike Path Project
NRCS Soils Map

SOURCE
Bing Aerial Basemap; NCE 2019

JOB NUMBER
501.34.25

DRAWN
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DATE
8/23/2019

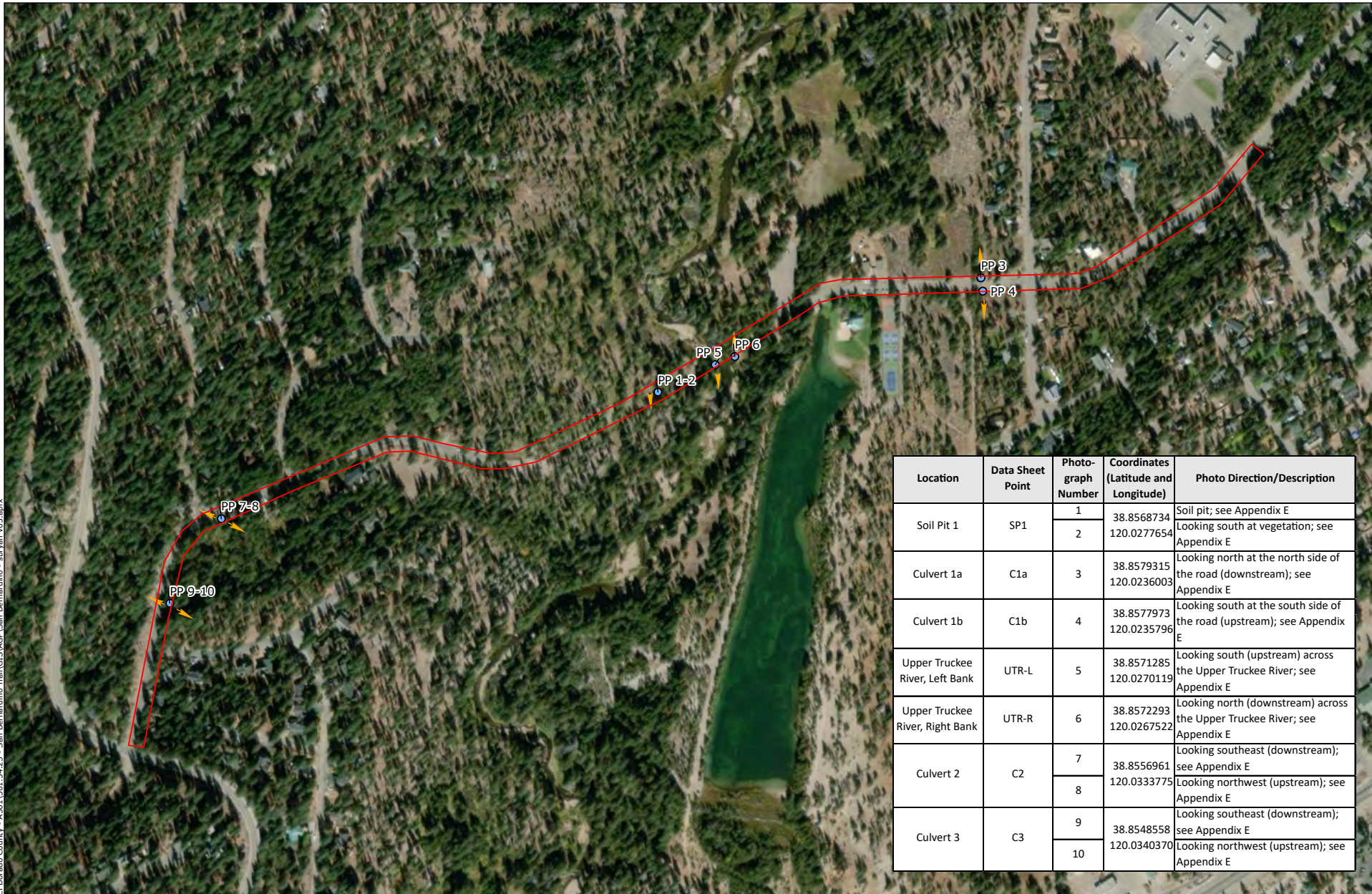


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FIGURE
6



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drios

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Location	Data Sheet Point	Photo-graph Number	Coordinates (Latitude and Longitude)	Photo Direction/Description
Soil Pit 1	SP1	1	38.8568734 120.0277654	Soil pit; see Appendix E
		2		Looking south at vegetation; see Appendix E
Culvert 1a	C1a	3	38.8579315 120.0236003	Looking north at the north side of the road (downstream); see Appendix E
Culvert 1b	C1b	4	38.8577973 120.0235796	Looking south at the south side of the road (upstream); see Appendix E
Upper Truckee River, Left Bank	UTR-L	5	38.8571285 120.0270119	Looking south (upstream) across the Upper Truckee River; see Appendix E
Upper Truckee River, Right Bank	UTR-R	6	38.8572293 120.0267522	Looking north (downstream) across the Upper Truckee River; see Appendix E
Culvert 2	C2	7	38.8556961 120.0333775	Looking southeast (downstream); see Appendix E
		8		Looking northwest (upstream); see Appendix E
Culvert 3	C3	9	38.8548558 120.0340370	Looking southeast (downstream); see Appendix E
		10		Looking northwest (upstream); see Appendix E

Legend

-  Survey Area
-  Data Point



San Bernardino Class 1 Bike Path Project

Ground Level Photograph Locations and Directions

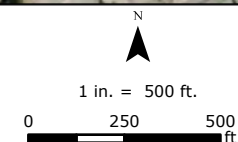


FIGURE
7

SOURCE
Bing Aerial Basemap; NCE 2019

JOB NUMBER
501.34.25

DRAWN
sbryan

DATE
8/26/2019

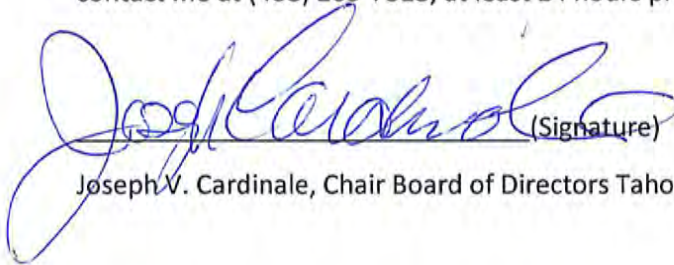
REVISED
9/6/2019

APPROVED
dlemke

Appendix C

PROPERTY ACCESS STATEMENT

I, Joseph V. Cardinale, Chair of the Board of Directors for the Tahoe Paradise Recreation and Park District, Assessor's Parcel Numbers 034-010-013, 034-020-017, 034-010-024, and 034-020-032 allow USACE personnel to enter the property and collect samples during normal business hours. Please contact me at (408) 209-7313, at least 24 hours prior to entering the property.



(Signature)

Joseph V. Cardinale, Chair Board of Directors Tahoe Paradise Recreation and Park District

Appendix D

PLANT LIST

Plant Species Identified Within the Project Area July 2019

Scientific Name	Common Name	Native: Y, N	Wetland Indicator Status*
<i>Abies concolor</i>	White fir	Y	UPL
<i>Achillea millefolium</i>	Common yarrow	Y	FACU
<i>Acmispon nevadensis</i>	Nevada birdsfoot trefoil	Y	NL
<i>Alnus incana</i>	Speckled alder	Y	FACW
<i>Aquilegia formosa</i>	Columbine	Y	FAC
<i>Arctostaphylos</i> sp.	Manzanita	Y	FACU
<i>Artemesia douglasiana</i>	California mugwort	Y	FACW
<i>Artemesia tridentata</i>	Sagebrush	Y	NL
<i>Calocedrus decurrens</i>	Incense cedar	Y	NL
<i>Castilleja miniata</i>	Scarlet paintbrush	Y	FACW
<i>Carex</i> sp.	Sedge	Y	OBL, FACW, FAC, FACU, and UPL (due to unknown species)
<i>Ceanothus leucodermis</i>	Whitethorn	Y	NL
<i>Collomia grandiflora</i>	Grand collomia	Y	NL
<i>Dactylis glomerata</i>	Orchard grass	N	FACU
<i>Delphinium patens</i>	Larkspur	Y	NL
<i>Equisetum arvense</i>	Common horsetail	Y	FAC
<i>Equisetum hyemale</i>	Scouring horsetail	Y	FACW
<i>Festuca idahoensis</i>	Blue fescue	Y	NL
<i>Festuca perennis</i>	Italian rye grass	N	NL
<i>Fragaria vesca</i>	Strawberry	Y	FACU
<i>Heracleum maximum</i>	Common cowparsnip	Y	FAC
<i>Juncus</i> sp.	Rush	Y	OBL, FACW, FAC, and FACU (due to unknown species)
<i>Lomatium multifidum</i>	Fernleaf biscuitroot	Y	NL
<i>Lupinus breweri</i>	Brewer's lupine	Y	NL
<i>Lupinus lepidus</i>	Lobb's lupine	Y	NL
<i>Lupinus polyphyllus</i>	Meadow lupine	Y	FAC
<i>Pinus contorta</i> ssp. <i>murrayana</i>	Lodgepole pine	Y	FAC
<i>Pinus jeffreyi</i>	Jeffrey pine	Y	NL
<i>Pinus ponderosa</i>	Ponderosa pine	Y	FACU
<i>Potentilla recta</i>	Sulphur cinquefoil	N	NL
<i>Rumex crispus</i>	Curly dock	N	FAC
<i>Rosa californica</i>	Wild rose	Y	FAC
<i>Salix lasiolepis</i>	Arroyo willow	Y	FACW
<i>Salix scouleriana</i>	Scouler willow	Y	FAC
<i>Scirpus microcarpus</i>	Mountain bog bulrush	Y	OBL

Scientific Name	Common Name	Native: Y, N	Wetland Indicator Status*
<i>Symphoricarpos mollis</i>	Snowberry	Y	FACU
<i>Trifolium pretense</i>	Red clover	N	FACU
<i>Veratrum californicum</i>	California false hellebore	Y	FAC
<i>Verbascum thapsus</i>	Wooly mullein	N	FACU
<i>Viola pupurea</i>	Goosefoot Violet	Y	NL

* Wetland Indicator Status (WIS):

OBL = Obligate Wetland; occurs in aquatic resources > 99% of time
 FACW = Facultative Wetland; occurs in aquatic resources 67-99% of time
 FAC = Facultative; occurs in aquatic resources 34-66% of time
 FACU = Facultative Upland; occurs in aquatic resources 1-33% of time
 UPL = Obligate Upland; occurs in uplands > 99% of time
 NL = Not Listed

Appendix E

REPRESENTATIVE PHOTOGRAPHS



Photo 1: Soil Pit 1, SP1, looking at the soil pit.



Photo 2: Soil Pit 1, SP1, looking south at vegetation.



Photo 3: Culvert 1a, C1a, looking north at the north side of the road (downstream).



Photo 4: Culvert 1b, C1b, looking south at the south side of the road (upstream).



Photo 5: Upper Truckee River Left Bank, LTR-L, looking south (upstream) across the Upper Truckee River.



Photo 6: Upper Truckee River Right Bank, LTR-R, looking north (downstream) across the Upper Truckee River.



Photo 7: Culvert 2, C2, looking southeast (downstream).



Photo 8: Culvert 2, C2, looking northwest (upstream).



Photo 9: Culvert 3, C3, looking southeast (downstream).



Photo 10: Culvert 3, C3, looking northwest (upstream).



Photo 11: Culvert 5, C5, Roadside ditch (non-jurisdictional), looking west up San Bernardino road.

Appendix F

DELINEATION DATASHEETS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: San Bernardino City/County: El Dorado County Sampling Date: 7-10-19
 Applicant/Owner: El Dorado County State: CA Sampling Point: Soil pit 1
 Investigator(s): Sarah Bryan & Debra Lemke Section, Township, Range: 30, 12, 18
 Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR): Western Mountains Lat: 38.8568606 Long: -120.0277589 Datum: NAD 1983
 Soil Map Unit Name: Celso loamy coarse sand, 0 to 5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? NO Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? NO (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>	
Remarks: <u>yes climatic conditions typical at A wet winter</u>		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u> </u>)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> = Total Cover				
Herb Stratum (Plot size: <u>1m</u>)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u>Wheatgrass Festuca Perennis</u>	<u>40%</u>	<u>Yes</u>	<u>NL</u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u>Bare ground</u>	<u>60%</u>	<u> </u>	<u> </u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u>40</u> <u>Yes</u> <u>NL</u> = Total Cover				
Woody Vine Stratum (Plot size: <u> </u>)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u> </u> = Total Cover				
% Bare Ground in Herb Stratum <u>60</u>				
Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>				
Remarks: <u>Festuca Perennis was the only veg present in at sampling point which is representative of the Area.</u>				

Sampling Point: Soil P-11

HYDROLOGY

Wetland Hydrology Indicators:

Western Mountains, Valleys, and Coast – Version 2.0

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: San Bernardino
Project Number: SD.34.25
Stream: Upper Truckee River
Investigator(s): Debra Lemke & Sarah Bryan

Date: 7-10-19
Town: S. Lake Tahoe
State: CA
Photo begin file#: 1
Photo end file#: 6

Y ☒ / N ☐ Do normal circumstances exist on the site?

Location Details: South Lake Tahoe, CA

Y ☐ / N ☒ Is the site significantly disturbed?

Projection: State Plane CA **Datum:** NAD 1983

Coordinates: 38.857 2456, 120.0267624

Potential anthropogenic influences on the channel system:

Human interaction from the Tahoe Paradise Park

Brief site description:

Flowing river, rock bank on right side, mature vegetation

Checklist of resources (if available):

☒ Aerial photography

Dates:

☒ Topographic maps

☐ Geologic maps

☒ Vegetation maps

☒ Soils maps

☐ Rainfall/precipitation maps

☐ Existing delineation(s) for site

☐ Global positioning system (GPS)

☐ Other studies

☐ Stream gage data

Gage number:

Period of record:

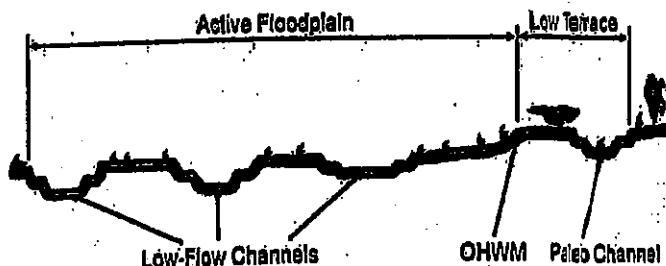
☐ History of recent effective discharges

☐ Results of flood frequency analysis

☐ Most recent shift-adjusted rating

☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
 - a) Record the floodplain unit and GPS position.
 - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
 - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

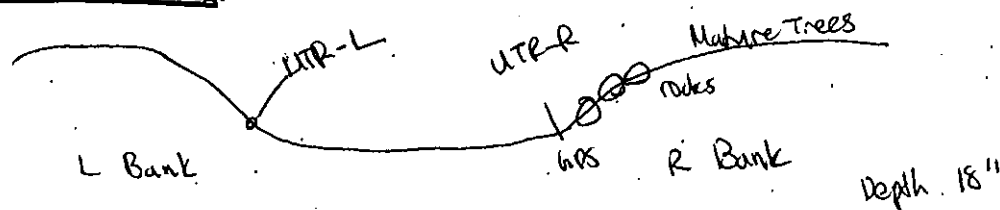
☐ Mapping on aerial photograph
☐ Digitized on computer

☒ GPS
☐ Other:

Project ID: 5012425 Cross section ID:

Date: 7-10-19 Time: 9:15

Cross section drawing:



OHWM

GPS point: LTR-R (Right bank) & LTR-L (Left Bank)

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover

☒ Break in bank slope

☒ Other: Flow

☐ Other: _____

Comments:

Standing on right bank, willows, pines, grasses

Photo 4 LTR-L - Looking Downstream - N
5 " - Upstream SE
6 " " " South

Floodplain unit:

☒ Low-Flow Channel

☐ Active Floodplain

☐ Low Terrace

GPS point: _____

Alders, willow, pine, grasses

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ~~100%~~ 90% Tree: 20% Shrub: 40% Herb: 20% 10% Bareground

Community successional stage:

☐ NA

☐ Early (herbaceous & seedlings)

☐ Mid (herbaceous, shrubs, saplings)

☒ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks

☐ Ripples

☐ Drift and/or debris

☐ Presence of bed and bank

☐ Benches

☐ Soil development

☐ Surface relief

☐ Other: _____

☐ Other: _____

☐ Other: _____

Comments:

Photo 1 - DL phone, looking west across LTR
2 " " " " North (downstream)
3 " " " " " " Right Bank

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: San Bernardino Project Number: El Dorado County Stream: Unnamed Drainage 501-3425 Investigator(s): Sarah Bryan & Debra Lemke		Date: 7-10-19 Town: South Lake Tahoe Photo begin file#: 1 Time: 8:30 State: CA Photo end file#: 4	
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input type="checkbox"/> / N <input checked="" type="checkbox"/> Is the site significantly disturbed?		Location Details: South Lake Tahoe, CA Projection: State Plane, CA Datum: NAD 1983 Coordinates: 38.8568587, 120.0277482 38.8579843, 120.0236065	
Potential anthropogenic influences on the channel system: roadway, near by houses.			
Brief site description: dry channel, mature pine trees, metal culvert under San Bern. Road. Area around culvert is eroded - @ 7' x 8' depression.			
Checklist of resources (if available):			
<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies		<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event	
Hydrogeomorphic Floodplain Units			
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:			
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OHWM and record the indicators. Record the OHWM position via:			
<input type="checkbox"/> Mapping on aerial photograph <input type="checkbox"/> Digitized on computer		<input checked="" type="checkbox"/> GPS <input type="checkbox"/> Other:	

Banks

Project ID: 501.31.25

Cross section ID:

Date: 7.10.19 Time: 8:30

Cross section drawing:

Channel = 12" wide
deep - 0.5"

metal culvert, 24" diameter

OHWM

GPS point:

Culvert 1 (north side of road) downstream
Culvert 1b (south side of road) upstream.

Indicators:

- ☐ Change in average sediment texture
☒ Change in vegetation species
☒ Change in vegetation cover

- ☐ Break in bank slope
☐ Other: _____
☐ Other: _____

Flows to the N

Comments:

metal culvert, partially filled w/ sediment, culvert is
eroded/missing top, little to no slope, very shallow low flow.

no pine trees in drainage, drainage contained
Grass species.

Floodplain unit:

☒ Low-Flow Channel

☐ Active Floodplain

☐ Low Terrace

GPS point:

Culvert 1 + Culvert 1b

Characteristics of the floodplain unit:

Average sediment texture: loam

Total veg cover: _____% Tree: 5% Shrub: _____%

90 bare ground
Herb: 5% (at Culvert 1b)

Community successional stage:

- ☐ NA
☐ Early (herbaceous & seedlings)

- ☐ Mid (herbaceous, shrubs, saplings)
☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches

- ☐ Soil development
☐ Surface relief
☐ Other: _____
☐ Other: _____
☐ Other: _____

Comments:

photos 1 & 2 looking North (a north side of road)
3 looking North (on south side of road)
4 " south

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: San Bernardino
 Project Number: 501.31.25
 Stream: Drainage 2 - culvert 2
 Investigator(s): Debra Lemke & Sarah Bryan
 Date: 7.10.19 Time: 10:00
 Town: South Lake Tahoe State: CA
 Photo begin file#: 7 Photo end file#: 8

Y ☒ / N ☐ Do normal circumstances exist on the site?
 Y ☐ / N ☒ Is the site significantly disturbed?
 Location Details: South Lake Tahoe, CA
 Projection: State Plane CA Datum: NAD 1983
 Coordinates: 38.8557421, 120.133043

Potential anthropogenic influences on the channel system:

neighbors & road crossing

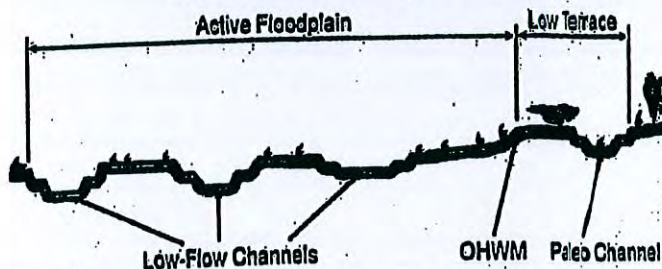
Brief site description:

normal & w/ san. intersection, metal culvert, w/ flow headed
 southeast

Checklist of resources (if available):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Aerial photography | <input type="checkbox"/> Stream gage data |
| Dates: | Gage number: |
| <input checked="" type="checkbox"/> Topographic maps | Period of record: |
| <input type="checkbox"/> Geologic maps | <input type="checkbox"/> History of recent effective discharges |
| <input checked="" type="checkbox"/> Vegetation maps | <input type="checkbox"/> Results of flood frequency analysis |
| <input checked="" type="checkbox"/> Soils maps | <input type="checkbox"/> Most recent shift-adjusted rating |
| <input type="checkbox"/> Rainfall/precipitation maps | <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event |
| <input type="checkbox"/> Existing delineation(s) for site | |
| <input type="checkbox"/> Global positioning system (GPS) | |
| <input type="checkbox"/> Other studies | |

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
 - a) Record the floodplain unit and GPS position.
 - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
 - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

<input type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS
<input type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:

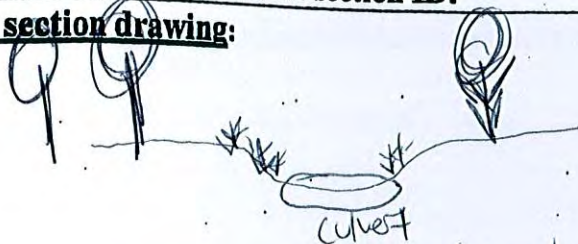
Project ID: 5013425

Cross section ID:

Date: 7-10

Time: 10:00

Cross section drawing:



veg-horsetail, pine

metal culvert, soft-no rock bottom

OHW

GPS point:

Culvert 2

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover

- ☒ Break in bank slope
- ☒ Other: flow-light
- ☐ Other:

Comments:

photo 7 d looking downstream, SE
8 looking upstream NW

Flow 14"

OHW 22" width
1.25' depth

Culvert 52" width, 26" height

Floodplain unit:

☒ Low-Flow Channel

☐ Active Floodplain

☐ Low Terrace

GPS point:

Culvert 2

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)

- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches

- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OTHM Datasheet

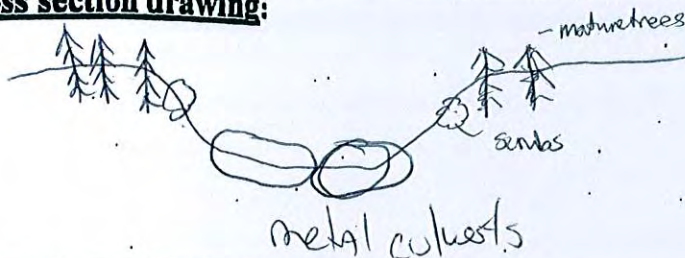
Project: San Bernardino Project Number: 501, 34.25 Stream: Drainage 3 - culvert 3 Investigator(s): Sarah Bryan & Debra Lemke		Date: 7/10/19 Town: South Lake Tahoe State: CA Photo begin file#: 9 Photo end file#: 10	
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input type="checkbox"/> / N <input checked="" type="checkbox"/> Is the site significantly disturbed?		Location Details: South Lake Tahoe, CA Projection: State Plane CA Datum: NAD 1983 Coordinates: 38.8548433, 120.0340748	
Potential anthropogenic influences on the channel system: Road - W. San Berno + nearby Houses			
Brief site description: 2 metal culverts under W. San Bernardino. Flow			
Checklist of resources (if available):			
<input checked="" type="checkbox"/> Aerial photography Dates: <input checked="" type="checkbox"/> Topographic maps <input type="checkbox"/> Geologic maps <input checked="" type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies		<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event	
Hydrogeomorphic Floodplain Units			
Procedure for identifying and characterizing the floodplain units to assist in identifying the OTHM:			
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OTHM and record the indicators. Record the OTHM position via:			
<input type="checkbox"/> Mapping on aerial photograph <input type="checkbox"/> Digitized on computer		<input checked="" type="checkbox"/> GPS <input type="checkbox"/> Other:	

Project ID: 501.34.25

Cross section ID:

Date: 7-10-19 Time: 10:30

Cross section drawing:



OHWM

GPS point:

culvert 3

two metal culverts

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover

- ☒ Break in bank slope
- ☒ Other: flow
- ☐ Other:

Comments:

photo 9 looking downstream - south east
10 11 north west

Culvert 62" across
65" height
OHWM 8 ft
3 inch depth

Floodplain unit:

☒ Low-Flow Channel

☐ Active Floodplain

☐ Low Terrace

GPS point:

Characteristics of the floodplain unit:

Average sediment texture:

Total veg cover: _____ % Tree: 10 % Shrub: 80 % Herb: _____ % Bare ground: 10 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)

- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches

- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Veg: Alder, wheat grass, pine

Appendix G

AQUATIC RESOURCE SPREADSHEET AND GIS METADATA

APPENDIX J

GEOTECHNICAL REPORT