TDS Telecom
Olinda Last Mile Underserved Broadband Project
Shasta County, California

Proponent's Environmental Assessment

Prepared By:
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Prepared For:
TDS Telecommunications Corporation
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525 Junction Road
Madison, Wisconsin 53717

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AMSL	Above Mean Sea Level
AP	Agricultural Preserve
APE	Area of Potential Effect
APM	Applicant's Proposed Measure
AQAP	Air Quality Attainment Plan
AST	Aboveground Storage Tank
B	Building Site District
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BLM	Bureau of Land Management
BMP	Best Management Practice
BRE	Biological Resources Evaluation
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalREN	California Research and Education Network
Caltrans	California Department of Transportation
CAL FIRE	California Department of Forestry and Fire Protection
CARB	California Air Resources Board
CASF	California Advanced Services Fund
CBG	Census Block Group
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDWR	California Department of Water Resources
CEPA	California Environmental Protection Agency
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFE	Coyote & Fox Enterprises
CFR	Code of Federal Regulations
CGP	Construction General Permit
CIPC	California Invasive Plant Council
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Control Office
CO_2 Eq.	CO_2 Equivalent
CPUC	California Public Utilities Commission

CRHR	California Register of Historic Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dBA	A-weighted Decibel Scale
DLC	Digital Loop Carrier
DSA	Digital Served Area
DTSC	Department of Toxic Substances Control
EA	Exclusive Agricultural District
EDR	Environmental Data Resources
EIR	Environmental Impact Report
ENF	Water Board Enforcement Actions
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FRA	Federal Responsibility Area
FWS	U.S. Fish and Wildlife Service
GHG	Greenhouse Gas
GLO	General Land Office
GP	General Plan
GPS	Global Positioning System
GWP	Global Warming Potential
HAZWOPER	Hazardous Waste and Operations and Emergency Response
HCP	Habitat Conservation Plan
HDPE	High Density Polyethylene
HIST	Historic
HUC	Hydrologic Unit Code
I	Interstate
IO	Isolated Occurrence
I.O.O.F.	Independent Order of Odd Fellows
K12HSN	K-12 High Speed Network
LOS	Level of Service
LUST	Leaking Underground Storage Tank
Mbps	Megabits Per Second
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MRZ	Mineral Resource Zone
MSDS	Material Safety Data Sheet
MU	Mixed Use

NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEIC	Northeast Information Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
OBL	Wetland Obligate
OHP	Office of Historic Preservation
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
PEA	Proponent's Environmental Assessment
PF	Public Facilities
PM10, 2.5	Particulate Matter 10 Micron, Particulate Matter 2.5 Micron
PRC	California Public Resources Code
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RGA LUST	Recovered Government LUST Database
ROG	Reactive Organic Gas
ROW	Right-of-way
RPW	Relatively Permanent Water
RR	Rural Residential
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
RWQCB	Regional Water Quality Control Board
SAQMD	Shasta County Air Quality Management District
SCGP	General Plan
SDR	Standard Dimension Ratio
SHPO	State Historic Preservation Office
SHS	Shasta Historical Society
SMARA	Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
SR	State Route
SWEEPS	Statewide Environmental Evaluation and Planning System
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T	Mobile Home District

TDS	TDS Telecom, Inc.
TNW	Traditional Navigable Water
U	Unclassified
USACE	U.S. Army Corps of Engineers
USC	United States Code
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VDSL2	Very High Bit Rate Digital Subscriber Line, 2nd Generation
WDE	Washington State Department of Ecology
WDR	Waste Discharge Requirement
WDS	Waste Discharge System
WRCC	Western Regional Climate Center
WS	Waters of the State of California
WUS	Waters of the U.S.

1.0 SUMMARY

Happy Valley Telephone Company d.b.a. TDS Telecom, Inc. (TDS), proposes to construct the Olinda Last Mile Underserved Broadband Project (the project), which would extend high-speed internet service to an area approximately 51.44 km^2 (19.86 $miles^2$) in size that includes the communities of Happy Valley, Olinda, Igo, and other areas of unincorporated Shasta County, California. The proposed project involves the construction of a second-generation, very-high-bit-rate digital subscriber line (VDSL2) fiber-optic network capable of 25 Mbps/5 Mbps (download/upload) speeds. In total, approximately 24.6 km (15.3 miles) of new fiber-optic cable would be buried within protective conduit along existing roads in the project area.

This Proponent's Environmental Assessment (PEA) includes the information required by the California Public Utilities Commission (CPUC) PEA Guidelines (*CPUC Information and Criteria List*, Appendix B, Section V). This PEA includes a discussion of the purpose and need for the proposed project in Section 2, the project description in Section 3, and the environmental setting, impacts, mitigation measures, and cumulative and growth-inducing impacts in Section 4.

No cumulative impacts, growth-inducing effects, or indirect effects were identified for the proposed project. Lists of references are included after each resource area in Section 4, and a list of the PEA preparers is included in Section 5 of this document.

2.0 PROJECT PURPOSE AND NEED

2.1 Overview

The CPUC approved funding in the amount of $1,833,689.00 from the California Advanced Services Fund (CASF) for the Olinda Last Mile Underserved Broadband Project. The project, which would be constructed and operated by the Happy Valley Telephone Company d.b.a. TDS, would extend high-speed internet service to an area approximately 51.44 km^2 (19.86 $miles^2$) in size that includes the communities of Olinda, Happy Valley, and Igo and other areas of unincorporated Shasta County, California.

TDS has been building broadband networks utilizing technologies similar to this project for the past decade and currently provides both voice and limited broadband services in the project area. The project would implement VDSL2 technology at the two central offices in the project area, as well as at numerous existing and proposed digital loop carrier (DLC) sites in order to provide high-speed internet service across the project area. The U.S. Census Block Groups (CBGs) impacted by the project area include 060890123021, 060890123022, 060890123023, 060890123024, 060890123031, 060890123032, 060890124002, and 060890124003.

TDS has targeted the area for broadband deployment because of existing customer demand and because they determined that the project is economically feasible with the assistance of a CASF grant of $1,833,689.00 (60 percent of the project costs) to match TDS's funding of $1,222,459.00. When completed, the project would reach an estimated 1,908 households at the maximum advertised speeds of 25 Mbps/5 Mbps, which is above the served threshold of 6 Mbps/1.5 Mbps. TDS estimates that the project would initially yield 152 new subscriber households and that 368 existing customers will upgrade their service in the project area. In addition to residential customers, the project area includes five anchor institutions that may benefit from the project, including

Igo-Ono Elementary School, Happy Valley Primary School, Happy Valley Community Day School, Happy Valley Union Elementary School, and Happy Valley Elementary School.

2.2 Project Objective

The proposed project's objective is to make affordable broadband Internet services available to currently underserved areas in Shasta County.

3.0 PROJECT DESCRIPTION

3.1 Project Location

The project area is located in southwestern Shasta County, California, west of the City of Anderson and the Sacramento River. Specifically, the project area is located in portions of Sections 27, 34, and 35, Township 31 North, Range 6 West; Sections 1 and 2, Township 30 North, Range 6 West; and Sections 5–11, 14–17, 19–24, 26, and 27, Township 30 North, Range 5, West Mount Diablo Meridian, as depicted on the Olinda, Ono, and Igo, CA, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps (Figures 1 and 2).

3.2 Existing System

TDS's existing land-based telecommunications system in the project area consists of direct-buried copper lines and is able to provide basic telephone and 911 services. The copper lines in the project area are connected to one of six DLCs. The first DLC is located at the TDS Central Office (CO) in Igo and serves the 34206 Digital Serving Area (DSA). The second DLC, located just east of Dale Lane on Cloverdale Road, serves the 34405 DSA, and the third DLC, located at China Gulch Drive and Oak Street, serves the 34404 DSA. The fourth DLC is a CO located at the intersection of Palm Avenue and Monte Vista Road that serves the 34400 DSA. The fifth DLC, located on Treat Avenue, serves the 34401 DSA, and the sixth DLC, located at Coyote Lane and Linnie Lane, serves the 34403 DSA. Dial-up Internet services are available in all six of the existing DSAs, but the data transfer rate is limited to a non-broadband speed of 56 Kbps under the International Telecommunications Union V92 standard.

3.3 Proposed Project

The proposed project involves the construction of a VDSL2 fiber-optic network capable of 25 Mbps/5 Mbps (download/upload) speeds. In total, approximately 24.6 km (15.3 miles) of new fiber-optic cable will be buried within protective conduit along existing roads in the project area. The buried line installation, which consists of the telecommunications cable and its protective conduit, will be performed using plowing and trenching construction techniques, and a directional boring machine will be used to install the line at waterway and road crossings. Ancillary equipment to be installed includes seven new equipment cabinets that will serve as connecting "nodes" for customers, splice boxes, and line markers. The equipment cabinets will be approximately 0.6 by 1.0 by 1.2 m (2.0 by 3.0 by 4.0 feet) in size and will be installed on top of buried vaults within an approximately 6-m-square (20-foot-square) area. Splice boxes are small, rectangular metal enclosures that will be installed between lengths of cable. Line markers, which will be installed at intervals of approximately 305 m (1,000 feet), are approximately 1.2 m (4.0 feet) tall and made of flexible fiberglass. Electrical power for the new DLC sites would be provided by Pacific Gas and Electric from existing aerial distribution lines located immediately adjacent to each site. Project plans are included in Appendix A.

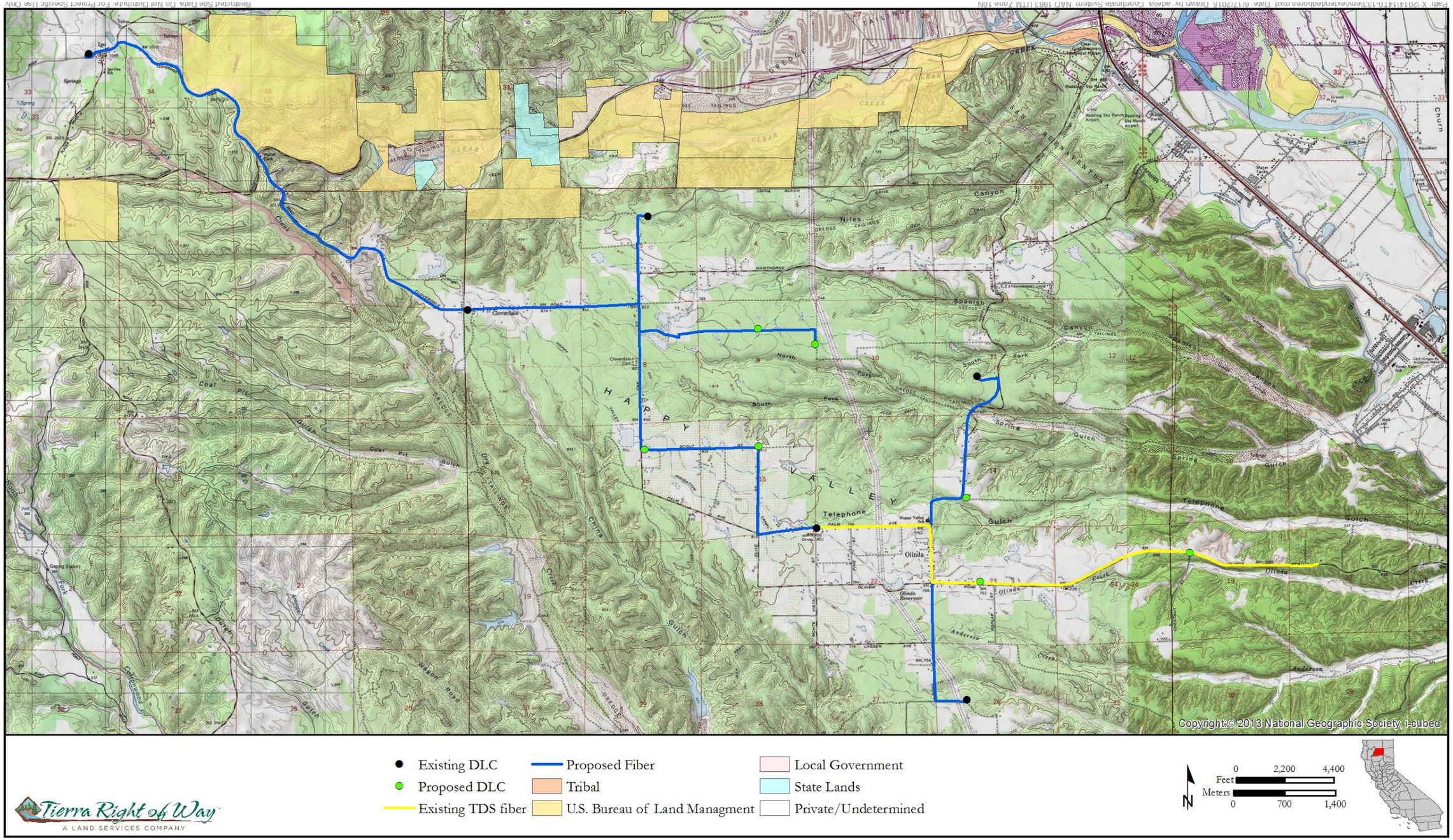

Figure 1. Project location.

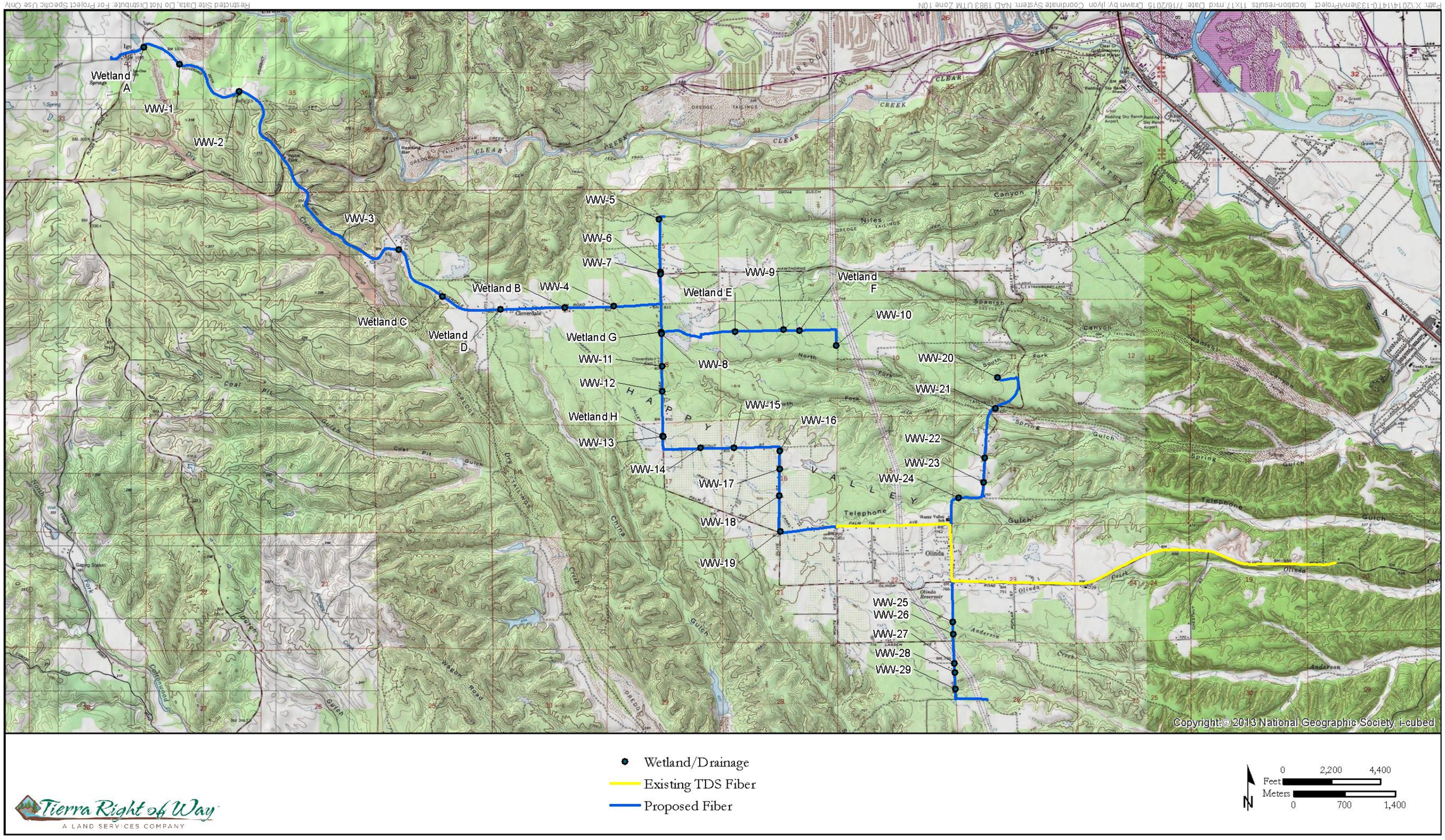

Figure 2. General project area

3.4 Project Components

The proposed project would consist of the following components:

- Installation of approximately 24,564 m (80,590 feet) of 96-count, shielded fiber-optic telecommunications cable within protective 3.20-cm-diameter (1.25-inch-diameter), high-density polyethylene (HDPE), standard dimension ratio (SDR) 11 conduits.
- Installation of seven equipment cabinets on top of new buried epoxy composite vaults at DLC sites that would serve as telecommunications nodes.
- Clean-up and site restoration following construction.

3.5 Right-of-way (ROW) Requirements

The majority of the proposed installations associated with the project would occur along County roads and would require ROW encroachment permits from Shasta County. The remaining installations located along private roadways would occur within existing easements that TDS currently holds grants for, and no additional ROW would be required.

3.6 Construction

3.6.1 Staging Areas

No staging areas would be required in the project area during construction of the proposed project. All equipment and material staging would take place either at the Igo and/or Happy Valley Central Offices or at individual contractors' off-site yards.

3.6.2 Communications Line Installation

The line installation would be performed in three steps. First, protective conduit for the fiber-optic cable would be installed by plowing, trenching, or directional boring construction methods. Second, the conduit would be prepared to receive the fiber-optic cable by a process known as pigging. This process involves forcing a cleaning sponge, or pig, through the conduit using compressed air to clean and lightly lubricate the inside of the conduit. The lubricant used during the conduit pigging process is a mineral-based oil containing silicone. Third, the fiber-optic cable would be blown through the conduit using compressed air. The total combined ground disturbance associated with the project, including both the plowed/trenched and bored installations, would not exceed an area approximately 2.8 ha (6.8 acres) in size.

3.6.2.1 Plowed and Trenched Installation

Approximately 11,328 m (37,165 feet) of the proposed installations would be performed using plowing or trenching construction techniques. Plowed conduit is installed using a track-type bulldozer equipped with a specialized single ripper that loosens the soil along the installation path. Conduit is fed either from the plow bulldozer or from a separate truck-mounted reel through a plow chute attached to the ripper and laid directly at a nominal depth of 1.0 m (3.3 feet). A compaction machine follows directly behind the plow bulldozer and restores the ground surface to its original contour. The installation path may be pre-ripped by a second bulldozer, if necessary, to loosen the soil in areas where subsurface rock or other buried obstructions may be present. This second bulldozer may also, in some cases, be attached to the plow bulldozer to provide additional pulling

power for the plowing operation. Ground disturbance associated with the plowed installation would be limited to an approximately 2.4-m-wide (8.0-foot-wide) corridor.

In areas that are too narrow for plowing equipment to be used and where directional boring is not required to avoid surface disturbance, trenching construction techniques will be used for the conduit installations. Typically, a backhoe would be used to dig the required trench, although a compact excavator may be used in areas that are exceedingly narrow. The nominal trench depth would be the same as for plowed installations, but the disturbance width would be less.

3.6.2.2 Directional Bore Installation

Approximately 13,236 m (43,425 feet) of the proposed installations would be performed using directional boring construction techniques. Directional boring is a method used to install utility lines under waterways and roads and in other areas where the avoidance of surface disturbance is desirable (Figure 3). Directional boring machines are essentially horizontal drilling rigs with a steerable drill bit. Each bore begins with the creation of a pilot hole, through which the drill bit is guided by the operator as it progresses along the desired boring path. After the pilot hole has been bored, conduit is attached to the end of the drill string, and the conduit is pulled back through the bore.

Two boring pits for bore ingress and egress would be required for each bored installation—one on either side of the bore. These bore pits would be located at varying distances from the waterways and roads. The depth of the bore would be a minimum of 1.5 m (5.0 feet) below the bed of the waterway or surface of the road, and the bore lengths would be variable. The bores would be of sufficient diameter to accommodate the 5-cm (2-inch) conduit and would be drilled using drilling fluid mud. This mud is nontoxic, consisting of clay, bentonite, and water; it would be disposed of accordingly. Following the installation of the conduit beneath the waterway or road, the bore pits would be filled in and compacted, and the ground surface would be restored to its original contour. Ground disturbance associated with the bored conduit installations would occur within the same 2.4-m-wide (8.0-foot-wide) corridor as the plowed installations.

3.6.3 Node Installation

Communications node (DLC) installation would begin with the excavation of a hole measuring 1.0 m long by 2.0 m wide by 1.2 m deep (3.0 feet long by 6.0 feet wide by 4.0 feet deep) using a backhoe. An epoxy composite vault would then be placed within this hole, the hole would be backfilled, and the location of the vault would be covered with gravel after the subsurface connections to the associated telecommunications lines are made. The vault cover would then be installed, onto which an equipment cabinet would be bolted to serve as the connecting point between the new fiber-optic lines and customers' copper service drops.

3.6.4 Cleanup and Surface Restoration

Following the telecommunications line and DLC installations, TDS and/or their contractors would promptly perform site clean-up and surface restoration. Clean-up would include removing all construction debris, and surface restoration would involve returning the surface contours of disturbed areas to their pre-construction condition. Recyclable materials including glass, metal, and most plastic food containers; wood and cardboard packaging; and HDPE conduit remnants will be collected daily in appropriately labeled containers.

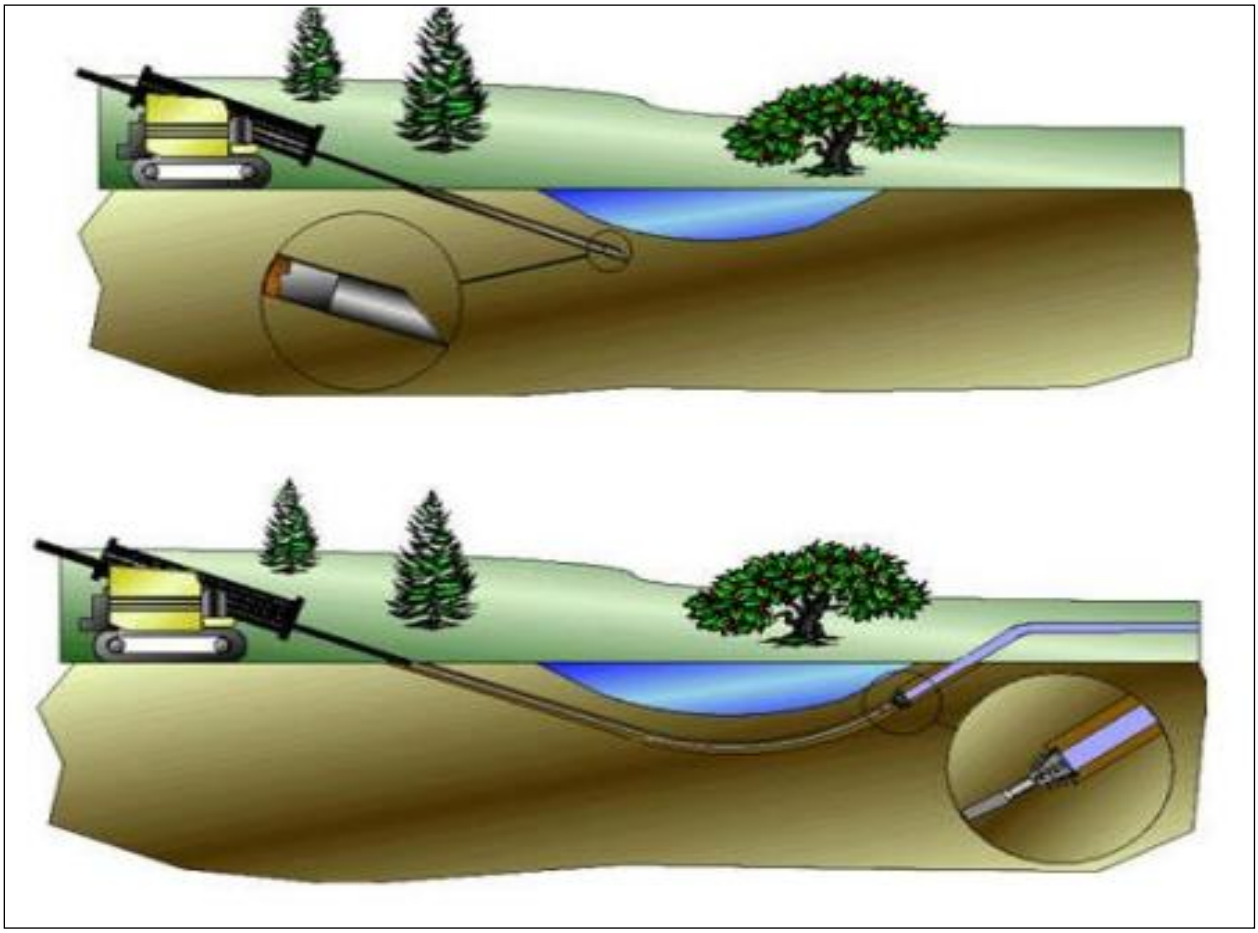

Figure 3. Example of a directional bore beneath a waterway.

Non-recyclable items, such as treated wood and foam packaging, fiber-optic cable remnants, and coated paper products, will also be collected in labeled containers on a daily basis. It is anticipated that 80 percent of the solid waste generated during construction would be recyclable; the remaining 20 percent would be disposed of in a local landfill.

3.6.5 Construction Workforce and Equipment

Preliminary construction workforce estimates indicate that one plow/trenching crew, two directional-boring crews, one splice crew, and one clean-up crew would be required to install the telecommunications lines associated with the project; each of these crews would consist of three to four workers. An additional two-person crew would be needed to construct the node sites. All work crews are anticipated to work 10-hour days Monday through Friday and not on weekends.

Construction equipment necessary to complete the installations is anticipated to consist of:

- Two D5-class bulldozers for the plowed installations.
- Two directional boring machines (Vermeer D20x22 S3 or equivalent).
- Two trailer-mounted mud-sucker pumps for drilling mud evacuation and recovery.
- Two backhoes (Case 580x or equivalent).
- One compact excavator (Bobcat E26 or equivalent).
- One medium-duty (5-ton), spray-bar-equipped water truck for dust control.
- One medium-duty (2.5–5.0-ton) flatbed truck for reel and underground vault delivery.
- Two trailer-mounted air compressors for conduit pigging and blowing fiber-optic line.
- Three to four light-duty pickups (0.50- and 0.75-ton) for crew transport.

3.6.6 Construction Schedule

The anticipated start date for the proposed project is late March 2016. Construction would take approximately two months.

3.7 Operation and Maintenance

Operation and maintenance (O&M) activities associated with the new telecommunications network are expected to be minimal, because, once installed, fiber-optic cable is essentially maintenance-free. Occasional visits by TDS technicians to the DLC sites would be required to disconnect and connect customers, and air filters in the DLC equipment cabinets would require periodic inspections and cleaning. None of these O&M activities would involve ground disturbance.

3.8 Applicant-Proposed Measures

TDS has incorporated Applicant-Proposed Measures (APMs) into the proposed project to avoid significant impacts on the environment and to reduce any potential impacts to less-than-significant levels. Implementation of these APMs, together with the limited nature of TDS's construction activities and their location along highly disturbed County road ROWs, ensures that the proposed project would not significantly affect the environment.

APM AQ-1: TDS will require all construction contractors to implement the following measures for fugitive Particulate Matter (PM) less than 10 microns in diameter (PM10) control during construction:

- All disturbed areas, including bulk material storage that is not being actively utilized, shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps, or other suitable material such as vegetative ground cover.
- All on- and off-site unpaved roads will be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by non-toxic chemical stabilizers, dust suppressants, and/or watering.

- All track-out and carry-out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 15 linear m (50 linear feet) or more onto a paved road within an urban area.
- Bulk material shall be stabilized prior to movement or at points of transfer with the application of sufficient water, the application of chemical stabilizers, or by sheltering or enclosing the operation and transfer line.
- Vehicle speed for all construction vehicles shall not exceed 24.1 km (15.0 miles) per hour on any unpaved surface at the construction site.

APM BIO-1: All waterways and wetlands in the project area will be bored beneath and avoided during construction.

APM BIO-2: Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of waterway banks or the maximum extent of any vegetation present along the waterways' margins.

APM BIO-3: Bore pits will be placed a minimum distance of 76 m (250 feet) beyond either the edge of seasonal wetlands or the maximum extent of any vegetation present along the wetlands' margins.

APM BIO-4: A Stormwater Pollution Prevention Plan (SWPPP) will be developed and will include Best Management Practices (BMPs) that will be implemented during construction to minimize or eliminate sediment transport from areas subject to ground disturbance.

APM BIO-5: All orchards will be avoided during construction.

APM BIO-6: No trees will be removed during project construction. If vegetation trimming is required to complete the installations, trimming will be kept to the absolute minimum necessary.

APM CR-1: Happy Valley Ditch will be avoided via subsurface boring.

APM CR-2: Cloverdale Cemetery and the Igo Inn will be avoided by rerouting the fiber-optic lines to the opposite side of the road.

APM CR-3: In the event that undiscovered historical or archaeological resources are encountered by construction personnel, all ground-disturbing activities within 30.5 m (100.0 feet) of the find in non-urban areas and 15.2 m (50.0 feet) in urban areas will be temporarily halted or diverted and a qualified archaeologist will be contacted to assess the discovery.

APM CR-4: If human remains are discovered or recognized in any location, construction personnel will suspend further excavation or disturbance of the site and any nearby areas reasonably suspected to overlie adjacent human remains until the County coroner has been informed and has determined that no investigation of the cause of death is required.

APM CR-5: In the event that fossil remains are encountered by construction personnel, qualified paleontological specialists will be contacted. Construction within 30.5 m (100.0 feet) of the find in non-urban areas and 15.2 m (50.0 feet) in urban areas will be temporarily halted or diverted until a qualified vertebrate paleontologist examines the discovery.

APM GEO-1: TDS will require the contractor to manage construction-induced sediment and excavated spoils in accordance with the requirements of the State Water Resources Control Board (SWRCB) and U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permits for stormwater runoff associated with construction activities.

APM GEO-2: Prior to the onset of construction, TDS or its authorized contractor will complete a SWPPP that outlines BMPs to control discharges from construction areas.

APM GEO-3: No construction-related materials, wastes, spills, or residues will be discharged from the project.

APM GEO-4: The staging of construction materials, equipment, and excavation spoils will be performed outside of drainages.

APM GEO-5: Excavated or disturbed soil will be kept within a controlled area surrounded by a perimeter barrier that may include silt fence, hay bales, straw wattles, or a similarly effective erosion-control technique that prevents the transport of sediment from a given stockpile.

APM GEO-6: All stockpiled material will be covered or contained in such a way that off-site runoff is eliminated.

APM GEO-7: Upon completion of construction activities, excavated soil will be replaced and graded so that post-construction topography and drainage matches pre-construction conditions.

APM GEO-8: Surplus soil will be transported from the site and disposed of appropriately.

APM HAZ-1: TDS and/or their contractor will ensure proper labeling, storage, handling, and use of hazardous materials in accordance with BMPs and the Occupational Safety and Health Administration's (OSHA's) Hazardous Waste and Operations and Emergency Response (HAZWOPER) requirements.

APM HAZ-2: TDS and/or their contractor will ensure that employees are properly trained in the use and handling of hazardous materials and that each material is accompanied by a Material Safety Data Sheet (MSDS).

APM HAZ-3: Any small quantities of hazardous materials stored temporarily in staging areas will be stored on pallets within fenced and secured areas and protected from exposure to weather. Incompatible materials will be stored separately, as appropriate.

APM HAZ-4: All hazardous waste materials removed during construction will be handled and disposed of by a licensed waste disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility to the extent necessary to ensure the area can be safely traversed.

APM HAZ-5: Spill clean-up kits would be provided and kept on-site during construction, and equipment would remain in good working order to prevent spills. Significant releases or threatened releases of hazardous materials will be reported to the appropriate agencies.

APM HAZ-6: Workers shall be instructed regarding the danger of wildland fire and the need to carefully park equipment in areas without dry, brushy vegetation. All work vehicles shall be equipped with a working fire extinguisher. All cigarettes and trash shall be disposed of in proper containers and taken off-site at the end of the day.

APM NOI-1: All construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m. Monday through Friday. No construction operations shall occur on weekends or holidays or during nighttime hours.

APM TRA-1: TDS and/or their contractors will require the project contractor to obtain all necessary local road encroachment permits prior to construction and will comply with all the applicable conditions of approval.

APM TRA-2: As deemed necessary by the applicable jurisdiction, the road encroachment permits may require the contractor to prepare a traffic control plan in accordance with professional engineering standards prior to construction.

APM TRA-3: TDS and/or their contractors will develop circulation and detour plans to minimize impacts to local street circulation. This will include the use of signing and flagging to guide vehicles through and/or around the construction zone.

APM TRA-4: TDS and/or their contractors will schedule truck trips outside of peak morning and evening commute hours.

APM TRA-5: TDS and/or their contractors will limit lane closures during peak hours to the extent possible.

APM TRA-6: TDS and/or their contractors will include detours for bicycles and pedestrians in all areas potentially affected by project construction.

APM TRA-7: TDS and/or their contractors will install traffic control devices as specified in the *California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones*.

APM TRA-8: TDS and/or their contractors will coordinate with local transit agencies for the temporary relocation of routes or bus stops in work zones as necessary.

3.9 Key Permits and Approvals

Key permits and approvals necessary for the construction of the proposed project are presented below in Table 3.3.

Table 3.3. Permits and Approvals Required for Construction

Agency	Permit/Approval	Status
California Public Utilities Commission	MND	pending
Shasta County	Encroachment Permit	pending

Key: MND = Mitigated Negative Declaration.

4.0 ENVIRONMENTAL SETTING AND IMPACT ASSESSMENT SUMMARY

The following sections (4.1–4.15) evaluate the potential environmental impacts of construction and operation of the proposed project. In accordance with the California Environmental Quality Act (CEQA), the environmental impacts associated with the project components are evaluated for the following resource areas:

- Aesthetics
- Agricultural Resources
- Air Quality and Greenhouse Gases
- Biological Resources
- Cultural Resources
- Geology, Soils, and Seismic Potential
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services/Utilities and Service Systems
- Recreation
- Transportation and Traffic

Sections 4.1–4.15 include discussions of the existing conditions as they pertain to each resource area, as well as the project's potential impacts to these resources. Additionally, within each section, a checklist is provided summarizing the level of impact (i.e., No Impact, Less Than Significant Impact, Less Than Significant Impact with Mitigation Measures, and Significant Impact) to these resource areas according to the significance criteria used for analysis. An assessment of growth-inducing, indirect, and cumulative impacts for each resource category is provided in Section 4.16.

With the incorporation of APMs, the project will result in less than significant impacts in all resource categories. APMs to be implemented in order to ensure that all potential impacts are less than significant are discussed in their relevant sections and are summarized above in Section 3.8.

4.1 Aesthetics

4.1.1 Affected Environment

4.1.1.1 Regulatory Setting

Federal

There are no applicable Federal regulations or policies related to aesthetics.

State

California Scenic Highway Program

In 1963, the California Legislature created the Scenic Highway Program to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The State regulations and guidelines governing the Scenic Highway Program are found in Section 260 et seq. of the Streets and Highways Code. A highway may be designated as scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the travelers' enjoyment of the view.

Local

The Shasta County General Plan (SCGP) includes goals and objectives related to visual resources (Shasta County 2004). These policies are listed below.

SH-a To protect the value of the natural and scenic character of the official scenic highway corridors and the County gateways dominated by the natural environment, the following provisions, along with the County development standards, shall govern new development:

- setback requirements
- regulations of building form, material, and color
- landscaping with native vegetation, where possible
- minimizing grading and cut and fill activities
- requiring use of adequate erosion and sediment control programs
- siting of new structures to minimize visual impacts from highway
- regulation of the type, size, and location of advertising signs
- placement of utility lines shall be underground wherever possible; where undergrounding is not practical, lines should be sited in a manner that minimizes their visual intrusion

4.1.1.2 Project Setting

According to the SCGP, the County's scenic resources are both varied and remarkable. The County contains two major river valleys (the Sacramento and Fall River valleys) and three major mountain ranges (the Coast, Klamath, and Cascade ranges).

Several major highways in the County have been officially designated as State Scenic Highways including State Route (SR)-151 and County Roads near Shasta Lake. Portions of SR-89 are designated historic parkways. In addition, several major roadways have been identified as eligible as State-designated scenic highways, including portions of I-5, SR-44, SR-89, and SR-299. None of these roadways are located in or near the project area.

The topography of the project area is highly variable, ranging from relatively flat in the eastern portion of the project area to mountainous rolling terrain at the north and western ends of the project area. The corridor traverses two rural agricultural communities, rural agricultural land, orchards, and a Bureau of Land Management (BLM)-managed recreation area. Within the communities of Happy Valley and Igo, buildings range from one to two stories, and distant views are obstructed by buildings and landscaping trees. Project corridor roadways provide scenic views of both agricultural land and wildlands. Views in the eastern portion of the project area are dominated

by agricultural fields and orchards with intermittent views of distant mountains. In the western portion of the project area, Cloverdale Road runs along a ridge line, offering distant views of forested hillsides and the Clear Creek Greenway. In 2013, the Clover fire destroyed much of the vegetation. Although this provided increased viewsheds, currently the views are primarily of burned acreage.

The primary viewers of the proposed telecommunications facilities would include local residents, tourists, and employees of existing businesses.

4.1.2 Environmental Effects

4.1.2.1 Significance Criteria

An impact related to aesthetics was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.
- Substantially degrade the existing visual character or quality of a site and its surroundings.
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

4.1.2.2 Impacts and Mitigation Measures

Impact AES-1: Adverse Impact on a Scenic Vista (Less Than Significant)

Construction of the proposed project would result in temporary impacts to the visual resources of the project area. These short-term impacts would be due to the presence of equipment and work crews during the installations. The equipment used would be similar in character to the agricultural equipment that is currently used in the fields adjacent to the project corridor. Following construction, aboveground facilities including seven new equipment cabinets and several splice pedestals painted in Warm Gray, which will match the colors of the adjacent terrain, would be visible along the roads in the project area. These new facilities would be in character with the existing utility cabinets and pedestals found along the roads. These impacts to scenic vistas would be less than significant.

Impact AES-2: Substantially Damage Scenic Resources Including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings within a State Scenic Highway (No Impact)

There are no State-designated scenic highways in the project area (California Department of Transportation [Caltrans] 2015), and the project would not require removal of trees, rock outcroppings, historic buildings, or other scenic resources; therefore, there would be no impact to scenic resources.

Impact AES-3: Substantially Degrade the Existing Visual Character or Quality of a Site and Its Surroundings (Less Than Significant)

Construction of the proposed project would result in temporary impacts to the visual resources of the project area. These short-term impacts would be due to the presence of equipment and work crews during the installations. The equipment used would be similar in character to the agricultural equipment that is currently used in the fields adjacent to the project corridors.

Following construction, aboveground facilities including seven new equipment cabinets and several splice pedestals painted in Warm Gray, which will match the colors of the adjacent terrain, would be visible along the roads in the project area. These new facilities would be in character with the existing utility cabinets and pedestals found along the roads. These impacts to the visual character of the area would be less than significant.

Impact AES-4: Create a New Source of Substantial Light or Glare that Would Adversely Affect Daytime or Nighttime Views in the Area (No Impact)

The proposed project does not include the installation of new sources of light or glare. Installation would occur during daylight hours and would not require lighting the work area. Therefore, there would be no impacts related to light or glare.

4.1.3 References

California Department of Transportation (Caltrans)

2015 Officially Designated State Scenic Highways and Parkways. Available at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm. Accessed June 10, 2015.

4.2 Agricultural Resources

4.2.1 Affected Environment

4.2.1.1 Regulatory Setting

Federal

No Federal regulations or policies related to agricultural resources apply to the proposed project.

State

Farmland Mapping and Monitoring Program

California established the Farmland Mapping and Monitoring Program (FMMP) in 1982 to continue the Important Farmland Inventory efforts begun by the Natural Resources Conservation Service (NRCS) in 1975. The FMMP is a non-regulatory program intended to aid in assessing the location, quality, and quantity of agricultural lands and the conversion of such lands over time. The FMMP provides consistent and impartial data for the analysis of agricultural land uses and land use changes in California. Under the FMMP, the first Important Farmland Maps were produced in 1984, covering 38 of the State's 58 Counties. Current maps, released every 2 years, cover almost 98 percent of the State's privately held land (California Department of Conservation 2015a). The FMMP rates agricultural land according to soil quality and irrigation status within the designations discussed below.

Prime Farmland: Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion.

Unique Farmland: Unique Farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops such as citrus, tree nuts, olives, cranberries, fruits, and vegetables.

Farmland of Statewide Importance: Farmland of Statewide Importance is land of statewide or local importance, but not of national significance, that has been identified by State or local agencies for agricultural use.

Farmland of Local Importance: Farmland of Local Importance is land identified as important to the local agricultural economy by each County's board of supervisors and a local advisory committee.

Williamson Act

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is a State policy administered at the local government level. The Williamson Act is intended to preserve agricultural and open-space lands through contracts with private landowners. By entering into a Williamson Act contract, the landowner foregoes the possibility of converting agricultural land to nonagricultural use for a rolling period of 10 years in return for lower property taxes. Local governments receive an annual subvention of foregone property tax revenues from the State via the Open Space Subvention Act of 1971.

Of California's 58 Counties, 53 have adopted the Williamson Act program, including Shasta County. However, beginning in budget year 2008–2009, California drastically reduced subvention reimbursements to Counties as part of a plan to phase out the program. In 2009–2010, California Governor Arnold Schwarzenegger cut State subvention funding to $1,000, essentially eliminating State support for the program. In response to these funding cuts, Shasta County filed non-renewal on all Williamson Act contracts, effective January 2011 and covering 117,246 acres; however, pursuant to California Government Code Section 51246, the contracts remain in full force and effect until their termination dates.

Local

Shasta County General Plan

The Agricultural Element of the SCGP serves as the principal statement for implementing development policies for agricultural land use in the County. The objectives and policies found within the Agricultural Element provide direction for new development, as well as government actions and programs. Shasta County's objectives are intended to serve as a long-term commitment regarding future growth, development, and quality of life within the County. The SCGP provides an overall framework for maintaining agriculture including the following objectives:

AG-1 Preservation of agricultural lands at a size capable of supporting full-time agricultural operations (designated on the land use maps as A-C or A-G) in order to allow the continuation of such uses and to provide opportunities for the future expansion and/or establishment of such uses.

AG-2 Preservation of agricultural lands at a size capable of supporting part-time or second income, but not full-time, agricultural operations (designated on the land use maps as A-cg) in order to allow the continuation of such uses and to provide opportunities for the future expansion and/or establishment of such uses.

AG-5 Protection of agricultural lands from development pressures and or uses that will adversely impact or hinder existing or future agricultural operations.

AG-6 Protection of water resources and supply systems vital for the continuation of agriculture.

The following policy addresses nonagricultural development on agricultural lands:

> The site planning, design, and construction of on-site and off-site improvements for nonagricultural development in agricultural areas shall avoid unmitigatable short- and long-term adverse impacts on facilities, such as irrigation ditches, used to supply water to agricultural operations (SCGP Agricultural Element AG-h).

4.2.1.2 Project Setting

As of 2007, Shasta County contains 1,473 farms making up a total land area of 158,156 ha (390,812 acres). The main agricultural commodities of the County, as ranked in the *California Agricultural Resources Directory 2009,* include forest products, cattle and calves, hay, nursery stock, and wild rice. The SCGP recognizes the importance of agricultural resources and the industry as a significant component of the County's economic base. According to the SCGP, there has been a continuous trend of small-scale farming in Shasta County since the late 1960s in which the number of farms in the country increased, but the size of the farms decreased. Provisions within the SCGP are directly related to small-scale agriculture (Shasta County 2004).

The proposed project traverses several agricultural areas classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland by the FMMP (California Department of Conservation 2015b). Surrounding zoning of the project area includes Agricultural Preserve (AP), Exclusive Agricultural District (EA), and Limited Agriculture (A-1) (see Section 4.9, Land Use). The AP and EA districts are intended to preserve lands with agricultural value in the region.

Agricultural land use observed in the project area during the biological evaluation surveys was primarily olive orchards. Forested land was observed during the surveys along the western portion of Cloverdale Road and also north of Spring Gulch along Happy Valley Road.

4.2.2 Environmental Effects

4.2.2.1 Significance Criteria

An impact related to agriculture was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.
- Conflict with existing zoning for agricultural use or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 122220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g]).
- Result in the loss of forest land or conversion of forest land to non-forest use.
- Result in other changes in the existing environment that, due to their location or nature, could result in the conversion of farmland to nonagricultural use or conversion of forest land to non-forest use.

4.2.2.2 Impacts and Mitigation Measures

Impact AG-1: Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as Shown on the Maps Pursuant to the FMMP of the California Resources Agency, to Nonagricultural Use (No Impact)

The proposed project would not result in the conversion of farmland to nonagricultural use because the proposed installations would occur along existing roads, and the orchards located next to the project alignment would be avoided during construction (see APM BIO-5). There would be no impact.

Impact AG-2: Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract (No Impact)

There would be no conflicts with existing zoning regulations for agricultural areas or Williamson Act contracts, because the proposed installations would occur along existing roads, and orchards located next to the project alignment would be avoided during construction (see APM BIO5). The project will not convert lands to non-agricultural uses or adversely impact agricultural water supply or irrigation ditches. There would be no impact.

Impact AG-3: Conflict with Existing Zoning for, or Cause Rezoning of, Forest Land, Timberland, or Timberland Zoned as Timberland Production (No Impact)

There is no zoned forested land in the project area; therefore, the proposed project would have no impact on any zoning regulations designating forest land. There would be no impact.

Impact AG-4: Result in the Loss of Forest Land or Conversion of Forest Land to Non-Forest Use (No Impact)

Although there is forested land located next to portions of the project corridors, this forest does not extend into the areas of the proposed installations. Therefore, the proposed project would not result in the loss or conversion of forested land, and there would be no impact.

Impact AG-5: Involve Other Changes in the Existing Environment that, Due to their Location or Nature, Could Result in Conversion of Farmland to Nonagricultural Use or Conversion of Forest Land to Non-Forest Use (No Impact)

The proposed project would not result in the conversion of farmland to nonagricultural use because the proposed installations would occur along existing roads, and the orchards located next to the project alignment would be avoided during construction (see APM BIO-5). There would be no impact.

4.2.3 References

California Department of Conservation

2015a California Important Farmland Finder. Available at: http://maps.conservation.ca.gov/ ciff/ciff.html. Accessed July 16, 2015.

2015b The California Land Conservation Act 2014 Status Report: *The Williamson Act*. Available at: http://www.consrv.ca.gov/dlrp/lca/stats_reports/Documents/2014% 20LCA %20Status%20Report_March_2015.pdf. Accessed June 12, 2015.

Shasta County

2004 *Shasta County General Plan*. County of Shasta Planning Division, Redding, California.

2015 *Shasta County Internet Zoning Viewer*. County of Shasta Planning Division, Redding, California. Available at: http://gis.co.shasta.ca.us/Zoning/. Accessed May 15, 2015.

4.3 Air Quality and Greenhouse Gases

4.3.1 Affected Environment

4.3.1.1 Regulatory Setting

Air quality and climate change are addressed by the Federal Clean Air Act (CAA) and California Clean Air Act (CCAA) and by local air district planning pursuant to the Acts. At the Federal level, the EPA administers the CAA. In California, the CCAA is administered by the California Air Resources Board (CARB) at the State level and by Air Quality Management Districts at the regional and local levels. The Shasta County Air Quality Management District (SAQMD) has local jurisdiction over the proposed project area.

Criteria Pollutants

The EPA and CARB have established national ambient air quality standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), respectively, for the following six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), lead (Pb), and PM, including PM10 and PM less than 2.5 microns in diameter (PM 2.5).

The local air districts develop air quality and air pollutant regulations and prepare air quality plans that set goals and measures for achieving attainment with NAAQS and CAAQS. The districts also develop emissions inventories, collect air-monitoring data, and perform dispersion modeling simulations to establish strategies that will reduce emissions and improve air quality. As part of an

effort to attain and maintain NAAQS and CAAQS, the SAQMD has established and adopted thresholds of significance for criteria pollutants of greatest concern within the district (Shasta County 2004).

Shasta County has two levels of criteria pollutant thresholds that are used to determine the appropriate level of mitigation measures required for a project. All projects in Shasta County are to implement Standard Mitigation Measures (SMMs) for the preservation of air quality. If the "A" threshold levels are exceeded, Best Available Mitigation Measures (BAMMs) must be implemented in addition to the SMMs. If the "B" threshold levels are exceeded by a given project, special BAMMs must be used along with SMMs and BAMMs. For the purposes of CEQA and the analysis presented in this PEA, the "B" thresholds are the levels at which, if they are exceeded, impacts would be considered significant. The Shasta County thresholds for ozone precursors (reactive organic gas [ROG] and oxides of nitrogen [NO_x]) and PM10 emissions can be found in Table 4.1.

Table 4.1. SAQMD Significance Thresholds for Criteria Pollutants

Pollutant	"A" Threshold	"B" Threshold
NO_x	25 lbs./day	137 lbs./day
ROG	25 lbs./day	137 lbs./day
PM10	80 lbs./day	137 lbs./day

Greenhouse Gases

Gases that have the ability to trap heat in the atmosphere are called greenhouse gases (GHGs). The carbon dioxide (CO_2) produced from the burning of fossil fuels is one of five principal GHGs entering the atmosphere as a result of human activities identified by the EPA and other Federal agencies. The other four gases are methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. Since the time of the Industrial Revolution, the concentrations of GHGs in the Earth's atmosphere have risen and been correlated with rising average temperatures. Increased atmospheric temperature, often called global warming, is only one aspect of climate change; other influences on climate can include human causes such as deforestation and the development of land and natural causes such as changes in ocean and atmospheric circulation, the Earth's orbit, solar intensity, and volcanic activity.

GHGs such as CH_4 and N_2O have a greater potential to produce global warming effects relative to CO_2. This phenomenon is known as Global Warming Potential (GWP), and it is related to the abilities of the gases to absorb energy and also persist in the atmosphere. The GWP of CO_2 is 1, which serves as a baseline for other GWP values; CH_4 has a GWP of 25, and the GWP of N_2O is 298 (EPA 2015a). The metric measure used to compare the emissions of various GHGs based upon their relative GWP is known as CO_2 Equivalent (CO_2 Eq.), which is customarily expressed in metric tons.

Fugitive Dust

In Shasta County, all construction activities must be in compliance with District Rule 3:16 (SAQMD 2007). The purpose of this rule is to reduce the amount of PM10 released into the atmosphere from anthropogenic fugitive dust sources. Standard Reasonable Available Control Measures for the

control of fugitive PM10 produced by construction activities outlined in Rule 3:16 include the application of dust suppressants and the use of wind breaks and/or screens.

4.3.1.2 Project Setting

The Western Regional Climate Center (WRCC) recorded seasonal climatic data from 1986–2013 at the Redding Municipal Airport, located approximately 13 km (8 miles) east of the project area (WRCC 2014). These data include average maximum temperature, average minimum temperature, average total precipitation, and average snowfall. The average annual maximum temperature within the project area is 75.5° Fahrenheit (F) (24.2° Celsius [C]); the hottest month of the year is July with an average maximum temperature of 98.7° F (37.1° C). The average annual minimum temperature within the project area is 49.4° F (9.7° C); December has the coldest average temperature of 36.1° F (2.3° C). The project area receives an average of 85.50 cm (33.68 inches) of precipitation annually, with January having the highest average precipitation at 16.10 cm (6.32 inches). The project area receives a snowfall of 10.2 cm (4.0 inches) in the average year.

The proposed project area is located within the Sacramento Valley air basin. Review of the 2013 CAAQS criteria pollutant attainment status for Shasta County indicates that it was in non-attainment for PM10 and O_3 and either in attainment or unclassified for the remaining criteria pollutants (CARB 2013). Review of the NAAQS criteria pollutant attainment status for Shasta County indicates that, as of January 30, 2015, the County was in attainment for all criteria pollutants (EPA 2015b).

4.3.2 Environmental Effects

4.3.2.1 Significance Criteria

An impact related to air quality or GHGs was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.
- Generate GHG emissions, either directly or indirectly that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

4.3.2.2 Impacts and Mitigation Measures

In accordance with Shasta County Rule 3:16, the proposed project would incorporate required dust control measures as detailed in the APM below and would not result in significant impacts on air quality in the project area.

APM AQ-1: TDS will require all construction contractors to implement the following measures for fugitive PM10 control during construction:

- All disturbed areas, including bulk material storage that is not being actively utilized, shall be effectively stabilized, and visible emissions shall be limited to no greater than 20-percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps, or other suitable material such as vegetative ground cover.
- All on- and off-site unpaved roads will be effectively stabilized, and visible emissions shall be limited to no greater than 20-percent opacity for dust emissions by non-toxic chemical stabilizers, dust suppressants, and/or watering.
- All track-out and carry-out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 15 linear m (50 linear feet) or more onto a paved road within an urban area.
- Bulk material shall be stabilized prior to movement or at points of transfer with the application of sufficient water, the application of chemical stabilizers, or by sheltering or enclosing the operation and transfer line.
- Vehicle speed for all construction vehicles shall not exceed 24.1 km (15.0 miles) on any unpaved surface at the construction site.

Impact AQ-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan (Less Than Significant).

The proposed project area is located in Shasta County, which is currently in non-attainment for PM10 and O_3 (CAAQs). The SAQMD adopted an Air Quality Attainment Plan (AQAP) for O_3 in September 2010. The AQAP estimates future emissions and describes strategies necessary for emissions reductions through regulatory controls. Emissions projections in the plans are based on population, vehicle, and land-use trends developed by the SAQMD and CARB.

A proposed project would be considered inconsistent with air quality plans if it would result in population and/or employment growth that exceeds estimates used to develop applicable air quality plans. Projects that propose development that is consistent with the growth anticipated by the relevant land use plans would be consistent with the current SAQMD air quality plans. Similarly, projects that propose development that is less dense than anticipated within a General Plan or other applicable land use plan would be consistent with the air quality plans, because emissions would be less than estimated for the region.

The purpose of the proposed project is to make affordable broadband Internet services available to currently underserved areas in Shasta County. It would not induce population or employment growth and would not conflict with or obstruct the implementation of the applicable air quality plans. The proposed project would generate minor amounts of emissions during construction; however, no emissions would be generated during operation, and the emissions generated are not

anticipated to impede attainment or maintenance of the NAAQS or CAAQS by the SAQMD. Therefore, this impact would be considered less than significant.

Impact AQ-2: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation (Less Than Significant).

Potential impacts from the proposed project on the air quality of the project area were modeled using the California Emissions Estimator Model (CalEEMod) version 2013.2.2 (Appendix B). Construction equipment indicated in Section 3.6.5 operated under the schedule in Table 4.2 below were used as inputs for the model, which provided estimates for the SAQMD criteria pollutants, as well as an estimate for the amount of GHG that would be released during construction of the proposed project.

Table 4.2. Modeled Construction Schedule

Construction Phase	Days of Construction
Plowed/Trenched Conduit Installation	3
Bored Conduit Installation	44
Node Installation	3
Total	**50**

ROG, NO_x, CO, and PM10 and PM2.5 (exhaust) estimates for all construction phases include unmitigated on- and off-site emissions (Table 4.3). PM10 and PM2.5 estimates only include dust from equipment exhaust, because all on-site fugitive dust will be controlled through the implementation of standard measures in compliance with Shasta County Rule 3:16 (APM AQ-1).

Table 4.3. Estimated Daily Construction Emissions—Criteria Pollutants

Construction Phase	Criteria Pollutant Emissions (lbs./day)						
	ROG On-+Off-Site	NO_x	CO	PM10		PM2.5	
				Dust[a]	Exhaust	Dust[a]	Exhaust
Plowed/ Trenched Conduit Installation	2.20+0.12 **2.32**	18.91+1.04 **19.95**	10.37+1.14 **11.51**	0.11	1.45+0.19 **1.64**	0.32	1.34+0.02 **1.36**
Bored Conduit Installation	2.89+0.14 **3.03**	25.34+1.07 **26.41**	20.26+1.39 **21.65**	0.15	1.63+0.19 **1.82**	0.04	1.58+0.17 **1.75**
Node Installation	0.34+0.09 **0.43**	3.26+0.79 **4.05**	2.41+0.92 **3.33**	0.09	0.25+0.14 **0.39**	0.03	0.23+0.01 **0.24**
Maximum Daily Emission	3.03	26.41	21.65	0.15	1.82	0.32	1.64
SAQMD "B" Thresholds	137	137	none	137		none	
Exceeds Threshold?	no	no	n/a	no		n/a	

[a] Off-site fugitive dust only; all on-site fugitive dust will be controlled per Rule 3:16.

As shown in Table 4.3, the proposed project's estimated emissions would be below the SAQMD maximum daily emission "B" thresholds for all criteria pollutants. On-site fugitive dust will be controlled through the implementation of standard measures in compliance with Shasta County Rule 3:16 (APM AQ-1). Therefore, the criteria pollutant emissions impacts associated with the proposed project would be less than significant.

Impact AQ-3: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for Which the Project Region is in Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard (Iincluding Releasing Emissions That Exceed Quantitative Thresholds for Ozone Precursors) (Less Than Significant).

The project area is currently in non-attainment for the criteria pollutants PM10 and O_3; however, the estimated emissions levels from the proposed project during construction for both PM10 and ROG are both well below the SAQMD thresholds. Consequently, because the proposed project's anticipated emissions of these two criteria pollutants that are in non-attainment are below what SAQMD would consider significant, any cumulative impacts would be considered less than significant.

Impact AQ-4: Expose Sensitive Receptors to Substantial Pollutant Concentrations (Less Than Significant).

Sensitive receptors located along the project corridors include residences and schools. Equipment used for the proposed installations would release diesel exhaust as the installations proceed; however, this equipment would not remain in any one location for a prolonged period of time. Therefore, substantial pollutant concentrations would not occur in the vicinity of the sensitive receptors along the project corridors, and impacts would be less than significant.

Impact AQ-5: Create Objectionable Odors Affecting a Substantial Number of People (Less Than Significant).

None of the facilities to be installed during construction of the proposed project are known to have odor impacts; however, equipment used for the proposed installations would release diesel exhaust, which some people may consider to have an objectionable odor, as the installations proceed. Because the proposed project area is primarily located in an open, rural area with relatively few people, and the construction equipment would not remain in any one location for a long period of time, odor impacts would be less than significant.

Impact AQ-6: Generate GHG Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment (Less Than Significant).

The proposed project's GHG emissions in CO_2 Eq. were estimated using CalEEMod in lbs/day and extrapolated for the entire duration of each construction phase in metric tons (Table 4.4). No GHG emissions would be released during operation of the telecommunications system; therefore, the only emissions of GHG that require consideration are those from construction. The 75.0 MT of CO_2 Eq. emissions that would be released by the proposed project is the same amount released by 15.8 average passenger vehicles in a year (EPA 2015c), which, given that there were 23.8 million registered passenger vehicles in California in 2014 (California Department of Motor Vehicles 2015), would be in comparison less than significant.

Table 4.4. Estimated Greenhouse Gas Emissions

Construction Phase	CO_2 Eq. (Lbs./Day), On-+Off-Site	CO_2 Eq. (Metric Tons)
Plowed/Trenched Conduit Installation	1,666+306 **1,972**	2.7
Bored Conduit Installation	3,246+338 **3,584**	71.5
Node Installation	326+237 **563**	0.8
Project Total		**75.0**

Impact AQ-7: Conflict within Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of GHGs (No Impact).

The SAQMD currently has no adopted plan for reducing the emissions of GHGs from utility construction projects. There would be no impacts related to emissions of GHGs.

4.3.3 References

California Air Resources Board (CARB)

2013 California Environmental Protection Agency Air Resources Board website. Available at: http://www.arb.ca.gov/homepage.htm. Accessed June 15, 2015.

California Department of Motor Vehicles

2015 State of California Department of Motor Vehicles Statistics for Publication, January through December 2014. Available at: https://www.dmv.ca.gov/portal/wcm/connect/5aa16cd3-39a5-402f-9453-0d353706cc9a/official.pdf?MOD=AJPERES. Accessed March 31, 2015.

U.S. Environmental Protection Agency (EPA)

2015a EPA Climate Change website. Available at: http://epa.gov/climatechange/. Accessed January 12, 2015.

2015b EPA Green Book website. Available at: http://www.epa.gov/airquality /greenbook/. Accessed June 16, 2015.

2015c EPA Greenhouse Gas Equivalencies Calculator website. Available at: http://www.epa.gov/cleanenergy/energy-resources/calculator.html. Accessed June 17, 2015.

Western Regional Climate Center (WRCC)

2014 Redding WSO, California—Climate Summary. Available at: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7304. Accessed November 13, 2014.

4.4 Biological Resources

4.4.1 Affected Environment

4.4.1.1 Regulatory Setting

Federal

Endangered Species Act

The U.S. Fish and Wildlife Service (FWS) and the National Oceanographic and Atmospheric Administration's National Marine Fisheries Service enforce the provisions stipulated within the Endangered Species Act (ESA) of 1973 (16 USC Section 1531 et seq.). Threatened and Endangered species on the Federal list (50 CFR Section 17.11, and 17.12) are protected from take, defined as direct or indirect harm, unless a Section 10 permit is granted to an entity other than a Federal agency or a Biological Opinion with incidental-take provisions is rendered to a Federal lead agency via a Section 7 consultation. Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine if any Federally listed species may be present in the project site and determine whether the proposed project will have a potentially significant impact upon such species. Under the ESA, habitat loss is considered to be an impact to a species. In addition, the agency is required to determine if the project is likely to jeopardize the continued existence of any species that is proposed for listing under the ESA or to result in the destruction or adverse modification of critical habitat proposed or designated for such species (16 USC 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation.

Executive Order 13186: Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (United States Code, Title 16, Chapter 7, Subchapter II) prohibits the "pursuit, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof." The ensuing Executive Order 13186, signed January 10, 2001, by President Clinton "directs executive departments and agencies to take certain actions to further implement the [MBTA]." Such actions include the responsibility that Federal agencies "taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations … develop and implement, within 2 years, a Memorandum of Understanding with the Fish and Wildlife Service, that shall promote the conservation of migratory bird populations."

Executive Order 11990: Protection of Wetlands

Executive Order 11990, signed May 24, 1997, directs Federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that Federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. A project that encroaches on wetlands may not be undertaken unless the agency has determined that (1) there are no practicable alternatives to construction, (2) the project includes all practicable measures to minimize harm to wetlands affected, and (3) the impact will be minor.

Executive Order 13112: Invasive Species Prevention

On Feb 3, 1999, Executive Order 13112 was signed, establishing the National Invasive Species Council. Executive Order 13112 required that each Federal agency whose actions may affect the status of invasive species will, to the extent practicable and permitted by law, (1) identify such actions; (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species, (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner, (iii) monitor invasive species populations accurately and reliably, (iv) provide for the restoration of native species and habitat conditions in ecosystems that have been invaded, (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions. In addition, it requires that Federal agencies will pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

State

California Endangered Species Act (CESA)/CEQA

The CESA of 1970 (Fish and Game Code Section 2050 et seq. and CCR Title 14, Subsection 670.2, 670.51) prohibits the take (interpreted to mean the direct killing of a species) of species listed under CESA (14 CCR Subsection 670.2, 670.5). Under CESA, State agencies are required to consult with the California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game [CDFG]) when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on State-listed species. During consultation, CDFW determines whether take would occur and identifies "reasonable and prudent alternatives" for the project and the conservation of special status species. CDFW can authorize take of a State-listed species under Sections 2080.1 and 2081(b) of CDFW code in those cases where it is demonstrated that the impacts are minimized and mitigated. Take authorized under Section 2081(b) must be minimized and fully mitigated. A CESA permit must be obtained if a project will result in take of listed species either during construction or over the life of the project. Under CESA, CDFW is responsible for maintaining a list of Threatened and Endangered species designated under State law (CDFG Code 2070). CDFW also maintains lists of Species of Special Concern that serve as "watch lists." Pursuant to the requirements of CESA, a State or local agency reviewing a proposed project within its jurisdiction must determine if any State-listed species may be present in the project area and if the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation. Impacts to species of concern and fully protected species would be considered significant under certain circumstances.

CEQA (Subsections 21000-21178) requires that CDFW be consulted during the CEQA review process regarding impacts of proposed projects on Rare or Endangered species. These "special status" species are defined under CEQA Guidelines, Subsection 15380(b) and (d), as those listed under the ESA and CESA and species that are not currently protected by statute or regulation but that would be considered Rare, Threatened, or Endangered under these criteria or by the scientific community. Therefore, species that are considered Rare or Endangered are addressed in this study regardless of whether they are afforded protection through any other statute or regulation. The California Native Plant Society (CNPS) inventories the native flora of California and ranks species according to rarity; plants on Lists 1A, 1B, and 2 are considered special status species under CEQA.

Although Threatened and Endangered species are protected by specific Federal and State statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the Federal or State list of protected species may be considered Rare or Endangered if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the ESA and the section of the California Fish and Game Code dealing with Rare or Endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the FWS or CDFW (i.e., Candidate species) would occur. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agency has an opportunity to designate the species as protected, if warranted.

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (CDFG Code Section 1900-1913) requires all State agencies to use their authority to carry out programs to conserve Endangered and otherwise rare species of native plants. Provisions of the Act prohibit the taking of listed plants from the wild and require the project proponent to notify CDFW at least 10 days in advance of any change in land use, which allows CDFW to salvage listed plants that would otherwise be destroyed.

California Department of Food and Agriculture (CDFA) Noxious Weed Species List and the California Invasive Plant Council (CIPC) Invasive Plant Inventory List

The CDFA classifies noxious weeds as to the extent of their distribution in the State and the possibility of successful eradication. "A"-rated noxious weeds are prohibited from entry into the State and sale within the State and are subject to eradication. "B"-rated noxious weeds are prohibited from nurseries and sale by nurseries and can be prohibited and eradicated at the County level at the discretion of the County Agricultural Commissioner. "C"-rated noxious weeds can also be prohibited from sale and eradicated at the discretion of the County Agricultural Commissioner. "Q"-rated noxious weeds are those weeds that are prohibited until more information as to their invasiveness can be determined.

The CIPC has a rating system for invasive species that is as follows:

> **High**—These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate-to-high rates of dispersal and establishment. Most are widely distributed ecologically.
>
> **Moderate**—These species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and

vegetation structure. Their reproductive biology and other attributes are conducive to moderate-to-high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited—These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low-to-moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Nesting Birds

California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code Section 3511 lists birds that are "Fully Protected" as those that may not be taken or possessed except under specific permit.

Protection of Wetlands, Waters of the United States (WUS), and Waters of the State

Any person, firm, or agency planning to alter or work in WUS, including the discharge of dredged or fill material, must first obtain authorization from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344). Permits, licenses, variances, or similar authorization may also be required by other Federal, State, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable WUS without a permit from USACE (33 U.S.C. 403). The CDFW requires notification prior to commencement and possibly a Streambed Alteration Agreement pursuant to California Fish and Game Code Subsection 1601-1603, 5650F, if a proposed project would result in the alteration or degradation of a stream, river, or lake in California. The Regional Water Quality Control Board (RWQCB) may require State Water Quality Certification (CWA Section 401 permit) prior to the alteration of or discharge to WUS and Waters of the State.

WUS are defined as all waters that are currently used or were used in the past or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide, all interstate waters including interstate wetlands, and all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds where the use, degradation, or destruction of such waters could affect interstate commerce, impoundments of these waters, tributaries of these waters, or wetlands adjacent to these waters (33 CFR Part 328). With nontidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction extends to the ordinary high water mark—the line on the shore established by fluctuations of water and indicated by a clear, natural line impressed on the bank; shelving; changes in soil character; destruction of terrestrial vegetation; and/or the presence of litter and debris. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code Section 13050(e)."

Water quality in California is governed by the Porter-Cologne Water Quality Control Act (California Water Code § 13000 et. seq.) This act delegates responsibility to the SWRCB for water rights and water quality protection and directs the nine statewide RWQCBs to develop and enforce water quality standards within their jurisdiction. The Porter-Cologne Water Quality Control Act requires

any entity discharging waste or proposing to discharge waste within any region that could affect the quality of the "Waters of the State" to file a "report of waste discharge" with the appropriate RWQCB. The appropriate RWQCB then must issue a permit, referred to as a waste discharge requirement (WDR). WDRs implement water quality control plans and take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, and the need to prevent nuisances (California Water Code Section 13263).

Local

Shasta County General Plan

The SCGP, which applies to all public and private projects in unincorporated Shasta County, consists of three groups of State-mandated Elements entitled the Public Safety Group, the Resources Group, and the Community Development Group. The Fish and Wildlife Habitat Element in the Resources Group outlines objectives and policies that address the need to preserve important aquatic, fish, and wildlife habitats and plant communities for their biological and ecological values, as well as for their direct and indirect benefits to the citizens of Shasta County.

4.4.1.2 Methodology

Field Reconnaissance and Pre-Field Literature Search

Tierra biologists Theresa Knoblock and Tim Jordan conducted reconnaissance surveys of the project area on February 10–14, 2015, and returned to the project area on May 20, 2015, to perform a species-specific survey for the CNPS-listed Big-scale Balsamroot *(Balsamorhiza macrolepis)* during its blooming season. Special status species (listed in Appendix A of the Biological Resources Evaluation [BRE] attached as Appendix C to this PEA) were assessed for their potential to occur in the project area based on the existing characteristics that were observed. In addition to special status species and their habitats, the project corridors were assessed for general wildlife species, migratory birds, plant species and noxious weeds, sensitive natural communities, and the presence or absence of waterways. For the purposes of this report, the entire area assessed during the reconnaissance and species-specific surveys includes the project corridor centerlines with an approximately 15.2-m (50.0-foot) buffer to either side, which is comprehensively referred to as the study area. All areas within the study area were visually assessed during the surveys.

Prior to conducting the reconnaissance surveys, a comprehensive list of regionally-occurring special-status species and sensitive natural communities was compiled from the list of reported occurrences in the CDFW's California Natural Diversity Database (CNDDB) for the Cottonwood, Olinda, Ono, Igo, Hooker, Enterprise, Mitchell Gulch, Rosewood, and Redding 7.5-minute USGS topographic quadrangles (CNDDB 2014), and the list of Federal Endangered and Threatened species that occur in or may be affected by projects in the Cottonwood, Olinda, Ono, and Igo quadrangles was obtained from the FWS Sacramento Fish and Wildlife Office.

Waterway and Wetland Delineation

Field delineations were conducted during the reconnaissance surveys to map all waterways and wetlands to be crossed in the project area and to assist TDS with identifying waterways to avoid (see Appendix D).

4.4.1.3 Project Setting

The project area is located in north-central California within the northern portion of the Sacramento valley where the valley meets the Cascade Range. The topography in the central portion of the project area is relatively flat, and the western and northern portions are hilly. Land use in most of the project area is rural residential, with denser development present in the vicinity of Olinda, located at the intersection of Happy Valley and Palm Roads. Olive orchards are present in the central portion of the project area along Scout and Olive Streets, and relatively open woodland areas are present in the vicinity of Happy Valley Road at Spring Creek and along the western portion of Cloverdale Road to the western end of the study area located in the community of Igo. Elevations in the project area range from approximately 198–335 m (650–1,100 feet) above mean sea level.

Terrestrial Habitat

The dominant type of terrestrial habitat present in the study area, as classified in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 2009), is Blue Oak-Digger Pine Woodland. Other terrestrial habitats present in the study area include ruderal habitat, located in the more developed central portions of the study area, and a small amount of Northern Yellow Pine Forest located in the extreme northwestern portion of the study area in the vicinity of Igo. Complete lists of plants and wildlife species identified in the study area at the time of the surveys can be found in Appendices C and D of the BRE (Appendix C).

Aquatic Habitat

The only perennial aquatic habitat in the study area is located at Dry Creek just east of Igo on Placer Road. A palustrine emergent wetland is also located at the road crossing. The remainder of the waterways and wetlands identified in the study area are ephemeral and seasonal, respectively. There are no ponds within the study area.

Sensitive Natural Communities

The CNNDB search indicates that sensitive natural communities, as defined by CDFW, including Great Valley Cottonwood Riparian Forest, Valley Oak Riparian Forest, and Willow Scrub occur on one or more of the USGS quadrangles in the vicinity of the study area. None of these three sensitive communities is present in the study area itself; however, sparse riparian vegetation and wetlands are present in a few locations.

Riparian Areas

Sparse riparian vegetation, consisting of White Alder *(Alnus rhombifolia)* and willows (*Salix* spp.), is located in the vicinity of Spring Creek at the Happy Valley Road crossing. This vegetation is mostly in the understory and is not structurally complex. The overstory includes upland species such as California Foothill Pine *(Pinus sabiniana)* and oak (*Quercus* spp.).

Wetlands

Palustrine emergent and riverine wetlands, both seasonal and perennial, are present in the study area that will be crossed by the proposed installations. TDS will be boring beneath all wetlands crossed by the line installations, with sufficient setbacks from any associated vegetation, thus avoiding any potential impacts to wetlands (see Waterway Delineation and Assessment Report, Appendix D).

Special Status Species

Based on the assessment methodology outlined above, 14 special status wildlife species and 2 special status plant species are either known to occur or have the potential to occur in the study area (Table 4.5).

Table 4.5. Special Status Species with the Potential to Occur in the Study Area

Scientific Name	Common Name	Status (FWS/State/CNPS)
Amphibians		
Rana boylii	Foothill Yellow-legged Frog	-/SSC/-
Rana draytonii	California Red-legged Frog	T/-/-
Spea hammondii	Western Spadefoot	-/SSC/-
Birds		
Haliaeetus leucocephalus	Bald Eagle	-/E,FP/-
Fish		
Ascipenser medirostris	Green Sturgeon	T/-/-
Oncorhynchus mykiss	Central Valley Steelhead	T/-/-
Oncorhynchus tshawtyscha	Chinook Salmon	T[1],E[2]/T[1],E[2]/-
Invertebrates		
Branchinecta conservatio	Conservancy Fairy Shrimp	E/-/-
Branchinecta lynchi	Vernal Pool Fairy Shrimp	T/-/-
Lepidurus packardi	Vernal Pool Tadpole Shrimp	E/-/-
Mammals		
Antrozus pallidus	Pallid Bat	-/SSC/-
Corynorhinus townsendii	Townsend's Big-eared Bat	-/CT,SSC/-
Lasiurus blossevillii	Western Red Bat	-/SSC/-
Plants		
Balsamorhiza macrolepis	Big-scale Balsamroot	-/-/1B.2
Potamogeton epihydrus	Nuttal's Ribbon-leaved Pondweed	-/-/2B.2
Reptiles		
Emys marmorata	Western Pond Turtle	-/SSC/-

Key: SSC = Species of Special Concern, C = Candidate, T = Threatened, 1 = Central Valley Spring Run Evolutionarily Significant Unit (ESU), 2 = Sacramento River Winter Run ESU.

Migratory Birds

No bird nests were observed in the study area at the time of the surveys; however, areas adjacent to the project corridors and the study area contain trees and other vegetation that may be utilized by migratory birds. A list of bird species appearing on the 2008 FWS Birds of Conservation Concern list for Bird Conservation Region (BCR) 32, Coastal California, can be found in Table 4.6.

Invasive Species

Twenty-four invasive plant species appearing on the CDFA Noxious Weed Species List and/or the CIPC Invasive Plant Inventory list were identified in the study area (Table 4.7).

Table 4.6. BCR 32 Migratory Bird List

Black-footed Albatross	Spotted Owl
Pink-footed Shearwater	Black Swift
Black-vented Shearwater	Costa's Hummingbird
Ashy Storm Petrel	Allen's Hummingbird
Bald Eagle	Lewis's Woodpecker
Peregrine Falcon	Nuttall's Woodpecker
Yellow Rail	White-headed Woodpecker
Black Rail	Loggerhead Shrike
Snowy Plover	Island Scrubjay
Mountain Plover	Yellow-billed Magpie
Black Oystercatcher	Oak Titmouse
Whimbrel	Cactus Wren
Long-billed Curlew	LeConte's Thrasher
Marbled Godwit	Yellow Warbler
Red Knot	Common Yellowthroat
Short-billed Dowitcher	Spotted Towhee
Gulf-billed Tern	Black-chinned Sparrow
Black Skimmer	Song Sparrow (*graminea* ssp.)
Xantus's Murrelet	Song Sparrow (*maxillaris* ssp.)
Cassin's Auklet	Song Sparrow (*pusillula* ssp.)
Yellow-billed Cuckoo	Song Sparrow (*samuelis* ssp.)
Flammulated Owl	Tricolored Blackbird
Burrowing Owl	Lawrence's Goldfinch

Table 4.7. Invasive Species and Their Location in the Study Area

Scientific Name	Common Name	Rating		Location in Study Area
		CDFA	CIPC	
Arundo donax	Giant Reed	listed	high	Spring Creek
Avena fatua	Wild Oats		moderate	central
Brassica nigra	Black Mustard		moderate	central
Briza maxima	Big Quaking Grass		limited	scattered throughout
Bromus diandrus	Ripgut Brome		moderate	central
Centaurea solstitalis	Star Thistle		high	scattered throughout

Scientific Name	Common Name	Rating		Location in Study Area
		CDFA	CIPC	
Cirsium arvense	Canada Thistle	listed	moderate	edge of Cloverdale near Wetland D
Cynodon dactylon	Bermuda Grass		moderate	scattered throughout
Erodium cicutarium	Redstem Storksbill		limited	scattered throughout
Ficus carica	Fig		moderate	near Dry Creek (Wetland A)
Geranium dissectum	Cut-leaved Geranium		limited	scattered throughout
Hordeum murinum	Hare Barley		moderate	scattered throughout
Hypochoeris radicata	False Dandelion		moderate	scattered throughout
Mentha pulegium	Pennyroyal		moderate	near Spring Creek
Olea europaea	Olive		limited	central orchards
Picris echioides	Bristly Oxtongue		limited	central and eastern
Plantago lanceolata	Broadleaf Plantain		limited	scattered throughout
Polypogon monspeliensis	Annual Rabbitsfoot Grass		limited	margins of wetter areas throughout
Rumex crispus	Curly Dock		limited	wetter areas throughout
Silybum marianum	Milk Thistle		limited	northern Happy Valley Road
Sorghum jalpense	Johnson Grass	listed		scattered throughout
Spartium junceum	Spanish Broom	listed	high	central Laverne, Happy Valley Road North of Palm, Olive Street
Trifolium hirtum	Rose Clover		moderate	scattered throughout
Vinca major	Big Periwinkle		moderate	east end of Laverne

4.4.2 Environmental Effects

4.4.2.1 Significance Criteria

An impact related to biological resources was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- 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 CDFW or FWS;
- 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 CDFW or FWS;

- Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local, regional, or State HCP.

4.4.2.2 Impacts and Mitigation Measures

The proposed project would incorporate measures to avoid and/or minimize impacts to biological resources as detailed in the APMs below. The project would not result in significant impacts to biological resources in the project area.

APM BIO-1: All waterways and wetlands in the project area will be bored beneath and avoided during construction.

APM BIO-2: Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of waterway banks or the maximum extent of any vegetation present along the waterways' margins.

APM BIO-3: Bore pits will be placed a minimum distance of 76 m (250 feet) beyond either the edge of seasonal wetlands or the maximum extent of any vegetation present along the wetlands' margins.

APM BIO-4: A SWPPP will be developed and will include BMPs that will be implemented during construction to minimize or eliminate sediment transport from areas subject to ground disturbance.

APM BIO-5: All orchards will be avoided during construction.

APM BIO-6: No trees will be removed during project construction. If vegetation trimming is required to complete the installations, trimming will be kept to the absolute minimum necessary.

Impact BIO-1: Substantial Adverse Effects, 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 CDFW or FWS (Less Than Significant).

Foothill Yellow-legged Frog has the potential to occur along Spring Creek, and Western Spadefoot has the potential to occur in the orchards along Olive and Scout Streets. Implementation of the proposed project has the potential to impact these two species if individuals come into contact with construction equipment or personnel or if individuals attempt to flee the construction area and are subject to increased chances of predation or other harm. With the implementation of APM BIO-1, 2, and 5, impacts are expected to be reduced to a less than significant level.

Green Sturgeon, Steelhead, and Chinook Salmon have a low potential to occur in the waterways in the study area due to the flow regimes of the waterways, past disturbance, and the presence of impoundments that restrict movement of fish from the Sacramento River to the study area. Implementation of the proposed project has the potential to indirectly impact these anadromous fish, because ground disturbance associated with construction increases the risk of sediment transport through tributary waterways that could reach occupied anadromous fish habitat in the Sacramento River. With the implementation of APM BIO-1, 2, and 6, impacts are expected to be reduced to a less than significant level.

Vernal pool invertebrates have a low potential to occur in the seasonal wetlands in the study area, and Nuttall's Ribbon-leaved Pondweed and Western Pond Turtle have a moderate potential to occur in the perennial Wetland A located near Igo. Implementation of the proposed project has the potential to impact vernal pool invertebrates if seasonal wetlands are disturbed either directly or indirectly during construction, and it has the potential to impact Nuttall's Ribbon-leaved Pondweed if Wetland A is disturbed. The proposed project has the potential to impact Western Pond Turtle if individuals come into contact with construction equipment or personnel or if individuals attempt to flee the construction area and are subject to increased chances of predation or other harm.

Vernal pool invertebrates, if individuals or cysts are present in the seasonal wetlands in the study area, have the potential to be directly impacted if fills associated with construction of the proposed project were to occur within the wetlands. These species may be indirectly impacted if the hydrology regime of the seasonal wetlands was changed by proposed project. For example, the plowed installations would involve subsurface ripping that could diminish the amount and quality of water available to perched water tables that may be present beneath the wetlands. In addition, ground disturbance and subsequent erosion associated with the proposed installations has the potential to increase the risk of sediment transport, which could contaminate the wetlands if it were to reach them. With the implementation of APM BIO-1–4, impacts are expected to be reduced to a less than significant level.

Pallid Bat, Townsend's Big-eared Bat, and Western Red Bat have a moderate potential to occur in the vegetation of study area while foraging, and Western Red Bat has the potential to roost in trees adjacent to and within the study area. With the implementation of APM BIO-6, impacts are expected to be reduced to a less than significant level.

Impact BIO-2: Substantial Adverse Effects on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, and Regulations or by the CDFW or FWS (No Impact).

Riparian habitat present along Spring Creek at the Happy Valley Road crossing that would be crossed by the proposed installations may provide suitable habitat for wildlife species, and Dry Creek, associated with Wetland A outside of Igo, may provide suitable habitat for fish. All of the waterways and wetlands in the project area, including the riparian vegetation in the vicinity of Spring Creek, would be avoided and bored beneath during the proposed installations (APM BIO-1–3); therefore, the project would have no impact on sensitive natural communities.

Impact BIO-3: Substantial Adverse Effect on Federally Protected Wetlands as Defined by Section 404 of the CWA (Including, but Not Limited to, Marsh, Vernal Pool, Coastal, etc.) Through Direct Removal, Filling, Hydrological Interruption, or Other Means (No Impact).

Potentially jurisdictional wetlands are present in the project area. All of these wetlands would be avoided and bored beneath during the proposed installations (APM BIO-1–3); therefore, the project would have no impact on wetlands.

Impact BIO-4: Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors or Impede the Use of Native Wildlife Nursery Sites (Less Than Significant).

According to the California Essential Habitat Connectivity Project (Spencer et al. 2010), there are no natural landscape blocks or potential riparian connections present within the project area. However, the western end of Cloverdale Road in the vicinity of Igo is located within an Essential Connectivity Area that could theoretically be used as a wildlife corridor, and deer trails were actually observed in this area during the surveys. Although native wildlife may move through the project area, the proposed installations would not create new barriers to animal movement, given that the proposed alignment is located along existing roadways, and the installations would consist of buried cables and the installation of seven new equipment cabinets. Therefore, impacts to migratory wildlife corridors are expected to be less-than-significant.

Impact BIO-5: Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Other Protective Ordinance (No Impact).

The proposed project would be in compliance with the SCGP's Fish and Wildlife Habitat Element, because all of the proposed installations would be performed in previously disturbed areas along existing roads, and no new removal of undisturbed habitat would occur. There would be no impact related to local biological resource–related policies and ordinances.

Impact BIO-6: Conflict with the Provisions of an Adopted HCP, Natural Community Conservation Plan, or Other Approved Local, Regional, or State HCP (No Impact).

The proposed project is not located in an area that is subject to an adopted conservation plan. There would be no impacts.

4.4.3 References

California Natural Diversity Database (CNDDB)

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4.5 Cultural Resources

4.5.1 Affected Environment

4.5.1.1 Regulatory Setting

Federal

There are no applicable Federal regulations or policies related to cultural resources because the proposed project is not located on Federal lands and no Federal action is required for project implementation.

State

California Environmental Quality Act

CEQA recognizes cultural resources as a part of the environment. A historic resource is defined by CEQA as the following:

- A resource listed on or determined to be eligible by the State Historical Resources Commission for listing on the California Register of Historical Resources (Public Resources Code Sec. 5024.1, Title 14 CCR, Section 4850 et seq.).
- A resource included in a local register of historic resources, as defined in Sec. 5020.1 (k) of the Public Resource Code, or identified as significant in a historic resource survey meeting the requirements of Sec. 024.1(g) of the Public Resources Code.

California Public Resources Code

California Public Resources Code (PRC) Sec. 5024.1 establishes the California Register of Historic Resources (CRHR), sets forth the criteria to determine significance, defines eligible properties, and lists nomination procedures. As described in Subsection (d), resources that are automatically listed in the CRHR include those listed in or formally determined eligible for listing in the National Register of Historic Places (NRHP) (i.e., historic properties) and California Historical Landmarks from Number 770 onward.

The CRHR criteria for eligibility are virtually identical to those of the NRHP. Cultural resources may be listed in or eligible for the CRHR if they have significance and integrity. Cultural resources are significant if they meet any of the following criteria:

- Criterion 1—Association with events that have made a significant contribution to the broad patterns of California's history and cultural heritage, or the United States (CCR Title 14, Sec. 4852[b][1]);
- Criterion 2—Association with the lives of persons important in our past (CCR Title 14, Sec. 4852[b][2]);
- Criterion 3—Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values (CCR Title 14, Sec. 4852[b][3]); or

- Criterion 4—Yield, or may be likely to yield, information important in prehistory or history (CCR Title 14, Sec. 4852[b][4]).

A resource must retain adequate integrity to be eligible for listing in the CRHR. Integrity is the authenticity of a resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Integrity must be judged with reference to the particular criteria under which the resource is eligible for listing in the CRHR (14 CCR 4852[c]). Integrity assessments are generally made with regard to the retention of the following:

- Location—Where the historic property was constructed or the place where the historic event occurred.
- Design—The combination of elements that create the historic form, plan, space, structure, and style of a property. This includes organization of space, proportion, scale, technology, ornamentation, and materials. This is applicable to larger properties for the historic way in which the buildings, sites, and structures are related.
- Setting—The physical environment of a historic property. It refers to the historic character of the property. It includes the historical relationship of the property to surrounding features and open space. These include topographic features, vegetation, simple manmade paths or fencing, and the relationship between buildings, structures, or open space.
- Materials—The physical elements that were combined during a particular period of time and in a particular pattern or configuration to form the historic property.
- Workmanship—The physical evidence of the crafts of a particular culture or people during a given period in history. It may be expressed in vernacular methods of construction and plain finishes or in highly sophisticated configuration and ornamental detailing.
- Feeling—The property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character.
- Association—The direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Like feeling, association requires the presence of physical features that convey a property's historic character.

PRC Sec. 5097.5 states that any unauthorized removal or destruction of archaeological or paleontological resources on sites located on public land is a misdemeanor. "Public lands" is defined as "lands owned by, or under the jurisdiction of, the State, or any City, County, district, authority, or public corporation, or agency thereof."

PRC Sec. 5097.9 prohibits the interference with the free expression of Native American religion as provided in the United States Constitution and the California Constitution and cause of severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine on public property, except on a clear and convincing showing that the public interest and necessity so require.

PRC Sec. 5097.97 promotes preservation of certain Native American cultural places located on public property, including a sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine, by ensuring access to these places by Native Americans.

PRC Sec. 5097.98 requires the Native American Heritage Commission (NAHC), upon notification by a County coroner, to notify the most likely descendants regarding the discovery of Native American human remains; enables the descendants, within 48 hours of the notification by the commission, to inspect the site of the discovery of Native American human remains and to recommend to the landowner or the person responsible for the excavation work means for treating or disposition, with appropriate dignity, the human remains and any associated grave goods; requires the owner of the land upon which Native American human remains were discovered, in the event that no descendant is identified, or the descendant fails to make a recommendation for disposition, or the landowner rejects the recommendation of the descendant, to reinter the remains and burial items with appropriate dignity of the property in a location not subject to further disturbance.

PRC Sec. 5097.99 prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and sets penalties for those actions.

PRC Sec. 5097.991 states that it is the policy of the State that Native American remains and associated grave artifacts shall be repatriated.

PRC Sec. 5097.993–5097.994 (Native American Historic Resources Protection Act) states that it is unlawful to maliciously excavate, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the CRHR pursuant to PRC Sec. 5024.1, including any historic or prehistoric ruins, any burial ground, any archaeological or historic site, any inscriptions made by Native Americans at such a site, any archaeological or historic Native American rock art, or any archaeological or historic feature of a Native American historic, cultural, or sacred site on public land.

PRC Sec. 21083.2 states that if a project may affect a resource that has not met the definition of a historical resource set forth in Sec. 21084, then the lead agency may determine whether a project may have a significant effect on "unique" archaeological resources; if so, an Environmental Impact Report (EIR) (or, if applicable, an EIR/Environmental Impact Statement or, if authorized, a Substitute Environmental Document) shall address these resources. If the potential for damage to unique archaeological resources can be demonstrated, such resources must be avoided; if they cannot be avoided, mitigation measures will be required. The law also discusses excavation as mitigation, discusses the costs of mitigation for several types of projects, sets time frames for excavation, defines unique and non-unique archaeological resources, and sets financial limitations for this section.

PRC Sec. 21084.1 indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historical resource. The section further defines "historical resource" and describes what constitutes a "significant" historical resource.

Local

The objective of the SCGP Heritage Resources Element is to protect significant prehistoric and historic cultural resources in the County. The single policy identified in the Element is related to development projects, and it specifies that: "…projects in areas of known heritage value shall be designed to minimize degradation of these resources. Where conflicts are unavoidable, mitigation measures which reduce such impacts shall be implemented. Possible mitigation measures may include clustering, buffer or non-disturbance zones, and building siting requirements (Shasta County 2008).

4.5.1.2 Project Setting

Ethnography

The project area falls within the traditional lands of the Wintu, a collective name for nine groups of related people who inhabited an area that includes portions of what are now Shasta, Siskiyou, and Tehama counties (LaPena 1978:324). Although these people were encountered by Euroamerican explorers as early as the 1820s, the Tribal name *Wintu* does not appear to have been reported until the 1850s (in the orthographic form "Win-toon"). The term Wintu derives from *wintʰuh*, or "person" (LaPena 1978:339). The Wintu people discussed here have been referred to by anthropologists as the Northern Wintu, as distinguished from two closely related and neighboring groups, namely the Patwin (or Southern Wintu) and the Nomlaki (or Central Wintu), to whom they were closely related linguistically, possibly only speaking different dialects (Goldschmidt 1978:341).

Like most Native American groups, the Wintu culture was profoundly impacted and altered—and even partially erased—by the arrival of Euroamericans in historic times. The following ethnographic account provides a model of Wintu culture based on what can be determined from early Euroamerican accounts and later historic and ethnographic descriptions that depict a worldview and lifeways that had been deeply altered by interaction with non-Native cultures.

Territory, Traditional Lands and Settlement

The traditional territory of the Wintu extends from the upper Trinity River valley and Mt. Shasta on the north to about 9.7 km (6 miles) south of Cottonwood Creek on the south. To the east and southeast, the boundary is defined by Cow Creek. To the northeast, east of Squaw Creek, is a hunting and gathering area that is held in common by the Wintu and the Achumawai people. To the southwest, the land extends to the South Fork Trinity River, continuing north-northeast past Junction City (LaPena 1978:324, Figure 1).

Nine Tribal groups make up the Wintu as a whole (LaPena 1978:324), although some sources state that there are six groups (McTavish 2010:8). Regardless, these groups are identified by the names of the geographical locations that they traditionally inhabited. The names of the groups and their corresponding territories can be found in Table 4.8. The project area lies specifically within the territory of the *dawpom* or Stillwater Wintu. Unfortunately, little information specific to this subgroup of people is available; one ethnographic study refers to them as a "minor band" (Merriam 1967:261). The present ethnographic summary therefore focuses upon aspects of Wintu culture that are better known in the northern part of the Wintu territory, particularly those of the *wenemem* (Winnemem, or McCloud) Wintu.

Table 4.8. Names of Wintu Tribal Groups and Their Locations

Place Name/Name of Group[a]	Translation	Location/Region
nomtipom	"in the west ground"	upper Sacramento Valley
wenemem	"middle water"	McCloud
dawpom	"front ground"	Stillwater
ʔelpom	"in ground"	Keswick
λ'abal-pom	"good (or peaceful) ground"	French Gulch
nomsuꞏs	"those being west [people]"	upper Trinity Valley
dawnom	"front west"	Bald Hills
norelmaq	"south uphill [people]	Hayfork
waymaq	"north [people]"	upper McCloud River Valley

[a] The orthography of these names follows Schlichter 1981a. Non-English consonants in the above table are as follows: *ʔ* signifies an unaspirated glottal stop, λ' is a glottalized dental affricate, and *u* is a high back vowel. Other characters signify sounds similar or identical to English sounds.

Little information is available regarding the characteristics of early Wintu settlement. Villages consisted of 20–150 people who inhabited bark houses (LaPena 1978:325-326). The dwellings were conical and constructed of lashed poles covered with bark or evergreen boughs. Wintu houses appear to have been, at least prehistorically in the McCloud River valley, semisubterranean pit structures (Sundahl 1998:95). Villages of about 20–70 families might have had earth lodges (Du Bois 1935:28). An earth lodge consisted of a 4.6–6.1-m-diameter (15.0–20.0-foot-diameter) pit with a roof supported by a single pole and a smoke hole that also functioned as the entrance. Earth lodges functioned as places for men's gatherings, sweating, and initiations. Also, unattached men slept in the earth lodges in winter (LaPena 1978; Du Bois 1935:122–123).

It is difficult to reconstruct a typical (Northern) Wintu village layout, but it appears to have been a form of rancheria. The layout of a Nomlaki (Central Wintu) village may be taken as a model. The Nomlaki village, generally constructed adjacent to a waterway, consisted of individual family dwellings surrounding the chieftain's house, which was larger than the other houses (Goldschmidt 1978:343). In addition to being the chieftain's home, the chieftain's house was used as a men's gathering place, a center of village social life, and a sweat lodge, similar to the earth lodges of the Wintu (Goldschmidt 1978:347). It faced the stream, and men would plunge into the water at the conclusion of sweating rituals. Other houses were oriented toward the chieftain's house. The menstrual hut was located diametrically opposite from the village water supply. Following the arrival of the Ghost Dance in the 1870s, large dance houses were constructed at some distance from the village. The dance houses were based on smaller houses that had been constructed in precontact times for secret society initiations. It is unclear if the Northern Wintu used an analogous structure.

History and Early Sources

Members of the expeditions of Jedediah Smith and Peter Ogden, in 1826 and 1827, respectively, were the first known Euroamericans to contact the Wintu. During subsequent visits by John Work of the Hudson Bay Company in 1833 and the U.S. Exploring Expedition in 1841, the Wintu were described, but their Tribal name was apparently not recorded (LaPena 1978:339). Malaria was introduced into the region from Oregon between 1830 and 1833, presumably brought by the

Hudson Bay trappers (LaPena 1978:324). The ensuing malaria epidemic decimated an estimated 75 percent of the Wintu population, which LaPena (1978:325, Table 1) estimates at 14,250 persons in precontact times. The long-term consequences of the epidemic were that the Wintu were unable to effectively deal with the coming incursions of Euroamericans into their traditional territories.

In 1846, a Mexican land grant to Pearson B. Reading in the upper Sacramento valley led to an influx of settlers who brought cattle and sheep that destroyed many of the natural resources traditionally used by Wintu people. After this time, the Wintu suffered numerous abuses at the hands of Euroamericans, including massacres and the pollution of waterways following the discovery of gold. In 1850, following the establishment of Shasta County, a notorious massacre of about 150 Trinity and *wenemem* Wintu occurred when they were served poisoned food during a "friendship feast" hosted by Euroamerican settlers (LaPena 1978:325). A year later, another massacre near the town of Old Shasta involved the burning of the Wintu council house and the killing of about 300 people by miners.

Following the 1851 massacre, the so-called Cottonwood Treaty (informally known as the Treaty of Friendship and Peace) was drafted, allotting the Wintu 35 square miles of land and designating Pearson Reading as their agent (LaPena 1978:325). In 1852, Fort Reading was established, but this did little to diminish hostility toward the Wintu. The six-month "Wintoon War" of 1858–1859 resulted in about 100 Natives being killed and another 300 being sent to the Mendocino Reservation, a large reservation that operated from 1856–1866. Depredations against the Wintu continued through the 1860s, and many people were forcibly placed on the coastal reservations.
The railroad arrived in 1875, bringing additional increases in the non-Native population. In the face of this influx of Euroamerican people, industry, and commerce, a religious revival took place wherein many traditional practices were modified or replaced. In the 1880s and 1890s, the final episodes of several Wintu traditions (such as the communal fish drive at Baird) occurred. Simultaneously, copper mining in the region was adversely impacting the environment, killing large numbers of trees and other vegetation, affecting not only Natives but all farmers in the area.

The Wintu were granted American citizenship under the Snyder Act of 1924, but this did not have the effect of elevating them to a status of equality. During the 1920s, the *wenemem* Wintu took the lead in addressing problems such as land issues, Tribal rolls, and grievances. In 1938, construction began on the Shasta Dam, located on the Sacramento River above Redding. Construction was completed in 1945. This was the first dam project in Wintu territory that flooded traditional Wintu lands and blocked salmon runs. Dam construction and the flooding of traditional Wintu lands is an issue that continues to the present day, most recently in regard to a proposed raising of the Shasta Dam an additional 5.6 m (18.5 feet), which would result in the inundation of 40 locations considered sacred by the Wintu (LaPena 1978:325; Winnemem Wintu Tribe 2015a; McTavish 2010).

Today, the Wintu lack Federal Tribal recognition. One branch, the Winnemem Wintu, are actively struggling for such recognition. The Cottonwood Treaty of 1851 was not ratified by Congress, who capitulated to the demands of settlers that the Indians in Shasta County be removed (Winnemem Wintu Tribe 2015b; Smith 2009) (although LaPena [1978:325] states, apparently mistakenly, that the treaty was ratified in 1852). However, despite the lack of a formal reservation, they received Federal health, housing, and education benefits until 1985, the year in which the U.S. government determined that the Wintu do not meet the criteria for recognition as a Tribal government (Winnemem Wintu Tribe 2015c). The Winnemem Wintu believe that the Cottonwood Treaty gives them Federal recognition and that the Federal government does not consider this binding due to

land interests in the region, most recently pertaining to the proposed raising of Shasta Dam (Winnemem Wintu Tribe 2015b). The Tribe also asserts that not only does the Cottonwood Treaty provide them with Federal recognition but that they were recognized in 1978, when the Office of Federal Acknowledgement was created by the Bureau of Indian Affairs to establish a formal process for Tribes to establish Tribal governments (Winnemem Wintu Tribe 2015b, 2015d).

The displacement of Native peoples and the consequential paucity of early ethnographic data describing lifeways that were practiced at the time of contact is a common pattern in California (McTavish 2010:22–23). Some of the earliest work among the Wintu was conducted by Stephen Powers in the 1870s. Powers was not a trained ethnographer; however, his work is considered pioneering (LaPena 1978:339; McTavish 2010:38). Although initial contact with the Wintu occurred in the 1820s and was followed by a long and largely abusive cultural relationship, the most substantial ethnographic work was not accomplished until the 1930s (LaPena 1978:325, 339–340). The seminal study of Wintu culture was *Wintu Ethnography*, published by Cora Du Bois in 1935. Du Bois and Dorothy Demetracopoulou also presented important accounts of the Wintu cultural mythos in 1931 and 1932. Other studies have been concerned primarily with linguistics (e.g., Schlichter 1981a, 1981b) and political issues, such as dam construction and water and fishing rights (e.g., Dallman et al. 2013; Yoshiyama and Fisher 2011).

Language

The three closely related Wintu peoples—the Wintu, Nomlaki, and Patwin (or Northern, Central, and Southern Wintu, respectively)—belong to the Wintun linguistic group. The Wintun group is in turn a member of the Penutian linguistic family (Kroeber 1976:347; LaPena 1978:324) and was one of five major groups belonging to this language family, with the other four being the Maidu, Yokuts, Costanoan, and Miwok groups. The Penutian languages were spoken over a vast area of California, centered on the San Joaquin and Sacramento valleys between the coastal region and the Sierra Nevada Mountains (Kroeber 1976:349–350). The Wintu, therefore, shared linguistic affinity with a large number of Californian Native American cultures.

Subsistence

The Wintu were non-agriculturalists whose environment provided an abundance of resources for food, shelter, tools, and other necessities of life. Fishing, hunting, and gathering vegetable foods were all important aspects of Wintu subsistence. Their utilization of some of these resources is discussed below.

Fish

Chinook salmon *(Oncorhynchus tshawtyscha)* were once plentiful in the McCloud and Sacramento Rivers. Salmon (called *nur* by the Wintu) ran in the spring and summer from May until October and in fall and winter from October to December. Salmon were a staple among the Wintu (especially among the *wenemem*, or Winnemem Wintu, along the McCloud River), not only because of their plentitude but also because of their role in the creation of humans. When the first people emerged from the sacred spring at Mt. Shasta, they were without the ability to speak, but the Nur—the salmon—took pity on humans and gave them the power of speech. In return for the gift of the Nur, the people promised to always speak for the salmon (Winnemem Wintu Tribe 2015e).

A man named Livingstone Stone, a fish culturist and former Unitarian minister from Massachusetts, co-founded the American Fisheries Society in 1870. In 1872, he was named the U.S. Deputy Fish Commissioner and established the Baird Fish Hatchery on the McCloud River (National Oceanic

and Atmospheric Administration [NOAA] Fisheries 2015; Sanders 2015; McTavish 2010:65–71). The purpose of the hatchery was to breed Pacific salmon to replenish vanishing stocks of Atlantic salmon. McCloud River salmon were also exported to other locations around the world. Stone was initially unwelcome by the Wintu, but Stone convinced them that he was only interested in gathering the roe and would return the fish, and the Wintu let Stone capture and breed salmon. In return, the Wintu promised the sacred fish that they would "always be allowed to return home" (Winnemem Wintu Tribe 2015e). Unfortunately, the construction of the Shasta Dam blocked the passage of the salmon run along the McCloud River, and in the Wintu view, the damming of the river broke the covenant made with the salmon in the 1870s.

Today, the Central Valley spring run and Sacramento River winter run Chinook salmon Evolutionarily Significant Units are listed by the National Marine Fisheries Service and the State of California as Threatened and Endangered, respectively (see Appendix C). Recently, the Winnemem Wintu, in consultation with NOAA, have been working to return Chinook salmon populations to the Central Valley and various rivers, such as the McCloud. In 2010, a group of Wintu traveled to the Rakaia River in New Zealand—one of the locations where Stone established a successful hatchery—to conduct a four-day ceremony to atone for allowing Shasta Dam to be built and preventing the salmon from returning to their spawning waters. The ceremony was conducted with the assistance of local Maori Tribes that now manage the land on which the hatchery is located. In addition to the ceremony, it was proposed that roe from Rakaia River Chinook salmon be brought to a hatchery on the McCloud River and a new population of salmon cultivated for eventual release (Dadigan 2011; Winnemem Wintu Tribe 2015e).

Salmon was prepared in various ways. The oily spring catch was baked in a stone-lined pit, and the less oily catch from fall could be sun-dried. All parts of the fish were used. For example, the heads and entrails of baked salmon were pulverized and used as a flour during the winter. The flour was mixed with roe and pine nuts or with acorn mush (Merriam 1967:265). The *wenemem* Wintu traded salmon meal to people in the south for salt and clam disk money.

Fishing techniques were both communal and individual. Communal drives could involve several villages, with the fish caught in nets (participants used dip nets during small drives). The catch was divided by the village leaders and distributed among adult males. Individuals fished with harpoons from the bank or from salmon houses. The Wintu salmon house (*nur qewel*) was constructed on two cross poles that were set in deep water and accessed by a log extending from the shore. Although individual fishermen had fishing rights at certain locations, anyone had the right to visit a man when he was fishing and expect to receive part of his catch as a gift. It was prohibited for women to fish, although they could accompany their husbands.

In addition to salmon, steelhead trout *(Oncorhynchus mykiss)*, suckers *(Catostomus occidentalis)*, whitefish *(Prosopium williamsoni)*, and shellfish were also commonly caught. On the McCloud River, children were provided with small harpoons and encouraged to fish for suckers, presumably as training for becoming fishermen as adults.

Land Animals

Deer and bear were the large animals commonly hunted by the Wintu (LaPena 1978:336–337). Individuals sometimes hunted deer, but often deer hunting was a communal task. Communal hunts lasted about three days and included women, children, and unskilled hunters, as well as trained dogs. Noose snares were used to trap deer, but cliff drive kills were also common. Several rules and specific prohibitions regulated the consumption of the deer. For example, the head was roasted

separately, and young women could not eat meat taken from it, although elderly women could partake if it was not eaten with water, salt, or acorn mush. Deer meat was processed and cooked in various ways, such as being roasted in strips over hot coals or steamed. If cooked in the field, whole sides or quarters were roasted over a fire.

Brown bears were hunted individually, or by a small group of friends. A bear would be smoked out of its den and slayed with an arrow. Bear hides were stretched on a frame by the younger men, and women defleshed it with scrapers. This was a time for dancing and making requests to the bear's spirit. Both brown and grizzly bear hides were used as burial shrouds.

Grizzly bears were hunted for hides but were not eaten. Because grizzly bears ate humans, eating a grizzly was risking cannibalism. Grizzlies were feared, and "may the grizzly bear eat you!" and "may the grizzly bear bite your father's head off!" were powerful Wintu curses. Among most Wintu groups, the killing of a grizzly bear called for the head of the animal to be laid in front of a singer, surrounded by people in a circle, while the kill was reenacted. It was unwise to boast of killing any bear, for a bear would kill the boastful hunter in the future.

Smaller game was also taken (LaPena 1978:337). Rabbits, gophers, mice, wood rats, and squirrels were all hunted or trapped. Small animals were singed; had their limbs, head, larger bones, and entrails removed; and were pounded and then roasted. Quail were caught in nets; other birds were usually hunted by young boys.

Gathered Foods

As is the case with a number of California Tribes, acorns were the primary gathered staple among the Wintu (LaPena 1978:338–339). Acorn gathering was carried out by families or local groups. One tree or two small trees usually amounted to a day's work. The men would shake the tree to detach the acorns, either by climbing the tree or with a hooked stick, and the women would pick up the acorns and collect them in burden baskets to be carried back to camp. Although the men assisted, the gathering and processing of acorns were considered to be the responsibility of women. Acorns were pounded by young women, and the meal was sifted by older women. Acorns were pounded by pestles and leached in sand pits. The resulting flour was used to make soup or bread that would keep for several months. Buckeye was also an important gathered food throughout the Wintu region but was especially plentiful in the north (LaPena 1978:339). Numerous other plants were used for food, as well as glue, pigment binder, medicine, and fibers. Different materials were used to make different types of specialized baskets, including baskets for storage and baby baskets, as well as those for general use (Merriam 1967:264).

Kinship and Polity

The family was the basic Wintu social unit, but the village was the primary economic and political unit (LaPena 1978:326-327). A family, inhabiting a single bark house, consisted typically of 3–7 people. Most village residents were related in some way; therefore, villages were generally exogamous groups (Du Bois 1935:28). Although a suitor (male or female) might offer gifts or services to the family of the individual they were interested in, marriage was not overly formalized and consisted of the couple simply establishing a household together (Du Bois 1935:54). Residence could be either matrilocal or patrilocal, but independent households were encouraged (Du Bois 1935:55). Monogamy was customary, but polygyny was permitted to important men such as village chiefs.

Villages were administered by a chieftain (*wi*). Chieftainship was ostensibly hereditary, passed from father to eldest son, but a certain amount of charisma and skill was required of the young man before assuming the office. If the eldest son was not suitable, one of the younger sons, a nephew, or some other relative might inherit the role of chief (Du Bois 1935:30). Ultimately, the chief had to be an individual who was popular and could speak well. The chief was primarily an organizer, executive, and mediator in the case of judging crimes. Although the chief was responsible for decisions, Tribal elders were always available for consultation (Du Bois 1935:31).

Worldview and Life Cycle

This section briefly summarizes the religious worldview of the Wintu. It is emphasized that the following account is necessarily incomplete and consists of very generalized remarks. Like many Native American religious outlooks, the Wintu worldview varied considerably between groups, shamans, and lay individuals. The traditional Wintu life cycle, excluding marriage, is discussed here because of its close association with ritual.

The Wintu spiritual worldview is extraordinarily complex, and only a few aspects of it are touched on here. Ideas concerning charmstones, werebeasts, prominent numinous beings, the practices of malevolent shamans and witches, and other important aspects of Wintu religion are not presented here. Interested readers are referred to Du Bois' ethnographic account (1935), Demetracopoulou and Du Bois (1932), and other works by Demetracopoulou.

Life Cycle

Birth. A pregnant woman was subject to a large number of taboos, not all of which were likely (or possible) to be observed (Du Bois 1935:45). Most of these restrictions were related to ideas of sympathetic magic. As an example, the mother could not wear a necklace, because it was believed that the umbilical cord would be wrapped about the infant's throat at birth. As delivery of the child drew near, the woman withdrew to a secluded structure for a period of one month and gave birth with the assistance of a midwife, while observing various food restrictions. At the conclusion of the mother's one-month seclusion, a ceremony was held to celebrate the mother's return and the child's first entrance into its home. The ceremony involved the dedication of a cradle-basket, woven from hazel and given to a fast runner who ran a short distance with it or circled the dwelling. After this, the child could be brought into the house (Du Bois 1935:47). Children were not named until they were old enough to understand the significance of the name (Du Bois 1935:51). If the mother died in childbirth, the infant was often killed and buried with her (Du Bois 1935:46).

Puberty. Another occasion for the seclusion of female members of the Tribe was the time of a girl's first menses (Du Bois 1935:53). The young woman was made to stay in a small brush shelter for one month or up to several months. During this time, she observed a number of taboos, and yellow pine bark might be burned to banish evil spirits. Some of her young contemporaries might gather outside her lodge at night to dance and sing bawdy songs. At the second menses, or one to three years later, a large puberty ceremony—the *batlastconos*, or Balas Chonas—would often be held (depending on economic considerations and the social importance of the girl's father). This ceremony, although not obligatory, was an important Wintu ritual that retains its importance today (Du Bois 1935:53; Winnemem Wintu Tribe 2015f). The rite was usually conducted in the fall and could involve several girls from different villages. Guests gathered for several days, bringing food that was placed in a circle around a dancing ground. The girls stood in the circle as people danced, but they did not participate. Each girl carried a spirally-painted staff made by her mother and a deer hoof rattle. The group feasted after the dancing, except for the girls, who continued to observe dietary restrictions.

At the end of five days (or sometimes longer, if there was enough food), the *xiwili* dance, a mock war performance also performed on other occasions, was held. Following the *batlastconos*, dietary and other restrictions were lifted. However, for the rest of her life, a woman was secluded in the family menstrual lodge during menses (Du Bois 1935:53–54).

Among modern Winnemem Wintu people, the Balas Chonas lasts four days and involves the young woman camping on the McCloud River, on the opposite shore from the location of the ceremony and swimming across on the fourth day, to join the dancers (Winnemem Wintu Tribe 2015f). Because the location of the ceremony, within the Shasta-Trinity National Forest, is accessible to the public, interference and outright abuse from boaters, fishermen, and other visitors has marred the ritual in recent years. The Winnemem Wintu continue to petition the U.S. Forest Service to close the river when the ceremony takes place.

Death. Upon a person's death, the relatives gathered and began wailing. Ideally, the body was buried on the same day as the individual's death, but burial might be delayed if some relatives had to travel to pay their respects (Du Bois 1935:64). The Wintu, for the most part, practiced flexed interment, although cremation may have been practiced to a limited extent. Burials were placed in a cemetery belonging to the family or serving the village as a whole. Inside the dwelling, the body was arranged in a crouching position with its hands on its cheeks and tightly wrapped in a deer or bear hide. The corpse was then removed via a special opening made in the rear of the house. The prepared body was brought to the cemetery and buried in a hole excavated by two or three old women. The entire process was accompanied by much wailing; it was considered bad form and very rude not to wail. A basket of water with acorn meal was placed at the right side of the body, and some of the deceased's personal effects might also be buried (Du Bois 1935:65). The person's dog would also be killed and buried with them to accompany them in the afterlife. After the burial, participants were required to purify themselves by bathing or sweating or by exposure to live oak or pine smoke (Du Bois 1935:65–66). The destruction of property was considered necessary to get rid of the person's ghost, who might otherwise linger. The house of the deceased, as well as their belongings, was burned, although valuable objects might be saved by passing them on as heirlooms before the person's impending death. Houses might be saved by moving the person outside before they died. However, all would have to be carefully purified by smoke. In addition to destroying property, the trails where the person habitually walked in life would be furrowed, as it was felt that the person's ghost would be attracted to the places he or she walked in life. Finally, mourners would gather at the grave for 10 days or so, to smoke and talk. Annual mourning ceremonies were not practiced.

After death, the spirit or soul (*les*), which all living people possess, may manifest as a ghost, or *loltcit*, a few days after death. The spirit of a shaman (*yapaitu*) is distinct from the *les*. The ghost of a relative sometimes manifests as a dust devil; when one is seen near one's house, acorn meal and water, sometimes mixed with hematite, is scattered where the whirlwind was seen (Du Bois 1935:77). Shamans are capable of communicating with the dead and sometimes have the *les* of a deceased person as a guardian spirit. One other component of the soul was known as the *winesxuyat*. This component is located "behind the ear" and dies along with the individual. It represents the waking human consciousness and intelligence. Deer are also said to possess a *winesxuyat*.

The *loltcit* lingers in the immediate vicinity for a few days after death. The ultimate fate of the soul varies according to different people, but some say it goes to Mt. Shasta and from there ascends to the Milky Way. Others say it returns to a spring whose location is unknown to the living and rises from there after it has sated its thirst with water (Du Bois 1935:78–79). There was no customary

orientation that the dead were placed according to in their graves; orientation of the dead was largely a matter of personal opinion among informants (Du Bois 1935:64–64). In some instances, the corpse may have been interred facing north, the direction of the sacred spring (as well as Mt. Shasta). This allowed the spirit to proceed in the correct direction toward the afterlife.

Cosmogony and Cosmology

The Wintu conceived of a supreme being or spirit, known by several variations of a name meaning "the one who is above" or "great man" (LaPena 1978:331; Du Bois 1935:72). However, he does not appear to have been thought of as omnipotent or omniscient. Interestingly, he does not appear to have been a Wintu adaptation of the Judeo-Christian deity. He appears to have been a creator figure with little or no additional role in influencing the Wintu world, although this varied between Du Bois' informants. Some stated that daily prayers for help or luck in routine tasks, such as deer hunting, were addressed to the sun, while others stated that prayers were (or once were) addressed to the "one above" (Du Bois 1935:72–74). There may have been varying degrees of identity of the supreme being and the sun between different individuals.

Accounts and interpretations of Wintu cosmology varied between individuals, but some general traits can be discerned. The world has been destroyed four (or three) times. The current world is the fifth (or fourth) world and will also be destroyed. The world was made by the creator, who formed the first people, and with his finger carved the McCloud River into the Earth, down from Mt. Shasta. The earth was originally composed only of bedrock, but Gopher created mounds of dirt that became the mountains (Du Bois 1935:74). The first people shared some of their attributes with animals. The first people were destroyed by a great wind, followed by a flood. Subsequent worlds were destroyed by a similar method or by fire or water alone. The belief in this cyclic cosmogony gave rise to a considerable amount of eschatological thought among the Wintu, at least as early as 1935, when Du Bois published her research. According to at least one informant, the world will continue to exist as long as Indians live, but when all Indians are gone, the world will be destroyed, again by a flood. This is because "white people never cared for land or deer or bear" and do not care for the world as the Wintu do, even when utilizing its resources (Du Bois 1935:74–75).

Sacred Places

Central to the Wintu worldview are sacred places—topographical features that are imbued with meaning outside of the domestic sphere of the village. These features include pot and seepage holes, rocks in the shape of animals, caves, river whirlpools, and knolls, each associated with a particular spirit. These locations are further identified by the sound of a buzzing noise in their vicinity. Spirits may include coyotes, suckers, and deer; less common are wolves, grizzlies, and a mythical person named Suptcit (Du Bois 1935:79–80). An example of one such location in the Stillwater area was a rock outcrop shaped like a bear and sacred to Grizzly Bear. This outcrop was destroyed by mining activities (Du Bois 1935:80). Sacred places are sources of supernatural power and (at least when Du Bois was writing) were generally off-limits to women, with the exception of the places sacred to Coyote. Both shamans and lay persons visited these places to obtain a spirit as a guardian or as a familiar. The person so inclined would leave the village without speaking to anyone, travel alone to the location, perform a ritual, and wait for a dream to be sent from the spirit. If the spirit of the place was well-disposed to the supplicant, the person might become a shaman (if he was not already one). Young men also petitioned sacred places for luck in gambling and success in hunting. Other skills and forms of assistance were also sought; a woman may, for example, seek skill in basketry, and attempts may be made to counter the effects of witchcraft (Du Bois 1935:80–82).

Shamanism

Shamanism was the most important aspect of the Wintu spiritual worldview, at least prior to about 1870 (Du Bois 1935:88). However, specialized shamans, such as rattlesnake shamans or weather shamans, were unknown, despite their presence in adjacent regions. Both men and women could become shamans. A chief who owned an earth lodge would, when requested by local shamans, arrange an initiation dance (*lahatconos*) for the initiation of new shamans, that occurred either in spring or late fall (Du Bois 1935:88–89). Some of those seeking initiation may have had prior supernatural experiences (such as the type undergone at a sacred place), but this was not a prerequisite. The initiation consisted of dancing naked around a manzanita fire all night, until a spirit or spirits were announced by a whistling sound above the smokehole of the lodge. Participants who did not have a supernatural experience after several hours dropped out of the dance. Those who remained would become possessed if the visiting spirits favored them and undergo a period of frenzied dancing, followed by a period of unconsciousness. The nature of the visiting spirits was assessed by knowledgeable holy men, and during the following several days, the initiate was instructed in the techniques of shamanism, as well as the songs, dietary restrictions, and other aspects of the particular spirit. The ritual was concluded by the purification of the shamans, old and new, in the river and a public dance. By the time of Du Bois' ethnographical work, the *lahatconos* was no longer being practiced, and people who wanted to become shamans had to be "natural doctors." That is, they had to have a personal calling to the vocation and undergo some form of liminal initiation that may be individualistic or involve other shamans (see Du Bois 1935:91–103 for an in-depth account of Wintu shamanic initiation and training during the early 20th century).

Shamans used several methods to heal disease. Disease was thought to be caused by object intrusion, soul loss, or spirit possession (Du Bois 1935:104). Curing involved either sucking, massage, soul capture, or the soul dance. For non-life threatening occurrences of object intrusion, sucking and, to a lesser extent, massage were the preferred methods of cure. Soul capture would be used if the patient were near death or if sucking had proven ineffective. In these cases, the patient's *les* is thought to have left the body and be wandering or to have been stolen by a werebeast (Du Bois 1935:105). The shaman's spirits are charged with finding the *les* and returning it to the patient's heart (where the *les* is believed to reside). Finally, the soul dance was an exorcism combined with object extraction, in which the invasive "poison" would be coerced out of the body.

Another function of the shaman, and perhaps a more frequently used one than healing, was that of prophecy and clairvoyance (Du Bois 1935:106–107). A common use of this power was at one time to ascertain the outcome of communal hunts, although the outcome of nearly anything might be subject to prediction. Clairvoyance was an ability that all shamans were expected to possess and was not a specialized skill.

Religious Revitalization

As mentioned earlier, the shamanic initiation dance fell into disuse after about 1870. This was likely due in part to the religious revitalization undergone by the Wintu and many other Native American Tribes as a result of the Ghost Dance movement of 1870. The Ghost Dance, and its later revival in 1890, were social movements intended to restore Indian societies devastated by contact with Euroamericans (Thornton 1986). The premise of the Ghost Dance was that its performance would restore wildlife (particularly buffalo), eliminate introduced diseases, remove people of European descent from Indian lands, and revive the dead—hence its name. The 1870 movement originated

among the Paviotso and Paiute people of western Nevada and spread into adjacent areas of Nevada, California, and Oregon.

The 1870 Ghost Dance developed into three distinct forms: the Earth Lodge cult, the *Bole Maru*, and the Big Head cult (Thornton 1986:5). The Earth Lodge cult originated among the Yana and may have emphasized the destruction of the world, though it may merely have centralized the earth lodge structure in the Ghost Dance's performance. The *Bole Maru* originated among the Hill Patwin Tribe (and became popular among the Pomo) and emphasized dreaming and the intercession of a supreme being in the life of the individual. The Big Head cult was a variation of the *Bole Maru*. By the time it reached the Trinity River area around 1880, and again in 1890, it centered on dances involving two ceremonial feather headdresses and two feather capes, which the Wintu purchased. The headdresses, but not the capes, were sold in turn to the Shasta tribe (Du Bois 1935:119). The Ghost Dance reached some of the Wintu groups from the south who referred to it as the Southland Dance (Du Bois 1935:118). After about a year, it evolved into the *yetcewestconos*, or dream dance, which was related to the *Bole Maru* cult. Interestingly, the only surviving songs from the Ghost Dance movement as a whole belong to the Wintu dream dance (Thornton 1986:5–6).

Conclusion

As of this writing, the Wintu remain engaged in the struggle for Federal recognition and compensation for the historic seizure of their native lands. For the Winnemem Wintu, Shasta Dam has been an issue since the late 1930s, when construction on the dam began (Winnemem Wintu Tribe 2015b). The construction of the dam flooded allotment lands that had previously been granted to the Wintu by the Federal government. This issue continues today with the proposed raising of the dam and the purchase of about 1,214 ha (3,000 acres), which would raise water levels that would flood an estimated 39 sites along the McCloud River (Winnemem Wintu Tribe 2015c, 2015d). Despite these struggles, the Wintu continue to preserve their traditional culture. These preservation efforts include, as noted above, the continued practice of the *batlastconos* ceremony and other sacred rituals, many of which are dependent upon geographic location for their practice and will be lost if the Shasta Dam is raised and allowed to flood these sites. Efforts to preserve the Wintu language have also been active for over 20 years (Winnemem Wintu Tribe 2015g).

Historic Context

Historic Era (A.D. 1848–1940)

The Igo and Ono mining districts are two neighboring districts named after their respective towns. Igo is about 6.4 km (4.0 miles) east of Ono in southwestern Shasta County and about 24 km (15 miles) southwest of Redding, California. Placer mining in the area began shortly after the California Gold Rush, which commenced following the discovery of gold at Sutter's Mill in 1848 and ended in 1855. Hydraulic and drift mining was fruitful from the 1860s through the 1880s, particularly at the Hardscrabble and Russell mines near Igo. The area was occupied by many Chinese miners. One local tradition proposes that the names Igo and Ono originate from the pidgin idioms "I go?" and "oh-no!" spoken by the Chinese after being told to move on (Vaughan 2002b:6).

Reading's Bar, a sandbar formation at the mouth of the canyon of Clear Creek connected with Major Pierson B Reading, was the location of the first gold discovery in Shasta County. The settlement eventually became known as Horsetown (Southwest Shasta Historical Group 2011). Large-scale mining operations began in 1851 in the region, and it was claimed that as many as 52 ounces of gold were collected each day (Amy Huberland, personal communication 2014). As

hydraulic mining and the need for water control grew in the 1860s, the number of Chinese laborers present in Shasta County increased from the previous decade. Chinese labor was responsible for the construction of many of the ditches in the area. During the 1860s, many Chinese residents accumulated their own capital and started their own mining operations (Ritter 1986:7–8).

Established in 1849, the town of Piety Hill was a precursor to the town of Igo. Around 1860, it had roughly 1,500 residents, 600 of whom were Chinese (Vaughan 2002b:7). As the Hardscrabble Mine increased its operations, it was determined that Piety Hill was located in the way of the expanding mine. It was proposed that the town be moved to an unproductive (in terms of mineral resources) location across Conger Gulch. The town was relocated in 1866, becoming known as Igo. Some of the structures, including what is known now as the Igo Inn, were moved to the new location. Many of the Chinese residents stayed behind when the Euroamerican population relocated to Igo, and by 1888, Piety Hill had become a predominately Chinese settlement (Ritter 1986:9).

Paleontology

Portions of Shasta County are underlain by sedimentary rocks that are known to produce valuable, scientifically significant vertebrate and invertebrate fossils (Shasta County 2004).The geology of the project area consists primarily of non-marine alluvial deposits dating from the Pleistocene.

Research Methods

Prior to fieldwork, a Class I records search was performed that examined all previously conducted surveys and previously recorded sites and historic properties within a 0.8-km (0.5-mile) buffer zone extending from the project footprint. The Class I research was conducted through consultation with the California Historical Resources Information System via the Northeast Information Center. A Sacred Lands File request was also filed with the California NAHC. U.S. General Land Office (GLO) maps were used for applicable Township and Range designations within California as well as to check for indications of historic properties within the vicinity of the area of potential effect (APE).

Records Search

Class I

The Class I search found 32 surveys that had been previously conducted and 19 sites that had been previously recorded within the 0.8-km (0.5-mile) buffer (see Appendix E). Of the 19 sites, 17 are historic, 1 is prehistoric, and 1 has a combination of historic and prehistoric components. In addition, the project area is located within the historic Igo-Ono Gold District (see Historic Context section above). Portions of the project area traverse the Happy Valley Ditch (site CA-SHA-3382H), a historic water conveyance system that runs parallel to Cloverdale Road.

In 2002, during a survey performed by Coyote & Fox Enterprises (CFE), Cloverdale Road served as the eastern boundary of a newly recorded historic mining site, CA-SHA-3373H (Vaughan 2002a:10). The CFE survey was conducted as a cultural resource assessment for a property owned by Shasta County for a proposed landfill (Vaughan 2002a:1). The newly recorded site was named the Landfill Mining Complex; in addition to new features, it incorporated several previously recorded mining sites. The eastern boundary of the site was defined by boundary of the property, Cloverdale Road, rather than by the extent of historic mining features (Vaughan 2002a:12). Happy Valley Ditch, though the project incorporates it, was recorded as a separate site and not integrated into the Landfill Mining Complex. Although not mentioned directly in CFE's report, the Landfill Mining

Complex most likely was associated with the Piety Hill townsite, which was located in the immediate vicinity along Cloverdale Road.

GLO Maps

GLO maps for the relevant Township and Range designations were checked for indications of historic properties in the vicinity of the APE. The maps were accessed via the BLM GLO Records website (BLM 2014). Reviewed maps included Township 31 North, Range 6 West, dated June 16, 1876, and Township 30 North, Range 4 West, dated January 19, 1870. A few properties, discussed below, are indicated as being present within the 0.8-km (0.5-mile) Class I buffer. The project area itself, according to the maps, does not encroach upon any historic properties.

Native American Heritage Commission Coordination

Tierra sent a Sacred Lands File and Native American Contacts List request to the NAHC on December 2, 2014 (see Appendix E). NAHC responded on December 11 and indicated that no known sacred sites or Traditional Cultural Properties are located in the project area. The NAHC response included a list of 14 Native American individuals/organizations that may have knowledge of cultural resources in the proposed project area.

Field Survey

Tierra archaeologists conducted a Class III cultural resource survey of the proposed project area on February 24–26, 2015. No prehistoric archaeological sites or isolated occurrences (IOs) were observed during the survey. A portion of Happy Valley Ditch (previously recorded site CA-SHA-3382H) was recorded. The Primary Record and Linear Feature Record forms for the site were updated. The project area passes by the Igo Inn, a historic structure that originally housed fraternal groups. The Building Structure record and Object record forms were completed. Locations of sites and IOs can be seen in Appendix E, the cultural resource report.

The project area also traverses the northeastern edge of CA-SHA-3373H, the Landfill Mining Complex site. The majority of this site is located on the opposite side of Dry Creek, but in 2002 the boundary was extended to include Happy Valley Ditch, even though it is a site in its own right (Vaughan 2002b).

Cloverdale Cemetery is also an important cultural landmark in the direct vicinity of the project area. Although the project area lies outside of the cemetery, the cemetery is close to the utility corridor, and its presence suggests a potential for buried remains.

In addition to the ditch, building, and cemetery, several IOs dating to the historic era were recorded. Each of the above-mentioned properties (except for site CA-SHA-3373H, because it is adjacent to but not within the project area), beginning with IOs, are described below.

IOs

Ten IOs were discovered; all were historic in age (see Appendix E). More than half (n=6) of the IOs consist of isolated features. These include a culvert (IO 1); a concrete box (IO 3); concrete pipes (IOs 4 and 5), one of which is inscribed "1942" (IO 4); a historic benchmark (IO 9); and a concrete structure of unknown function that is potentially related to water management (IO 10). Isolated artifacts include a glass and white earthenware scatter (IO 2) and several metal cans (IOs 6–8). See Appendix E for photos of IOs.

Happy Valley Ditch (CA-SHA-3382H)

The Happy Valley Ditch (CA-SHA-3382H), also known as the Happy Valley Irrigation Canal, begins in Igo and extends into the community of Olinda, Shasta County, California (see Appendix E). The feature was inspected within Shasta County ROW along Cloverdale, Palm, Olive, and Happy Valley Roads. The section of the ditch within the project area is earthen, except at one location where it passes under Cloverdale Road via a culvert.

The Happy Valley Ditch is situated parallel to and crosses Cloverdale Road. It spans from Igo to Olinda and includes a series of concrete culverts where the ditch intersects roads. The ditch branches off into a number of arterials located on private lands near Cloverdale. The profile of the ditch is generally U-shaped, with a depth of roughly 0.9–1.2 m (3.0–4.0 feet), measured from the top of the earthen embankments that are located on either side of the ditch, and a width of 0.6–0.9 m (2.0–3.0 feet). The ditch is probably part of the Dry Creek Tunnel and Fluming Company's Hardscrabble Mine ditch, which also served the mining community of Piety Hill from 1853–1880 (Moravec 1997).

Presently, an official NRHP designation for the Happy Valley Ditch as a whole does not appear to have been made. Records obtained from the California Office of Historic Preservation for the Class I records check did indicate that a portion of the ditch has been previously recommended as an ineligible contributing segment. Although the Primary Site Record was not available, this assessment seemingly was made during a survey for a proposed fuel break on BLM lands (Ritter 2000). Tierra similarly recommends that the portion of the ditch examined as part of this survey is an ineligible contributing segment.

Igo Inn (Independent Order of Odd Fellows Welcome Lodge No. 209)

The Igo Inn, located in Igo, California, was formerly the Independent Order of Odd Fellows (I.O.O.F.) Welcome Lodge No. 209. The structure consists of a two-story meeting hall that was either constructed or moved from Piety Hill in 1885. A single-story dance hall addition at the rear of the building was added in the 1920s while the building was still being used as a fraternal meeting hall. The building was restored in 1992, and sometime after 2002, a front porch was added to the structure. In addition to housing meetings for the I.O.O.F., it was also used as a meeting place for a Masonic body—Clinton Lodge No. 119, which is known to have operated in Piety Hill in and before 1971 (Grand Lodge of California 1871:722). Although the Southwest Shasta Historical Group (2010) gives a date of 1877 for the relocation of the lodge to Piety Hill from Horsetown, the Grand Lodge of California (1910) indicated that the Clinton Lodge had moved by that time. However, it is unclear if the relocation of the lodge mentioned in these documents refers to the actual building structure or to the fraternal organization. In 1935, the building was deemed unsafe for public use, and the Masons left. It was not until after remodeling efforts took place in the 1990s that the structure was used again (Walsh 1999). The structure consists of wooden horizontal sidings on top of a coursed stone foundation (see Appendix E).

Cloverdale Cemetery

The project area passes near the Cloverdale Cemetery, located on the west side of Oak Street. Although the project area does not directly infringe upon the cemetery, the proposed fiber-optic line passes very close to its boundary. In 1887, three acres of land were purchased for $40.00 for the cemetery. It became an "official" cemetery in 1892 (Morevec 1997) and remains in use today. It is possible that buried remains could extend beyond the modern boundaries of the cemetery. It was

recommended that either the project area be rerouted or monitoring take place in the vicinity during construction.

4.5.2 Environmental Effects

The proposed installations of underground conduit and fiber-optic lines would involve minimal ground disturbance, and there is a low probability for the proposed project to affect cultural resources in the subject area. Nevertheless, cultural resources could be discovered during any ground-disturbing activities conducted for the proposed project.

For a built resource to be listed in or be considered eligible for the NRHP or the CRHR, it must retain the essential character-defining features that enable it to convey its historic identity. These features are those that define both why a property is significant and the period during which it acquired its significance. Furthermore, each type of property depends on certain aspects of integrity, more than others, to express its historic significance. Determining which of the aspects is most important to a particular property requires an understanding of the property's significance and its essential physical features from the resource's period of significance.

Impacts on cultural resources could potentially occur if the project were to result in any of the following:

- Substantial adverse changes in the significance of a historical resource either listed or eligible for listing on the NRHP, the CRHR, or a local register of historic resources.
- Substantial changes in the significance of a unique archaeological resource, destruction of a unique paleontological resource or site, or disturbance of human remains, including those interred outside of formal cemeteries. Paleontological resource sensitivity is defined as follows:

  Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the rock unit in producing significant fossils, and fossil localities that are recorded from that unit. Paleontological sensitivity is derived from the fossil data collected from the entire geologic unit, not just from a specific survey.

4.5.2.1 Significance Criteria

An impact related to cultural resources was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA §15064.5.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA §15064.5.

- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- Disturb any human remains, including those interred outside of formal cemeteries.

4.5.2.2 Impacts and Mitigation Measures

The proposed project would incorporate measures to avoid and/or minimize impacts to cultural resources, as detailed in the APMs below. The project would not result in significant impacts to cultural resources in the project area.

APM CR-1: Happy Valley Ditch will be avoided via subsurface boring.

APM CR-2: Cloverdale Cemetery and the Igo Inn will be avoided by rerouting the fiber-optic lines to the opposite side of the road.

APM CR-3: In the event that undiscovered historical or archaeological resources are encountered by construction personnel, all ground-disturbing activities within 30.5 m (100.0 feet) of the find in non-urban areas and 15.2 m (50.0 feet) in urban areas will be temporarily halted or diverted and a qualified archaeologist will be contacted to assess the discovery.

APM CR-4: If human remains are discovered or recognized in any location, construction personnel will suspend further excavation or disturbance of the site and any nearby areas reasonably suspected to overlie adjacent human remains until the County coroner has been informed and has determined that no investigation of the cause of death is required.

APM CR-5: In the event that fossil remains are encountered by construction personnel, qualified paleontological specialists will be contacted. Construction within 30.5 m (100.0 feet) of the find in non-urban areas and 15.2 m (50.0 feet) in urban areas will be temporarily halted or diverted until a qualified vertebrate paleontologist examines the discovery.

Impact CR-1: Cause a Substantial Adverse Change in the Significance of a Historical Resource as Defined in CEQA § 15064.5 (Less Than Significant).

The proposed project installations would cross the historic Happy Valley Ditch (CA-SHA-3382H) and would also occur in the vicinity of the Cloverdale Cemetery and the Igo Inn. Happy Valley Ditch is not eligible for inclusion in the NRHP, and the eligibility of the Cloverdale Cemetery and the Igo Inn have not been assessed. The State Historic Preservation Office's concurrence for CPUC's recommended "No Adverse Effect" finding is pending. Once received, it will be included in Appendix E of this document, as it pertains to the proposed project's potential impacts on these resources. Impacts resulting from the proposed project would be less than significant, because the Happy Valley Ditch would be bored beneath (APM CR-1) and the cemetery and the Igo Inn would be avoided (APM CR-2).

It is possible that undiscovered historical resources may be present in the project are. If present, these resources could be impacted during the ground-disturbing activities associated with the proposed installations. In order to maintain these potential impacts at a less than significant level, APM CR-3 would be implemented during construction. Therefore, impacts to historical resources would be less than significant.

Impact CR-2: Cause a Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to CEQA § 15064.5 (Less Than Significant).

There are no archaeological sites present in the proposed project area, and the IOs identified are considered to be "nonunique" archaeological resources as defined by CEQA §15064.5(c)(4) and §21083.2(h). According to these statutes, a "nonunique archaeological resource need be given no further consideration" and "the effects of the project on those resources shall not be considered a significant effect on the environment" (California Association of Environmental Professionals 2014). As such, the documentation of the IOs is considered complete, and the proposed project would have no impact on these resources.

It is possible that undiscovered archaeological resources could be present in the project area. If present, these resources could be impacted during the ground-disturbing activities associated with the proposed installations. Depending on the nature of the materials and the extent of the disturbance and/or damage, impacts could be significant. In order to maintain these potential impacts at a less than significant level, APM CR-3 would be implemented during construction.

Impact CR-3: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature (Less Than Significant).

There is the potential for undiscovered paleontological resources to be present in the proposed project area. However, with the implementation of APM CR-5, any potential impacts to these resources resulting from construction would be kept to less than significant level. The proposed project would have no impact on unique geologic features because none are present in the project area.

Impact CR-4: Disturb Any Human Remains, Including Those Interred Outside of Formal Cemeteries (Less Than Significant).

Although it would be unlikely for human remains to be disturbed during construction, APM CR-4 would be implemented during construction to ensure that potential impacts are kept to a less than significant level.

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4.6 Geology, Soils, and Seismic Potential

4.6.1 Affected Environment

4.6.1.1 Regulatory Setting

Federal

Clean Water Act Section 402p

Amendments to the CWA in 1987 added Section 402p, which created a framework for regulating municipal and industrial stormwater discharges under the NPDES program. In California, the SWRCB is responsible for implementing the NPDES program. Pursuant to the State's

Porter-Cologne Water Quality Control Act, it delegates implementation responsibility to California's nine RWQCBs. The Central Valley RWQCB has jurisdiction within the project area.

Under the NPDES Phase II Rule, any construction project disturbing 0.4 ha (1.0 acre) or more must obtain coverage under the State's Construction General Permit (CGP) for stormwater discharges associated with construction activity. The purpose of the Phase II Rule is to avoid or mitigate the effects of construction activities, including earthwork, on surface waters. To this end, CGP applicants are required to file a Notice of Intent to Discharge Stormwater with the RWQCB that has jurisdiction over the construction area and to prepare a SWPPP stipulating BMPs that would be in place to avoid adverse effects on water quality.

State

Alquist-Priolo Earthquake Fault Zoning Act

In 1972, the legislature of the State of California passed the Alquist-Priolo Geologic Hazards Zone Act (renamed the Alquist-Priolo Earthquake Fault Zoning Act in 1994). The intent of the legislation was to limit the hazards of fault surface rupture to occupied structures. Active faults are those with evidence of displacement within the past 11,000 years (Holocene time). Those faults with evidence of displacement during Pleistocene time (11,000–2,000,000 years before present) are generally considered potentially active. In 1974, the California Division of Mines and Geology (currently known as the California Geological Survey) began establishing special study zones along known active faults termed earthquake fault zones. Starting in 1976, the California Division of Mine and Geology initiated the Fault Evaluation and Zoning Program to study faults identified in the Alquist-Priolo Earthquake Fault Zoning Act as "sufficiently active and well defined" to be considered for further evaluation. Fault Evaluation Reports were prepared for each earthquake fault zone summarizing data on fault location, age of activity, orientation, and probable magnitude of displacement.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. Passed by the State Legislature in 1990, this law was codified in the PRC as Division 2, Chapter 7.8A and became operative in April 1991.

Local

The Seismic and Geologic Hazards Element of the SCGP identifies goals and policies that minimize the risks associated with identification and appraisal of seismic and geologic hazards including surface faulting, ground shaking, and ground failure, and it specifies land use planning procedures that should be implemented to avoid hazardous situations. Relevant SCGP policies are provided below.

Objectives

SG-1 Protection of all development from seismic hazards by developing standards for the location of development relative to these hazards; and protection of essential or critical structures, such as schools, public meeting facilities, emergency services, high-rise and high-density structures, by developing standards appropriate for such protection.

SG-2 Protection of development on unstable slopes by developing standards for the location of development relative to these hazards.

SG-3 Protection of development from other geologic hazards, such as volcanoes, erosion, and expansive soils.

Policy

SG-e When soil tests reveal the presence of expansive soils, engineering design measures designed to eliminate or mitigate their impacts shall be employed.

4.6.1.2 Project Setting

The geology of California is subdivided into 11 geomorphic provinces (California Geological Survey 2002). The project site is located in the Great Valley Province. The Great Valley Province is an alluvial plain approximately 50 miles wide and 400 miles long, stretching from south of Redding to south of Bakersfield. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago). The topography of the Great Valley Province is characterized by low rolling hills and flat bottom lands. A thick sequence of sedimentary rocks, ranging in age from Jurassic to recent, typifies the province.
According to the SCGP, Shasta County, though not as active as some areas of California, is a seismically active region; however, earthquake activity has not been a serious hazard in Shasta County's history, nor is it probable that it will become a serious hazard in the future (Shasta County 2004).

Soils in the project area are of the, Anderson gravelly sandy loam (Ad), Auburn loam (AnD), Auburn very stony loam (ArD), Churn gravelly loam (CeB), Clough gravelly loam (CgB), Moda loam (MhA), Newtown gravelly loams (NeC, NeD and NeE2), Red Bluff loams and gravelly loams (RbA, RbB, RcA, RcB, RdA, and RdB), tailings, and placer diggings (TaD)(NRCS 2013a). Soils in the project area include soils with low-to-high shrink-swell potential. Soils with low shrink-swell potentials are generally suitable for building, whereas soils with high shrink-swell potentials, also known as expansive soils, primarily comprise clay particles. Clay increases in volume when water is absorbed and shrinks when dry. Expansive soils can damage building foundations, concrete slabs, and road pavement as a result of swelling forces that reduce soil strength.

The wind erodibility of these soils ranges from moderate to high, and the K-factor for erodibility ranges from 0.20–0.37. The K-factor, which can range from 0.02 for the least erodible soils to 0.62 for the most erodible, is an index that quantifies the relative susceptibility of a soil to erosion by surface water flows. Medium-texture soils, including the Red Bluff gravelly loams, Newtown gravelly loams, and Churn gravelly loams, all have a moderate K-factor ranging from 0.32 to 0.37; the coarse-textured Anderson gravelly loam and Red Bluff loams in the project area have low K-factors ranging from 0.2 to 0.24 and are the least erodible soil present (NRCS 1974).

4.6.2 Environmental Effects

4.6.2.1 Significance Criteria

An impact related to geology, soils, or seismic potential was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving:
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil.
- 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.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risk to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater.

4.6.2.2 Impacts and Mitigation Measures

The proposed project would incorporate the following APMs and would not result in significant impacts on geology, soils, or seismic potential in the project area.

APM GEO-1: TDS will require the contractor to manage construction-induced sediment and excavated spoils in accordance with the requirements of the SWRCB and EPA NPDES permits for stormwater runoff associated with construction activities.

APM GEO-2: Prior to the onset of construction, TDS or its authorized contractor will complete a SWPPP that outlines BMPs to control discharges from construction areas.

APM GEO-3: No construction-related materials, wastes, spills, or residues will be discharged from the project.

APM GEO-4: The staging of construction materials, equipment, and excavation spoils will be performed outside of drainages.

APM GEO-5: Excavated or disturbed soil will be kept within a controlled area surrounded by a perimeter barrier that may entail silt fence, hay bales, straw wattles, or a similarly effective erosion-control technique that prevents the transport of sediment from a given stockpile.

APM GEO-6: All stockpiled material will be covered or contained in such a way that eliminates off-site runoff from occurring.

APM GEO-7: Upon completion of construction activities, excavated soil will be replaced and graded so that post-construction topography and drainage matches pre-construction conditions.

APM GEO-8: Surplus soil will be transported from the site and disposed of appropriately.

Impact GEO-1: Expose People or Structures to Potential Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Strong Seismic Ground Shaking; Seismic-Related Ground Failure, Including Liquefaction; or Landslides (No Impact).

The proposed project area is not located in an Alquist-Priolo earthquake fault zone, and there are no seismic hazard zones near the project area. Because these hazard zones are not present and the majority of the proposed facilities to be installed would be buried, the proposed project would not expose people or structures to risks resulting from seismic activity. There would be no impacts.

Impact GEO-2: Result in Substantial Soil Erosion or the Loss of Topsoil (Less Than Significant).

Plowing construction and the excavation of bore pits and DLC vault sites associated with the proposed project would loosen soil, which could contribute to soil erosion from wind and storm events. Per APM GEO-2, a SWPPP will be prepared that will detail BMPs to be implemented that would minimize or eliminate the potential soil erosion that could result from construction. Therefore, soil erosion and the loss of topsoil resulting from the proposed project would be maintained at less than significant levels.

Impact GEO-3: 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 (No Impact).

The proposed project would involve the installation of buried fiber-optic lines and ancillary equipment including DLC sites consisting of buried vaults and aboveground equipment cabinets. Per APMs GEO-1–7, a SWPPP will be prepared prior to construction that will detail BMPs to be followed related to management of runoff, excavation and stockpiling, and post-construction site restoration. All soils disturbed during construction would be stabilized following construction by compaction to accepted engineering standards. As a result of this stabilization and the lack of topographical relief in the project area that would be conducive to landslides, there would be no impacts from on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse resulting from the proposed project.

Impact GEO-4: Be Located on Expansive Soil, as Defined in Table 18-1-B of the Uniform Building Code (1994), Creating Substantial Risk to Life or Property (No Impact).

The proposed fiber-optic line installations would be located in an area that includes expansive soils with a high shrink-swell potential. Because the majority of the project's components would be buried, disturbed soils would be compacted following construction, and none of the aboveground installations would include large structures, there would be no impacts resulting in substantial risks to life or property resulting from the expansive soils present in the project area.

Impact GEO-5: Have Soils Incapable of Adequately Supporting the Use of Septic Tanks or Alternative Waste Disposal Systems Where Sewers Are Not Available for the Disposal of Wastewater (No Impact).

The proposed project does not include the installation of septic tanks or other waste disposal systems; therefore, there would be no impacts related to disposal of wastewater.

4.6.3 References

California Geological Survey

2002 California Geomorphic Provinces. Note 36. Revised. California Department of Conservation, Sacramento.

National Resource Conservation Service (NRCS)

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4.7 Hazards and Hazardous Materials

4.7.1 Affected Environment

4.7.1.1 Regulatory Setting

Federal

The EPA is the principal Federal regulatory agency responsible for the safe use and handling of hazardous materials. The key Federal regulations pertaining to hazardous wastes are described below. Other applicable Federal regulations are contained primarily in Titles 29, 40, and 49 of the CFR.

Toxic Substances Control Act

The Toxic Substances Control Act of 1976 (15 United States Code 2601 et seq.) authorizes the EPA to track industrial chemicals produced within or imported into the United States. Under this act, the EPA screens and tests industrial chemicals that pose a potential health hazard to humans or the environment. This act grants the EPA the authority to control and ban newly developed industrial chemicals and other chemicals that pose a risk in order to protect public and environmental health.

Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act of 1980

The Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 address handling, disposal, and spill contingency measures for hazardous substances. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP 40 CFR Part 300) specifies the requirements for spill response activities. These laws and regulations apply to the proposed project installation activities conducted within the subject area.

State

California hazardous materials and wastes regulations are equal to or more stringent than Federal regulations. The EPA has granted the State primary oversight responsibility for administration and enforcement of hazardous waste management programs. State regulations require planning and management to ensure that hazardous materials are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key State laws pertaining to hazardous materials and wastes are discussed below.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Material Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes business facilities, inventories, emergency response plans, and training programs. Hazardous materials are

defined as raw or unused materials that are part of a process or manufacturing step. They are not considered to be hazardous waste. However, health concerns pertaining to the release of hazardous materials are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the State Hazardous Waste Management Program, which is similar to, but more stringent than, the Federal RCRA program. The Act defines "hazardous wastes" as waste products with properties that make them dangerous or potentially harmful to human health or the environment. Hazardous wastes can be the byproducts of manufacturing processes or simply discarded commercial products, such as cleaning fluids or pesticides. The Act is implemented by regulations set forth in CCR Title 26, which describes the following required parameters for the proper management of hazardous waste:

- Identification and classification.
- Generation and transport.
- Design and permitting of recycling, treatment, storage, and disposal facilities.
- Treatment standards.
- Operation of facilities and staff training.
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for their identification, packaging, and disposal. Under this act and CCR Title 26, a generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substances Control (DTSC).

California Occupational Safety and Health Administration Standards

Worker exposure to contaminated soils, vapors that could be inhaled, or groundwater containing hazardous constituents is subject to the monitoring and personal safety equipment requirements established in Title 8 of the California OSHA regulations. The primary intent of the Title 8 requirements is to protect workers, but compliance with some of these regulations also reduces potential hazards to non-construction workers and project vicinity occupants through required controls related to site monitoring, reporting, and other activities.

California Environmental Protection Agency (CEPA)

CEPA implements and enforces a Statewide hazardous materials program established by Senate Bill 1082 (1993) to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs for hazardous materials.

- Hazardous Materials Release Response Plans and Inventories (Business Plans).
- California Accidental Release Prevention Program.
- Underground Storage Tank Program.
- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control, and Countermeasure Plans.

- Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs.
- California Uniform Fire Code: Hazardous Materials Management Plans and Hazardous Material.
- Inventory Statements.

Local

Certified Unified Program Agency

A Certified Unified Program Agency (CUPA) is a City or County agency certified by DTSC to conduct the Unified Program established by Senate Bill 1082 (as explained under CEPA). The Shasta County Environmental Health Division CUPA Department of Toxic Substances Control is the CUPA with jurisdiction in the vicinity of the project area.

Shasta County General Plan

The SCGP has two planning documents with information related to hazards: the General Plan, including the Hazardous Materials and Fire Safety and Sheriff Protection Elements (Shasta County 2004) and the Shasta County Multi-jurisdictional Hazard Mitigation Plan (Shasta County 2011). Background information, goals, and objectives related to Fire and Hazardous Materials from these plans are discussed below.

Fire

Fire hazards within Shasta County include wildland and non-wildland fires. Wildland fires burn natural or wild vegetation on undeveloped lands. According to the SCGP, human activities such as smoking, debris burning, and equipment operation are the major causes of wildland fires (Shasta County 2004). Fuel load, which is the quantity of available vegetative fuel, determines the intensity of a wildland fire. Fuel load can be characterized as "light" to "heavy," with light indicating a light coverage of grasses and herbs and heavy indicating the presence of woods and brushwood with vegetation 1.8 m (6.0 feet) or more in height (Shasta County 2004). In addition to fuel load, topography can influence the intensity of fire; steep slopes cause fires to burn faster and increase the travel time of and obstacles encountered by response crews. Non-wildland fires include structural, chemical, petroleum, electrical, vehicle, and other human-made material fires (Shasta County 2004). Non-wildland fires occur predominately in urban areas.

The SCGP Fire Safety and Sheriff Protection Element includes objectives and policies to protect human safety. The following policy is relevant to the proposed project:

FS-b Known fire hazard information should be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to the requirements of the California Environmental Quality Act (CEQA)

Hazards and Hazardous Materials

The SCGP Hazard Mitigation Plan includes goals and objectives related to hazards and hazardous materials (Shasta County 2011).

SCGP Hazardous Materials:

Objective HM-1: Protection of life and property from contact with hazardous materials through site design and land use regulations and storage and transportation standards.

Objective HM-2: Protection of life and property in the event of the accidental release of hazardous materials through emergency preparedness planning.

Policy HM-a: The County shall make every effort to inform applicants for discretionary and nondiscretionary projects which are located within potential border zone property of known hazardous waste facilities that they must comply with State requirements regarding hazardous waste facilities. A map shall be prepared and maintained which identifies these areas.

Hazard Mitigation Plan (HMP):

HMP, overall Goal 5: Reduce the possibility of damage and losses to existing assets, particularly people, critical facilities/infrastructure, and County-owned facilities due to flood, wildfire, extreme weather, earthquake, hazardous materials, volcano, chemical/biological/radiological/nuclear/ explosive events, pandemic/epidemic, multi-casualty, or dam failure.

HMP Goal Wildfire (WDF)-1—Promote disaster-resistant future development

- Objective WDF-1.A: Facilitate the updating of the Comprehensive Plan, General Plans, and zoning ordinances to limit (or ensure safe) development in wildfire hazard areas.
- Objective WDF-1.B: Facilitate the adoption of building codes that protect existing assets and restrict new development in wildfire hazard areas.
- Objective WDF-1.C: Facilitate consistent enforcement of the comprehensive plan, zoning ordinances, and building codes.

HMP Goal HM-1—Promote disaster-resistant future development

- Objective HM-1.A: Facilitate the updating of the Comprehensive Plan, General Plans, and zoning ordinances to limit (or ensure safe) development in hazardous materials areas.
- Objective HM-1.B: Facilitate the adoption of building codes that protect existing assets and restrict new development in hazardous materials areas.
- Objective HM-1.C: Facilitate consistent enforcement of the comprehensive plan, zoning ordinances, and building codes.

4.7.1.2 Project Setting

The subject area is located within the existing ROW of public roads; therefore, a Phase 1 Site Assessment of the subject area corridor was not conducted. An Environmental Data Resources (EDR) DataMap Corridor Study (2015) was prepared for the project alignment (Appendix F). Table 4.9 presents a summary of facilities located within 0.8 km (0.5 miles) of the project area.

Table 4.9. EDR Records of Potential Recognized Environmental Conditions (RECs)

Record Type	Reported Facilities	Status	Concern for Project (Low, Moderate, High)
Emergency Response Notification System (ERNS)	1	16774 Palm Avenue, incident reported, completion not reported, minor spill of mineral oil	low
California Water Resources Control Board—Waste Discharge System (WDS)	1	facility that treats sewage, minor threat to water quality	low
State Water Resources Control Board HIST CORTESE Database	3	minor spills (such as gasoline spill), remediation and/or monitoring in effect; and hazardous materials business site plan for underground tank	low
Leaking Underground Storage Tank (LUST) Incident Records	5	LUST facilities, cases all remediated and closed	low
Historical Underground Storage Tank (HIST UST) Registered Database	6	a list of facilities that have underground storage tanks; this database records presence of USTs rather than violations	low
Certified Unified Program Agency (CUPA) Database Listings	8	sites included in CUPA database that handle hazardous materials; the records for these projects include 3 schools, 3 stores, a community center, and the Happy Valley Telephone office; no violations were reported	low
Statewide Environmental Evaluation and Planning System (SWEEPS)	6	a list of facilities that have USTs; this database records presence of USTs rather than violations	low
California Hazardous Materials Incident Report System (CHMIRS)	2	16774 Palm Avenue, incident reported, completion not reported, minor spill of mineral oil	low
Aboveground Storage Tank (AST) Locations	2	A list of facilities that have ASTs; no violations reported	low
Water Board Enforcement Actions (ENF)	2	2 records, one for illegal grading and a record for an enforcement letter for action at a local school. Cases closed	low
Department of Toxic Substance Control HAZNET Database	2	two facilities that handle hazardous materials; no violations reported	low
EDR U.S. Historical Automobile Service Station Sites	2	two reported facilities at 16809 Olea Lane (2002) and 15868 Cloverdale Road	low
EDR Recovered Government LUST Database (RGA LUST)	1	record for LUST violations at one facility (duplicate record for one of the LUST sites; remediated and closed)	low

As noted in the table above, according to the EDR Report, 41 sites are located within or adjacent to the project corridor (EDR 2015). However, based on regulatory status, none of the sites are considered to represent a recognized environmental condition.

No other known regulated or unregulated hazardous waste generators, leaking tanks, toxic spills, or other sites affecting the environment are located in the proposed project area. There is no listed Superfund or other National Priorities List (NPL) site in the vicinity of the project area.

The nearest schools to the project area are Igo-Ono Elementary School, Happy Valley Primary School, Happy Valley Community Day School, Happy Valley Union Elementary School, and Happy Valley Elementary School. These schools are located within 0.40 km (0.25 miles) of the project area.

The nearest public airport is the Redding Municipal Airport, approximately 6 km (4 miles) east of the project area.
According to the California Department of Forestry and Fire Protection (CAL FIRE) Shasta County Fire Hazards Severity Zones map, the proposed project alignment is primarily located within areas mapped as Very High Fire Danger, with a small portion mapped as Federal Responsibility Area (FRA). The FRA is the Clear Creek Greenway, managed by the BLM in the western portion of the project area (CAL FIRE 2007). Fire is a serious concern in the project area, particularly at the western end of the project because of steep slopes and forested vegetation. The western end of the project area was subject to the large Clover wildfire in 2013 that burned over 3,267 ha (8,073 acres) and resulted in 6 injuries and the loss of 68 residences and 128 outbuildings, as well as damage to 5 residences and 10 outbuildings (CAL FIRE 2015)

Fire control agencies within Shasta County operate at Federal, State, and local levels. The U.S. Forest Service is responsible for wildland fire control on U.S. Forest Service-administered lands, and CAL FIRE is responsible for wildland fire control outside U.S. Forest Service and city boundaries (Shasta County 2004). CAL FIRE also assists BLM in protecting their lands. Local fire agencies protect unincorporated lands, and their coverage overlaps CAL FIRE and U.S. Forest Service agencies, leading the agencies to cooperate as the need arises (Shasta County 2004). Fire protection available near the project area includes the U.S. Forest Service, City of Redding, Anderson Fire Protection District, Burney Fire Protection District, Cottonwood Fire Protection District, and Happy Valley Fire Protection District (CAL FIRE 2015).

4.7.2 Environmental Effects

4.7.2.1 Significance Criteria

An impact related to public health and safety was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

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

- Create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.40 km (0.25 miles) of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.
- Result in a safety hazard for people residing or working in an area subject to an airport land use plan or an area within 3.2 km (2.0 miles) of a public airport or private airstrip.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- 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.

4.7.2.2 Impacts and Mitigation Measures

Measures to avoid and minimize impacts from hazards and hazardous materials have been included in the APMs listed below. With implementation of the standard construction protocols and existing regulations, the proposed project would not result in significant impacts related to hazards and hazardous materials in the subject area of this PEA.

APM HAZ-1: TDS and/or their contractor will ensure proper labeling, storage, handling, and use of hazardous materials in accordance with best management practices and OSHA's HAZWOPER requirements.

APM HAZ-2: TDS and/or their contractor will ensure that employees are properly trained in the use and handling of hazardous materials and that each material is accompanied by a MSDS.

APM HAZ-3: Any small quantities of hazardous materials stored temporarily in staging areas will be stored on pallets within fenced and secured areas and protected from exposure to weather. Incompatible materials will be stored separately, as appropriate.

APM HAZ-4: All hazardous waste materials removed during construction will be handled and disposed of by a licensed waste disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility to the extent necessary to ensure the area can be safely traversed.

APM HAZ-5: Spill clean-up kits would be provided and kept on-site during construction, and equipment would remain in good working order to prevent spills. Significant releases or threatened releases of hazardous materials will be reported to the appropriate agencies.

APM HAZ-6: Workers shall be instructed regarding the danger of wildland fire and the need to carefully park equipment in areas without dry, brushy vegetation. All work vehicles shall be equipped with working a fire extinguisher. All cigarettes and trash shall be disposed of in proper containers and taken off site at the end of the day.

Impact HAZ-1: Creation of a Significant Hazard to the Public or the Environment Through the Routine Transport, Use, or Disposal of Hazardous Materials (Less Than Significant).

Construction of the proposed project would involve small quantities of commonly used materials, such as fuels and oils, to operate construction equipment. However, because standard construction BMPs would be implemented to reduce the emissions of pollutants, this impact is considered less than significant (APM GEO-1 and 2). Spills of small quantities of hazardous wastes, such as waste oil, could be generated during construction and maintenance activities. However, potential impacts from accidents involving the release of small quantities of hazardous materials would be minimal due to the implementation of APM HAZ-5. Therefore, impacts would remain less than significant.

Impact HAZ-2: Creation of a Significant Hazard to the Public or Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment (Less Than Significant).

Potential impacts that could result from the proposed project include the risk of an oil or hazardous materials release from vehicle collisions, fires, damage to utility lines, and the general risks associated with installation. Construction activities would involve the operation of construction equipment and support vehicles within the project site. Construction of the project could also result in spills from accidents or the improper handling or disposal of fuels or hazardous materials, which could expose workers and the public to levels of hazardous materials in excess of OSHA and other applicable regulations. In addition to spills, small quantities of hazardous wastes, such as waste oil, could be generated during maintenance activities. However, potential impacts from accidents involving the release of small quantities of hazardous materials would be minimal due to the implementation of APMs. Spill clean-up kits would be provided and kept on-site during construction, and equipment would remain in good working order to prevent spills. Therefore, impacts would remain less than significant.

Impact HAZ-3: Reasonable Anticipation to Emit or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste Within 0.40 km (0.25 Miles) of an Existing or Proposed School (Less Than Significant).

There are 6 schools located within 0.4 km (0.25 miles) of the proposed project. Given the types of materials used during construction (fuel, oils) and the minimal quantities that may be used, it is unlikely that any school would be affected by an accidental release of hazardous materials. However, potential impacts from accidents involving the release of small quantities of hazardous materials would be minimal due to the implementation of APM HAZ-5. Therefore, impacts would remain less than significant.

Impact HAZ-4: If the Project is Located on a Site That is Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.05 and, as a Result, Creates a Significant Hazard to the Public or the Environment (No Impact).

According to the EDR Report, 41 sites are located within or adjacent to the project alignment. However, based on regulatory status, none of the sites are considered to represent a recognized environmental condition. In addition, the project alignment is not located on a Superfund or other

NPL site. Therefore, the proposed project would not result in a significant hazard to the public or the environment through exposure to such sites. No impact is associated with this concern.

Impact HAZ-5: If the Project Results in a Safety Hazard for People Residing or Working in an Area Subject to an Airport Land Use Plan or an Area Within 3.2 km (2.0 Miles) of a Public Airport or Private Airstrip (No Impact).

The nearest public airport to the project alignment is the Redding Municipal Airport, located approximately 6 km (4 miles) east of the proposed project in Redding. The proposed project does not include installation of any new utility poles or increasing the height of the existing aerial distribution lines. Therefore, impacts associated with public airports are not anticipated.

Impact HAZ-6: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan (Less Than Significant).

Because project construction would occur within public road ROWs, traffic would need to be controlled and coordinated. Typically, traffic control would be set up for the day's work operation. Because project construction would occur within public road ROWs, traffic would need to be controlled and coordinated. Typically, traffic control would be set up for the day's work operation. One lane of traffic may need to be closed during work activities. During such periods, flaggers would be used to direct traffic in the construction zone. Delays to motorists would typically average 1–2 minutes. These traffic control measures would conform to Caltrans specifications and would ensure that any impacts would be less than significant.

Impact HAZ-7: Expose People or Structures to the Risk of Loss, Injury, or Death Involving Wildland Fires, Including Where Wildlands are Adjacent to Urbanized Areas or Where Residences are Intermixed with Wildlands (Less Than Significant).

Wildlands are present adjacent to the western end of the project area; consequently, there is a potential for wildland fire to impact people or structures if a fire results from proposed construction activities. Construction activities would involve the operation of construction equipment and support vehicles within areas adjacent to wildlands and there is a minor risk of fire being sparked by this equipment if parked on dry vegetation. Another minor risk of fire may occur from construction workers improperly disposing of cigarettes. To reduce these fire hazards during construction, APMs HAZ-1 through 6 will be implemented. With implementation of these APMs, the potential for wildland fire would be a less than significant impact.

4.7.3 References

California Department of Forestry and Fire Protection (CAL FIRE)

2007 Fire Hazard Severity Zones in Shasta County. CAL FIRE, Sacramento.

2015 Clover Fire Incident Information. Available at: http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=910. Accessed June 10, 2015.

Shasta County

2004 *Shasta County General Plan.* County of Shasta Planning Division, Redding, California.

2011 *Shasta County Multi-jurisdiction Hazard Mitigation Plan (General Plan Update).* County of Shasta Planning Division, Redding, California.

Environmental Data Resources (EDR)
2015 *EDR DataMap™ Corridor Study*. EDR Environmental Data Resources Inc., Shelton, Connecticut.

4.8 Hydrology and Water Quality

4.8.1 Affected Environment

4.8.1.1 Regulatory Setting

Federal

Section 404 of the CWA authorizes the USACE to review and approve permit applications for the discharge of dredge and fill material within WUS, including wetlands. Section 10 of the River and Harbors Act requires project proponents to obtain a permit from USACE for construction or fill activities affecting the course, location, condition, or capacity of navigable waters. Section 401 of the CWA established national water quality goals and created the NPDES to regulate water discharges and subsequent impacts to water quality. Section 401 also provides States the opportunity to review and provide comment on Section 404 permit applications through a certification process for determinations of water quality standards compliance.

State

Acting under the leadership of the State Water Resources Control Board, RWQCBs protect the beneficial uses of surface water and groundwater in California under the Porter-Cologne Water Quality Control Act, with a focus on water quality. The RWQCBs regulate all pollutant or nuisance discharges that may affect either surface waters or ground Waters of the State. In cases where the waters are excluded from regulation under the CWA, the RWQCBs may still exercise jurisdiction over discharges into Waters of the State, pursuant to the Porter-Cologne Water Quality Control Act. In the absence of a legally approved formal protocol for delineating Waters of the State, all potential WUS, as well as all isolated waters, are considered Waters of the State. Stormwater discharges in the project area are regulated by the Central Valley RWQCB.

Local

The Water Element of the SCGP outlines objectives and policies for the protection of water quality in Shasta County (Shasta County 2004). An objective identified in the SGCP related to water quality and applicable to the proposed project is:

W-9 Institute effective measures to protect groundwater quality from potential adverse effects of increased pumping or potential sources of contamination.

Water quality policies in the SGCP applicable to the proposed project include:

W-a Sedimentation and erosion from proposed developments shall be minimized through grading and hillside development ordinances and other similar safeguards as adopted and implemented by the County.

W-b Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to streams, creeks, rivers, reservoirs, or groundwater basins in accordance with standards and water resource management plans adopted by the County.

W-c All proposed land divisions and developments in Shasta County shall have an adequate water supply of a quantity and a quality for the planned uses. Project proponents shall submit sufficient data and reports, when requested, which demonstrate that potential adverse impacts on the existing water users will not be significant. The reports for land divisions shall be submitted to the County for review and acceptance prior to a completeness determination of a tentative map. This policy will not apply to developments in special districts which have committed and documented, in writing, the ability to provide the needed water supply.

4.8.1.2 Project Setting

The project area is located within the Lower Cottonwood and Sacramento-Lower Cow-Lower Clear watersheds (Hydrologic Unit Codes 18020102 and 18020101) (EPA 2014), which are in turn part of the larger Sacramento River hydrologic region. The project area is located within the Redding Groundwater Basin (5-06). The California Department of Water Resources (CDWR) monitored two domestic water wells in the vicinity of the project area. The first well is located near the intersection of Cloverdale Road and Oak Street, and the second is near the intersection of Olinda and Happy Valley Roads. Historical water level data indicate that the groundwater level at the first well was relatively constant at 40 m (130 feet) below the surface from 1970–2011, when monitoring stopped. The water level at the second well was also relatively constant at 47 m (155 feet) during CDWR's 1961–1980 monitoring period at that well (CDWR 2015).

Twenty-nine waterways, two of which have emergent wetland vegetation (Map Nos. 4 and 5), and eight wetlands are present within the project area that will be crossed by the proposed installations. All but one of the waterways in the proposed project area are ephemeral, the exception being the perennial Dry Creek at the west end of the project area near Igo (see Appendix D).

Review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panels 06089C1525G, 06089C1905C, 06089C1910C, and 06089C1920C indicates that all of the project corridors are located in areas mapped as Zone X (FEMA 2015). Zone X areas are located outside the FEMA Special Flood Hazard Area, because they are above the elevation of the 0.2-percent annual chance flood and have minimal flood hazard risk.

4.8.2 Environmental Effects

4.8.2.1 Significance Criteria

An impact related to hydrology and water quality was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Violate any water quality standards or waste discharge requirements.
- 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 (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).
- 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 that would result in substantial erosion or siltation on- or off-site.
- 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 that would result in flooding on- or off-site.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing in a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or FIRM or other flood hazard delineation map.
- Place structures within a 100-year flood hazard area that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of a failure of a levee or dam.
- Contribute to inundation by seiche, tsunami, or mudflow.

4.8.2.2 Impacts and Mitigation Measures

The proposed project would incorporate APMs that would avoid or minimize impacts to water quality and waste discharge (see Section 4.6.2.2, APMs GEO-1–GEO 7). With incorporation of these APMs, there would be no significant impacts to hydrology and water quality.

Impact HYD-1: Violate Any Water Quality Standards or Waste Discharge Requirements (No Impact).

The proposed project would involve ground disturbance that has the potential for increasing sediment transport in the project area. Prior to the installations, TDS would obtain a NPDES permit from the Central Valley RWQCB and develop a SWPPP including BMPs that would be implemented during construction (APM GEO-1 and GEO-2). These BMPs would include structural controls such as straw wattles and silt fencing, which would serve to contain sediment from disturbed areas that could be transported by storm events. Therefore, the proposed project would not violate water quality standards, and there would be no impact.

Impact HYD-2: 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 (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) (No Impact).

During the proposed fiber-optic installations, fugitive dust from disturbed areas will be controlled by the application of water. The proposed project would not require substantial amounts of water during construction and would require no water during operation. Therefore, there would be no impact to groundwater supplies.

Impact HYD-3: 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 That Would Result in Substantial Erosion or Siltation On- or Off-Site (No Impact).

The proposed project involves the installation of buried fiber-optic lines; following the installations, the ground surface contours would be restored to their pre-construction condition (APM GEO-7). Therefore, drainage patterns would remain as they currently are, and no impacts to surface water flow would occur.

Impact HYD-4: Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff (No Impact).

Impact HYD-5: Otherwise Substantially Degrade Water Quality (No Impact).

Prior to commencing the line installations, a SWPPP would be developed that will provide guidelines for implementing BMPs to control sediment transport (APMs GEO-1–7). These BMPs would ensure that no impacts from runoff water occur during construction and that water quality in the vicinity of the project area is maintained. There would be no impact.

Impact HYD-6: Place Housing in 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 (No Impact).

Impact HYD-7: Place Structures within a 100-Year Flood Hazard Area That Would Impede or Redirect Flood Flows (No Impact).

Impact HYD-8: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding as a Result of a Failure of a Levee or Dam (No Impact).

The proposed project does not include the placement of housing. All of the proposed fiber-optic line installations would be buried, and the only aboveground structures installed would be DLC cabinets, splice boxes, and line markers. None of these structures, either above- or belowground, would redirect flood flows, and the project area is not located in a flood hazard area. Therefore, there would be no impacts.

Impact HYD-9: Contribute to Inundation by Seiche, Tsunami, or Mudflow (No Impact).

The proposed project area is located inland and in an area with relatively flat topography; therefore, the proposed project would not contribute to the risk of inundation by seiche, tsunami, or mudflow. There would be no impact.

4.8.3 References

California Department of Water Resources (CDWR)

2015 CDWR Water Data Library. Available at: http://www.water.ca.gov/waterdatalibrary/. Accessed July 1, 2015.

Environmental Protection Agency (EPA)

2014 Surf your Watershed. Available at: http://cfpub.epa.gov/surf/county.cfm?fips_code=06025. Accessed December 19, 2014.

Federal Emergency Management Agency (FEMA)

2015 FEMA Food Map Service Center. Available at: http://msc.fema.gov/portal. Accessed July 1, 2015.

Shasta County

2004 *Shasta County General Plan*. County of Shasta Planning Division, Redding, California.

4.9 Land Use and Planning

4.9.1 Affected Environment

4.9.1.1 Regulatory Setting

Federal

No Federal plans or policies related to land use or planning apply to the project.

State

California Public Utilities Commission

The CPUC has jurisdiction over the siting and design of the proposed project because the CPUC authorizes the construction and maintenance of investor-owned public utility facilities.

Local

The CPUC has primary jurisdiction over the proposed project, because it authorizes the construction, operation, and maintenance of public utility facilities. Although the CPUC has the authority to preempt local agency permitting of the proposed project, they have not issued any decision broadly preempting such permitting. Therefore, the proposed project would have to meet local permitting requirements. The project area is located within unincorporated Shasta County, the BLM-managed Clear Creek Greenway, and the communities of Igo and Happy Valley. The project area is under the jurisdiction of Shasta County and would be subject to the SCGP and the SCGP updates (2011).

Shasta County General Plan and Zoning Regulations

Shasta County incorporates planning into their long-term development strategy through the implementation of the SCGP, which establishes policies relating to the organization and relationships of the types of communities present in Shasta County, the types of living environments they offer, and the location of development in relation to these communities in order to maintain and enhance the quality of their environments (Shasta County 2004).

The following local land use policy applies to the proposed project alignment:

PF-h Public uses (e.g. schools, parks, waste disposal sites) and public utilities (e.g. substation, transmission lines) whose site-specific locations often cannot be identified in advance by the General Plan may be permitted throughout the County to serve the public need. Appropriate zoning on site-specific locations will be determined in response to the identified need as it occurs. Solid waste disposal facilities shall be conditionally permitted to ensure that the site is compatible with adjacent land uses. Surrounding land uses, to the extent feasible, shall be regulated to avoid incompatibility with the solid waste disposal facilities.

The following local land use objectives are relevant to the land surrounding the proposed project alignment:

CO-2 To guide development in a pattern that will provide opportunities for present and future County residents to enjoy the variety of living environments which currently exist within the County, including:

- Incorporated communities served by the full range of urban services.
- Unincorporated communities served by most but not all urban services.
- Unincorporated rural communities provided with very limited or no urban services.
- Rural homesites located outside of community centers on relatively large lots or in clustered development accompanied by open space areas within the project provided that the clustering does not create an adverse impact on neighboring properties.

CO-3 To guide development in a pattern that will respect the natural resource values of County lands and their contributions to the County's economic base.

CO-4 To guide development in a pattern that will minimize land use conflicts between adjacent land users.

CO-5 To guide development in a pattern that will establish an acceptable balance between public facility and service costs and public revenues derived from new development.

CO-e The General Plan shall recognize four general types of living environments and shall distribute the developable land inventory among them so that future residents of the County have available the full range of lifestyle opportunities. These living environments are described in Table CO-6.

4.9.1.2 Project Setting

The project area is located within unincorporated Shasta County and includes the unincorporated communities of Igo and Happy Valley. The majority of the project area is used for agriculture, with small areas of residential and commercial properties located in the communities of Igo and Happy Valley, and public land managed by BLM at the western end of the project area. Existing development within the project area can be characterized as rural, sparse, and mostly limited to residences and buildings associated with agriculture. The communities of Igo and Happy Valley include more dense residential and commercial development.

The project alignment is located within an existing transportation corridor. The project alignment is located adjacent to areas primarily carrying the zoning designations with the main categories of AP, EA, A-1, Public Facilities (PF), Mixed Use (MU), Rural Residential (RR), and Unclassified (U); sub-classifications of the adjacent zoning include Building Site District (B) and Mobile Home District (T). Land use within the alignment is as a transportation corridor. Land use adjacent to the project corridor is primarily agricultural and rural residential, with the areas adjacent to the corridor in the communities of Igo and Happy Valley including MU, RR, and PF designations.

4.9.2 Environmental Effects

4.9.2.1 Significance Criteria

An impact related to land use and planning was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Physically divide an established community.
- 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.
- Conflict with any applicable HCP or Natural Community Conservation Plan.

4.9.2.2 Impacts and Mitigation Measures

Impact LU-1: Physically Divide an Established Community (No Impact).

The proposed project would be constructed along existing public transportation corridors. The subject area is currently used as a public roadway, and other utilities are currently installed in these corridors. The use of this alignment for telecommunication network facilities is consistent with the current use of the subject area. The proposed project would retain existing land use designations.

Because the proposed telecommunication facilities would be built entirely within the existing utility corridor, the proposed project would not result in the physical division of an established community. There would be no impact.

Impact LU-2: 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 (No Impact)

The CPUC has primary jurisdiction over the proposed project, because it authorizes the construction, operation, and maintenance of public utility facilities. Although the CPUC has the authority to preempt local agency permitting of the proposed project, they have not issued any decision broadly preempting such permitting. Therefore, the proposed project would have to meet local permitting requirements. The proposed project would be co-located within existing utility ROWs, and project construction, design, and operational characteristics would be in compliance with the applicable Zoning Regulations. Because TDS would be required to acquire all necessary

permits and conditions of approval from local jurisdictions, such as encroachment permits, and provide CPUC with appropriate documentation, there would be no impact.

Impact LU-3: Conflict with Any Applicable HCP or Natural Community Conservation Plan (No Impact)

The proposed project alignment is not located in an area with an adopted habitat Conversation Plan or Natural Community Conservation Plan. Therefore, there would be no impact to any applicable HCP or Natural Community Conservation Plan.

4.9.3 References

Shasta County

2004 *Shasta County General Plan*. County of Shasta Planning Division, Redding, California.

4.10 Mineral Resources

4.10.1 Affected Environment

4.10.1.1 Regulatory Setting

Federal

The Mining and Mineral Policy Act of 1970 declared that the Federal government's policy is to encourage private enterprise in the development of a sound and stable domestic mineral industry. The Act also encourages orderly economic development of mineral resources and includes research and reclamation methods.

State

The Surface Mining and Reclamation Act of 1975 (SMARA) mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses that would preclude mineral extraction. SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or Statewide significance. Mineral commodities are mapped within jurisdictional boundaries, such as Counties, using the California Mineral Land Classification System.

The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of Statewide or regional significance are available when needed. The SMGB, based on recommendations from the State Geologist and public input, prioritizes areas to be classified and/or designated. Areas that are generally given highest priority are those areas within the State that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction.

Classification is completed by the State Geologist, in accordance with the SMGB's priority list, by defining Mineral Resource Zones (MRZs) (defined below). Classification of these areas is based on geologic and economic factors without regard to existing land use and land ownership. The following MRZ categories are used by the State Geologist in classifying the State's lands:

MRZ-1 Areas are where adequate geologic information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence. This zone is applied where well-developed lines of reasoning, based on economic-geologic principles and adequate data, indicate that the likelihood for occurrence of significant mineral deposits is nil or slight.

MRZ-2a Areas are underlain by mineral deposits where geologic data show that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b Areas are underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered deposits that are either inferred reserves or deposits that are presently sub-economic as determined by limited sample analysis, exposure, and past mining history.

MRZ-3a Areas contain known mineral deposits that may qualify as mineral resources. Further exploration work within these areas could result in the reclassification of specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3a areas are considered to have a moderate potential for the discovery of economic mineral deposits.

MRZ-3b Areas contain inferred mineral deposits that may qualify as mineral resources. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. MRZ-3b is applied to land where geologic evidence leads to the conclusion that it is plausible that economic mineral deposits are present.

MRZ-4 Areas are where geologic information does not rule out either the presence or absence of mineral resources. It must be emphasized that MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather that there is a lack of knowledge regarding mineral occurrence.

Local

The purpose of the Minerals Element of the SCGP is to provide the necessary geologic information to ensure that there are adequate mineral resources available in Shasta County for at least the next 20 years.

4.10.1.2 Project Setting

Fourteen metallic minerals have been historically mined in Shasta County: cadmium, chromite, copper, gold, iron, lead, manganese, molybdenite, platinum, pyrite, mercury, silver, tungsten, and zinc. Most of the metallic ores lie in western Shasta County. The French Gulch district is the most important gold-producing area of the region, and the West and East Shasta Copper-Zinc belts contain the County's principal copper deposits. These belts extend from Iron Mountain northeast to Backbone Creek, then east to Ingot—a distance of about 30 miles (Shasta County 2004).

In addition to coal, 13 other non-metallic minerals have been mined in Shasta County, including alluvial sand and gravel, asbestos, barite, clay, crushed stone, diatomite, dimension stone, graphite, limestone, olivine, pumice and volcanic cinders, sulfur, and talc. At the present time six different mineral resources are under production in Shasta County, including gold, alluvial sand and gravel, crushed stone, volcanic cinders, limestone, and diatomite (Shasta County 2004).

The proposed project is not located in a mapped MRZ area (California Department of Conservation 2015).

4.10.2 Environmental Effects

4.10.2.1 Significance Criteria

An impact related to mineral resources was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- 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.
- 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.\

4.10.2.2 Impacts and Mitigation Measures

Impact MIN-1: 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 (No Impact).

Impact MIN-2: Result in the Loss of Availability of a Locally Important Mineral Resource Recovery Site Delineated on a Local General Plan, Specific Plan, or Other Land Use Plan (No Impact).

The proposed project would involve the installation of buried fiber-optic lines within existing road ROWs. There would be no impacts to known mineral resources because none are located in the project area.

4.10.3 References

California Department of Conservation

2015 Surface Mining and Reclamation Act Mineral Land Classification Maps. Available at: http://www.quake.ca.gov/gmaps/WH/smaramaps.htm. Accessed June 12, 2015.

Shasta County

2004 *Shasta County General Plan*. County of Shasta Planning Division, Redding, California.

4.11 Noise

Sound occurs when an ear senses pressure variations or vibrations in the air. Noise is unwanted sound. A person's brain associates a subjective element with a sound, and an individual reaction is formed. Studies indicate that the most pervasive sources of noise in our environment today are those associated with transportation. The source of most outdoor noise is mainly caused by machines and transportation systems, motor vehicles, aircrafts, and trains.

The magnitude of noise is described by its sound pressure. Since the range of sound pressure varies greatly, a logarithmic scale is used to relate sound pressures to a common reference level, the decibel (dB). Because sound perception depends on the context in which the sound was generated and the characteristics of the sound, such as frequency duration, noise measurement refinements have been developed. These include the A-weighted decibel scale (dBA), which is weighted toward the portions of the sound frequency spectrum to which the human ear is most sensitive, typically 1–8 kHz. Most equipment noise levels are expressed using the dBA scale.

Sound levels are often expressed in terms of an average noise level over time. The most commonly used short-term average is L_{eq}, the equivalent noise level. When L_{eq} is used, a time for averaging may be stated, such as 15 minutes, 1 hour, 8 hours, or 24 hours. If no time is stated, a one-hour average is assumed. L_{eq} is usually used in the description of noise near a point source or group of sources, such as a tractor or a construction site. Another time-averaged noise level measurement that is used to quantify transportation-related noise such as traffic is the day-night average noise level; L_{dn}. L_{dn} is averaged over a 24-hour period and applies a penalty to noise that occurs during the evening and nighttime hours, thereby providing a good correlation to the potential for annoyance from mobile noise sources.

The threshold of human hearing is assigned a dB level of zero. A normal conversation at a distance of 1.0–1.5 m (3.0–5.0 feet) produces about 60 dB. The conversation is not 60 times louder than the hearing threshold—it is a million times louder, because the decibel scale is logarithmic (60 dB, 10^6 = 1,000,000). A table of common sound levels measured in dB and adapted from a chart by Quiet Solutions (2003) can be found in Table 4.10.

Table 4.10. Common Sound Levels

Decibel Level	Examples
0	threshold of hearing
10	breathing
20	rustling leaves
30	quiet rural area
40	very quiet residence
45	typical neighborhood
50	quiet suburb, private office
60	normal conversation at 0.9–1.5 m (3.0–5.0 feet), typewriter, sewing machine
70	freeway traffic at 15.2 m (50.0 feet), vacuum cleaner
75	typical car interior on highway
80	garbage disposal, average factory, telephone dial tone, noisy office
85	city traffic (inside car)
90	power drill, busy urban street, diesel truck, food blender
95	subway train at 61 m (200 feet)
100	jet takeoff at 305 m (1,000 feet), outboard motor, garbage truck
105	power mower
110	chainsaw, pneumatic drill, car horn (0.9 m [3.0 feet])

Decibel Level	Examples
120	loud thunderclap, typical rock concert
130	jet takeoff at 91 m (300 feet), stock car race
140	jet engine at 30.5 m (100.0 feet), propeller aircraft takeoff, gun muzzle blast
150	jet takeoff at 23 m (75 feet)
160	jet takeoff at 9 m (30 feet)
180	jet engine at 0.3 m (1.0 foot)

4.11.1 Affected Environment

4.11.1.1 Regulatory Setting

Federal, State, and local bodies of government establish laws and regulations to control excessive noise and reduce human noise exposure to a level that is acceptable within their jurisdiction. Although Federal and State laws regulate transportation noise, establish "normally" and "conditionally" acceptable exterior noise limits based on land use type, and establish maximum acceptable interior noise limits for residences, no Federal or State provisions regulate noise levels relating to temporary construction activity. Construction noise is generally regulated at the local or County-wide level.

Federal

No Federal regulations relating to noise are applicable to this project.

State

No State regulations relating to noise are applicable to this project.

Local

The objectives of the SCGP Noise Element are:

N-1 To protect County residents from the harmful and annoying effects of exposure to excessive noise.

N-2 To protect the economic base of the County by preventing incompatible land uses from encroaching upon existing or programmed land uses likely to create significant noise impacts.

N-3 To encourage the application of state-of-the-art land-use planning methodologies in the area of managing and minimizing potential noise conflicts.

Noise Element policy applicable to the proposed project includes:

N-b Noise likely to be created by a proposed non-transportation land use shall be mitigated so as not to exceed the noise level standards of Table N-IV (Table 4.11) as measured immediately within the property line of adjacent lands designated as noise-sensitive. Noise generated from existing or proposed agricultural operations conducted in accordance with generally accepted agricultural industry standards and practices is not required to be mitigated.

Table 4.11. Noise Level Performance Standards for New Projects Affected by or Including Non-transportation Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq}, dB	55	50
The noise levels specified above shall be lowered by 5 dB for simple tone noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses, such as caretaker dwellings.		
The County can impose noise level standards which are more restrictive than those specified above based upon determination of existing low ambient noise levels.		
In rural areas where large lots exist, the exterior noise level standards shall be applied at a point 100' away from the residence.		
Industrial, light commercial, commercial, and public service facilities which have the potential for producing objectionable noise levels at nearby noise-sensitive uses are dispersed throughout the County. Fixed-noise sources which are typically of concern include, but are not limited to: • Air compressors • Drill rigs • Heavy equipment		
Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operation, and aircraft in flight. Control of these noise sources is preempted by Federal and State regulations. Other noise sources are presumed to be subject to local regulations, such as a noise control ordinance. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, etc.		

4.11.1.2 Project Setting

The majority of the proposed project is located in a rural residential area, and the central portion contains agricultural areas consisting of orchards. The Happy Valley school complex located at Palm Avenue and Happy Valley Road and the Igo School on Placer Road would be considered sensitive receptors, as would the scattered rural residences.

Existing noise sources in the proposed project area include agricultural equipment and vehicular traffic. Typical sound levels for the existing noise sources found in the project area, normalized to a reference distance of 15.2 m (50.0 feet), can be found in Table 4.12.

Table 4.12. Existing Noise Sources in the Project Area

Noise Source	Sound Level [a]
Agricultural equipment	67–82 dBA (Bean 2008)
Vehicular traffic, Happy Valley Road	58 dB L_{dn} (Shasta County 2004)
Vehicular traffic, Olinda Road	63 dB L_{dn} (Shasta County 2004)

[a] Sound levels were normalized using the equation: $dB_x = dB_{ref} + 20 \log (d_{ref}/d_x)$, where dB_x is the decibel level at distance x, dB_{ref} is the decibel level at the reference distance, d_{ref} is the reference distance, and d_x is the distance that the desired decibel level, dB_x, is to be calculated for.

4.11.2 Environmental Effects

4.11.2.1 Significance Criteria

An impact related to noise was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Result in exposure of persons to or generation of noise levels in excess of standards established in the local General Plan, by noise ordinance, or by applicable standards of other agencies.
- Result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

4.11.2.2 Impacts and Mitigation Measures

Measures to avoid and minimize impacts from noise have been included in the APMs listed below. With implementation of the standard construction protocols and existing regulations, the proposed project would not result in significant impacts related to noise in the subject area of this PEA.

APM NOI-1: All construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m. Monday through Friday. No construction operations shall occur on weekends, holidays, or during nighttime hours.

Impact NOI-1: Result in Exposure of Persons to or Generation of Noise Levels in Excess of Standards Established in the Local General Plan by Noise Ordinance or by Applicable Standards of Other Agencies (Less Than Significant).

During construction, equipment operation would be the primary noise source associated with construction activities and could affect noise-sensitive receptors adjacent to the project area. Section 3.6.5 above lists the typical construction equipment that would be needed for the various construction activities. The construction activities would occur on weekdays only (APM NOI-1), and the anticipated construction schedule for each activity is listed in Section 3.6.6.

The Federal Highway Administration (FHWA) has compiled data regarding the noise-generating characteristics of specific types of construction equipment. The typical average maximum noise levels for construction equipment measured at a distance of 15.2 m (50.0 feet) are listed in Table 4.13. Noise levels from equipment shown in Table 4.12 decrease with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. The noise levels listed in Table 4.13 represent the construction equipment's averaged maximum noise levels, when operating under full load conditions. However, most construction equipment operates in alternating cycles of full power and low power and during varying periods of time. Consequently, the average sound level

at construction sites is typically less than the equipment's maximum noise levels. Noise generated by construction equipment during the proposed project's construction would occur with varying intensities and durations during the various phases of construction.

Table 4.13. Construction Equipment Noise Levels

Equipment	Maximum Noise Level (dBA) at 15.2 m (50.0 feet)
Bulldozer	82
Directional boring machine	83
Backhoe	78
Mud sucker	81
Compact excavator	79
Medium-duty truck (5 ton)	76
Air compressor	78
Pickup	75

Source: 2011 FHWA Construction Noise Handbook (FHWA 2011), actual measured sound levels, samples averaged.

Noise levels at receiving properties are dependent on several factors, including the number of machines operating within an area at a given time and the distance between the source(s) and receiving properties. The nearest sensitive receptors along the project corridors include residences that are no closer than 9 m (30 feet) to the project corridors, the school complex at Palm Avenue and Happy Valley Road approximately 27 m (90 feet) away, and the Igo school, which is approximately 244 m (800 feet) away from the project corridors. Typically, the average noise level generated from the proposed construction activities would range from 75–83 dBA when measured at a distance of 15.2 m (50.0 feet) from the construction area. These noise levels from construction equipment are within the same range as that normally produced by agricultural equipment in the project area but would be somewhat greater than that produced by traffic.

Noise generated by construction activities, therefore, could result in noise levels at the closest sensitive receptors exceeding the County's 55 dB hourly L_{eq} averaged daytime noise standard indicated above. However, during the installations, construction equipment would be constantly moving and would not remain at any one location for an extended amount of time. In addition, all construction would occur on weekdays during daytime hours. Therefore, the impact would be less than significant.

Impact NOI-2: Result in Exposure of Persons to or Generation of Excessive Ground-Borne Vibration or Ground-Borne Noise Levels (Less Than Significant).

Slightly less than half of the proposed project installation would be conducted using plowing or trenching construction techniques, which produce only negligible ground-borne vibration. For the areas where the proposed line would be installed using directional boring, some amount of vibration may be generated. As described in the discussion of Impact NOI-1 above, construction activities would take place for a matter of hours over a limited number of days at any one location, and construction would occur during daytime hours. The impact would be less than significant.

Impact NOI-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Project (No Impact).

The proposed project would not result in a permanent increase in ambient noise levels in the project vicinity, because the installed facilities, consisting of buried fiber-optic lines, equipment cabinets and vaults, and markers, would produce no noise. There would be no impacts.

Impact NOI-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Project (Less Than Significant).

As discussed in Impact NOI-1 above, noise generated by project construction would be limited to a few hours a day on several nonconsecutive days at each location. Because existing noise sources in the project area include vehicular traffic and agricultural equipment, with noise generation taking place very close to the identified sensitive receptors, construction equipment noise would not raise ambient noise levels substantially. The impact would be less than significant.

4.11.3 References

Bean, Thomas

2008 Noise on the Farm Can Cause Hearing Loss. Available at: http://ohioline.osu.edu/aex-fact/pdf/ AEX_590_08.pdf. Accessed April 9, 2015.

Federal Highway Administration (FHWA)

2011 Construction Noise Handbook. Available at: http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm. Accessed April 8, 2015.

Shasta County

2004 *Shasta County General Plan*. Shasta County Planning Department, Redding, California.

4.12 Population and Housing

4.12.1 Affected Environment

4.12.1.1 Regulatory Setting

Implementation of the proposed project would occur entirely within existing ROWs and would not involve the acquisition of any property or the relocation of any existing residents, businesses, or other uses. Consequently, Federal and State policies related to relocation assistance and real property acquisition would not apply to this project.

State

State law requires each City and County to adopt a General Plan for its future growth. This plan must include a housing element that identifies housing needs for all economic segments and provides opportunities for housing development to meet those needs. At the State level, the Housing and Community Development Department estimates the relative share of California's projected population growth that would occur in each county presented by the Department of Finance's demographic research unit.

Each City and County must update its General Plan housing element on a regular basis (usually every five years). Among other things, the housing element must incorporate policies and identify potential sites that would accommodate the City's and County's share of the regional housing need. The applicable County housing element, part of the SCGP, is described below.

Local

The Housing Element of the SCGP is Shasta County's plan for addressing the housing needs of the residents within the unincorporated areas of the County. Policies contained in this element are an expression of the Statewide housing priority to allow for the "attainment of decent housing and a suitable living environment for every Californian," as well as a reflection of the unique needs and concerns of the County community. The purpose of the Housing Element is to establish specific goals and policies relative to the provision of housing and to adopt an action plan toward this end. In addition, the element identifies and analyzes housing needs and resources, as well as constraints to housing development (Shasta County 2011).

4.12.1.2 Project Setting

The majority of the proposed project is located in a rural residential area, and the central portion contains agricultural areas consisting of orchards. The closest residences in relation to the project corridors are no closer than 9.1 m (30.0 feet) to the project corridors.

4.12.2 Environmental Effects

4.12.2.1 Significance Criteria

An impact related to population and housing was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- 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).
- Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

4.12.2.2 Impacts and Mitigation Measures

Impact POP-1: Induce Substantial Population Growth in an Area Either Directly or Indirectly (No Impact)

The proposed project would not induce population growth. Implementation of the project would provide a service to existing rural residents, businesses, and schools. Construction activities would last only a few weeks and would not generate new permanent jobs in the region. There would be no impact related to population growth.

Impacts POP-2: Displace Existing Housing and/or People, Resulting in Relocation and/or the Construction of Replacement Housing Elsewhere (No Impact)

The proposed project consists of installing telecommunications facilities within existing ROWs along County roads. Project implementation would not displace existing housing or people and therefore would not require relocation or construction of replacement housing elsewhere. There would be no impact related to displacement of housing and/or people.

4.12.3 References

Shasta County

2011 *Shasta County 2009–2014 Housing Element*. Shasta County Department of Resource Management Planning Division, Redding, California.

4.13 Public Services/Utilities and Service Systems

4.13.1 Affected Environment

4.13.1.1 Regulatory Setting

There are no applicable Federal or local policies related to public services, utilities, and service systems for the proposed project.

State

CPUC regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies in California. CPUC is responsible for ensuring that California utility customers have safe, reliable utility service at reasonable rates; protecting utility customers from fraud; and promoting the health of California's economy. CPUC establishes service standards and safety rules and authorizes utility rate changes. CPUC enforces CEQA compliance for utility construction.

4.13.1.2 Project Setting

Police protection in the proposed project area is provided by the Shasta County Sheriff. Fire protection is provided by the Happy Valley Fire Department and Igo-Ono Volunteer Fire Department.

The project corridors are located along Shasta County roads, many of which include existing utility easements with aerial electrical distribution lines and buried telecommunications and water lines.

As mentioned in Section 3.3, wired Internet service in the proposed project area is limited to dial-up and is only available in TDS's six existing DSAs. Cellular data service (3G, 4G, and 4GLTE) from Verizon, AT&T, and T-Mobile is available in portions of the project area, as is HughesNet satellite Internet service.

The five schools in the proposed project area are connected at varying speeds to the K-12 High Speed Network (K12HSN), a State program funded by the California Department of Education. K12HSN administers K-12's participation in the California Research and Education Network (CalREN). CalREN is the high-speed, high-bandwidth Statewide network of 14 Hub Sites and circuits linking to 73 K-12 Node Sites, 11 UC Node Sites, 24 CSU Node Sites, and 111 community college Node Sites, as well as 6 Node Sites that serve the 3 participating private universities. CalREN

is also linked to the national Internet2 network forming an advanced State and national "Intranet" for educational use.

Happy Valley Elementary School, Happy Valley Union Elementary School, and Happy Valley Community Day School share the same location on Palm Avenue, but only Happy Valley Union Elementary School has a 100 Mbps connection to the Shasta County Office of Education, which in turn has a 1 Gbps connection to the CalREN Corning Hub. Happy Valley Primary School, located on Cloverdale Road, has 100 Mbps connections to both Happy Valley Elementary School and Happy Valley Community Day School, but only a 1.5 Mbps T1 connection back to Happy Valley Union Elementary School; therefore, the connectivity of these three schools to CalREN is limited. Igo-Ono Elementary School is similarly limited because it has a T1 connection through the Redding Elementary District's 100 Mbps connection to the Shasta County Office of Education and then to the CalREN Corning Hub (K12HSN 2015).

4.13.2 Environmental Effects

4.13.2.1 Significance Criteria

An impact related to public services was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities or the need for new or physically altered government 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 following public services:
    - Fire protection
    - Police protection
    - Schools
    - Parks
    - Other public facilities
- Exceed wastewater treatment requirements of the applicable RWQCB.
- 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).
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities (the construction of which could cause significant environmental effects).
- Require new or expanded entitlements for water supplies if existing water supplies available for the project from existing entitlements and resources are insufficient.

- Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Be served by a landfill with insufficient capacity to accommodate the project's solid waste disposal needs.
- Not be in compliance with Federal, State, and local statutes and regulations related to solid waste.

4.13.2.2 Impacts and Mitigation Measures

Measures to avoid and minimize impacts from noise have been included in the APMs listed below. With implementation of the standard construction protocols and existing regulations, the proposed project would not result in significant impacts related to noise in the subject area of this PEA.

APM PSU-1: To the extent practicable, TDS and/or their contractors will recycle solid waste generated during construction.

Impact PSU-1: Result in Adverse Physical Impacts Affecting Service Ratios, Response Times, or Other Performance Objectives for Any Public Service (Fire and Police Protection, Schools, Parks, or Other Public Facilities) (Less Than Significant Impact).

The proposed project consists of installation and operation of facilities to improve the capacity and reliability of the area's telecommunications system and would therefore have no effects on the demand for schools, parks, or other public facilities. Construction activities are not expected to result in the need for new or physically altered governmental facilities or to affect service ratios, response times, or other performance objectives for any public services. The impact on service ratios, response times, and other performance objectives would be less than significant.

Impact PSU-2: Exceed Wastewater Treatment Requirements of the Colorado River Basin RWQCB (No Impact).

The proposed project does not include any facilities or uses associated with the generation of wastewater. The proposed project would therefore have no impact on wastewater treatment requirements.

Impact PSU-3: 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 (No Impact).

The proposed project would not require or result in the construction of any new water or wastewater treatment facilities or the expansion of existing facilities. There would be no impact.

Impact PSU-4: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects (No Impact).

The proposed project involves the placement of buried telecommunications facilities within existing utility ROWs and would not generate a need for expansion or construction of new stormwater drainage facilities. There would be no impact.

Impact PSU-5: Require New or Expanded Entitlements for Water Supplies if Existing Water Supplies Available for the Project from Existing Entitlements and Resources are Insufficient (No Impact).

Construction activities would incorporate standard SAQMD construction measures specified in Shasta County Rule 3:16 to reduce fugitive dust emissions, including the use of water for dust suppression. Water needed for dust suppression would be provided to the project contractor by local municipal water sources, such as those found in Anderson, Happy Valley, or Igo. The contractor would obtain the quantity of water needed for a day's operations prior to arriving on-site. Because there would be little ground disturbance associated with the project, only a small amount of water (between 500 and 1,000 gallons per week) would be required. There would be no increase in demand for new or expanded entitlements to provide sufficient water supplies following construction. There would be no impact.

Impact PSU-6: Result in a Determination by the Wastewater Treatment Provider Which Serves or May Serve the Project That It Has Inadequate Capacity to Serve the Project's Projected Demand in Addition to the Provider's Existing Commitments (No Impact).

Neither construction nor operation of the proposed project would generate additional wastewater in the project area. There would be no impact.

Impact PSU-7: Be Served by a Landfill with Insufficient Capacity to Accommodate the Project's Solid Waste Disposal Needs (Less Than Significant).

Following construction, the proposed project is not expected to generate solid waste. Minimal amounts of solid waste would be generated during construction, and TDS and/or their contractors would recycle this material to the extent possible (see APM PSU-1) and/or properly dispose of it. No new landfill capacity would be necessary, and any impacts would be less than significant.

Impact PSU-8: Conflict with Federal, State, and Local Statutes and Regulations Related to Solid Waste (No Impact).

The proposed project would be implemented in compliance with all Federal, State, and local statutes and regulations related to solid waste. There would be no impact.

4.13.3 References

K-12 High Speed Network (K12HSN)

2015 Shasta County educational facilities connectivity to the K-12 High Speed Network. Available at: http://www.k12hsn.org/data/reporting/index.php/county/45104540000000. Accessed June 12, 2015.

4.14 Recreation

4.14.1 Affected Environment

4.14.1.1 Regulatory Setting

There are no applicable Federal, State, or local policies related to recreation for the proposed project.

4.14.1.2 Project Setting

The BLM-administered Cloverdale Trails Recreation Area, located on the north side of Cloverdale Road west of Clear Creek Road, is the only recreation area in close proximity to the proposed

project area. Public access to the recreation area is provided at the Cloverdale Trailhead. There are no other parks or opportunities for recreational activities in the vicinity of the proposed project area.

4.14.2 Environmental Effects

4.14.2.1 Significance Criteria

An impact related to recreation was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- 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.
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

4.14.2.2 Impacts and Mitigation Measures

Impact REC-1: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facility Would Occur or be Accelerated (No Impact).

The proposed project would make affordable broadband Internet services available to currently underserved areas in Shasta County, and it would not increase the use of any neighborhood or regional parks or any other recreational resources. The proposed project would not lead to any increases in population and therefore would not require construction or expansion of recreational facilities. There would be no impact.

Impact REC-2: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities Which Might Have an Adverse Physical Effect on the Environment (No Impact).

The proposed project does not include construction or expansion of any recreational facilities. There would be no impact.

4.15 Transportation and Traffic

4.15.1 Affected Environment

4.15.1.1 Regulatory Setting

Federal

There are no applicable Federal policies related to transportation and circulation for the proposed project.

State

State law requires each City and County to adopt a comprehensive, long-range General Plan, including a circulation element, to guide its physical development. The applicable County circulation documents are described below.

Local

Regional Transportation Plan

The Regional Transportation Plan (RTP) serves as a guide for interjurisdictional circulation planning for Shasta County. The RTP must consider and incorporate, as appropriate, the transportation plans of the Cities and County, as well as those of Caltrans. The RTP was initially prepared and adopted by the Shasta County Regional Transportation Planning Agency (RTPA, formerly the Local Transportation Commission) in 1975. It is reviewed and updated by the RTPA every two years. The RTPA is composed of representatives of the three cities and the County.

The goal of the RTP is to:

> provide for an effective, efficient, safe, balanced, and coordinated transportation system, at reasonable cost, that conserves energy, protects air quality, serves the needs of the local metropolitan area and region, and helps to implement local agencies' General Plans. The RTP discusses regional transportation issues and problems and possible solutions, and includes goals, objectives and policies for each transportation mode and area of concern. It also describes actions to be taken to implement the RTP and funding estimated to be available.

Shasta County General Plan

The SCGP establishes goals and polices related to the county's transportation network. The SCGP contains the following relevant transportation goal (Shasta County 2004):

C-6j New development shall provide circulation improvements for emergency access by police, fire, and medical vehicles; and shall provide for escape by residents/occupants in accordance with the Fire Safety Standards.

C-6k Shasta County shall adopt the following Level of Service (LOS) standards for considering any new roads: rural arterial and collectors - LOS C and urban/suburban arterial and collectors - LOS C.

4.15.1.2 Project Setting

According to the SCGP, the most important features of the circulation system in Shasta County are its extensive provisions for automobile travel and the presence of a major multimodal (auto, truck, bus, rail, air, and pipe and transmission line) transportation corridor through the southern portion of the County. Automobile traffic is the dominant mode of vehicular transportation, followed by trucks, buses, taxicabs, and bicycles. Nonvehicular modes of transportation include walking and horseback riding (Shasta County 2004). Interstate-5 (I-5), running north-south through the center of the County, is the primary transportation thoroughfare in the region.

Existing Roadway Network

The proposed project is located in a rural, unincorporated area of the County within the existing ROW of the local roadway system. These roadways provide access to land uses within the local region and connect local streets to I-5.

Transit

Public transportation in the County includes the Redding Area Bus Authority, Rural services between Redding and Burney, and a fixed-route and demand-response service for the City of Anderson (Shasta County 2004). Greyhound Trailways provides bus services as well, but the only stops available are located in Anderson and Redding (Shasta County 2004). No public transit is present in the project area.

Bikeways

A regional Bikeway Plan was adopted by the Shasta County Regional Transportation Planning Agency in October 1984. It was prepared with the cooperation of the County and the Cities. The original plan was superseded by the 1995 Shasta County Bikeway Plan, which specifically addresses bicycle facilities for the unincorporated portions of the County, rather than utilizing a regional perspective (Shasta County 2004).

4.15.2 Environmental Effects

4.15.2.1 Significance Criteria

An impact related to transportation and traffic was considered potentially significant under CEQA if the project would result in any of the following environmental effects. The criteria are based on Appendix G of the State CEQA Guidelines and professional practice.

Appendix G of the State CEQA Guidelines indicates that an impact is considered significant if the project would:

- 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.
- 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.
- 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.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

4.15.2.2 Impacts and Mitigation Measures

Measures to avoid or minimize traffic impacts would be followed during construction in accordance with the APMs below. These measures would comply with or require construction contractors to comply with the relevant emergency access and temporary traffic-control requirements identified by the Caltrans and/or the County where appropriate. With implementation of these APMs and existing regulations, the proposed project would not result in significant impacts related to traffic in the subject area of this PEA. No additional measures are needed.

APM TRA-1: TDS and/or their contractors will require the project contractor to obtain all necessary local road encroachment permits prior to construction and will comply with all the applicable conditions of approval.

APM TRA-2: As deemed necessary by the applicable jurisdiction, the road encroachment permits may require the contractor to prepare a traffic control plan in accordance with professional engineering standards prior to construction.

APM TRA-3: TDS and/or their contractors will develop circulation and detour plans to minimize impacts to local street circulation. This will include the use of signing and flagging to guide vehicles through and/or around the construction zone.

APM TRA-4: TDS and/or their contractors will schedule truck trips outside of peak morning and evening commute hours.

APM TRA-5: TDS and/or their contractors will limit lane closures during peak hours to the extent possible.

APM TRA-6: TDS and/or their contractors will include detours for bicycles and pedestrians in all areas potentially affected by project construction.

APM TRA-7: TDS and/or their contractors will install traffic control devices as specified in the *California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones*.

APM TRA-8: TDS and/or their contractors will coordinate with local transit agencies for the temporary relocation of routes or bus stops in work zones as necessary.

Impact TRA-1: 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 (Less Than Significant)

The proposed project would not conflict with any applicable circulation plan, ordinance, or policy establishing measures of effectiveness for the circulation system's performance. Construction traffic would be present on a temporary basis and would be similar to ongoing activities occurring in the subject area, including local travel and ranch and farm activities. Therefore, this would be a less-than-significant impact.

Construction activities would occur along existing transit and school bus routes and may require temporary traffic control and temporary closure of one lane of traffic. Although minimal work within travel lanes is anticipated, when the construction zone must take over a travel lane, a lane of traffic would be closed to provide traffic control for the work zone. Lane or shoulder closures would be short-term and would occur only during construction hours. TDS will coordinate with local transit agencies prior to construction (APM TRA-9). Therefore, this would be a less-than-significant impact.

Impact TRA-2: 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 (Less Than Significant).

Implementation of the proposed project would not conflict with the SCGP Circulation Element, the applicable congestion management program for the area. Construction traffic associated with the proposed project would not be substantial enough to affect local roadway performance levels, and there would be no long-term effect on roadway traffic. This would be a less-than-significant impact.

Impact TRA-3: 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 (No Impacts).

The proposed project involves the installation of buried telecommunications facilities and does not include installation of any new utility poles. No change in air traffic patterns would be associated with the proposed project. There would be no impact.

Impact TRA-4: Substantially Increase Hazards Due to a Design Feature (e.g., Sharp Curves or Dangerous Intersections) or Incompatible Uses (e.g., Farm Equipment) (Less Than Significant)

The proposed project consists of the installation of new buried fiber-optic cable. Operation of the project would not involve any hazardous changes to roadways or their uses. Because the project alignment is primarily located within public road ROWs, traffic would need to be controlled and coordinated to avoid a hazardous situation during construction activities.

Construction equipment to be used for the proposed installations would be highly maneuverable and would use existing improved areas such as existing roads, field access aprons, driveway aprons, or farm roads for turning around or parking. For some construction activities, it may be necessary to close one traffic lane. At least one lane of traffic would be open at all times. Traffic control would be implemented in accordance with Caltrans specifications as presented in Chapter 5 of their traffic manual, *Traffic Controls for Construction and Maintenance Work Zones*, even when not on State highways. Flaggers would direct traffic in the construction zone. Delays to motorists would typically average 1–2 minutes. Lane or shoulder closures would be short-term and would occur only during construction hours. In addition, TDS would ensure all APMs are followed to avoid and minimize transportation and traffic effects. Therefore, this would be a less-than-significant impact.

Impact TRA-5: Result in Inadequate Emergency Access (Less Than Significant)

Because the project alignment is primarily located within or near public road ROWs, traffic would need to be controlled and coordinated during some construction activities. Although minimal work within travel lanes is anticipated, when the construction zone must take over a travel lane, a lane of traffic would be closed to provide traffic control for the work zone. Lane or shoulder closures would be short-term and would occur only during construction hours. All traffic-control measures would conform to Caltrans specifications as presented in Chapter 5 of their traffic manual, *Traffic*

Controls for Construction and Maintenance Work Zones. Therefore, this would be a less-than-significant impact.

Impact TRA-6: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Facilities (Less Than Significant)

The proposed project would not conflict with any adopted alternative transportation policies, plans, or programs. However, construction activities will occur along existing transit and school bus routes and may require temporary traffic control and temporary closure of one lane of traffic. Although minimal work within travel lanes is anticipated, when the construction zone must take over a travel lane, a lane of traffic would be closed to provide traffic control for the work zone. All traffic control measures would conform to Caltrans specifications as presented in Chapter 5 of their Traffic Manual, *Traffic Controls for Construction and Maintenance Work Zones*. TDS would coordinate with local transit agencies for temporary relocation of routes or bus stops in work zones prior to any lane closures (APM-9). Therefore, this impact would be less than significant.

Construction activities on or near the roadway shoulder could temporarily affect bicycle or pedestrian travel within the proposed project alignment. Construction activities in any individual location would be of short duration and would not encroach on the roadway; therefore, they would not require redirection of motorists, bicyclists, or pedestrians. In compliance with the *California Manual on Uniform Traffic Control Devices*, bicycle traffic, like motorists, would be provided "reasonably safe passage through the [temporary traffic control] zone" (Caltrans 2012). As part of the project construction activities, warning signs and notices would be posted to properly warn bicyclists utilizing the roadway of potential hazards on or near the shoulder (APM TRA-6). This impact would be less than significant.

4.15.3 References

Shasta County

2004 *Shasta County General Plan*. County of Shasta Planning Division, Redding, California.

4.16 Growth-Inducing and Cumulative Impacts

4.16.1 Growth-Inducing Impacts

Growth-inducing effects could occur if a project would induce growth either directly or indirectly in the surrounding environment. Typically, the growth-inducing potential of a project would be considered significant if it fosters growth or a population concentration above what is assumed or planned for in local and regional land-use plans or in projections made by regional planning groups. Significant growth-inducing impacts could also occur if the project provides infrastructure or service capacity to accommodate growth levels beyond those permitted by local plans and/or policies. Growth and development within Shasta County is managed at the local and County level and is anticipated to occur consistently with general and specific plans prepared and approved by each jurisdiction.

The proposed project is not expected to induce growth. Rather, it would allow TDS to provide broadband telecommunications services to currently underserved areas.

The proposed project could also be considered growth-inducing if growth results from the direct and indirect employment needed to construct, operate, and maintain the project. The proposed project would not require full-time personnel on site, and construction work would be temporary and of short duration. Inspection and maintenance activities would occur only periodically. Therefore, the proposed project would not generate growth associated with direct or indirect employment for construction, operation, or maintenance of the project. There would be no growth-inducing effects associated with the proposed project.

4.16.2 Indirect Impacts

Indirect impacts, also referred to as secondary impacts, are impacts caused by a project that occur later in time or are farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing impacts and the impacts that result from this growth, including those related to changes in the pattern of land use, population density, or growth rate and the resulting effects on air and water and other natural systems.

As noted above, the proposed project is not anticipated to induce growth. Rather, it would allow TDS to provide broadband telecommunications services, as required by CPUC, to current and future customers in the area. Growth and development within Shasta County is managed at the local and County level and is anticipated to occur consistently with general and specific plans prepared and approved by each jurisdiction. Therefore, to ensure that adequate telecommunications services are available to serve existing and planned development, the proposed project would be considered an essential utility.

Future development in Shasta County must occur consistently with the applicable General Plan, specific plans, and related environmental documentation, and development in the vicinity of the proposed project area is expected to be minimal. The proposed project traverses several agricultural areas classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland and is therefore protected from development for other uses. Likewise, surrounding zoning for the project area includes AP, EA, and A-1 (see Section 4.9, Land Use). These AP and EA districts are intended to preserve lands with agricultural value in the region. This project would not influence planned or future developments. Development of the proposed project is not anticipated to result in any indirect impacts on land use, population density, growth rate, or natural systems or resources in the project area. No long-term indirect changes or growth of any kind can be reasonably attributed solely to the proposed project.

4.16.3 Cumulative Impacts

Cumulative impacts are defined in State CEQA Guidelines Section 15355 as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from "the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time" (State CEQA Guidelines Section 15355[b]).

For the purposes of this PEA, cumulative impacts on resources in the general project vicinity may result from closely related projects either in close physical or temporal proximity that could add incrementally to any potential impacts of the proposed project. The Shasta County Public Works

Department's Bids and Proposals List was reviewed for relevant present and future projects (Shasta County 2015). No projects appeared on the list. No other projects are located at or near the project site that would add to potential circulation impacts, and therefore no cumulatively considerable impacts will result from this project.

As discussed in Section 4.3, Air Quality, the project area is currently in non-attainment for the criteria pollutants PM10 and O_3; however, the estimated emissions levels from the proposed project during construction for both PM10 and ROG are both well below the established SAQMD thresholds. Consequently, because the proposed project's anticipated emissions of these two criteria pollutants that are in non-attainment are below what SAQMD would consider significant, any cumulative impacts would be considered less than significant.

4.16.4 References

Shasta County

2015 Shasta County Public Works Department. Available at: http://www.co.shasta.ca.us/index/pw_index/bids_proposals.aspx. Accessed July 6, 2015.

5.0 LIST OF PREPARERS

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