**TDS Telecom**
**Winterhaven Last Mile Underserved Broadband Project**
**Imperial County, California**

# Proponent's Environmental Assessment

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April 21, 2015

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## LIST OF ACRONYMS

| | |
|---|---|
| AIRFA | American Indian Religious Freedom Act |
| AMSL | Above Mean Sea Level |
| APE | Area of Potential Effect |
| APM | Applicant's Proposed Measure |
| ARPA | Archaeological Resources Preservation Act |
| ARPI | Arizona Rural Policy Institute |
| BIA | Bureau of Indian Affairs |
| BLM | Bureau of Land Management |
| BMP | Best Management Practice |
| BOR | Bureau of Reclamation |
| BRE | Biological Resources Evaluation |
| BWD | Bard Water District |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standards |
| 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 |
| CDMV | California Department of Motor Vehicles |
| CDOC | California Department of Commerce |
| CDOT | California Department of Transportation |
| CDWR | California Department of Water Resources |
| CEQA | California Environmental Quality Act |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| CGC | California Government Code |
| CGP | Construction General Permit |
| CHRIS | California Historic Resources Information System |
| CIPC | California Invasive Plant Council |
| CNDDB | California Natural Diversity Database |
| CNPS | California Native Plant Society |
| CPUC | California Public Utilities Commission |
| CRHR | California Register of Historic Resources |
| CUPA | Certified Unified Program Agency |

| | |
|---|---|
| dB | Decibel |
| dBA | Decibel, A-weighted |
| DLC | Digital Loop Carrier |
| DSA | Digital Served Area |
| DTSC | Department of Toxic Substances Control |
| EA | Environmental Assessment |
| EFZ | Earthquake Fault Zone |
| EIR | Environmental Impact Report |
| EIS | Environmental Impact Statement |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| FAA | Federal Aviation Administration |
| FHWA | Federal Highway Administration |
| FMMP | Farmland Mapping and Monitoring Program |
| FONSI | Finding of No Significant Impact |
| FWS | U.S. Fish and Wildlife Service |
| GHG | Greenhouse Gas |
| GLO | General Land Office |
| GP | General Plan |
| GWP | Global Warming Potential |
| HAZWOPER | Hazardous Waste and Operations and Emergency Response |
| HCP | Habitat Conservation Plan |
| HDPE | High Density Polyethylene |
| HUC | Hydrologic Unit Code |
| ICAPCD | Imperial County Air Pollution Control District |
| IID | Imperial Irrigation District |
| IPAC | Information, Planning, and Conservation |
| IS | Initial Study |
| ITA | Indian Trust Asset |
| LCR MSCP | Lower Colorado River Multi-Species Conservation Plan |
| LRA | Local Responsibility Area |
| MBPS | Megabits Per Second |
| MBTA | Migratory Bird Treaty Act |
| MND | Mitigated Negative Declaration |
| MRZ | Mineral Resource Zone |
| MSDS | Material Safety Data Sheet |
| MUTCD | Manual on Uniform Traffic Control Devices |
| NAAQS | National Ambient Air Quality Standards |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NAHC | Native American Heritage Council |
| NEPA | National Environmental Policy Act |

| | |
|---|---|
| NHPA | National Historic Preservation Act |
| NMFS | National Marine Fisheries Service |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priorities List |
| NPS | National Park Service |
| NRCS | National Resource Conservation Service |
| NRHP | National Register of Historic Places |
| O&M | Operations and Maintenance |
| OHWM | Ordinary High Water Mark |
| OSHA | Occupational Safety and Health Administration |
| PEA | Proponent's Environmental Assessment |
| PM10, 2.5 | Particulate Matter 10, and 2.5 Micron |
| PRC | California Public Resources Code |
| RCRA | Resource Conservation and Recovery Act |
| ROG | Reactive Organic Gas |
| ROU | Right of Use |
| ROW | Right of Way |
| RWQCB | Regional Water Quality Control Board |
| SCIC | South Central Information Center |
| SDR | Standard Dimension Ratio |
| SED | Substitute Environmental Document |
| SHPO | State Historic Preservation Office |
| SMARA | Surface Mining and Reclamation Act |
| SMGB | State Mining and Geology Board |
| SPRR | Southern Pacific Railroad |
| SPVUSD | San Pasqual Valley Unified School District |
| SWPPP | Stormwater Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TDS | TDS Telecom, Inc. |
| UPRR | Union Pacific Railroad |
| USACE | U.S. Army Corps of Engineers |
| USC | United States Code |
| USDOT | U.S. Department of Transportation |
| USGS | U.S. Geological Survey |
| UST | Underground Storage Tank |
| VDSL2 | Very High Bit Rate Digital Subscriber Line, 2nd Generation |
| WDR | Waste Discharge Requirement |
| WRCC | Western Regional Climate Center |
| WUS | Waters of the U.S. |
| YCIPTA | Yuma County Intergovernmental Public Transportation Authority |
| YCWUA | Yuma County Water Users' Association |

# 1.0 SUMMARY

Winterhaven Telephone Company d.b.a. TDS Telecom, Inc. (TDS), proposes to construct the Winterhaven Last Mile Underserved Broadband Project (the project), which would extend high-speed internet service to an area approximately 40.59 $km^2$ (15.67 $miles^2$) in size, including the community of Winterhaven, a portion of the Fort Yuma-Quechan Indian Reservation, and other areas of unincorporated Imperial County in southeastern 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 24.65 km (15.31 miles) of new fiber-optic cable would be buried within protective conduit along existing roads in the project area, and approximately 2.25 km (1.40 miles) of existing buried copper line would be used in the new system.

Public involvement has been an integral part of the project since its inception. The Fort Yuma–Quechan Tribal Council (the Council) was notified of the project prior to TDS's submittal of a California Advanced Services Fund (CASF) grant application to the California Public Utilities Commission (CPUC) on February 1, 2013, and the Council released a letter in support of TDS's efforts to secure funding on January 24, 2013. In addition to coordination with the Council, two public meetings were held at the Paradise Casino on July 17, 2014, where presentations describing the project were given to members of the public and questions and concerns regarding the project were discussed.

Because a portion of the project area is located on the Fort Yuma–Quechan Indian Reservation and a right-of-way (ROW) grant from the Bureau of Indian Affairs (BIA) is required prior to construction, the project must demonstrate National Environmental Policy Act (NEPA) compliance. This environmental compliance is in addition to California Environmental Quality Act (CEQA) compliance that is required by the project's partial funding source, the CPUC. Consequently, this Proponent's Environmental Assessment (PEA) is a combined environmental document that complies with NEPA requirements for the preparation of an Environmental Analysis (EA) and with CEQA requirements for an Initial Study (IS). An agreement between the CPUC and BIA was developed where CPUC would be the State lead agency for the project and BIA would serve as the Federal lead. A second Federal agency, the Bureau of Reclamation (BOR), is involved with the project because irrigation canals under their jurisdiction would be crossed by the project alignments; the BOR has agreed to act as a cooperating agency.

This PEA includes the information required by the CPUC PEA Guidelines (*CPUC Information and Criteria List*, Appendix B, Section V) as well as an impact analysis for resource areas specified by the BIA in the *BIA NEPA Handbook*. This PEA includes a discussion of the purpose and need for the proposed project in Section 2; the project description in Section 3; the environmental setting, impacts, mitigation measures, and cumulative and growth-inducing impacts in Section 4; and an analysis of NEPA-specific resource areas in Section 5. No alternatives are being considered in this document other than the "No-Action Alternative." The proposed project alignment was chosen for analysis because of the presence of existing roads, ROWs, and supporting facilities. Other locations would require the preparation of new sites, which would result in increased environmental impacts. Under NEPA guidelines, in an EA where there are no unresolved conflicts with respect to

alternative uses of available resources, only the Proposed Action needs to be considered (43 CFR 46.310(b)).

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 Sections 4 and 5, and a list of the PEA preparers is included in Section 6 of this document.

# 2.0 PROJECT PURPOSE AND NEED

## *2.1 Overview*

The CPUC approved funding in the amount of $2,063,967.00 from the CASF for the Winterhaven Last Mile Underserved Broadband Project. The project, which would be constructed and operated by the Winterhaven Telephone Company d.b.a. TDS, would extend high-speed internet service to an area approximately 40.59 $km^2$ (15.67 $miles^2$) in size that includes the community of Winterhaven and other areas of unincorporated Imperial County, California, including a portion of the Fort Yuma–Quechan Indian Reservation.

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 second-generation VDSL2 technology at its central office 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 060259400001, 060259400002, and 060259400003.

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 $2,063,967.00 (60 percent of the project costs) to match TDS's funding of $1,375,978.00. When completed, the project would reach an estimated 961 households at maximum advertised speeds of 25 MBPS/5 MBPS, which is above the served threshold of 6 MBPS/1.5 MBPS.

TDS estimates the project would initially yield 233 potential subscriber households in the project area. In addition to residential customers, the project area includes five anchor institutions which may benefit from the project, including San Pasqual Valley High, San Pasqual Valley Elementary, Bill M. Manes High, San Pasqual Middle School, and San Pasqual Vocational Academy.

## *2.2 Project Objectives*

The proposed project's objective is to make affordable broadband Internet services available to currently underserved areas in Imperial County, including a portion of the Fort Yuma–Quechan Reservation.

# 3.0 PROJECT DESCRIPTION

## *3.1 Project Location*

The project area is located in southeastern Imperial County, California, just north of Yuma, Arizona, and the Colorado River. Baseline Road, which runs north-south, marks the boundary between the Fort Yuma–Quechan Reservation and private land; the Reservation is west of Baseline Road, and

private land lies to the east (Figures 1 and 2). The southern edge of the project area is roughly bounded by the Union Pacific Railroad (UPRR) tracks, the community of Winterhaven, and the Paradise Casino on Picacho Road. The Cocopah Canal runs along the eastern boundary of the project area and the community of Bard is located at the northeastern limits of the project area. Stalnacker and Ross Roads, along with the community of Ross Corner, make up the approximate northern limits of the project area, and the western edge of the project area is near Arnold Road, where the road approaches the UPRR. Specifically, the project area is located in portions of Section 2, Township 15 South, Range 24 East; Sections 11, 14, and 21–27, Township 16 South, Range 22 East; and Sections 4, 5, 7–9, 18, and 19 Township 16 South Range 23 East, San Bernardino Baseline and Meridian (SBB&M), as depicted on the Araz, Bard, Yuma East, and Yuma West, AZ/CA, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps.

## *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 four DLCs, the first of which is located at the TDS Central Office in Winterhaven and serves the 35100 Digital Serving Area (DSA). The second DLC, located just north of the Paradise Casino on Picacho Road, serves the 35109 DSA, and the third DLC, located in Bard, serves the 35102 DSA. The fourth DLC is located just east of the intersection of Arnold and Flood Roads and serves the 35103 DSA. Dial-up Internet services are available in all four 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 second-generation VDSL2 fiber-optic network capable of 25 MBPS/5 MBPS (download/upload) speeds. In total, approximately 24.65 km (15.31 miles) of new fiber-optic cable would be buried within protective conduit along existing roads in the project area, and approximately 2.25 km (1.40 miles) of existing buried copper line would be used to connect a proposed DLC site on Arnold Road to the new system. A summary of the associated lengths to be installed on and off the Fort Yuma–Quechan Reservation can be found in Table 3.1. The buried line installation, which consists of the telecommunications cable and its protective conduit, would be performed using plowing construction techniques, and a directional boring machine would be used to install the line at canal and road crossings. Ancillary equipment to be installed includes 10 new equipment cabinets at DLC sites that would serve as connecting "nodes" for customers, splice boxes, and line markers. The equipment cabinets would be approximately 0.6 by 1.0 by 1.2 m (2.0 by 3.0 by 4.0 feet) in size and would 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 would be installed between lengths of cable. Line markers, which would be installed at intervals of approximately five per mile, 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 existing aerial distribution lines located immediately adjacent to each site. Project plans are included in Appendix A.

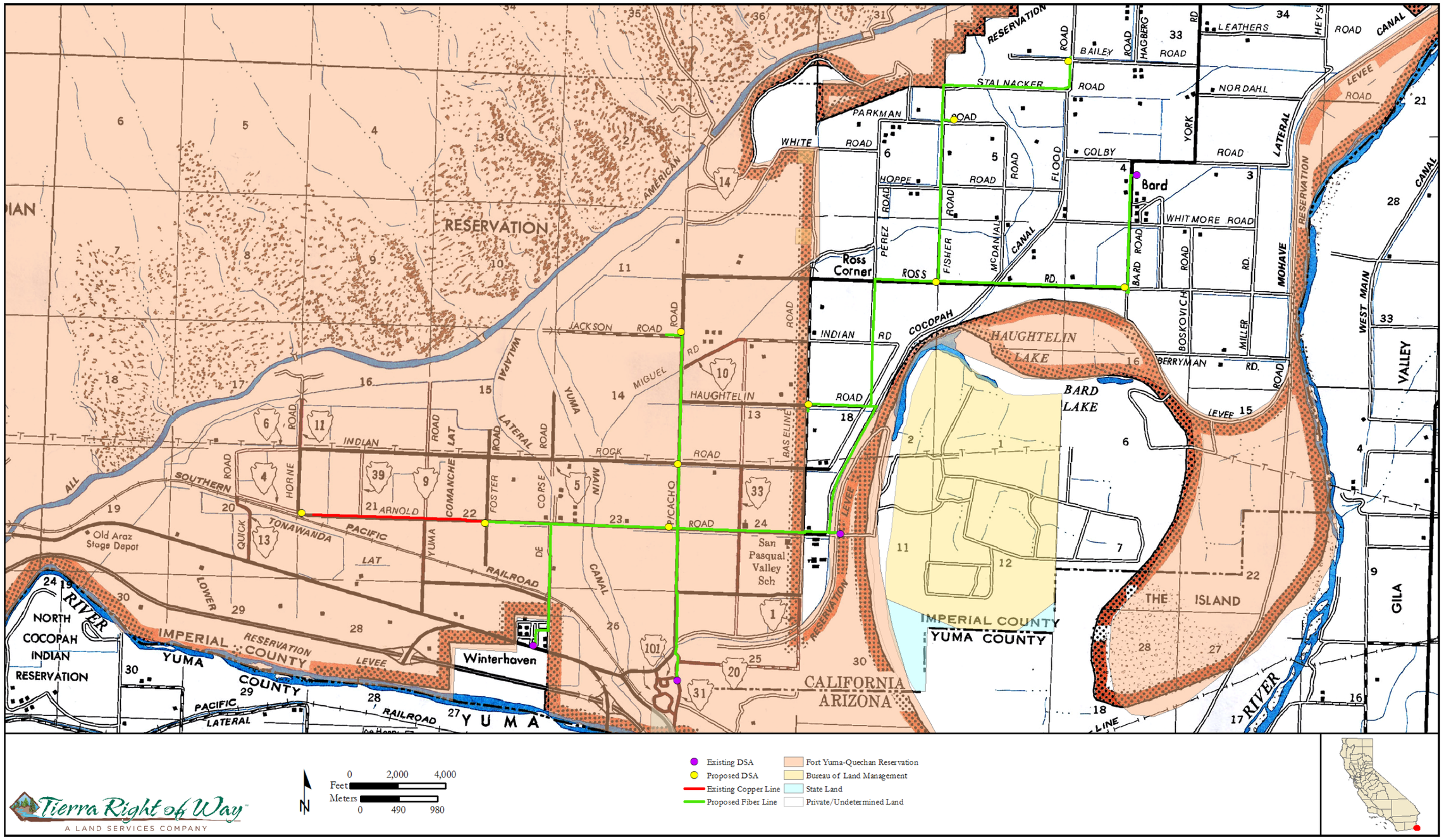



**Figure 1. Project location.**

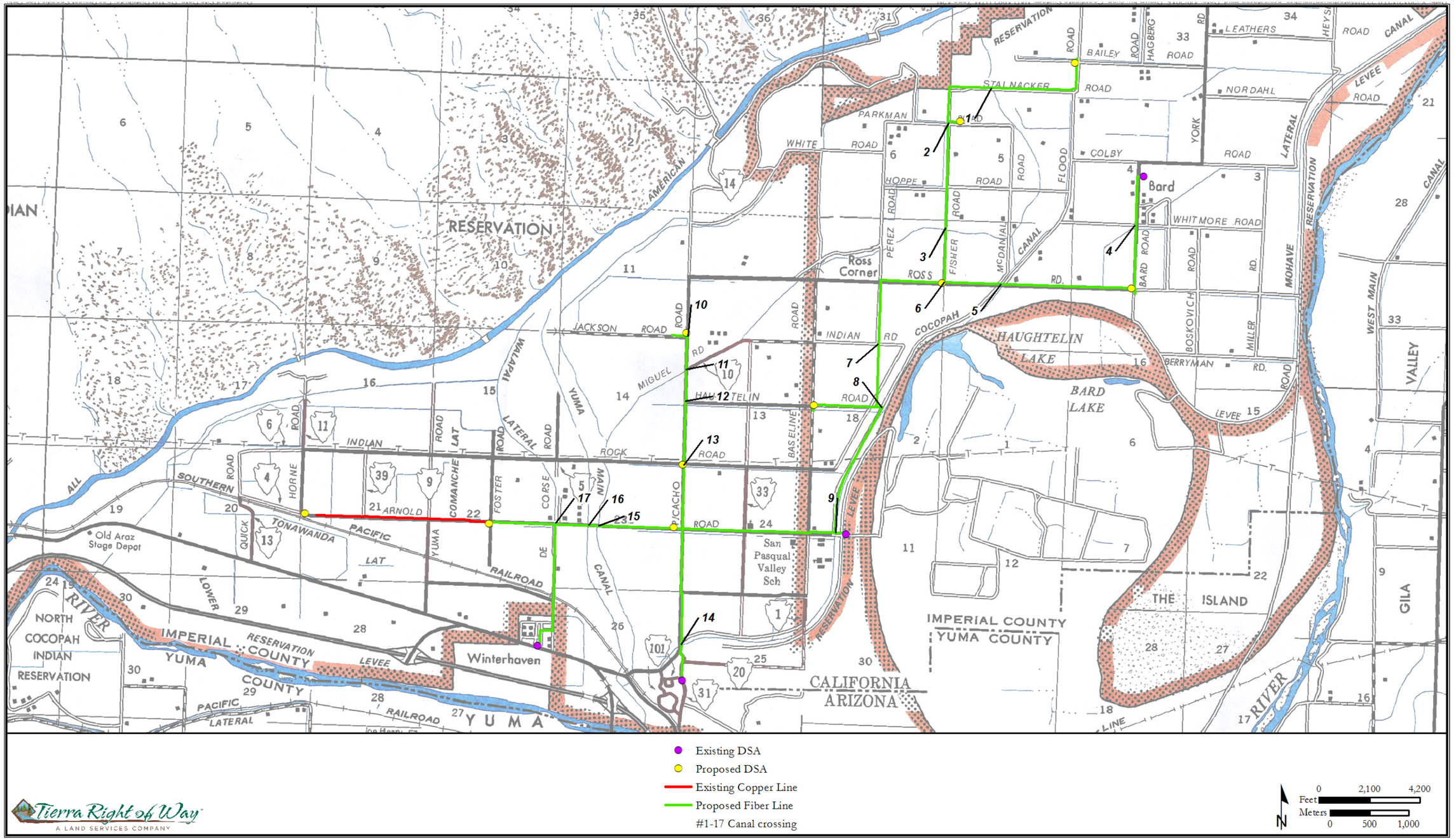



**Figure 2. General project area.**

**Table 3.1. Cable Installation Lengths**

| Installation | Length (m) | Length (km) | Length (feet) | Length (miles) |
|---|---|---|---|---|
| On-Reservation | 10,139 | 10.14 | 33,264 | 6.30 |
| Off-Reservation | 14,507 | 14.51 | 47,595 | 9.01 |
| Total | 24,646 | 24.65 | 80,859 | 15.31 |

## *3.4 Project Components*

The proposed project would consist of the following components:

- Installation of approximately 24,646 m (80,860 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 10 equipment cabinets on top of buried epoxy composite vaults at DLC sites that would serve as telecommunications nodes.
- Clean-up and site restoration following construction.

## *3.5 ROW Requirements*

The portions of the proposed project located on Tribal land are located on allotments that would require ROW grants from the associated landowners prior to the telecommunications line installation. The remaining portions of the project located on non-Tribal land would require County road ROW encroachment permits from Imperial County.

## *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 Winterhaven Central Office or individual contractor's 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 either plowing or directional boring construction methods. Second, the conduit would be prepared for receiving the fiber-optic cable by "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. 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 and bored installations, would not exceed an area approximately 5.1 ha (12.5 acres) in size.

#### 3.6.2.1 Plowed Installation

Approximately 20,757 m (68,101 feet) of the proposed installations would be performed using plowing 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.

#### 3.6.2.2 Directional Bore Installation

Approximately 3,889 m (12,758 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, roads, and 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 creating a pilot hole, where the drill bit is guided by the operator as it progresses along the desired boring path. After boring the pilot hole, 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 canal and road crossing installation, one on each side of the canal or road. These bore pits would be approximately 2.4 m (8.0 feet) square and would be located at varying distances from the canals or roads. The depth of the bore would be a minimum of 1.5 m (5.0 feet) below the bottom of the canals and roads, and the bore lengths would be variable. The bores would be of sufficient diameter to accommodate the 3.20-cm-diameter (1.25-inch-diameter) conduit and would be drilled using drilling fluid "mud" consisting of sodium bentonite and water. The drilling mud serves two purposes: first, it lubricates the drill bit; second, it seals the bore with an impermeable layer of sodium bentonite, keeping the bore from collapsing. As drilling mud accumulates in the bore pits, it would be evacuated using a trailer-mounted "mud-sucker" pump for reuse and/or appropriate disposal. In some cases, such as directional bores located beneath earthen canals, the entire bore would be grouted after conduit installation with a drilling mud/concrete mixture to provide a solid barrier that would prevent seepage flow from the canal in accordance with BOR guidelines.

Following the installation of the conduit beneath the canal or road, the bore pits would be filled in, compacted, and the ground surface restored to its original contour. The locations of all canal bores associated with the project are summarized in Table 3.2. 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.

**Table 3.2. Canal Bore Locations**

| Map No. | Canal Name | Location | Canal Width [a] |
|---|---|---|---|
| 1 | Reservation Main Drain | Stalnacker Road | 20.5 m (67 feet) |
| 2 | Unnamed canal | Fisher and Parkman Roads | 3.6 m (12 feet) |
| 3 | Reservation Main Drain | Fisher Road | 19.6 m (64 feet) |
| 4 | Hopi Canal | Bard and Whitmore Roads | 6.3 m (21 feet) |
| 5 | Cocopah Canal | Ross Road | 9.0 m (30 feet) |
| 6 | Unnamed canal | Fisher and Ross Roads | 5.3 m (17 feet) |

| Map No. | Canal Name | Location | Canal Width [a] |
|---|---|---|---|
| 7 | Papago Canal | Perez Road | 4.5 m (15 feet) |
| 8 | Pima Canal | Haughtelin and Perez Roads | 4.5 m (15 feet) |
| 9 | Cocopah Canal | Flood and Arnold Roads | 7.0 m (23 feet) |
| 10 | Navajo Canal | Picacho and Jackson Roads | 7.3 m (24 feet) |
| 11 | Reservation Main Drain | Picacho Road | 27.3 m (90 feet) |
| 12 | Pima Canal | Picacho and Haughtelin Roads | 3.7 m (12 feet) |
| 13 | Pueblo Canal | Picacho and Indian Rock Roads | 3.6 m (12 feet) |
| 14 | Cocopah Canal | Picacho Road | 8.3 m (27 feet) |
| 15 | Reservation Main Drain | Arnold Road | 27.3 m (90 feet) |
| 16 | Yuma Main Canal | Arnold Road | 46.0 m (151 feet) |
| 17 | Walapai Canal | Arnold Road | 2.4 m (8 feet) |

[a] Includes width of canal and any associated vegetation at edges of canal (see Section 4.4 for details).

### 3.6.3 Node Installation

Communications node (DLC) installation would begin with excavating 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, backfilled, and 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 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.

### 3.6.5 Construction Workforce and Equipment

Preliminary construction workforce estimates indicate that one plow 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 standard eight-hour days, five days a week. 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 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 (0.5- and 0.75-ton) for crew transport.

### 3.6.6 Construction Schedule

The anticipated start date for the proposed project is mid-January 2016, and 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 theses APMs, together with the limited nature of TDS' 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 Imperial County Air Pollution Control District (ICAPCD) standard measures for fugitive PM10 control:

- 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 would be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- All unpaved traffic areas 1 acre or more in size with 75 or more average vehicle trips per day would be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- The transport of bulk materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage or loss of bulk material. In addition, the cargo compartment of all haul trucks is to be cleaned and/or washed at the delivery site after removal of bulk material.
- All track-out and carry-out would 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.
- The construction of any new unpaved road is prohibited within any area with a population of 500 or more, unless the road meets the definition of a temporary

unpaved road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.

In addition, the following discretionary measures would be implemented:

- Watering of exposed soil with adequate frequency for continued moist soil.
- Replacing ground cover in disturbed areas as quickly as possible.
- Installing an automatic sprinkler system on all soil piles.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.

**APM BIO-1:** All irrigation canals 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 the canal bank or the maximum extent of any vegetation present along the canal's margin.

**APM BIO-3:** All agricultural fields will be avoided during construction.

**APM BIO-4:** No trees will be removed during project construction. If vegetation trimming is required to complete the installations, it will be kept to the absolute minimum necessary.

**APM BIO-5:** All equipment and vehicles will be thoroughly cleaned to remove dirt and weed seeds prior to being transported or driven to or from the project area.

**APM CR-1:** The Pilot Knob-Tap Drop 4 161kV Transmission Line will be avoided during construction.

**APM CR-2:** The UPRR will be bored beneath and avoided during construction.

**APM CR-3:** All construction activities will be monitored by a qualified archaeologist and/or Tribal member. If buried cultural resources are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the discovery until the archaeological monitor can assess the significance of the find and, if necessary, develop appropriate measures in consultation with the CPUC, SHPO, and other appropriate agencies.

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

**APM CR-5:** If human remains of Native American origin are discovered on Federal land during ground-disturbing activities, pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA), the contractor will:

- Notify the County coroner or the Sheriff;

- Notify, in writing, the responsible Federal agency; and
- Cease activity in the area of discovery and protect the human remains.

**APM CR-6:** In the event that fossil remains are encountered, either by the cultural resources monitor or 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 m (50 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 Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) permits for storm water runoff associated with construction activities.

**APM GEO-2:** Prior to the onset of construction, TDS or its authorized contractor will complete a Stormwater Prevention Pollution Plan (SWPPP) that outlines Best Management Practices (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.

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

**APM HAZ-2:** TDS 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:** Significant releases or threatened releases of hazardous materials will be reported to the appropriate agencies.

**APM NOI-1**: All construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m. Monday through Friday and 9 a.m. to 5 p.m. on Saturday. No construction operations shall occur on Sunday or holidays.

**APM TRA-1:** TDS will require the project contractor to obtain all necessary local, State, and BIA 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 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 will schedule truck trips outside of peak morning and evening commute hours.

**APM TRA-5:** TDS will limit lane closures during peak hours to the extent possible.

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

**APM TRA-7:** TDS 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-9:** The contractor 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 |
| Bureau of Indian Affairs | FONSI and ROW Grant | Pending |

| Agency | Permit/Approval | Status |
|---|---|---|
| Bureau of Reclamation | ROU Authorization | Pending |
| Imperial County | Encroachment Permit | Pending |
| Union Pacific Railroad | Encroachment Permit | Pending |

*Key:* FONSI = Finding of No Significant Impact (NEPA), MND = Mitigated Negative Declaration (CEQA), ROU = Right of Use.

# 4.0 ENVIRONMENTAL SETTING AND IMPACT ASSESSMENT SUMMARY

This PEA is a combined environmental document that complies with NEPA requirements for the preparation of an EA and with CEQA requirements for an IS. It is important to note that the use of the term "significant" in the resource sections below differs under these two laws. Under NEPA, an EA is prepared to determine whether a "Proposed Action" would have any "significant effects on the quality of the human environment," and significance is defined in terms of the impact's context and intensity. If a Proposed Action would result in one or more significant impacts, an Environmental Impact Statement (EIS) rather than an EA must be prepared. Under CEQA, each "significant effect on the environment" resulting from a "proposed project" must be identified in an IS along with ways to mitigate these effects. The manner in which the differences between the two processes are addressed in this PEA must therefore take into account that NEPA does not require mandatory findings of significance in an EA, and that some impacts determined to be significant under CEQA may not necessarily be determined significant under NEPA.

Environmental factors and mandatory findings of significance under CEQA are presented below. NEPA-specific resource areas that do not require consideration under CEQA are presented in Section 5.

## *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 Imperial County General Plan (ICGP) has goals and objectives related to visual resources (Imperial County 2008). These goals and objectives are listed below.

- Conservation and Open Space Element Goal 7: The aesthetic character of the region shall be protected and enhanced to provide a pleasing environment for residential, commercial, recreational, and tourist activity.
    - Objective 7.1—Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape.
- GP Circulation and Scenic Highways Goal 4: The County shall make every effort to develop a circulation system that highlights and preserves the environmental and scenic amenities of the area.

#### 4.1.1.2 Project Setting

According to the ICGP, important visual resources include desert areas, sand hills, mountains, and the Salton Sea. Scenic visual resources that are visible from the project area are limited to mountains to the north and northwest.

Four areas within the County have potential as State-designated scenic highways, including Interstate 8 (I-8) from between the San Diego County line and its junction with State Route 98; this segment is not located in or near the project area.

The topography of the project area is relatively flat, allowing for mostly unobstructed views. The proposed project alignment is located along existing roads in an area used primarily for agriculture. Accordingly, the views in the project area are dominated by agricultural fields and irrigation canals with views of distant mountains to the north and northwest, primarily. In addition to roads, other linear features in the project area include aerial electrical distribution lines that parallel most of the roads in the project area. Scattered rural residences and associated planted trees are also present in rural portions of the project alignment. Within the community of Winterhaven, buildings range from one to two stories and distant mountain views are obstructed by buildings and landscaping trees.

The primary viewers of the proposed telecommunications facilities would include local residents, agricultural workers, 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 which would adversely affect day 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)**

The lack of topographic relief in the project area and presence of large areas dominated by agriculture allows mostly unobstructed views of distant mountains, which are considered a scenic visual resource in Imperial County. 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 10 new equipment cabinets and several splice pedestals painted in neutral colors, 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 (CDOT 2014), 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 10new equipment cabinets and several splice pedestals painted in neutral colors, 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 which would Adversely Affect Day 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 (CDOT)

2014 Officially Designated State Scenic Highways and Parkways. Available at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm. Accessed on December 1, 2014.

## *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 2014). 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 Imperial 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, Imperial County filed non-renewal on all Williamson Act contracts, effective January 2011 and covering 117,246 acres; however, pursuant to California Government Code (CGC) Section 51246, the contracts remain in full force and effect until their termination dates.

**Local**

***Imperial County General Plan***

The Agricultural Element of the ICGP serves as the primary policy statement for implementing development policies for agricultural land use in Imperial County. The goals, objectives, implementation programs, and policies found in the Agricultural Element provide direction for new development as well as government actions and programs. Imperial County's Goals and Objectives are intended to serve as long-term principles and policy statements to guide agricultural use decision-making and uphold the community's ideals.

The County's Agricultural Element identifies several Implementation Programs and Policies for the preservation of agricultural resources. The Agricultural Element recognizes that the County can and should take additional steps to provide further protection for agricultural operations, while at the same time it should provide for the logical, organized growth of urban areas. The County must be specific and consistent about which lands will be maintained for the production of food and fiber and for support of the County's agricultural economy. The County's strategy and overall framework for maintaining agriculture includes the following policy directed at the preservation of Important Farmland:

> The overall economy of the County is expected to be dependent upon the agricultural industry for the foreseeable future. As such, all agricultural land in the County is considered Important Farmland, as defined by Federal and State agencies, and should be reserved for agricultural uses. Agricultural land may be converted to nonagricultural uses only where a clear and immediate need can be demonstrated, such as requirements for urban housing, commercial facilities, or employment opportunities. All existing agricultural land will be preserved for irrigation agriculture, livestock production, aquaculture, and other agriculture-related uses except for nonagricultural uses identified in this General Plan or in previously adopted City General Plans.

The following program is provided in the Agricultural Element:

> No agricultural land designated except as provided in Exhibit C shall be removed from the Agriculture category except where needed for use by a public agency, for geothermal purposes, where a mapping error may have occurred, or where a clear long term economic benefit to the County can be demonstrated through the planning and environmental review process. The Board (or Planning Commission) shall be required to prepare and make specific findings and circulate same for 60 days

(30 days for parcels considered under Exhibit C of this element) before granting final approval of any proposal which removes land from the Agriculture category.

Also, the following policy addresses Development Patterns and Locations on Agricultural Land:

"Leapfrogging" or "checkerboard" patterns of development have intensified recently and result in significant impacts to the efficient and economic production of adjacent agricultural land. It is a policy of the County that leapfrogging will not be allowed in the future. All new nonagricultural development will be confined to areas identified in this plan for such purposes or in Cities' adopted Spheres of Influence, where new development must adjoin existing urban uses. Nonagricultural residential, commercial, or industrial uses will only be permitted if they adjoin at least one side of an existing urban use, and only if they do not significantly impact the ability to economically and conveniently farm adjacent agricultural land.

Agricultural Element Programs that address "leapfrogging" or "checkerboard" development include:

All nonagricultural uses in any land use category shall be analyzed during the subdivision, zoning, and environmental impact review process for their potential impact on the movement of agricultural equipment and products on roads located in the Agriculture category, and for other existing agricultural conditions which might impact the projects, such as noise, dust, or odors.

The Planning and Development Services Department shall review all proposed development projects to assure that any new residential or nonagricultural commercial uses located on agriculturally zoned land, except land designated as a Specific Plan Area, be adjoined on at least one entire property line to an area of existing urban uses. Developments that do not meet these criteria should not be approved.

#### 4.2.1.2 Project Setting

According to the ICGP, agriculture has been the most important economic activity in the County throughout its history. The County recognizes the area as one of the finest agricultural areas in the world due to several environmental and cultural factors, including good soils, a year-round growing season, the availability of adequate water transported from the Colorado River, extensive areas committed to agricultural production, a gently sloping topography, and a climate that is well-suited for growing crops and raising livestock (Imperial County 2008).

The proposed project is located in an agricultural area classified as Prime Farmland by the FMMP. The project alignment is located within existing ROW that is used for transportation. Surrounding zoning in the majority of the project area is General Agricultural (see Section 4.9, Land Use). Crops observed in the project area during the biological evaluation survey include Sudangrass, wheat, cotton, alfalfa, dates, citrus, and other commodities.

### 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)**

**Impact AG-2: Conflict with Existing Zoning for Agricultural Use or a Williamson Act contract (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)**

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

**Impact AG-5: Involve Other Changes in the Existing Environment which, 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 a nonagricultural use because all of the proposed installations would occur along existing County roads and the agricultural fields located next to the project alignment would be avoided (see APM BIO-3). For the same reason, there would be no conflicts with existing zoning regulations for agricultural areas or Williamson Act contracts. There is no forested land in the project area; therefore, the proposed project would have no effect on either forested land or any zoning regulations designating forested land. There would be no impacts to agricultural resources.

### 4.2.3 References

California Department of Conservation

2014 California Important Farmland Finder. Available at: http://maps.conservation.ca.gov /ciff/ciff.html. Accessed on August 18, 2014.

Imperial County

2008 *Imperial County General Plan*. County of Imperial Planning/Building Department, El Centro, California.

## *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 Imperial County Air Pollution Control District (ICAPCD) 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 particulate matter (PM), including PM less than 10 microns in diameter (PM10) and 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 ICAPCD has established and adopted thresholds of significance for criteria pollutants of greatest concern within the district (ICAPCD 2007). The thresholds for ozone precursors (reactive organic gas [ROG] and nitrogen oxides [$NO_x$]), PM10, and CO emissions from construction activities can be found in Table 4.1.

**Table 4.1. ICAPCD Significance Thresholds for Emissions from Construction Activities**

| Pollutant | Threshold |
|---|---|
| PM10 | 150 lbs./day |
| ROG | 75 lbs./day |
| $NO_x$ | 100 lbs./day |
| CO | 550 lbs./day |

**Greenhouse Gases**

Gases that have the ability to trap heat in the atmosphere are called greenhouse gases (GHGs). The $CO_2$ produced from the burning of fossil fuels is a GHG, one of five principal GHGs entering the atmosphere due to 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 have 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 is related to the gases' abilities 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 2014a). 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 Imperial County, all construction activities must be in compliance with Regulation VIII (ICAPCD 2007). The main purpose of this regulation is to reduce the amount of PM10 released into the atmosphere as a result of manmade fugitive dust sources. Compliance with the regulation does not constitute mitigation and it is presumed that all projects occurring in Imperial County will be implemented in compliance with Regulation VIII. Standard measures for fugitive PM10 control outlined in Regulation VIII include:

- 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 paving, chemical stabilizers, dust suppressants, and/or watering.
- All unpaved traffic areas 1 acre or more in size with 75 or more average vehicle trips per day will be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- The transport of bulk materials shall be completely covered, unless 15 cm (6 inches) of freeboard space from the top of the container is maintained with no spillage or loss of bulk material. In addition, the cargo compartment of all haul trucks is to be cleaned and/or washed at the delivery site after removal of bulk material.
- 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.

- The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a temporary unpaved road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.

In order to provide a greater degree of PM10 reductions, above that required by Regulation VIII, the ICAPCD recommends the following discretionary mitigation measures for fugitive PM10 control:

- Watering of exposed soil with adequate frequency for continued moist soil.
- Replacing ground cover in disturbed areas as quickly as possible.
- Installing an automatic sprinkler system on all soil piles.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
- Develop a trip reduction plan to achieve a 1.5 average vehicle ridership (AVR) for construction employees.
- Implement a shuttle service to and from retail services and food establishments during lunch hours.

#### 4.3.1.2 Project Setting

The Western Regional Climate Center (WRCC) recorded seasonal climatic data from 1993–2013 at the Yuma Quartermaster Depot, located just south 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 90.1° F (32.2° C), with the hottest month of the year being July with an average maximum temperature of 109.4° F (43.0° C). The average annual minimum temperature within the project area is 59.0° F (15.0° C), with December having the coldest average temperature of 43.4° F (6.3° C). The project area receives an average of 6.80 cm (2.67 inches) of precipitation annually, with February having the highest average precipitation at 1.20 cm (0.48 inches). The project area receives no snowfall in the average year.

The proposed project area is located within the Salton Sea air basin. Review of the 2013 CAAQS criteria pollutant attainment status for the basin indicates that it was in attainment for PM 2.5, CO, $NO_2$, $SO_2$, $SO_x$, and PB and non-attainment for PM10 and $O_3$. Review of the NAAQS criteria pollutant attainment status for the same year indicates that the air basin was in non-attainment for 8h $O_3$, attainment for $SO_2$, and unclassified/attainment for PM 2.5, CO, Pb, and $NO_2$ (CARB 2014).

### 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

The proposed project would incorporate ICAPCD 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 ICAPCD standard measures for fugitive PM10 control:

- 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 paving, chemical stabilizers, dust suppressants, and/or watering.
- All unpaved traffic areas 1 acre or more in size with 75 or more average vehicle trips per day will be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- The transport of bulk materials shall be completely covered unless 15 cm (6 inches) of freeboard space from the top of the container is maintained with no spillage or loss of bulk material. In addition, the cargo compartment of all haul trucks is to be cleaned and/or washed at the delivery site after removal of bulk material.
- 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.
- The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a temporary unpaved road. Any temporary unpaved road shall be effectively stabilized, and visible

emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.

In addition, the following ICAPCD-recommended discretionary measures will be implemented:

- Watering of exposed soil with adequate frequency for continued moist soil.
- Replacing ground cover in disturbed areas as quickly as possible.
- Installing an automatic sprinkler system on all soil piles.
- Vehicle speed for all construction vehicles shall not exceed 15 mph 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 the Salton Sea air basin, which is currently in non-attainment for PM10 and $O_3$ (CAAQs) and for 8h $O_3$ (NAAQS). The ICAPCD adopted an Air Quality Management Plan for $O_3$ on July 13, 2010, and a State implementation plan for PM10 on August 11, 2009. The ICAPCD plans estimate future emissions and describe 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 ICAPCD 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 ICAPCD 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 Imperial County, including a portion of the Fort Yuma–Quechan Reservation. It would not induce population or employment growth and would not conflict 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 ICAPCD. 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 ICAPCD 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 Conduit Installation | 7 |
| Bored Conduit Installation | 32 |
| Node Installation | 5 |
| Total | 44 |

Reactive Organic Gas (ROG), NOx, 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 Imperial County Regulation VIII (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 Conduit Installation | 1.90+0.69 **2.59** | 22.24+0.43 **22.67** | 8.20+0.84 9.04 | 60.22 | 1.00+0.01 **1.01** | 6.01 | 0.94+0.01 **0.95** |
| Bored Conduit Installation | 3.21+0.05 **3.26** | 29.98+0.33 **30.31** | 19.16+0.67 19.83 | 50.90 | 1.78+0.01 **1.79** | 5.08 | 1.72+0.01 **1.73** |
| Node Installation | 0.34+0.05 **0.39** | 3.24+0.33 3.57 | 2.40+0.67 3.07 | 50.90 | 0.25+0.01 **0.26** | 5.08 | 0.23+0.01 **0.24** |
| Maximum Daily Emission | 3.26 | 30.31 | 19.83 | 60.22 | 1.79 | 6.01 | 1.73 |
| ICAPCD Thresholds | 75 | 100 | 500 | 150 | | none | |
| Exceeds Threshold? | no | no | no | no | | n/a | |

[a] Off-site fugitive dust only; all on-site fugitive dust will be controlled per Regulation VIII.

As shown in Table 4.3, the proposed project's estimated emissions would be below the ICAPCD maximum daily emission thresholds for all criteria pollutants. On-site fugitive dust will be controlled through the implementation of standard measures in compliance with Imperial County Regulation VIII (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 (including Releasing Emissions which 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 ICAPCD thresholds. Consequently, because the proposed project's anticipated emissions of these two criteria pollutants that are in non-attainment are below what ICAPCD 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 68.4 MT of $CO_2$ Eq. emissions that would be released by the proposed project is the same amount released by 14.4 average passenger vehicles in a year (EPA 2014b), which, given the 23.8 million registered passenger vehicles in California in 2014 (CDMV 2015), would be in comparison less than significant.

**Table 4.4. Estimated Greenhouse Gas Emissions**

| Construction Phase | $CO_2$ Equivalent (Lbs./Day), On+Off-Site | $CO_2$ Equivalent (Metric Tons) |
|---|---|---|
| Plowed Conduit Installation | 1,987+115, **2,102** | 6.7 |
| Bored Conduit Installation | 4,103+90, **4,193** | 60.8 |
| Node Installation | 324+90, **414** | 0.9 |
| Project Total | | 68.4 |

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

The ICAPCD currently has no adopted plan for reducing the emissions of GHGs. There would be no impacts related to emissions of GHGs.

### 4.3.3 References


California Air Resources Board (CARB)

2014 California Environmental Protection Agency Air Resources Board website. Available at: http://www.arb.ca.gov/homepage.htm. Accessed on August 18, 2014.

California Department of Motor Vehicles (CDMV)

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 on March 31, 2015.

Imperial County Air Pollution Control District (ICAPCD)

2007 *CEQA Air Quality Handbook, Guidelines for the Implementation of the California Environmental Quality Act as 1970, as amended.* ICAPCD, El Centro, California.

U.S. Environmental Protection Agency (EPA)

2014a EPA Climate Change website. Available at: http://epa.gov/climatechange/. Accessed on January 12, 2015.

2014b EPA Greenhouse Gas Equivalencies Calculator website. Available at: http://www.epa.gov/cleanenergy/energy-resources/calculator.html. Accessed on January 16, 2014.

Western Regional Climate Center (WRCC)

2014 Yuma Quartermaster Depot, Arizona—Climate Summary. Available at: http://www.wrcc. dri.edu/cgi-bin/cliMAIN.pl?nm8668. Accessed on June 19, 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 (NMFS) enforce the provisions stipulated within the 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 whether 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 whether 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/California Environmental Quality Act***

The California Endangered Species Act (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, which serve as "watch lists." Pursuant to the requirements of CESA, a State or local agency reviewing a proposed project within its jurisdiction must determine whether any State-listed species may be present in the project area and determine whether 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 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, 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, 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, and Waters of the State**

Any person, firm, or agency planning to alter or work in "Waters of the U.S. (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 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; 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 which 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 (OHWM)—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 (Porter-Cologne Act) (California Water Code § 13000 et. seq.) This act delegates responsibility to the State Water Resource Control Board (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 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**

***Lower Colorado River Multi-Species Conservation Program***

The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) was created to balance the use of the Colorado River water resources with the conservation of native species and their habitats. The program works toward the recovery of species currently listed under the ESA. It

also reduces the likelihood of additional species listings. Implemented over a 50-year period, the program accommodates current water diversions and power production and will optimize opportunities for future water and power development by providing ESA compliance through the implementation of a Habitat Conservation Plan (HCP) that was finalized in December 2004.

The program area extends over 400 miles of the lower Colorado River from Lake Mead to the southernmost border with Mexico and includes Lakes Mead, Mohave, and Havasu, as well as the historic 100-year floodplain where the proposed project is located, along the main stem of the lower Colorado River. The HCP calls for the creation of over 3,278 ha (8,100 acres) of habitat for fish and wildlife species and the production of over 1.2 million native fish to augment existing populations. The plan will benefit at least 26 species, most of which are State- or Federally listed Endangered, Threatened, or Sensitive species.

The BOR is the implementing agency for the LCR MSCP. Partnership involvement occurs primarily through the LCR MSCP Steering Committee (currently representing 57 entities including State and Federal agencies, water and power users, municipalities, Native American Tribes, conservation organizations, and other interested parties), which provides input and oversight functions in support of LCR MSCP implementation. Program costs are evenly divided between the Federal government and non-Federal partners.

***Imperial County General Plan***

The ICGP, which applies to all public and private projects in unincorporated Imperial County, consists of 10 Elements: Land Use, Housing, Circulation and Scenic Highways, Noise, Seismic and Public Safety, Agricultural, Conservation and Open Space, Geothermal/Alternative Energy and Transmission, Water, and Parks & Recreation (Imperial County 2008).

The Conservation Element and Open Space Element of the ICGP provide detailed plans and measures for the preservation and management of biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space. The purpose of the Conservation and Open Space Element is to promote the protection, maintenance, and use of the County's natural resources, with particular emphasis on scarce resources, and to prevent wasteful exploitation, destruction, and neglect of the State's natural resources. Additionally, the purpose of this Element is to recognize that natural resources must be maintained for their ecological value for the direct benefit to the public, open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and public health and safety.

### 4.4.1.2 Methodology

**Field Reconnaissance and Pre-Field Literature Search**

Tierra's senior biologist, Tim Jordan, conducted a reconnaissance survey of the project area on July 15 and 16, 2014. 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. The entire area assessed during the reconnaissance survey included the project corridor centerlines with an approximately 15.2-m (50-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 Araz, Bard, Imperial Reservoir, Laguna Dam, Little Picacho Peak, Picacho Peak, Yuma East, and Yuma West 7.5 minute USGS topographic quadrangles (CNDDB 2014) and from a list of Natural Resources of Concern including Federally listed special status species for Imperial County that was obtained from the FWS Information, Planning, and Conservation (IPAC) system

**Waterway Delineation**

A field delineation was conducted to map all waterways and any vegetation associated with the waterways to be crossed in the project area and to assist TDS with identifying waterways to avoid (Appendix D).

#### 4.4.1.3 Project Setting

The project area is located in southeastern California on the lower Colorado River in an area primarily used for agricultural cultivation. Several irrigation canals operated by the BOR's Imperial Irrigation District (IID) and Bard Water District (BWD) either cross or run parallel to the project corridors. Elevations in the project area range from approximately 38–43 m (126–140 feet) above mean sea level (AMSL).

**Terrestrial Habitat**

While the study area is located within the Colorado Desert, as classified in *A Manual of California Vegetation* (Sawyer 2009), the dominant type of terrestrial habitat present in the project area consists of agricultural land that is being actively cultivated to produce Sudangrass, wheat, cotton, alfalfa, dates, citrus, and other crops. The road shoulders where the proposed telecommunications line is to be installed are mostly devoid of vegetation due to blading activities associated with road maintenance and agricultural activities. Due to this previous disturbance, little to no native vegetation remains in the project area. 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**

Aquatic habitat in the study area is limited to that associated with agricultural canals. There are no ponds or ephemeral or perennial waterways within the study area. Grass Carp *(Ctenopharyngodon idella)*, a fish species native to southeastern Russia and northwestern China, has been stocked in the Yuma Main Canal by the Yuma County Water User's Association (YCWUA) since October 2013 for vegetation control purposes.

**Sensitive Natural Communities**

***Riparian Areas***

No sensitive natural communities, as defined by CDFW, are present in the study area. However, the margins of unlined canals in the study area, especially the Reservation Main Drain, contain limited riparian vegetation consisting mostly of dense Common Reed *(Phragmites australis)* and invasive

species such as Salt Cedar *(Tamarix ramosissima)*. This vegetation is mostly low-growing, not structurally complex, and does not have a tree overstory.

***Wetlands***

Riverine wetlands may be present along the unlined canals that are crossed by the project corridors. These potential wetlands were not delineated during the field surveys because TDS would be boring beneath all of the canals crossed by the line installations will employ sufficient set-backs from either the canal edges or the extent of associated vegetation, if present, to avoid any potential impacts to wetlands (see Waterway Delineation and Assessment Report in Appendix D).

**Special Status Species**

Based on the assessment methodology outlined above, seven special status wildlife species are either known to occur or have the potential to occur in the study area (Table 4.5). Because of the previously disturbed nature of the study area and its lack of native vegetation, no special status plant species were expected to be found during the surveys, and none were identified.

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

| Scientific Name | Common Name | Status (FWS/State/CNPS) |
|---|---|---|
| Amphibians | | |
| *Incilius alvarius* | Sonoran Desert Toad | -/SSC/- |
| *Lithobates yavapaiensis* | Lowland Leopard Frog | -/SSC/- |
| Birds | | |
| *Lanius ludovicianus* | Loggerhead Shrike | -/SSC/- |
| *Pyrocephalus rubinus* | Vermilion Flycatcher | -/SSC/- |
| *Xanthocephalus xanthocephalus* | Yellow-headed Blackbird | -/SSC/- |
| Mammals | | |
| *Corynorhinus townsendii* | Townsend's Big-eared Bat | -/CT, SSC/- |
| *Sigmodon hispidus eremicus* | Yuma Hispid Cotton Rat | -/SSC/- |

*Key:* SSC = Species of Special Concern, C = Candidate, T = Threatened.

**Migratory Birds**

The study area and/or areas adjacent to it were determined to contain suitable habitat for two migratory birds appearing on the American Bird Conservancy's *U.S. Watchlist of Birds of Conservation Concern*. No bird nests were observed in the project corridors at the time of the surveys; this lack of nests was due to the project corridors being essentially devoid of vegetation large enough to support bird nests. 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 (BCC) list for Bird Conservation Region (BCR) 33, Sonoran and Mojave Deserts U.S. Portion Only, can be found in Table 4.6.

**Table 4.6. Bird Conservation Region 33 Migratory Bird List**

| | |
|---|---|
| Least Bittern | Elf Owl |
| Bald Eagle | Burrowing Owl |
| Peregrine Falcon | Costa's Hummingbird |
| Prairie Falcon | Gila Woodpecker |
| Black Rail | Gilded Flicker |
| Snowy Plover | Bell's Vireo |
| Mountain Plover | Gray Vireo |
| Whimbrel | Bendire's Thrasher |
| Long-billed Curlew | LeConte's Thrasher |
| Marbled Godwit | Lucy's Warbler |
| Red Knot | Yellow Warbler |
| Gull-billed Tern | Rufous-winged Sparrow |
| Black Skimmer | Black-chinned Sparrow |
| Yellow-billed Cuckoo | Lawrence's Goldfinch |

**Invasive Species**

Three 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. These invasive species are Russian Thistle *(Salsola kali)*, Kariba Weed *(Salvinia molesta)*, and Salt Cedar *(Tamarix ramosissima)*. With the exception of Russian Thistle and a few scattered dryland infestations of Salt Cedar, all of these invasive species were found associated with the irrigation canals crossed by the project corridors. The only aquatic invasive species identified, Kariba Weed, was found in the Reservation Main Drain at the proposed corridor crossings on Fisher, Picacho, and Stalnacker, Roads (Crossings 1, 3, and 11, indicated in Figure 2). Two of the invasive species, Kariba Weed and Salt Cedar, have a "High" rating assigned by the CIPC, and the remaining species, Russian Thistle, has a "Limited" rating.

### 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 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 irrigation canals 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 the canal bank or the maximum extent of any vegetation present along the canal's margin.

**APM BIO-3:** All agricultural fields will be avoided during construction.

**APM BIO-4:** 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 BIO-5:** All equipment and vehicles will be thoroughly cleaned to remove dirt and weed seeds prior to being transported or driven to or from the project area.

**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).**

Sonoran Desert Toad and Lowland Leopard Frog have the potential to occur along the irrigation canals in the project area. 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 and 2, impacts are expected to be reduced to a less-than-significant level.

Loggerhead Shrike and Yellow-headed Blackbird have the potential to occur in the agricultural fields adjacent to the project area. In addition to potentially occurring in the agricultural fields, Townsend's Big-eared Bat has the potential to occur in other vegetated areas adjacent to the project area, such as residential landscaping, while foraging. With the implementation of APM BIO-3 and 4, impacts are expected to be reduced to a less-than-significant level.

Vermilion Flycatcher and Yuma Hispid Cotton Rat have the potential to occur in the agricultural fields adjacent to the project area and along the vegetated irrigation canals within the project area. With the implementation of APM BIO-1–3, 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).**

Dense vegetation along some of the canals in the project area that would be crossed by the proposed installations may provide suitable habitat for wildlife species, and the canals themselves may provide suitable habitat for fish. All of the canals in the project area would be bored beneath during the proposed installations (APM BIO-1); 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 riverine wetlands may be present along some of the canals in the project area. All of the canals in the project area would be bored beneath during the proposed installations (APM BIO-1); therefore, the project would have no impact on wetlands, if present.

**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).**

No natural landscape blocks, potential riparian connections, or interstate connections are present within the project area (Spencer et al. 2010). The project area contains no Arizona Potential Linkage zones (Arizona's Wildlife Linkages 2006). Although native wildlife may move through the project area, the proposed installation would not create a new barrier to such small animal movement given that the proposed alignment is located along existing roadways and proposed installation would consist of buried cables and the installation of 10 equipment cabinets. No evidence of wildlife corridors was observed during the surveys. Migratory birds may be present in the areas surrounding the project corridors. With the implementation of APM BIO-3 and 4, impacts to migratory birds are expected to be reduced to a less-than-significant level.

**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 ICGP's Conservation 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 Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan (No Impact).**

Due to the presence of invasive plant species in the study area, implementation of the proposed project has the potential to result in the further spread of existing noxious weeds. Invasive species could also be introduced into the study area by construction equipment, vehicles, personnel, or imported fill or other material. Further introduction of invasive plant species could adversely impact the irrigation canals in the project area and their associated riparian areas, where present. However,

with the implementation of APM BIO-1, 2, and 5, the proposed project would be consistent with the conservation objectives of the ICGP because impacts are expected to be reduced to a less-than-significant level.

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## *4.5 Cultural Resources*

### 4.5.1 Affected Environment

#### 4.5.1.1 Regulatory Setting

**Federal**

***National Historic Preservation Act***

The National Historic Preservation Act (NHPA) of 1966 (16 USC Sec. 470), as amended, is the primary Federal law governing the preservation of cultural and historic resources in the United States. The NHPA establishes the Federal government policy on historic preservation and the programs through which this policy is implemented. Section 106 of the NHPA (16 USC Sec. 470f) requires Federal agencies to take into account the effects of their undertakings on any district, site, building, structure, or object that is included in or determined eligible for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36 CFR Sec. 800.1). Section 106 is applicable to the proposed project because BIA must approve the requested ROW grants for the portions of the project located on the Fort Yuma–Quechan Reservation and BOR must approve the project's canal crossings.

To be eligible for the NRHP, cultural resources must possess integrity and meet at least one of the following four criteria specified in 36 CFR Sec. 60.4. Pursuant to 36 CFR 60.4, these are the criteria by which properties are evaluated:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> **A.** That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> **B.** That are associated with the lives of persons significant in our past; or
>
> **C.** That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> **D.** That have yielded or may be likely to yield, information important in prehistory or history (National Park Service 2004).

Under Section 106, a project's impacts on historic properties that affect the characteristics that qualify a property for NRHP inclusion are considered an adverse effect on the environment. Examples of adverse effects on historic properties are listed under 36 CFR Sec. 800.5(a)(2) and include, but are not limited to, physical destruction or damage to all or part of a property, change of the character or the use of the property or physical feature within the setting of the property that

contributes to its significance, or introduction of visual, atmospheric, or audible elements that diminish the integrity of significant features of the property. If an adverse effect is identified, the agency shall act pursuant to 36 CFR Sec. 800.6 (36 CFR Sec. 800.5[d][2]) to resolve the adverse effect by developing and evaluating alternatives or modifications to the undertaking that "could avoid, minimize, or mitigate adverse effects on historic properties" (36 CFR Sec. 800.6[a]). Cultural resources that have been determined ineligible for the NRHP in consultation with the State Historic Preservation Office (SHPO) and interested parties require no further consideration unless new discoveries trigger re-evaluations.

Section 106 of the NHPA does not apply to paleontological resources unless they are found in a culturally related context. In addition to the Antiquities Act (16 USC Sec. 431-433) of 1906, the preservation and salvage of fossils and other paleontological resources can be protected under the National Registry of Natural Landmarks (16 USC Sec. 461-467) and NEPA, which directs Federal agencies to "preserve important historic, cultural, and natural aspects of our national heritage."

***Archaeological Resources Protection Act***

The Archaeological Resources Protection Act (ARPA) of 1979 (43 CFR Sec. 7) may impose additional requirements on an agency if Federal or Native American lands are involved. Specifically, the Act: (1) prohibits unauthorized excavation on Federal and Native American lands, (2) establishes standards for permissible excavation, (3) prescribes civil and criminal penalties, (4) requires agencies to identify archaeological sites, and (5) encourages cooperation between Federal agencies and private individuals.

***American Indian Religious Freedom Act***

The American Indian Religious Freedom Act (AIRFA) of 1978 (42 USC 1996 and 1996a) affirms the right of Native Americans to have access to their sacred places. If a place of religious importance to American Indians may be affected by an undertaking, AIRFA promotes consultation with Indian religious practitioners (this may be done in coordination with Section 106 consultation). Amendments to Section 101 of the NHPA in 1992 strengthened the interface between AIRFA and NHPA by clarifying the following: (1) properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization may be determined to be eligible for inclusion in the NRHP, and (2) in carrying out its responsibilities under Section 106, a Federal agency shall consult with any American Indian Tribe or Native Hawaiian organization that attaches religious and cultural significance to properties described under (1).

***Native American Graves Protection and Repatriation Act***

For activities on Federal lands, NAGPRA (43 CFR Sec. 10) requires consultation with "appropriate" Indian Tribes (including Alaska Native villages) or Native Hawaiian organizations prior to the intentional excavation, or the removal after inadvertent discovery, of several types of cultural items, such as human remains and objects of cultural patrimony. For activities on Native American or Native Hawaiian lands, which are defined by statute, NAGPRA requires the consent of the Indian Tribe or Native Hawaiian organization prior to the removal of cultural items. The law also provides for the repatriation of such items from Federal agencies and Federally assisted museums and other repositories.

The 1992 amendment to the NHPA strengthened NAGPRA by encouraging "protection of Native American cultural items…and of properties of religious or cultural importance to Indian Tribes, Native Hawaiians, or other Native American groups" (Sec. 112[b][3]) and by stipulating that a

Federal "…agency's procedures for compliance with Section 106 …provide for the disposition of Native American cultural items from Federal or Tribal land in a manner consistent with Sec. 3(c) of the Native American Graves Protection and Repatriation Act…"

The final rule of the NAGPRA regulations, effective May 14, 2010, added procedures for the disposition of culturally unidentifiable Native American human remains in the possession or control of museums of Federal agencies. The rule also amended sections of NAGPRA related to purpose and applicability of regulations, definitions, inventories of human remains and related funerary objects, civil penalties, and limitations and remedies.

***Paleontological Resources Protection Act***

The Paleontological Resources Protection Act, as provided in Title VI, Subtitle D, Paleontological Resources Preservation of the Omnibus Public Land Management Act of 2009 (Public Law 111-011), requires the secretaries of the interior and agriculture to manage and protect paleontological resources on Federal land using scientific principles and expertise. The law, which applies only to Federal lands, reaffirms the authority of Federal land managing agencies to implement many of the policies for managing paleontological resources, such as issuing permits for collecting paleontological resources, curating paleontological resources, and maintaining confidentiality of locality data. The law provides authority for the protection of significant paleontological resources on Federal lands, including criminal and civil penalties for fossil theft and vandalism.

**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 (detailed above), 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 NRHP ("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/EIS or, if authorized, a Substitute Environmental Document [SED]) 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 ICGP identifies areas of varying sensitivity for cultural resources and establishes policy for promoting the protection of important cultural resources (Imperial County 2008).

### 4.5.1.2 Project Setting

**Ethnography**

The Quechan are a Native American people inhabiting the region around the confluence of the Gila and Colorado Rivers. The name "Quechan" literally means "those who descended" (Bee 1983:97). The name "Yuma" is the Spanish name for the Quechan and likely derives from the Akimel O'odham/Tohono O'odham name for them, *yumi*. They are one of the several Yuman-speaking groups in southern California and western Arizona. For convenience, ethnologists, beginning with Kroeber in 1943 (Stewart 1983a), have placed the Yuman people into four broad geographical groups. The Delta Yumans include such people as the Cocopah in the Colorado delta area; the Upland Arizona Yumans include the Walapai, Havasupai, and Yavapai; and the California Yuman-speakers consist of southern Californian groups such as the Kumeyaay (or Kamia) and Tipai-Ipai (or Diegueño). The fourth group, the River Yumans, comprise two closely related peoples, the Mohave and the Quechan. The Mohave and Quechan were culturally similar and, traditionally, were allied in opposition to several other groups in the area, including the Halchidhoma, the Maricopa, and the Cocopah (Stewart 1983b:56).

The following brief ethnographic account attempts to form a model of Quechan culture in pre-Reservation times (i.e., prior to 1884) while tracing the impacts from Euroamerican interaction with the Quechan people historically.

***History and Early Sources***

The early records of contact between the Spanish and the Yuman Tribes that lived along the Lower Colorado are sparse. The earliest records, those of the Hernando de Alarcón and Melchior Diaz expeditions in the 1540s, do not mention the Quechan at all (Spicer 1962:262). The first substantial records of the Quechan made by Europeans were during Juan de Oñate's 1604 expedition of the Colorado River via the Bill Williams Fork (Bean and Brakke Vane 1978:5–44). The next contact with the Spanish occurred during Father Eusebio Kino's expeditions to ascertain whether California was an island or peninsula beginning in 1698 (Spicer 1962:263–264). Kino was apparently well-received by the different Yuman groups on the Colorado and Gila Rivers. Kino's last visit to the Quechan was in 1702, during his final expedition to determine California's geographical status.

The next visit from the Spanish did not occur until 1748, when the Jesuit missionary Father Jacobo Sedelmayr visited the area. However, unlike Kino, he was greeted with hostility by the Quechan. Part of the reason for this hostility was likely related to widespread epidemics among the Lower Colorado Tribes from diseases that had been introduced by Europeans. In addition, the Spanish slave trade (a practice later adopted by the Quechan) was also causing increasing hostilities elsewhere in the region (Bean and Brakke Vane 1978:5–44). In 1771, the Spanish had become fixated on establishing a permanent route between Sonora and Alta California via the Colorado River and Gila River confluence region, or what would eventually come to be known as the Yuma Route or Yuma Crossing. Spanish presence in the area accordingly intensified. The explorations for this route were led by General de Anza. At the same time, Father Franciso Garcés was busy trying find a route through Yuma country to the Hopi region for missionizing purposes, and was also conducting vigorous missionary activity among the Quechan.

Over the next 10 years, Spanish influence on the Quechan and other Lower Colorado Tribes was great due to these activities, but also because of the introduction of wheat as a winter crop and domesticated livestock (particularly poultry). The Spanish established two settlements near the crossing, the pueblos of Yuma and Xuksi'l, consisting of farmers, priests, and soldiers; these settlers allowed their cattle to graze in the Quechan fields, effectively destroying their crops (Bee 1983:94). This would occur again in 1849 during the California Gold Rush, when vast numbers of people traveled through the crossing (Bean and Brakke Vane 1978:5–47). Warfare related to the ongoing slave trade continued, as did epidemics; syphilis was introduced to the area during the 1774 De Anza expedition (Spicer 1962:264; Bean and Brakke Vane 1978:5–44).

In the summer of 1781, the Quechan successfully revolted against the Spanish, destroying both settlements and killing 95 settlers, soldiers, and missionaries (including Garcés) and taking 76 people captive (Bean and Brakke Vane 1978:5–45). The route from Sonora to Alta California via the Colorado-Gila confluence area was effectively closed off, and the Quechan remained relatively isolated until 1827, when the Quechan opened the crossing to Mexican travelers taking the slave trade road between Caborca, Sonora, and southern California (Bean and Brakke Vane 1978:5–46).

Because of the sporadic contacts between the Spanish and the Quechan, and because of the success of the revolt of 1781, the Quechan retained many of their cultural traditions and lifeways despite the Spanish enculturation of the 1770s. Nevertheless, during the course of the nineteenth century, the Quechan became increasingly subjected to Euroamerican political, religious, and economic impacts. These included the influx of would-be miners following the discovery of gold in California in 1848, the establishment of Fort Yuma in 1852, the arrival of the railroad in 1877, the establishment of the Reservation and Catholic school in the 1880s, the 1893 introduction of the Federal government's land allotment system (resulting from a local application of the Dawes Act of 1887), and irrigation projects (Bean and Brakke Vane 1978:5–48; Smith 2010; Bee 1983:94–95).

***Territory and Settlement***

The Quechan account of their origin states that they, like most of the other Lower Colorado Tribes and other Tribes farther to the west (such as the Kumeyaay in the San Diego area), came from the sacred mountain of Avikame (Newberry Mountain, near Needles, California). It is here that they were created by a creator being known as *Kwikumat* or *Kukumat*. From here, they migrated south. The lands regarded as traditional by the Quechan encompass an area extending from Needles to the Gulf of California. An anthropological model hypothesizes that the Quechan, as a tribal identity, formed between the thirteenth and eighteenth centuries when several patrilineal bands formed into a tribal affinity. Group proximity during horticultural activities, linguistic affiliation, and warfare may account for this formation (Bee 1983:86).

Geographically, the Quechan were organized into a number of rancherias, each consisting of several hundred people, organized into extended family groups. The rancherias were distributed along the Colorado River north and south of the Gila confluence and along the Gila (according to some Spanish accounts, as far as 42 km [26 miles] east of the confluence). The internal structure of each rancheria changed throughout the year, with each extended family moving to their river bottomlands during the summer farming season and returning to high ground in the winter and during spring flooding. The rancherias also shifted up and down the rivers in response to food shortages and warfare (Bee 1983:87–89). Because of the warm climate, substantial housing was uncommon. Families dwelt in dome-shaped arrowweed houses and ramadas both on high ground and near their fields during the growing season. In each rancheria, one or two larger and more substantial houses

were occupied by the leading families. These houses could accommodate other rancheria members in extreme cold (Bee 1983:89–90).

***Subsistence***

Throughout their history (and presumably prehistory), the Quechan were primarily gatherers and horticulturalists, something attested to by the early Spanish chroniclers (Bee 1983:86). Wild game was not a primary source of nutrition, as the harsh desert conditions beyond the Colorado River's floodplains limited the viability of hunting. Cultivated foods included maize, tepary beans, various melons, pumpkins, and wild grass seed; other foods, such as watermelons, black-eyed beans, and wheat, were introduced by Euroamerican immigrants. Interestingly, watermelons, a crop that spread extremely rapidly among North American Native populations upon its introduction, had been adopted by the Quechan prior to Kino's visit in the late seventeenth century (Rea 1997:299).

The Quechan practiced a diversified horticultural strategy, and planting of several food crops occurred at different times of year. Maize and melons were planted in February and were not dependent on floodwater farming. Other crops were planted after the spring flooding of the Colorado River. Winter wheat was sowed in the autumn and harvested just before the floods. The wild grasses, which provided seeds to be ground into meal, were sown in less fertile soils. The other main wild foods were mesquite and screw bean pods, which were probably the primary source of nutrition during years of crop failure (Bee 1983:86–87).

As discussed earlier, both cultivated and wild foods were affected by the arrival of Euroamericans, who would allow (or could not prevent) cattle to graze in Quechan fields. In 1893, a long-term impact was made on Quechan horticulture by an agreement (based on the Dawes Severalty Act of 1877) that persuaded Quechan farmers to limit their land holdings to 2 ha (5 acres) per person. All remaining land was then sold at public auction. This was a direct move by non-Natives to acquire the fertile bottomlands of the Colorado River that the Quechan had farmed for centuries. The allotments were increased to 4 ha (10 acres) in 1912. Meanwhile, the Yuma Project had been initiated by the U.S. Reclamation Service (later the BOR) in 1904 and had the effect of disrupting the annual flooding and silt deposition of the Colorado River. By the 1920s and 1930s, farming was no longer a viable occupation, with many Quechans becoming wage workers in Yuma. After years of claiming that agreement was signed under duress and that the U.S government had not fulfilled its terms, 10,117 ha (25,000 acres) of land that had belonged to the original 1884 reservation were restored to the Quechan Tribe in 1978 (Bee 1983:94–95). Today, most of the farmland is leased to non-Native farmers.

***Kinship and Polity***

Socially, the Quechan were organized into patrilineal clans. The clans were exogamous units, with clan names borne exclusively by women. Some clan names may have originated from other Tribes, such as the Mohave, Maricopa, or the Kumayaay. The rancherias were agamous; that is, anyone could marry outside the rancheria, but men most frequently married women from their own rancheria. Consequently, settlement was in practice bilocal, an important factor for the extended family as the primary economic unit (Bee 1983:89). Clan membership did not necessarily correspond to rancheria affiliation. Clan functions were largely disregarded by the 1960s, and many Quechans had forgotten their affiliation by that time (Bee 1983:90–91).

In general, the clan and rancheria were the basic social units among the Quechan, with the extended family the economic unit, as mentioned above. Tribal consciousness, when all the people identified

as "Quechan" rather than as members of the smaller-scale social units of clan and rancheria, occurred during warfare, harvest gatherings, and annual mourning ceremonies (Bee 1983:92).

Early European sources described two main leadership positions among the Quechan, one leading civil affairs and one in charge of warfare. However, it seems that these roles may have been largely traditional rather than consisting of any real political power. In practice, decisions were made by the leaders of individual rancherias, who probably consulted in council for matters of concern on the tribal level (Bee 1983:92–93). Although some degree of inheritance may have been a factor in determining leaders, competence was a more powerful attribute. Competence depended upon public approval, but also upon personal power bestowed by special dreams (Bee 1983:92–93). The dreams of a leader or candidate for leadership were evaluated by a group of elders, and the individual was required to experience dreams appropriate to his office, although he was also required to be an effective leader.

***Warfare***

Warfare was a cornerstone of Quechan culture. Two types of warfare were distinguished: the war party and the small raiding party (Bee 1983:93). The raiding party was focused on creating havoc and capturing horses or captives. Conflicts involving the war party consisted of a village raid followed by an arranged battle in which the opposing parties faced one another in two lines, ending in a hand-to-hand melee (McCorkle 1978:698). Bee (1983:93) points out that this had greater resemblance to a brutal team sport, where the two sides would agree upon weapons to be used and wait to attack until both sides had fallen into formation. The arsenal consisted of a "potato masher" war club of mesquite wood (typically a tapered cylinder mounted on a handle), wooden spears with fire-hardened tips, and bows. Because of their distinctive war club, the Quechan are referred to by the Spanish word "Garroteros," literally, "clubbers" (Bee 1983:97; Kroeber 1925:782).

Warfare among all the Yuman Tribes was closely intertwined with myth and ceremony, although casualties were real and occasionally heavy. An account of the first war party is given in the central creation myth. Traditionally, the function of warfare among the Lower Colorado Tribes was connected to tribal prestige and ritual, rather than conflict over resources or similar, comparatively mundane concerns. For example, when a sorcerer was killed, this was an act that often precipitated group conflict. This is again connected to the importance of dreams in Yuman culture: dreams of success in battle were highly valued and became incorporated into song cycles. In addition, like the rancheria leaders, war leaders, ceremonial managers, and shamans, obtained their position through dreams (McCorkle 1978:698–699).

The Quechan and Mohave (to whom they are closely related culturally and linguistically) did not usually fight one another, but both engaged in conflicts with the Maricopa and Cocopah, who were sometimes allied with the Pima. There was likely a long history of warfare among the Yuman Tribes that predated the arrival of Europeans. However, warfare may have increased in scale and intensity during the eighteenth and early nineteenth centuries for economic reasons—a departure from the tradition of "ritual" warfare (Bee 1983:93). The motivation for waging war appears to have been related to the taking of captives to trade to the Spanish and other Tribes for horses and other goods. It appears, however, that land acquisition was still not a motivation for war.

***Death and Mourning***

Mourning, along with dreaming and warfare, was one of the three most important aspects of the Quechan lifeway. Upon an individual's death, all of his or her belongings, including the family home,

were destroyed or given away. This sometimes left the deceased's family destitute, and they would be provided for by friends or the rancheria leaders (Bee 1983:89). Inheritance was therefore never an important factor in pre-Reservation life. Individual family garden plots were also abandoned, to be used later by non-family members. The *keruk* ceremony, the central mourning ceremony of the Yuman Tribes, including the Quechan, was held after the death of an important leader or after an accumulation of deaths to be honored by the families of the deceased (Bee 1983:93). The *keruk* is alternatively known in older literature as *nyimits* (Kroeber 1925) or *nimíts* (Curtis 1906).

A central component of the *keruk* ceremony was a mock battle, prepared for and carried out in the same way as an actual conflict. It also was a reenactment of the battle that was fought following the death of the creator deity Kwikumat. The ceremony also involved the singing of songs commemorating the creation of the world, public mourning, and the destruction of the deceased's property. The ceremony was intertribal and lasted several days, forming an occasion for large-scale social interaction wherein goods were exchanged, marriages were arranged, and enmities were resolved.

The *keruk* appears to have been associated with a pilgrimage trail between Pilot Knob (approximately 10.86 km [6.75 miles] west of modern Winterhaven) and Newberry Mountain (the sacred mountain *Avikame*). Altschul and Ezzo (1995) have noted that the practice of the *keruk* seems to have intensified during the eighteenth and nineteenth centuries, contemporaneous with the intensified conflicts resulting from the horses-for-slaves trade introduced by the Spanish and with an influx of people migrating from the desiccating Lake Cahuilla. They suggest that the *keruk* and the associated pilgrimage was a unifying force transcending conflicts between inimical Tribes. Altschul and Ezzo likewise suggest that the intaglios along the trail, which are executed in different styles, were the locations of *keruk* rites unique to and performed by different Tribes. The *keruk* has continued into modern times in modified form (Bee 1983:96–97).

**Historic Context**

***Spanish Period***

The first entry into what is now Arizona by people of European descent came in the late 1530s. A group of four men, including Álvar Nuñez Cabeza de Vaca, who survived a 1528 shipwreck on the coast of the Gulf of Mexico and then wandered across the Southwest before finally reaching Spanish-held territory in Sonora in 1536, may have passed through the state, although this has been questioned in recent years. Marcos de Niza, a priest dispatched as an advance scout for an expedition into the lands through which the Cabeza de Vaca party supposedly passed, likely explored the eastern part of the state in 1539, although his activities, too, have been called into question by modern researchers. The first European to unequivocally enter Arizona was Francisco Vasquéz de Coronado, who passed through the state on his way to the Pueblo area in New Mexico in 1540. As an adjunct to Coronado's expedition, Hernando de Alarcón was sent by sea up the west coast of Mexico with the intention of linking up with Coronado at some unspecified place. Alarcón discovered the mouth of the Colorado River and a crossing spot at Yuma, but his visit would not lead to any permanent Spanish presence in western Arizona. A few months later, the spot was visited by a second Spanish expedition led by Melchior Díaz, who traveled overland from Sonora via a trail that he would name the Camino del Diablo in order to meet up with Alarcón. Díaz was too late to meet up with Alarcón, but found a message left by his countryman. Alarcón and Díaz described the lower Colorado River area as a war-torn region and mentioned native groups they

identified as the Quiquima or Quicoma and Koxwan or Ciana (*koxkha'n*). It is not clear who these people were, but they are thought to be the Quechan or Kouanas (Howell 2014).

Over the course of the sixteenth and seventeenth centuries, the Spanish pushed their northern frontier inexorably northward from central Mexico. While they penetrated into present-day New Mexico in the late sixteenth century, establishing a colony along the Rio Grande north of present day Albuquerque in 1598, no comparable presence was established in Arizona until roughly a century later, and this settlement (at least initially) took on a very different form. In the 1680s, Jesuit missionaries, led by the Austrian Eusebio Francisco Kino, began to establish missions in Baja California and northern Sonora, the Sonoran missions ultimately extending north of the modern International Border into Arizona. Most of the Sonoran missions were located along a north-south axis, which, north of the border, corresponds to the Santa Cruz River Valley. One exception, the most remote of the Sonoran missions, was Nuestra Señora de Loreto y San Marcelo de Sonoyta, located about 80.5 km (50.0 miles) southeast of Dateland. This community was (and is) located on the Camino del Diablo pioneered by Díaz 150 years earlier. The Camino del Diablo never became a heavily traveled route, but it was periodically used by missionaries to move overland between the Sonoran and Baja California missions. In 1774, military officer Juan Batista de Anza used the trail to lead a party of 200 colonists overland to California. The colonists settled at Monterrey while Anza himself and a small scouting party proceeded north and reconnoitered the sites for what would become the Presidio of San Francisco and the Mission San Francisco de Asís (Howell 2014).

Kino had visited the confluence of the Gila and Colorado Rivers during expeditions in 1700 and 1701. Kino was the first to refer to the people inhabiting the region, who called themselves the Kwichyana or Kuchiana, as the Yuma or Yuman. The misnomer "Yuma" derived from the missionaries' misunderstanding of the word "*yah-may-o*," meaning "son of a captain" or chief. Following these visits, interaction between the Spanish and the Quechan increased significantly. Nearly a century later, two missions and accompanying settlements were established north of the confluence. The Spanish recognized the strategic importance of the Colorado River crossing at Yuma and consequently desired to remain on good relations with the Quechan. However, disputes over resources between settlers and natives led to a native uprising in 1801. Following the uprising, interactions between Europeans and the Quechan were minimal until the American period (Howell 2014).

***American Period***

Following a relatively short interval (A.D. 1821−1848) during which California and the Southwest was controlled by newly independent Mexico, the United States gained possession of most of Arizona with the Treaty of Guadalupe Hidalgo; they gained the remainder with the Gadsden Purchase of 1853. California attained statehood in 1850, becoming the 31st state. The 1850s were particularly tumultuous for the Yuman speaking peoples along the lower Colorado River. With the onset of the California Gold Rush following the discovery of gold at Sutter's Mill in 1848, hostilities erupted as increasing numbers of Euroamerican fortune hunters headed west into California. In the lower Colorado River region, the conflicts between Native Americans and would-be miners resulted in the development of Camp Yuma in 1852, after which time the Quechan lost control of the lands around the Yuma Crossing. In 1858, the Mohave War began following a Mohave attack on the Beale's Road immigrant trail (the Battle of Beale's Crossing). This led to the establishment of Fort Mohave near Topoc, the second major U.S. military outpost on the Colorado River, in 1859. In 1860, the U.S. Army defeated the Mohave in the last major conflict in the lower Colorado River region (Howell 2014).

The military post of Fort Yuma had originally been established in 1849 as Camp Calhoun, later becoming known as Camp Independence and then Camp Yuma. The initial purpose of the camp was to protect the nascent settlement of Colorado City (which would eventually become Yuma) and its strategically located river crossing from the Quechan, who were hostile to the incursion of the settlers. The cost of maintaining the post led to a brief period of abandonment in 1851, but it was re-established in 1852 as thousands of gold seekers began passing through the Yuma Crossing. While the California Gold Rush was the primary impetus for the growth of Colorado City, the settlement expanded when it was recognized that bringing goods via ship to the mouth of the Colorado River and distributing them from the fort was an effective means of getting supplies to other military outposts across the Southwest. This led to the establishment of the U.S. Army Quartermaster Depot, which was in operation from the 1860s until the 1880s (Howell 2014).

Colorado City burgeoned as the result of being both a seaport and a major crossing point on the river for travelers and immigrants heading west. After virtual destruction resulting from major flooding in 1862, Colorado City was rebuilt and renamed Arizona City. Following the Civil War, rather elaborate plans were made for the city's continued development as a commercial center. Arizona City was formally incorporated in 1871 and renamed once again as Yuma in 1873. In 1876, the Yuma Territorial Prison was constructed on a hill across from the fort, where it operated for 33 years until it was relocated to Florence, Arizona, because of overcrowding (Arizona State Parks 2014). In 1877, the first locomotive to cross the Colorado River entered Arizona at Yuma, inaugurating the long-anticipated establishment of the railroad in the state. Four years later, the Southern Pacific Railroad connected with the Texas Pacific Railroad east of El Paso (Howell 2014).

In 1884, the Fort Yuma Reservation was established for the Quechan on the western (California) side of the river. Prior to this time, the Quechan occupied six rancherías situated above the Colorado floodplain, moving to family farm plots on the floodplain during the growing season after the spring floods and until autumn. It is estimated that the Quechan derived 30–50 percent of their subsistence from agriculture, supplementing a mixed foraging and hunting economy. Quechan families gradually abandoned this lifeway following the establishment of the Reservation, where they were allocated 4-ha (10-acre) plots of farmland under the Dawes Severalty Act of 1887, which in turn opened up the remainder of the traditional lands for settlement by non-natives. In 1893, the extent of the reservation was drastically reduced by the U.S. government, which limited reservation lands to 2 ha (5 acres) per living person. Much of the original reservation land was returned to the Quechan in the 1970s (Howell 2014).

Fort Yuma itself continued as a military installation until 1883, when its management was transferred to the U.S. Department of the Interior. The end of the Civil War and the declining conflicts with Native Americans further rendered the fort unnecessary. In addition, the arrival of the railroad in 1877 had obviated the need for the military's use of the quartermaster's as a supply distribution hub. Military operations in the Yuma region would remain dormant until the establishment of the Yuma Proving Grounds during World War II (Howell 2014).

Much of the subsequent history of Yuma pertains to agriculture and the management of the Colorado River. The Yuma Project, an ambitious endeavor to irrigate the lower Colorado River valley, was initiated by the U.S. Reclamation Service (later the BOR) in 1904. The Reclamation Service took over the abandoned Fort Yuma facilities as its headquarters. The first project was the Laguna Dam, which was constructed from 1905–1909. Laguna Dam, located about 21 km (13 miles) northeast of Yuma, gave rise to the construction of several canals, including the Yuma Main Canal

(AZ X:6:67[ASM]) and its laterals and the the East Main (AZ X:6:65[ASM]) and West Main Canals (AZX:6:63[ASM]), both of which split from the Yuma Main in the town of Yuma after diversion beneath the river via the Colorado River Siphon (Stene 1996:8–9). Construction on the Colorado River Siphon (AZ X:6:40[ASM]) began in 1909 and was completed three years later. A 4.2-m-diameter (14.0-foot-diameter) tunnel was excavated through the sandstone underlying the river for a distance of nearly 305 m (1,000 feet). The tunnel was lined with concrete and was connected to two 22.5-m-deep (74.0-foot-deep) vertical shafts on either side of the waterway. The Laguna Dam successfully weathered the severe flooding of 1912 and continued diverting water until 1948, when it was superseded by the Imperial Dam (completed 8 km [5 miles] upstream from the Laguna Dam in 1938) and the All-American Canal. The All-American Canal replaced the Alamo Canal, a significant segment of which flowed through Mexico. In order to establish a canal that was located exclusively on U.S. lands, the All-American Canal was constructed by the BOR beginning in the 1930s. By 1942, it became the sole water source for Imperial Valley. The All-American Canal feeds the BWD, which was established in 1927 by water users from the Reservation Division of the Yuma Project. The BWD maintains the Reservation Division, which consists of 3,058 ha (7,556 acres) of land on the Fort Yuma–Quechan Reservation, and the Bard Division, which consists of 2,881 ha (7,120 acres) of private land (Howell 2014).

To encourage travel along the proposed Ocean-to-Ocean Highway (U.S. Highway 80) that would connect southern California with the rest of the United States, the Ocean-to-Ocean Bridge was constructed across the Colorado River at Yuma in 1915. Construction of the bridge was a joint effort of the Office of Indian Affairs and the states of California and Arizona, and it was fervently promoted by Yuma's business community. When completed, it was the only highway bridge crossing the Colorado River for some 1,931 km (1,200 miles). For a time during the Great Depression, a checkpoint was established by the State Police on the California side of the bridge to prevent the massive influx of people migrating west in search of employment. If the "Okies" or "Arkies" had no money or lacked proof of a job waiting in California, they were not allowed to enter the state. Many of those who were turned away set up camp in Yuma, and a neighborhood still bears the unofficial designation "Okietown." The bridge continued as a crossing point for vehicular traffic until 1988, when it was determined to have become structurally unsound. However, at some point, the bridge was reopened to vehicles, as it currently serves as an access point to the Fort Yuma–Quechan Reservation. The bridge is now listed on the NRHP (Howell 2014).

Following the United States' entry into World War II, combat training centers were established across the desert Southwest. The harsh desert conditions were considered ideal to prepare soldiers for combat overseas, particularly in North Africa. Camp Young, located in the Mojave Desert between Indio and Desert Center, California, served as headquarters of the Desert Training Center (DTC). Major General George S. Patton was Camp Young's first commanding officer and was assigned the task of selecting other desert locations for additional training areas. Ten other camps were established across the California and Arizona deserts. After Patton went to North Africa, the DTC was renamed the California-Arizona Maneuver Area (CAMA). Over a million men trained at the DTC/CAMA from 1942–1944, when the camps were closed. Camp Pilot Knob (in California) and Camp Laguna (in Arizona) were located in the Yuma vicinity. In 1943, the Yuma Test Branch was established downriver from the Laguna Dam for the purpose of testing portable combat bridges. The Yuma Test Branch closed briefly in 1950 and reopened in 1951 as the Yuma Test Station. The Yuma Test Station became the main artillery and armament testing range in the United States. It was later renamed the Yuma Proving Ground and remains an important military installation today (Howell 2014).

**Paleontology**

The geology of the project area consists of alluvial deposits dating from the late Holocene to historic times. Holocene deposits are generally considered too young to contain fossilized remains.

**Research Methods**

Prior to fieldwork, a Class I records search was performed. The Class I search examined all previously conducted surveys and previously recorded sites and historic properties within a 1.6-km radius (1.0-mile-radius) buffer zone extending from the project footprint. Although the project's area of potential effects (APE) is located only on the California side of the state line, the buffer zone extends into Arizona as well. The Class I research was completed through consultation with the California Historical Resources Information System (CHRIS) for the California portion of the buffer and via the Arizona State Museum's (ASM's) AZSITE online database for the Arizona portion. In addition, a Sacred Lands File (SLF) request was filed with the California Native American Heritage Commission (NAHC), and U.S. General Land Office (GLO) maps for the relevant Township and Range designations within both California and Arizona were also checked for indications of historic properties in the vicinity of the APE.

**Records Search**

***California***

The Class I records search found that 43 surveys have been previously conducted and 9 sites have been previously recorded within the California portion of the 1.6-km (1.0-mile) buffer zone surrounding the project area (see Appendix E, Cultural Resources Report, Tables 1 and 2, Figure B.1). In addition, one historic address (the Fort Yuma Train Depot) is present within the buffer zone (see Appendix E, Cultural Resources Report, Table 3).

Three linear, non-canal sites are present within the buffer. One of these sites, CA-IMP-7158, the historic Pilot Knob-Tap Drop 4 161kV Transmission Line, crosses the APE at two points. The line is supported, at least in the vicinity of the APE, by wooden towers and is currently in use. The line has been upgraded and maintained since its construction in the 1940s. The line crosses the APE near the intersection of Picacho Road and Indian Rock Road and again along Cocopah Road (see Appendix E, Cultural Resources Report, Photo 14). Another site, CA-IMP-3456, is described as a "road course NE and SW" and is apparently based on a GLO surveyor's notes from 1856. According to the site card, this site is now in Arizona because of a change in the course of the Colorado River. However, no indications of the site exist in the AZSITE database. Finally, a portion of the historic Southern Pacific Railroad (SPRR) passes through the buffer and crosses the APE along First Avenue. The SPRR (which was purchased by the UPRR in the 1990s) was constructed beginning in the 1870s and ran from the Los Angeles area to Yuma and subsequently further into Arizona. The line has been in active use since its original construction. Over the past several decades, a number of surveys in southern California have recorded segments of the SPRR and various features related to it. One such feature is the railroad bridge over the Colorado River, located adjacent to the Ocean-To-Ocean Bridge. This and several other railroad bridges in the vicinity (such as the bridges that cross the Yuma Main Canal and the All-American Canal) are subsumed under site number CA-IMP-3424.

The remaining three sites are historic canals, each presently in active use. The canals consist of the Yuma Main Canal (CA-IMP-6830), the Reservation Main/Cocopah Canal (CA-IMP-6832), and the Reservation Main Drain Canal (CA-IMP-6824).

***Arizona***

The Class I records search found that 18 surveys were previously conducted and 22 sites were previously recorded within the Arizona portion of the 1.6-km (1.0-mile) buffer zone surrounding the project area (see Appendix E, Cultural Resources Report, Tables 4 and 5, Figure B.2). There are also 22 historic properties and 3 historic districts listed on the NRHP within the buffer zone (see Appendix E, Cultural Resources Report, Tables 6 and 7, Figure B.3). At least two of the properties, the Ocean-to-Ocean Bridge and the Gandolfo Theater, are cross-listed as archaeological sites and historic properties. These properties lie within Yuma or along the Colorado River.

***GLO Maps***

GLO maps for the relevant Township and Range designations within both California and Arizona were checked for indications of historic properties in the vicinity of the APE. The maps were accessed via the Bureau of Land Management (BLM) GLO Records website (BLM 2014). All maps on which the APE is located were dated February 6, 1857. The APE itself crosses few properties: a "Cottonwood" along what today would be Picacho Road and an "Indian Field" on the northern end of the APE at Stalnacker Road and Flood Road, which is still a cultivated area today. Within the 1.6-km (1.0-mile) buffer, historic properties include Fort Yuma; the "Settlement of Captain Ankrum," which corresponds approximately to the location of modern Winterhaven; and "Western's House." Several sections note that "there are some Indian villages in this Section."

**Native American Heritage Commission Coordination**

Tierra sent a Sacred Lands File and Native American Contacts List request to the Native American Heritage Association (NAHC) on September 15, 2014. NAHC responded on September 21, 2014, stating that their records search failed to indicate the presence of Native American cultural resources in the immediate project area.

**Field Survey**

Tierra archaeologists, accompanied by a Quechan Tribal monitor, performed a Class III cultural resources survey of the proposed project area on July 15 and 16, 2014, and returned to the project area on March 12, 2015, to survey the minor alterations made to the project route in February of 2015.

No new prehistoric archaeological sites were observed during the surveys. One property, the Walapai Canal (Primary Site Number P-13-014813), was newly recorded as a historic site. In addition to the canal, several isolated occurrences were recorded. Although not considered an archaeological site, the Fort Yuma–Quechan Indian Reservation Cemetery was also noted as an important cultural landmark in proximity to the APE. The site records on file at the South Coastal Information Center (SCIC) for the Yuma Main Canal (CA-IMP-6830), the Reservation Main/Cocopah Canal (CA-IMP-6832), and the Reservation Main Drain Canal (CA-IMP-6824) were updated to reflect observations made where the canals cross the current APE. No new cultural resources were identified during the March 2015 survey. All of these properties are described below.

***Isolated Occurrences***

Ten isolated occurrences were observed (see Appendix E, Cultural Resources Report, Table D.1, Figure D.1). All of the lithic artifacts (n = 6) could only be tentatively identified as flaked stone. The fact that these isolated occurrences were in each case discovered on road shoulders or near the margins of cultivated fields (that is, highly disturbed areas) raises two issues. First, it is possible that

in some cases an item may have been produced by machinery (such as road grading equipment or tractors) impacting naturally occurring rocks. Second, in all cases, it is highly unlikely that the artifacts are in their original locations or contexts. One artifact, a possible quartzite tool (IO 5), is the item most likely to be an actual artifact (see Appendix E, Cultural Resources Report, Photo 21). Three artifacts were identified as historic or possibly historic glass; at one location, the glass was accompanied by a white earthenware plate fragment. One isolated occurrence consists of a roadside memorial shrine (IO 10) located at the southwest corner of the intersection of Picacho Road and Arnold Road. It does not appear to be historic, but it was recorded with the intent of documenting its location for avoidance.

***Walapai Canal (P-13-014813)***

The Walapai Canal (assigned primary site number P-13-014813) was constructed between 1908 and 1910 (Stene 1996:9). The Walapai branched from the Yuma Main Canal at the Siphon Drop Power Plant, near the point where the Yuma Main splits from the All-American Canal. From there, it flows 3.10 km (1.93 miles) to its southern terminus. Today, the Walapai Canal appears on maps as the Walapai Lateral (see see Appendix E, Cultural Resources Report, Figure D.1).

The APE crosses the Walapai Canal along Arnold Road (see Appendix E, Cultural Resources Report, Photo 22). At the crossing point, the canal is of earthen construction, but there is a concrete distribution box at this location. The canal south of this point was not explored or recorded, but this distribution box appears to form the southern terminal end of the canal, except for an extension to its south measuring a few hundred feet in length paralleling First Avenue. The box measures approximately 9.1 m (30.0 feet) long by 1.8 m (6 feet) wide. It is not clear when the box was constructed, but it uses modern metal gates for its distribution openings; slots remain from the wooden gates that it once used. The canal itself is trapezoidal in cross-section (and close to triangular) and measures approximately 5.5 m (18.0 feet) at its top width with an estimated depth of about 1.5 m (5.0 feet).

***Cemetery***

It was noted that the APE passes near the Fort Yuma–Quechan Indian Reservation Cemetery located at the interchange of Quechan Drive, Picacho Road, and Sapphire Lane. The APE does not encroach upon the cemetery; however, the cemetery was noted to allow for the recommendation of monitoring in the vicinity during the construction work (see APM CR-1 below).

***The Yuma Main Canal (CA-IMP-6830)***

The APE crosses the Yuma Main Canal (also known as the California Main Canal) at a point along Arnold Road to the west of the Arnold Road/Picacho Road intersection (see Appendix E, Cultural Resources Report, Figure B.1). Arnold Road is bridged at the canal crossing. Today, the Yuma Main Canal continues to convey a large volume of water from the All-American Canal to the south (see Appendix E, Cultural Resources Report, Photos 15 and 16). The Yuma Main Canal is a large earthen canal. It was constructed as a diversion canal originating from the Laguna Dam. Construction of the canal began in 1909 and was completed by 1912. The Yuma Main originally diverted water from the Laguna Dam, but this diversion was discontinued in 1941 following the construction of an earthen dike across the canal. After this time, the canal began to divert water from the Siphon Drop Spillway along the All-American canal. The Yuma Main continued through the Reservation Division to the Colorado River Siphon, where it passed beneath the river into Yuma and the Arizona side, and to the Valley Division of the Reclamation Service's (later the BOR) Yuma Project. In Yuma, the Yuma Main was split into the East and West Main Canals (Howell 2014).

In Arizona, the Yuma Main Canal, the Colorado River Siphon, the East Main Canal, and the West Main Canal have all been recorded as archaeological sites (AZ X:6:67, X:6:40, X:6:65, and X:6:63[ASM], respectively). The canals (but not the siphon) have all been determined individually eligible for inclusion on the NRHP by the Arizona SHPO. However, it does not appear that the California reach of the Yuma Main Canal has been officially recorded as a historic site or been evaluated for its NRHP status.

At the crossing at Arnold Road, the canal measures roughly 38 m (125 feet) in width. Because the canal currently conveys a large volume of water, it was not possible to determine the canal's other dimensions or its shape in cross-section. However, according to the existing Historic Resources Inventory Record for this property, the canal bottom averages 15 m (50 feet) in width, and the sides slope 1.25:1 with a water depth of about 2.7 m (9.0 feet).

***Reservation Main/Cocopah Canal (CA-IMP-6832)***

Construction on the Reservation Main/Cocopah Canal began in 1907; construction on an extensive system of laterals from the Reservation Main commenced the following year. The Reservation Main originally split from the Yuma Main Canal at Indian Heading. The Mojave and Cocopah Canals were split from the Reservation Main. The canal continues to convey a moderate volume of water. Today, the Reservation Main flows westward along Heyser Road and turns south at the interchange of Heyser Road, Stalnacker Road, and Avenue E, where it joins the Cocopah Canal (Howell 2014).

The APE does not cross the Reservation Main Canal proper, but it does come within close proximity of it at the road interchange (see Appendix E, Cultural Resources Report, Figure B.1). However, the APE does cross the Cocopah Canal along Ross Road and it parallels the canal along Cocopah Road. The APE also crosses the Cocopah Canal at Picacho Road (see Appendix E, Cultural Resources Report, Photo 17), Ross Road (see Appendix E, Cultural Resources Report, Photo 18), and the intersections of Flood Road and Haughtelin and Arnold Roads. Because the Cocopah Canal (along with the Mojave Canal, which is not crossed by the APE) was historically a diversion of the Reservation Main, it is considered a component of the same system and was not recorded as a separate site. Much of the Cocopah Canal has been lined with concrete, but portions of it remain earthen, such as at its crossing at Picacho Road.

***Reservation Main Drain Canal (CA-IMP-6824)***

The Reservation Main Drain Canal spans the Fort Yuma–Quechan Reservation and serves as a drainage for field runoff (see Appendix E, Cultural Resources Report, Figure B.1). It empties into the Colorado River about 0.8 km (0.5 miles) downstream from the SPRR Bridge. It was constructed between 1912 and 1914 and was designed to drain excess water from the very flat lands in the river valley, which have a high water table. This waterway may also be indicated as a "Ditch" in Sections 23 and 26 on a BLM plat of Township 16 South, Range 22 East, SBB&M, dated September 7, 1951. However, only a segment of the ditch appears on the map. The APE crosses the Reservation Main Drain along Picacho Road (see Appendix E, Cultural Resources Report, Photos 19 and 20), Arnold Road, Fisher Road, and Stalnacker Road. At each location, the canal is of earthen construction with a top width of approximately 7.6 m (25.0 feet). The canal is in active use and it was not possible to estimate its bottom width, but the Historic Resources Inventory Record indicates that its bottom width is 4.3 m (14.0 feet) and its average water depth is 0.9 m (3 feet) (Howell 2014).

### 4.5.2 Environmental Effects

The proposed project involves the use of existing infrastructure in the subject area. The proposed project alignment is located within existing public ROWs that have been previously disturbed. The proposed installation involves minimal ground disturbance, as required for installing underground conduit and cables. Therefore, 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.
- Paleontologic 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. Paleontologic 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:** The Pilot Knob-Tap Drop 4 161kV Transmission Line will be avoided during construction.

**APM CR-2:** The UPRR will be bored beneath and avoided during construction.

**APM CR-3:** All construction activities will be monitored by a qualified archaeologist and/or Tribal member.

**APM CR-4:** If human remains are discovered or recognized in any location other than a dedicated cemetery, TDS 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:** If human remains of Native American origin are discovered on Federal land during ground-disturbing activities, pursuant to the NAGPRA, the contractor will:

- Notify the county coroner or the sheriff;
- Notify, in writing, the responsible Federal agency; and
- Cease activity in the area of discovery and protect the human remains.

**APM CR-6:** In the event that fossil remains are encountered, either by the cultural resources monitor or 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 m (50 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 would cross the historic Pilot Knob-Tap Drop 4 161kV Transmission Line (CA-IMP-7158), the Southern Pacific Railroad (today the Union Pacific Railroad) (CA-IMP-3424), the Yuma Main Canal (CA-IMP-6830), the Reservation Main/Cocopah Canal (CA-IMP-6832), the Reservation Main Drain (CA-IMP-6824), and the Walapai Canal (P-13-014813). All six of these sites have been recommended eligible for inclusion in the NRHP under Criterion A and SHPO's concurrence for the BIA's recommended "No Adverse Effect" determination has been received (see Appendix E) regarding the proposed project's potential impacts on these resources. Impacts due to the proposed project would be less than significant because all six sites have been in continuous service since their inception and are regularly maintained. In addition, the transmission line would be avoided during construction (APM CR-1), the railroad would be bored beneath (APM CR-2), and all canals in the project area, including the four canal sites listed above, would be bored beneath during construction (see APM BIO-1 and 2).

It is possible that undiscovered historical resources may be present in the project area and, if present, these resources could be impacted during the ground-disturbing activities associated with the proposed installations. In order to maintain these potential impacts to 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 isolated occurrences 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 2014:35, 134). As such, the documentation of the isolated occurrences 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 to a less than significant level, APM CR-2 would be implemented during construction.

**Impact CR-3: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature (No Impact).**

The proposed project would have no impact on paleontological resources because the alluvial deposits present are too geologically young to contain such resources. Likewise, 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-2 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 storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program. In California, the State Water Resources Control Board (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 Regional Water Quality Control Boards (RWQCBs). The Colorado River Basin RWQCB has jurisdiction over the non-Tribal portion of the project area, whereas the EPA is responsible for implementing the NPDES program on the Tribal portion of 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 Stormwater Pollution Prevention Plan (SWPPP) stipulating Best Management Practices (BMPs) that would be in place to avoid adverse effects on water quality.

**State**

***Alquist-Priolo Earthquake Fault Zoning Act***

The legislature of the State of California passed the Alquist-Priolo Geologic Hazards Zone Act in 1972, 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 (EFZ) 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 Public Safety Element of the ICGP identifies goals and policies that minimize the risks associated with natural and manmade hazards, and it specifies land use planning procedures that should be implemented to avoid hazardous situations. The purpose of the Seismic and Public Safety Element is directly concerned with reducing the loss of life, injury, and property damage that might result from disaster or accident.

### 4.6.1.2 Project Setting

The proposed project is located within the Sonoran Desert section of the Basin and Range physiographic province. Within the Basin and Range Province, the Earth's crust (and upper mantle) has been stretched up to 100 percent of its original width. The entire region has been subjected to extension that thinned and cracked the crust as it was pulled apart, creating large faults. Along these roughly north-south-trending faults, mountains were uplifted and valleys fell, producing the distinctive alternating pattern of linear mountain ranges and valleys of the Basin and Range province.

The basin and range topography and the dry climate create a number of impressive features and landscapes that can be found throughout the province. These include pediments, alluvial fans, bajadas, bolsons, Inselbergs, playas, mud flats, salt flats, lakes, sand dunes, canyons, and the Rio Grande Rift. The vast region of the Basin and Range is divided into five distinct sections: Great Basin Section, Sonoran Desert Section, Salton Trough Section, Mexican Highland Section, and the Sacramento Section (NPS 2014). According to the Arizona Geological Survey, the entire project area is located on young river terrace and floodplain deposits associated with the historical Colorado River floodplain ($Qy_2r$ map unit) (Youberg et.al. 2011).

Soils in the project area are of the Indio silt loam (13), Holtville clay (12), Gadsden clay (8), Lagunita silt loam (19), Kofa clay (17), Ripley silt loam (24), and Lagunita loamy sand (18) map units (NRCS 2013a). These soils are well drained to somewhat excessively drained and formed from mixed alluvium. The surface layer consists mostly of clay and silt loam and occasionally loamy sand. The Lagunita loamy sand and silt loam map units are not classified as prime farmland by the NRCS. All of the remaining soil types are classified as prime farmland if irrigated, but Gadsden and Holtville clays and Indio silt loam need to be reclaimed of excess salts and sodium before the prime farmland designation would apply (NRCS 2013b).

Most of the project corridors are located on clay soils with a relatively high shrink-swell potential. Soils with high shrink-swell potentials, also known as expansive soils, are primarily comprised of 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. In general, much of the near surface soils in the agricultural areas of the Imperial Valley, including the project site, consist of clays that are moderately to highly expansive (NRCS 1980).

The wind erodibility of these soils ranges from moderate to high and the K-factor for erodibility ranges from 0.1 to 0.55. 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 Gadsden, Holtville and Kofa clays found in the project area, all have a moderate K-factor of 0.32, and fine-textured silty soils, such as the Indio and Ripley silt loams, have relatively high K-factors of 0.55 and 0.43, respectively. The coarse-textured Lagunita loamy sand in the project area has a low K-factor of 0.1 and is the least erodible soil present (NRCS 1980).

The principal fault system in Imperial County is the San Andreas Fault, located east of the proposed project area in the vicinity of the Salton Sea. The Algodones Fault is the closest major fault in this system in relation to the project area and is approximately 11.3 km (7.0 miles) to the southwest (Olmsted et. al. 1973). However, the proposed project area is not located in a mapped Alquist-Priolo Earthquake Fault Zone, and the County of Imperial is not identified as having any Seismic Hazards Zones according to the United States Geological Survey (USGS).

### 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 Imperial County does not have any seismic hazard zones. 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 held to 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 compacting to accepted engineering standards. Because of this, 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 having 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 due to 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.

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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 (CERCLA) address handling, disposal, and spill contingency measures for hazardous substances. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP 40 CFR Part 300) specify the requirements for spill response activities. These laws and regulations apply to the proposed project installation activities conducted within the subject area.

***Federal Aviation Administration Regulations***

The FAA regulates the use of aircraft. The FAA requires a lift plan for the use of helicopters in populated areas. The lift plan serves to identify staging areas and flight paths that present the least potential to affect populated areas. The FAA regulates the flight distances for loaded and unloaded helicopters. Unloaded large helicopters (also called sky cranes) cannot fly within 46 lateral m (150 lateral feet) of an occupied structure at elevations where downdrafts can occur. Loaded sky cranes cannot fly within 91 lateral m (300 lateral feet) of an occupied structure. If the required distances cannot be maintained during the flight, structures must be unoccupied.

**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 to administer and enforce 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. Health concerns pertaining to the release of hazardous materials, however, 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 identifying, packaging, and disposing of them. 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 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 Imperial County CUPA Department of Toxic Substances Control is the CUPA with jurisdiction in the vicinity of the project area.

***Imperial County General Plan***

Fire

The Imperial County Fire Prevention and Explosives Ordinance, Section 53101-53300, contains provisions for the purpose of prescribing regulations governing conditions hazardous to life and property from fire or explosion. Such measures in this ordinance include the following:

- Storage of flammable materials
- Storage of Radioactive materials
- Permit required for sale and use of fireworks
- Abatement of weeds and other vegetation

Hazards and Hazardous Materials

The ICGP has goals and objectives related to hazards and hazardous materials (Imperial County 2008). These goals and objectives are listed below.

- Goal 3: Protect the public from exposure to hazardous materials and wastes.
    - Objective 3.1—Discourage the transporting of hazardous materials/waste near or through residential areas and critical facilities.
    - Objective 3.2—Minimize the possibility of hazardous materials/waste spills.
    - Objective 3.3—Discourage incompatible development adjacent to sites and facilities for the production, storage, disposal, and transport of hazardous materials/waste as identified in the County General Plan and other regulations.
    - Objective 3.4—Adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.

***Winterhaven Urban Area Plan***

The Winterhaven Urban Area Plan identifies the goals, policies, and standards that will guide the physical growth of the Winterhaven Urban Area, which consists of the Townsite of Winterhaven and surrounding areas. A goal and associated objectives in the plan related to hazards and hazardous materials include:

- Goal 2: Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.
    - Objective 2.1—Ensure the adequacy of existing emergency preparedness and evacuation plans to deal with identified hazards and potential emergencies.
    - Objective 2.3—Minimize injury, loss of life, and damage to property by implementing all State codes where applicable.
    - Objective 2.4—Prevent and reduce death, injuries, property damage, and economic and social dislocation resulting from natural hazards, including flooding, land subsidence, earthquakes, other geological phenomena, levee or dam failure, urban and wildland fires, and building collapse by appropriate planning and emergency measures.

#### 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 Allands Data and Research, Inc. (Allands), Regulatory Database Corridor Study was prepared for the project alignment (Appendix F). Results of the Allands report indicate that there are three underground storage tanks (USTs) within 0.40 km (0.25 miles) of the project alignment. However, none of the USTs listed are reported to be in violation of any environmental regulations or pose a threat to public health and/or safety.

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 Bill M. Manes High, San Pasqual Valley High School, San Pasqual Unified Middle School, San Pasqual Vocational Academy, and the San Pasqual Valley Elementary School, all located near the intersection of Arnold and Baseline Roads at 676 Baseline Road, Winterhaven, California 92283. These schools are located within 0.40 km (0.25 miles) of the project area.

The nearest public airport is the Yuma International Airport, approximately 4 km (6 miles) south of the project area.

According to the CAL FIRE Imperial County Fire Hazards Severity Zones map, the proposed project alignment is located within areas that have not been zoned because they are located within areas of local responsibility; however, surrounding areas are mapped as Local Responsibility Area (LRA) Moderate fire danger (California Department of Forestry and Fire Protection 2007). According to the ICGP, the potential for a major fire in the unincorporated areas of the County is generally low (Imperial County 2008).

### 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 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 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**: Significant releases or threatened releases of hazardous materials will be reported to the appropriate agencies.

**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 the proposed APMs (APM GEO-1 and 2; APM HAZ-1–5). Spill clean-up kits would be provided and kept on-site during construction, and equipment would remain in good working order to prevent spills. 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 three 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 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-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, Create a Significant Hazard to the Public or the Environment (No Impact).**

According to the Allands Report, three sites of potential environmental concern 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 Yuma International Airport, located approximately 4 km (6 miles) southeast of the proposed project in Yuma, Arizona. 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. 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. Traffic control measures would conform to CDOT specifications.

**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 (No Impact).**

There are no wildlands present in or adjacent to the project area; consequently, there would be no impact related to the risk of loss, injury, or death involving wildland fires as a result of proposed project.

### 4.7.3 References


California Department of Forestry and Fire Protection

2007 *Fire Hazard Severity Zones in Imperial County*. Draft. CAL FIRE, Sacramento.

Imperial County

2008 *Imperial County General Plan*. Imperial County Planning/Building Department, El Centro, California.

Allands Data and Research

2015 *Allands Regulatory Database Search Corridor Study*. Allands Data and Research, Goodyear, Arizona.


## *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 National Pollutant Discharge Elimination System (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 Act in cases where the waters are excluded from regulation under the Federal CWA. 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 Colorado River Basin RWQCB.

**Local**

The Conservation/Open Space and Water Elements of the ICGP outline goals and objectives for the protection of water quality in the County (Imperial County 2008). Preservation of water resources in the Conservation/Open Space Element of the GP has the goal of conserving, protecting, and enhancing the water resources in the planning area with the following objectives applicable to the proposed project:

- Objective 8.1—Protect all bodies of water (e.g., the Salton Sea) and watercourses for their continued use and development.
- Objective 8.4—Ensure the use and protection of the rivers and other waterways in the County. Ensure proper drainage and provide accommodation for storm runoff from urban and other developed areas in manners compatible with requirements to provide necessary agricultural drainage.
- Objective 8.5—Protect and improve water quality and quantity for all water bodies in the County.
- Objective 8.6—Eliminate potential surface and groundwater pollution through regulations as well as educational programs.

Protection of surface waters in the Water Element of the GP has the goal of maintaining the long-term viability of the Salton Sea, Colorado River, and other surface waters in the County by protecting and sustaining wildlife and a broad range of ecological communities with the following objectives applicable to the proposed project:

- Objective 2.1—The continued viability of the agricultural sector as an important source of surface water for the maintenance of valuable wildlife and recreational resources in the County.
- Objective 2.2—A balanced ecology associated with the riparian and ruderal biological communities important as breeding and foraging habitats for native and migratory birds and animals occurring within the County.
- Objective 2.3—Preservation of riparian and ruderal habitats as important biological filters as breeding and foraging habitats for native and migratory birds and animals.

#### 4.8.1.2 Project Setting

The project area is located within the Yuma Valley Groundwater Basin (7-36), which is part of the Lower Colorado Watershed (Hydrologic Unit Code (HUC) 150301017) (EPA 2014), which is in turn part of the larger Colorado River hydrologic region. Historical data indicates that groundwater levels east and south of the All-American Canal, which includes the project area, have remained largely unchanged from 1962 through 2002 and range from 1.5– 6.1 m (5.0–20.0 feet) below the surface (CDWR 2004).

There are no perennial or ephemeral natural streams in the project area; however, 11 irrigation canals operated by the BOR's IID and BWD are crossed by the project corridors at 17 locations (see Appendix D).

Review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panels 06025C1900C, 06025C1925C, 06025C2250C, and 06025C2275C 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 Colorado River Basin 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 to be installed would be DLC cabinets, splice boxes, and line markers. None of these structures, either above or below ground, 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)

2004 California Groundwater Bulletin 118, Yuma Valley Groundwater Basin. Available at: http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescription/7-36.pdf. Accessed on January 26, 2015.

Environmental Protection Agency (EPA)

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

Federal Emergency Management Agency (FEMA)

2015 FEMA Food Map Service Center. Available at: http://msc.fema.gov/portal. Accessed on January 19, 2015.

Imperial County

2008 *Imperial County General Plan*. Imperial County Planning/Building Department, El Centro, 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 entire project area is located within unincorporated Imperial County; however, portions of the project area are also located within the Winterhaven Urban Area and the Fort Yuma–Quechan Reservation. "Urban Areas" within unincorporated Imperial County are ICGP designations that provide for a range of permitted land uses within specific geographic areas (Imperial County 2008). Winterhaven has prepared a separate Land Use Plan (or "Urban Area Plan") that includes additional guidance on planning policy within the Winterhaven Urban Area boundary.

***Imperial County General Plan and Zoning Regulations***

Imperial County incorporates planning into their long-term development strategy through the implementation of the ICGP, which provides policies and objectives as well as specific land use designations, to guide the "distribution, general location, and extent of uses of land for housing, business, industry, open space, agriculture, and public facilities" within unincorporated Imperial County (Imperial County 2008).

The following local land use goals, objectives, and policies apply to the proposed project alignment:

- Goal 8: Coordinate local land use planning activities among all local jurisdictions and State and Federal agencies.
    - Objective 8.8—Ensure that the siting of future facilities for the transmission of electricity, gas, and telecommunications is compatible with the environment and County regulation.
    - Objective 8.9—Require necessary public utility ROWs when appropriate.

The following local land use goals, objectives, and policies apply to the land surrounding the proposed project alignment:

- Goal 1: Preserve commercial agriculture as a prime economic force.
- Goal 2: Diversify employment and economic opportunities in the County while preserving agricultural activity.
- Goal 3: Achieve balanced economic and residential growth while preserving the unique natural, scenic, and agricultural resources of Imperial County.
    - Objective 3.8—Utilize nonagricultural land as a resource to diversify employment opportunities and facilitate regional economic growth. Uses

must be consistent with each site's resource constraints, the natural environment, and the County Conservation and Open Space Element.

The project alignment is located within an existing transportation corridor. The project alignment is located adjacent to areas primarily carrying the zoning designations of Indian Reservation and Agriculture–General (A-2) with a small area zoned Light Commercial (C-1) located at the intersection of Perez Road and Ross Road. The portion of the alignment located within the Winterhaven Urban Area is located adjacent to Low-Density Residential, Medium-Density Residential, High-Density Residential, General Commercial, and Government/Special Public. Land use within the alignment is used as a transportation corridor. Land use adjacent to the project corridor is primarily agricultural, with the areas adjacent to the corridor in the Winterhaven Urban Area including government offices, commercial areas, and residential areas.

***Winterhaven Urban Area Plan***

The Winterhaven Urban Area Plan does not include any goals or objectives specifically related to telecommunicationd facilities.

#### 4.9.1.2 Project Setting

The project area is located within unincorporated Imperial County and includes the communities of Winterhaven, Bard, and Ross Corner as well as portions of the Fort Yuma–Quechan Reservation. The majority of the project area is used for agriculture, with small areas of residential and commercial properties located in the communities of Winterhaven, Bard, and Ross Corner. 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 Winterhaven, Bard, and Ross Corner include more dense residential and commercial development.

The project area includes a school complex located near the intersection of Arnold and Baseline Roads that includes elementary, middle, high, and vocational schools. There are no public recreational facilities or designated open spaces in the project area; however, the school complex includes sports facilities.

### 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 an existing public transportation corridor. 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 Habitat Conservation Plan or Natural Community Conservation Plan (No Impact)**

The proposed project alignment is located in an area addressed by the LCR MSCP; however, the proposed project does not conflict with the plan. There would be no impact to any applicable HCP or Natural Community Conservation Plan.

### 4.9.3 References


Imperial County

2008 *Imperial County General Plan*. Imperial County Planning/Building Department, El Centro, California.

1996 *Winterhaven Urban Area Plan*. Imperial County Planning/Building Department, El Centro, 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 which 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 of 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 Conservation and Open Space Element of the ICGP contains goals and objectives to preserve mineral resources in the County. Figure 5 (Mineral Resources) of the Conservation and Open Space Element indicates the general location of known mineral resources in the County.

#### 4.10.1.2 Project Setting

A wide variety of minerals are found throughout Imperial County. Gold, gypsum, sand, gravel, lime, clay, and stone have the highest economic value and are presently extracted for profit in the County. Industrial materials are also readily available, including kyanite, mineral fillers (clay, limestone, sericite, mica, and tuff), salt, potash, calcium chloride, manganese, and sand (Imperial County 2008).

The proposed project is not located in a mapped MRZ area (CDOC 2015), and according to the ICGP mineral resources map, there are no known mineral resources in the vicinity of the project area. Given that the project area is located in the historic floodplain of the Colorado River, the only likely mineral resources present would be sand and gravel.

### 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 on April 17, 2015.

Imperial County

2008 Imperial County General Plan. Imperial County Planning/Building Department, El Centro, California.


## *4.11 Noise*

Sound (noise) occurs when an ear senses pressure variations or vibrations in the air. Noise is unwanted sound. A person's brain associates a subjective element to 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 towards the portions of the sound frequency spectrum to which the human ear is most sensitive. 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. Policies and ordinances that regulate noise at the source are usually stated in terms of $L_{eq}$.

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 can be found in Table 4.7.

**Table 4.7. Common Sound Levels**

| Sound Level (dB) | Community/Outdoor | Industry/ Home Indoor | Impression/Effect |
|---|---|---|---|
| 130 | | | |
| | jet takeoff (at 61 m [200 feet]) | | threshold of pain (130–140 dB) |
| 120 | | | |
| 110 | chainsaw (at 0.6 m [2.0 feet]) | nightclub | |
| 100 | pile driver (at 15 m [50 feet]) | | |
| 90 | power mower, heavy truck (at 15 m [50 feet]) | boiler room | hearing damage (8-hour exposure) |
| 80 | concrete mixer (at 15 m [50 feet]) | garbage disposal | loud/annoying |
| 70 | freeway (at 30.5 m [100.0 feet]) | noisy restaurant | shouting required at 0.9 m (3 feet) |
| 60 | air conditioner unit | department store | loud speech required at 0.9 m (3 feet) |
| 50 | light vehicle traffic (at 30.5 m [100.0 feet]) | quiet office | normal speech at 0.9 m (3 feet), disturbs sleep |
| 40 | bird calls | library | quiet |
| | soft whisper (at 1.8 m [6.0 feet]) | | |
| 30 | | quiet bedroom | |
| 20 | North Rim of Grand Canyon | recording studio | |
| 10 | | | threshold of hearing |

*Source*: Imperial County General Plan, Noise Element (2008).

### 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. While 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 Noise Element of the ICGP provides a program for incorporating noise issues into the land use planning process, with a goal of minimizing adverse noise impacts to receptors that are sensitive to noise.

***Construction Noise Standards***

Construction noise, from a single piece of equipment or a combination of equipment, shall not exceed 75 dB $L_{eq}$ when averaged over an eight-hour period and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor, of days or weeks. In cases of extended-length construction times, the standard may be tightened so as not to exceed 75 dB $L_{eq}$ when averaged over a one-hour period.

Construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m. Monday through Friday and 9 a.m. to 5 p.m. on Saturday. No commercial construction operations are permitted on Sunday or holidays. In cases of a person constructing or modifying a residence for himself/herself, and if the work is not being performed as a business, construction equipment operations may be performed on Sundays and holidays between the hours of 9 a.m. and 5 p.m. Such noncommercial construction activities may be further restricted where disturbing, excessive, or offensive noise causes discomfort or annoyance to reasonable persons of normal sensitivity residing in an area (Imperial County 2008).

### 4.11.1.2 Project Setting

The majority of the proposed project is located in a rural agricultural area with scattered residences, and concentrated residential areas are present in Winterhaven and Bard. The San Pasqual Valley school complex located at Arnold and Baseline Roads would be considered a sensitive receptor, as would the scattered rural residences and residential areas in Winterhaven and Bard.

Existing noise sources in the proposed project area include agricultural equipment, vehicular traffic, and trains on the UPRR. Typical sound levels for the existing noise sources found in the project area, normalized to a reference distance of 15 m (50 feet), can be found in Table 4.8.

**Table 4.8. Existing Noise Sources in the Project Area**

| Noise Source | Sound Level [a] |
|---|---|
| Agricultural equipment | 67–82 dBA (Bean 2008) |
| Light vehicular traffic | 56 dBA (Imperial County 2008) |
| Train (horn at road crossings) | 116 dBA maximum (USDOT 2009) |
| Train (locomotive and cars) | 83–91 dBA (USDOT 2009) |

[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 and 9 a.m. to 5 p.m. on Saturday. No construction operations shall occur on Sunday or holidays.

**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 m (50 feet) are depicted in Table 4.9. Noise levels from equipment shown in Table 10 decrease with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. The noise levels shown in Table 4.9 represent the construction equipment's averaged maximum noise levels, 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 4.9. Construction Equipment Noise Levels**

| Equipment | Maximum Noise Level (dBA) at 15 m (50 feet) |
|---|---|
| Bulldozer | 82 |
| Directional boring machine | 83 |
| Backhoe | 78 |
| Mud sucker | 81 |
| Skid steer loader | 79 |
| Medium-duty truck (5 ton) | 76 |
| Air compressor | 78 |
| Pickup | 75 |

*Source*: 2011 FHWA Construction Noise Handbook, 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 in Winterhaven that are as close as 4.6 m (15.0 feet). Rural residences in the remaining portions of the project area are no closer than 9 m (30 feet) to the project corridors, and the school complex at Arnold and Baseline is approximately 38 m (125 feet) away from the project corridor at that location. Typically, the average noise level generated from the proposed construction activities would range from 75–83 dBA when measured at a distance of 15 m (50 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.

Noise generated by construction activities, therefore, could result in noise levels, at the closest sensitive receptors, exceeding the County's 75 dB $L_{eq}$ (8-hour) averaged 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 and during the hours specified in the County standards. Therefore, while the project would generate noise for a very short term during construction, the noise levels would not exceed the 8-hour thresholds of the local standards. 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).**

Most of the proposed project installation would be conducted using plowing 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 a limited number of days at any one location, and construction hours would conform to local regulation (APM NOI-1). 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 in a day on several nonconsecutive days at each location. Since existing noise sources in the project area include vehicular traffic, the railroad, 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 on April 9, 2015.

Federal Highway Administration

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

Imperial County

2008 *Imperial County General Plan*. Imperial County Planning/Building Department, El Centro, California.

U.S. Department of Transportation (USDOT)

2009 Handbook for Railroad Noise Measurement and Analysis. Available at: http://www.fra.dot.gov/eLib /Details/L03061. Accessed on April 9, 2015.


## *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 provide

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 ICGP, is described below.

**Local**

The Housing Element of the ICGP is a comprehensive assessment of current and future housing needs in the County and proposed actions to facilitate the provision of housing to meet those needs for households of all income levels. 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 (Imperial County 2013).

#### 4.12.1.2 Project Setting

The majority of the proposed project is located in a rural agricultural area with scattered residences, and concentrated residential areas are present in Winterhaven and Bard. The closest residences in relation to the project corridors are located in Winterhaven at a distance of approximately 4.6 m (15.0 feet). Rural residences in the remaining portions of the project area 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

Imperial County

2013 County of Imperial 2014–2021 Housing Element. Imperial County, El Centro, 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 or utilities 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 Quechan Tribal Police Department and the Imperial County Sherriff. Fire protection is provided by the Winterhaven Fire Department.

The project corridors are located along County and BIA 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 four existing DSAs. Cellular data service (3G, 4G, and 4GLTE) from Verizon, AT&T, and Sprint is available in portions of the project area, as is HughesNet satellite Internet service.

The San Pasqual Valley School District complex at Arnold and Baseline Roads currently receives Internet connectivity through a microwave link from a station located west of the project area at Pilot Knob. This link provides 54 MBPS Internet service to the school, but the District has expressed a desire for a faster fiber-optic broadband connection (SPVUSD 2008).

### 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

**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 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 ICAPCD construction measures specified in Regulation VIII 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 Winterhaven. 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 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

San Pasqual Valley Unified School District (SPVUSD)

2008 Technology Use Plan, School Years 2008–2011. Technology Committee, San Pasqual Valley Unified School District, Winterhaven, California.

## *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

There are no 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 not increase the use of any neighborhood or regional parks or any other recreational resources because none are located in the vicinity of the project area. 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**

***Imperial County General Plan***

The ICGP, as the County's fundamental land use and development policy document, establishes goals and polices related to the county's transportation network. The ICGP contains the following relevant transportation goal (Imperial County 2008):

- Goal 1: The County will provide and require an integrated transportation system for the safe and efficient movement of people and goods within and through the County with minimum disruption to the environment.

***Winterhaven Urban Area Plan***

The Winterhaven Urban Area Plan identifies the goals, policies, and standards that will guide the physical growth of the Winterhaven Urban Area, which consists of the Townsite of Winterhaven and surrounding areas. A goal and associated objectives in the plan related to transportation include:

- Goal 1: The County will provide an integrated transportation system for the safe and efficient movement of people and goods within and throughout the Winterhaven Urban Area with minimum disruption to the environment.
    - Objective 1.1—Maintain and improve the existing road and highway network, while providing for future expansion and improvement based on travel demand and the development of alternative travel modes.
    - Objective 1.2—Ensure safe and coordinated traffic patterns, continuous growth, and promote a planned and consistent development around the township area.
    - Objective 1.3—Finance or seek funding for circulation system maintenance projects.

#### 4.15.1.2 Project Setting

The primary transportation thoroughfares in the region consist of I-8, which is the primary east-west route through Imperial County between San Diego, California, and Yuma, Arizona, and Interstate Business 8 (also called Winterhaven Drive), which provides business access to the Winterhaven community from I-8. The double-track UPRR runs parallel to and north of Winterhaven Drive in the southern portion of the project area. Roads within the project area consist primarily of two-lane minor collector roadways and residential streets.

**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 with the I-8 and State Highway 80 roadways. According to the County's 2013 Transportation Plan Update, there are currently no roadways in the project area identified as problem roadways in the Congestion Management Element of the plan (Imperial County 2013).

**Transit**

The Quechan Tribe, in partnership with the Yuma County Intergovernmental Public Transportation Authority (YCIPTA), provides local fixed-route bus service in Winterhaven and on Fort Yuma–Quechan Reservation lands (Yuma County Intergovernmental Public Transportation Authority 2015). In addition, there is a three-day-per-week route operating between eastern Imperial County (Winterhaven) and Downtown El Centro, California. Services are provided under contract to First Transit, Inc. (Imperial Valley Transit 2015).

The San Pasqual Unified School District provides bus services for the local community for the school day and after-school activities. Buses operate in the morning and afternoon.

### 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 California Department of Transportation (CDOT) 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 will require the project contractor to obtain all necessary local, State, and BIA 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 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 will schedule truck trips outside of peak morning and evening commute hours.

**APM TRA-5**: TDS will limit lane closures during peak hours to the extent possible.

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

**APM TRA-7**: TDS 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-9**: The contractor 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 ICGP, Circulation and Scenic Highways 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 for turning around or parking, such as existing roads, field access aprons, driveway aprons, or farm roads. 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 CDOT 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 are implemented. 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 CDOT specifications as presented in Chapter 5of 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 CDOT 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; they therefore would not require redirection of motorists, bicyclists, or pedestrians. In compliance with the *California Manual on Uniform Traffic Control Devices* (MUTCD), bicycle traffic, like motorists, would be provided "reasonably safe passage through the [temporary traffic control] zone" (CDOT 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


Imperial County

1996 *Winterhaven Urban Area Plan*. Imperial County Planning/Building Department, El Centro, California.

2008 *Imperial County General Plan*. Imperial County Planning/Building Department, El Centro, California.

2013 *Imperial County 2013 Transportation Plan*. Imperial County Transportation Commission, El Centro, California.

Imperial Valley Transit

2015 Imperial Valley Transit Bus Routes. Available at: http://www.ivtransit.com /riderguide/offline/download.pdf. Accessed on April 5, 2015.

Yuma County Intergovernmental Public Transportation Authority

2015 YCAT Blue Route 5—Quechan Shuttle (5). Available at: http://www.ycipta.org /routes/5. Accessed on April 10, 2015.


## *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 Imperial County is managed at the local and County level and is anticipated to occur consistent 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 related to a

change 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 Imperial County is managed at the local and County level and is anticipated to occur consistent 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 Imperial County must occur consistent 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 agricultural land present is considered Prime Farmland (see Section 4.2) and is therefore protected from development into other uses. Likewise, the Winterhaven Area Plan indicates that development in that community is anticipated to be minimal and consist primarily of infill on existing lots. 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 Imperial County Public Works Department Projects Out-to-Bid List was reviewed for relevant present and future projects (Imperial County 2015). The only future project in the vicinity of the proposed project is for sidewalk installations along the east side of Baseline Road between Arnold and San Pasqual Roads (project #5405). The proposed project alignment on Arnold Road would be installed on the north side of Arnold Road, opposite the northern terminus of the sidewalk project. No other projects are located at or near the project site that would add to potential circulation impacts, and as such would not result in cumulatively considerable impacts.

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 ICAPCD thresholds. Consequently, because the proposed project's anticipated emissions of these two criteria

pollutants that are in non-attainment are below what ICAPCD would consider significant, any cumulative impacts would be considered less than significant.

### 4.16.4 References

Imperial County

2015 Imperial County Public Works Department. Available at: http://www.co.imperial.ca.us/publicwork/PublicWorkUser/ProjectsOutToBid/ProjectsOutToBid.htm. Accessed on April 20, 2015.

## 5.0 NEPA-SPECIFIC RESOURCE AREA IMPACT ANALYSIS

The environmental analysis presented in this section takes into consideration the potential effects on the natural environment that may result from BIA's approval of a ROW grant that would allow the Tribal portion of the proposed project to be constructed. Approval of the ROW grant would constitute a Federal action; therefore, the environmental consequence analysis uses the correct NEPA term "Proposed Action," which is analogous to the CEQA "proposed project".

NEPA documents typically require an alternatives analysis where impacts of a Proposed Action are compared to impacts from alternative ways to accomplish the purpose and need of the project. Impacts of not implementing the Proposed Action are known as the No-Action Alternative, which serves as the baseline conditions present in the analysis area from which to make comparisons. Due to the limited potential for adverse impacts associated with the Proposed Action, BIA has determined that a comprehensive alternatives analysis was not required for the Winterhaven project, and only the impacts of the Proposed Action and No-Action Alternative need be considered in this PEA (Chip Lewis, BIA, personal communication, 1/26/2015).

The 2012 BIA NEPA Handbook includes a list of resource areas that require consideration in BIA NEPA documents. An initial screening analysis of these resource areas and how they relate to the Proposed Action is presented in Table 5.1. This analysis was performed to eliminate duplicate analyses in this combined NEPA/CEQA document.

**Table 5.1. BIA NEPA Resource Areas**

| Resource Area | Finding |
|---|---|
| *Land Resources* | |
| Topography (land forms, drainage, gradients) | Addressed in Section 4.6, Geology, Soils, and Seismic Potential |
| Soils (types, characteristics) | |
| Geologic Setting, Mineral, and Paleontological Resources | Addressed in Section 4.6; Section 4.10, Mineral Resources; and Section 4.5, Cultural Resources |
| **Water Resources** (surface and ground; quality, quantity, use, rights) | Addressed in Section 4.8, Hydrology and Water Quality |
| **Air** (quality/achievement, visibility) | Addressed in Section 4.3, Air Quality and Greenhouse Gases |
| *Living Resources* | |
| Wildlife (terrestrial, aquatic, Threatened and Endangered) | addressed in Section 4.4, Biological Resources |

| Resource Area | Finding |
|---|---|
| Vegetation (terrestrial, aquatic, riparian, threatened/endangered) | |
| Ecosystems and Biological Communities) | |
| Agriculture (livestock, crops, prime and unique farmland) | addressed in Section 4.2, Agricultural Resources |
| *Cultural Resources* | |
| Historic, Cultural, and Religious Properties | addressed in Section 4.5, Cultural Resources |
| Archaeological Resources | |
| Socioeconomic Conditions | |
| Employment and Income | addressed in Section 5.3, Socioeconomics |
| Demographic Trends | |
| Lifestyle and Cultural Values | addressed in Section 4.5 |
| Community Infrastructure (public services, utilities) | addressed in Section 4.13, Public Services/Utilities and Service Systems |
| Environmental Justice | addressed in Section 5.2, Environmental Justice |
| *Resource Use Patterns* | |
| Hunting, Fishing, Gathering | addressed in Section 4.5 |
| Timber Harvesting | addressed in Section 4.2, Agricultural Resources |
| Agriculture | |
| Mining | addressed in Section 4.10 |
| Recreation | addressed in Section 4.14, Recreation |
| Transportation Networks | addressed in Section 4.15, Transportation and Traffic |
| Land Use Plans | addressed in Sections 4.1–4.15 |
| *Other Values* | |
| Wilderness | there is no designated wilderness in or in the vicinity of the project area and no concerns were identified |
| Noise and Light | addressed in Section 4.1, Aesthetics, and Section 4.11, Noise |
| Visual | addressed in Section 4.1, Aesthetics, and Section 4.11, Noise |
| Public Health and Safety | addressed in Section 4.3 and Section 4.7, Hazards and Hazardous Materials |
| Climate Change (Greenhouse Gases) | addressed in Section 4.3 |
| Indian Trust Assets | addressed in Section 5.1, Indian Trust Assets |
| Hazardous Materials | addressed in Section 4.7 |

## *5.1 Indian Trust Assets*

Indian Trust Assets (ITAs) are legal interests in assets that are held in trust by the United States government for Federally recognized Tribes or American Indian individuals. The trust relationship usually stems from a treaty, Executive Order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of Federally recognized Tribes. "Assets" are anything owned

that holds monetary value. "Legal interests" refers to a property interest for which there is a legal remedy (such as a compensation or injunction) if there is improper interference. Assets can be real property, physical assets, or intangible property rights (such as a lease or right to use something). ITAs cannot be sold, leased, or otherwise alienated without approval from the United States. Trust assets may include lands, minerals, natural resources, and hunting, fishing, and water rights. American Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered ITAs. In some cases, ITAs may be located off trust land.

BIA shares the Indian trust responsibility with other agencies of the Executive Branch to protect and maintain ITAs reserved by or granted to Tribes or American Indian individuals by treaty, statute, or Executive Order.

### 5.1.1 Affected Environment

The portions of the proposed project area on the Fort Yuma–Quechan Reservation are located on Tribal allotments that are Indian Trust Assets. Each of the allotments is approximately 4 ha (10 acres) in size and can have anywhere from 1 to well over 100 Tribal members that have an ownership interest in the allotment.

### 5.1.2 Environmental Consequences

#### 5.1.2.1 Proposed Action

The Proposed Action would allow TDS to install and maintain fiber-optic lines on approximately 62 Tribal land allotments through the grant of a 1.5-m-wide (5.0-foot-wide) ROW with a term of 50 years. In total, the ROWs would encompass approximately 1.5 ha (3.8 acres) of Tribal land. Allottees would retain legal ownership and title to their land, which they could continue to use as they see fit, provided that their use does not interfere with TDS's use of the ROW for the fiber-optic lines. Therefore, the Proposed Action would have a minor, long-term, adverse impact on Indian Trust Assets.

#### 5.1.2.2 No-Action Alternative

The No-Action Alternative would result in no impacts to Indian Trust Assets in the Proposed Action Area.

## *5.2 Environmental Justice*

Title VI of the Civil Rights Act of 1964 and related statutes (including the State-level Environmental Evaluation Group's "Guidance on Title VI and Environmental Justice") ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, dated February 11, 1994, directs Federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations to the greatest extent practicable and permitted by law. The order also directs each agency to develop a strategy for implementing environmental justice. The order is also intended to promote nondiscrimination in Federal programs that affect human health and the environment, as well as provide minority and low-income communities with access to public information and public participation.

### 5.2.1 Affected Environment

According to 2010 U.S. Census, the majority of the residents in the three Census Block Groups (CBGs) in the Proposed Action area are minorities. Households with incomes below the Federal poverty level in the Proposed Action area range from a high of 44.7 percent for CBG 06025940003 to a low of 23.6 percent for CBG 060259400002, with CBG 060259400001 in the middle at 32.2 percent (CPUC 2014).

### 5.2.2 Environmental Consequences

#### 5.2.2.1 Proposed Action

The Proposed Action would be constructed within the ROW of existing public roadways and would not result in adverse human health or environmental effects on the local population. Because the Proposed Action would not disproportionately affect any one socioeconomic group more so than any other, there would be no adverse impact related to Environmental Justice in the Proposed Action area.

#### 5.2.2.2 No-Action Alternative

Because the No-Action Alternative would result in no changes to existing conditions, the No-Action Alternative would result in no adverse impacts related to Environmental Justice.

## *5.3 Socioeconomics*

### 5.3.1 Affected Environment

#### 5.3.1.1 Employment and Income

According to the U.S. Census Bureau's 2006–2010 American Community Survey (ACS), the unemployment rates in the project area range from a low of 4.1 percent in CBG 60259400003, which includes Winterhaven, to a high of 10.4 percent in 60259400002, which includes the Tribal portion of the project area and a small portion of unincorporated Imperial County. The unemployment rate of CBG 60259400001, located in unincorporated Imperial County, is in the middle at 6.7 percent. According to the ACS 2010 estimates, the median household income in the project area is $29,111 for CBG 60259400001, $25,179 for 60259400002, and $18,929 for CBG 60259400003 (CPUC 2014).

#### 5.3.1.2 Demographic Trends

In 2010, the most populous CBG in the project area, 60259400001, had a population of 1,322. The other two CBGs in project area, 60259400002 and 6025900003, had populations of 944 and 786, respectively (CPUC 2014).

Between 2000 and 2010, the population of the Fort Yuma–Quechan Reservation dropped from 2,376 to 2,197, a decline of 7.5 percent. The majority of residents on the Reservation identify themselves as American Indian and Alaska Native, with 61 percent reporting in 2010. The Hispanic or Latino population on the Reservation was 32 percent in 2010 and residents identifying themselves as white made up 23 percent of the population in 2010 (ARPI 2010).

### 5.3.2 Environmental Consequences

**Proposed Action**

The Proposed Action would bring telecommunication services to areas that are currently underserved. The inclusion of or improvement to communication services in the project area would enhance the quality of life of participating residents. The installation of the telecommunications facilities is not likely to immediately create new jobs, but may make the area more desirable to live and work in because of the availability of telecommunication services. The Proposed Action would therefore result in a minor beneficial impact related to Socioeconomics.

**No-Action Alternative**

Because the potential benefits of the enhanced telecommunications services would not be brought to an area that is currently underserved, the No Action Alternative would result in a minor adverse impact to socioeconomics.

## *5.4 References*


Arizona Rural Policy Institute (ARPI)

2010 *Demographic Analysis of the Fort Yuma–Quechan Reservation Using 2010 Census and 2010 American Community Survey Estimates.* Arizona Rural Policy Institute, Center for Business Outreach, W.A. Franke College of Business, Northern Arizona University, Flagstaff.

California Public Utilities Commission (CPUC)

2014 California Broadband Availability Mapper. Available at: http://www.broadbandmap.ca /gov/map. Accessed on December 5, 2014.


# 6.0 LIST OF PREPARERS

Tierra, in cooperation with TDS, prepared this PEA. Members of the project team who prepared the document are listed below.

## *6.1 Tierra Right of Way Services, Ltd.*

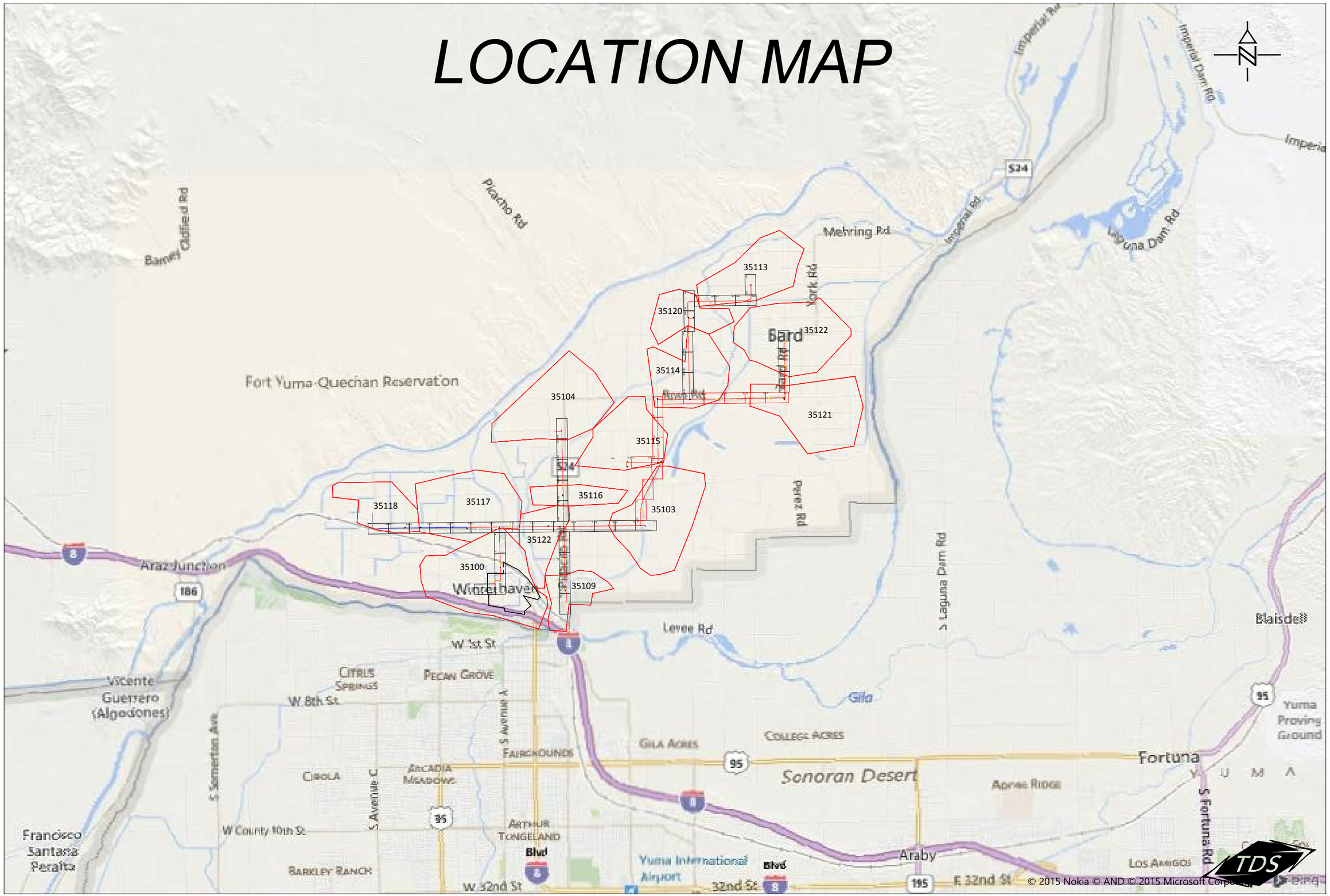
Tom Euler, Environmental Planning/Cultural Resources Director
Joseph Howell, Archaeologist
Tim Jordan, Senior Biologist
Theresa Knoblock, Biologist/Environmental Compliance Lead
Barbara Montgomery, Ph.D., Principal Investigator/Project Manager
John Murray, Technical Editor

## *6.2 TDS Telecommunications, Inc.*

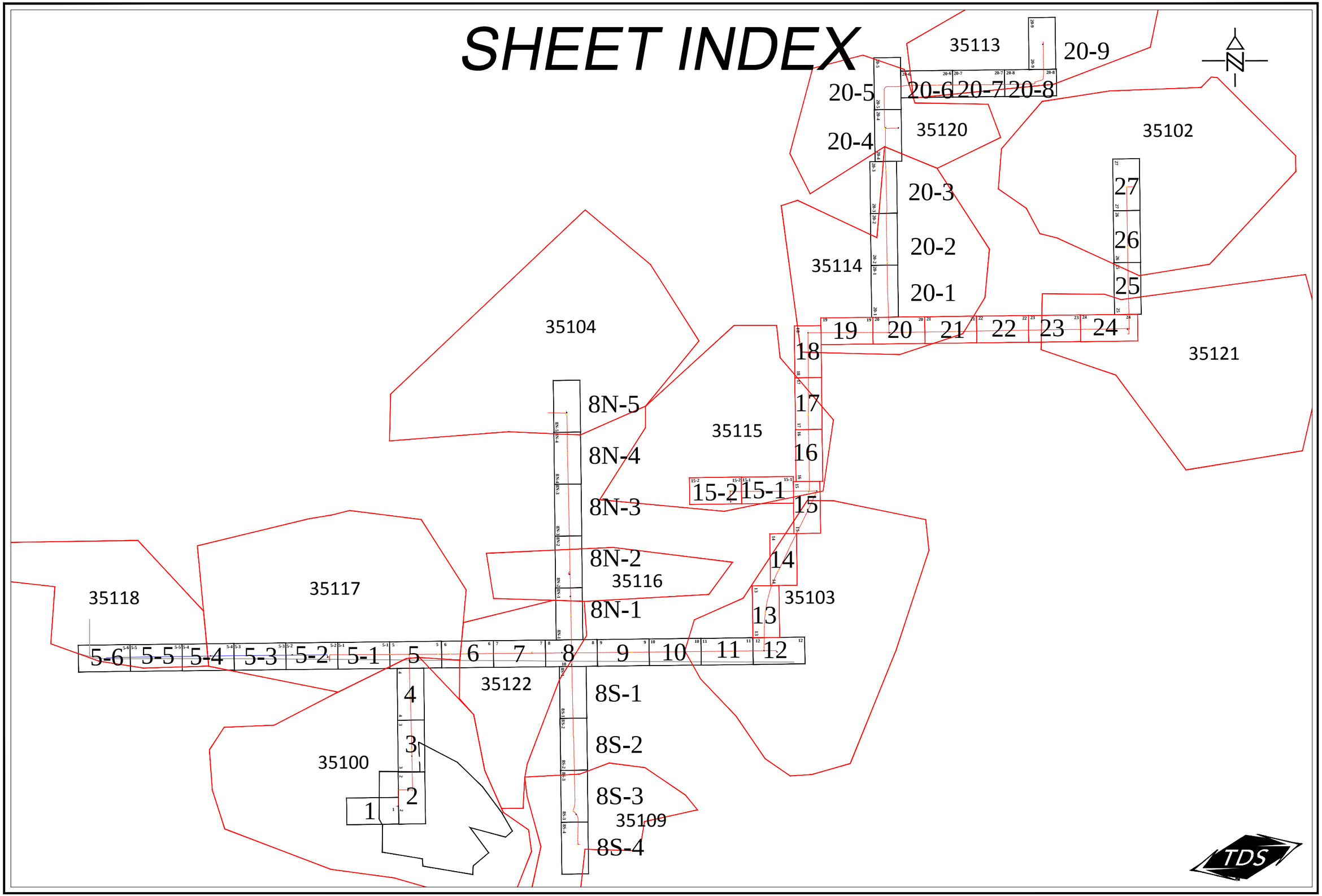
Joe Kirk, Manager
Garin Mayer, Engineer
Branden Piper, Network Specialist
Nate Stanislawski, Manager

# APPENDIX A. PROJECT PLANS

# LOCATION MAP

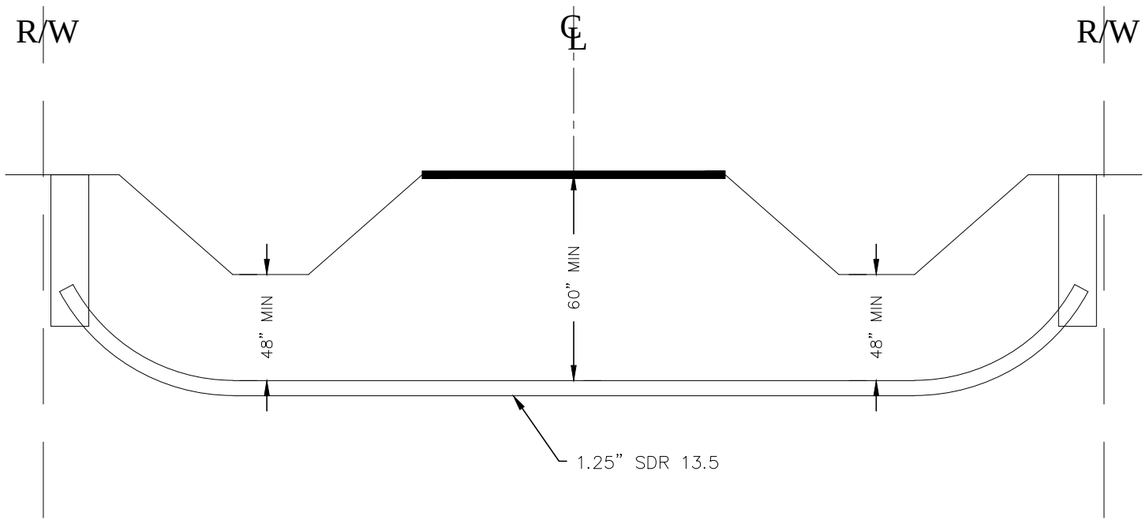


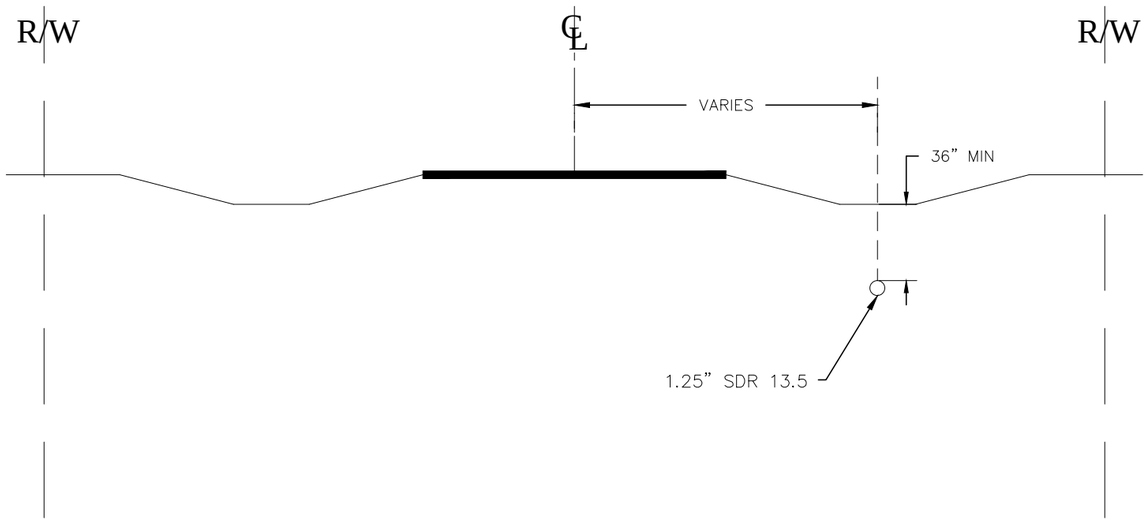
# SHEET INDEX


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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE ALL | SERVING AREA ALL | ROUTE ALL

# TYPICAL SECTIONS




## TYPICAL BORE PROFILE

**NOTES:**

1. Crossing will be made utilizing directional bore methodology.
2. Depth to top of duct will be a minimum of forty-eight inches (48") below bottom of ditch
3. Depth to top of duct will be a minimum of sixty inches (60") below hard road surface, bottom of waterway or irrigation ditch.
4. Entry and Exit locations on each side of roadway will be dug down to depth of running line as required and care will be taken to return pits to original or better condition.

## TYPICAL PARALLEL PROFILE

**NOTES:**

1. Minimum depth from ground to top of duct will be 36"
2. Placement shall be by directional bore, plow or trench methodology
3. When trenching or plowing, warning tape shall be placed 12" above top of duct
4. Running line shown on sheets subject to change due to location of existing utilities

NOT TO SCALE

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

ROUTE DA

SHEET 1 OF 27

EX. ROUTE DA

MAP REF. 351002

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: WINTERHAVEN

TWN/RGE 16S / 22E

SEC. 21

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV

REV

REV

FILE:




RUNNING LINE = 3'
FROM EDGE PVMT
MIN DEPTH= 36"

NOT TO SCALE

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

| POLES / PEDS | | | | | | | | | | CABLE | | | | | | POLE LINE & PED HARDWARE | | | | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POLE/ PED NO. | | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ | BFO (96) | BFOIE (96) | BFOV (1)(1.25) | | | | BM2 (5/8)(8) | BM 21 | BM 53 | BM 61D | | | | | | | | | HBFO (96) | | HO1 | | | W UM |
| TEL CO. | FOR CO. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0+00 | CO | | | | | | | | | 100 | | | | | | | 1 | | | | | | | | | | | 1 | | 96 | | | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0+64 | MH | | | | | | | | | | 64 | | | | | | | | | | | | | | | | | | | | | | |
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| TOTAL | | | | | | | | | | 100 | 64 | | | | | | 1 | | | | | | | | | | | 1 | | 96 | | | 1 |

| PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351 |
|---|---|---|




SHEET 1

**RUNNING LINE = 3'- 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

| ROUTE DA |
|---|
| SHEET 2 OF 27 |
| EX. ROUTE DA |
| MAP REF. 351002 |
| COUNTY: IMPERIAL |
| TOWNSHIP: |
| TAX DISTRICT: |
| MUNICIPALITY: WINTERHAVEN |
| TWN/RGE 16S / 22E |
| SEC. 21 |
| STAKED BY FARR |
| DATE 01/14 |
| DRAFTED BY FARR |
| DATE 10/14 |
| W.O. TC-CA351ENG-001 |
| REV |
| REV |
| REV |
| FILE: |

NOT TO SCALE

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 0+64 | SHT 1 | | | | | | | | |
| | | | | | | | | | |
| 6+34 | HH1 | BH2 | | | | | | | |
| | | | | | | | | | |
| 11+12 | HH2 | BH2 | | | | | | | |
| | | | | | | | | | |
| 15+74 | Lateral | | | | | | | | |
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| | | | | | | | | | |
| TOTAL | | 2 | | | | | | | |

## CABLE

| BFO (24) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 610 | 610 | | | |
| | | | | | |
| | 512 | 512 | | | |
| | | | | | |
| | 496 | 496 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | 1618 | 1618 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | 1 | 610 | | | | | | | |
| | | | | | | | | | |
| | 1 | 512 | | | | | | | |
| | | | | | | | | | |
| | | 496 | | | | | | | |
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| | | | | | | | | | |
| | 2 | 1618 | | | | | | | |

| CUST NO. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

ROUTE HA

SHEET 3 OF 27

EX. ROUTE HA

MAP REF. 351011/351009

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: WINTERHAVEN

TWN/RGE 16S / 22E

SEC. 21

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

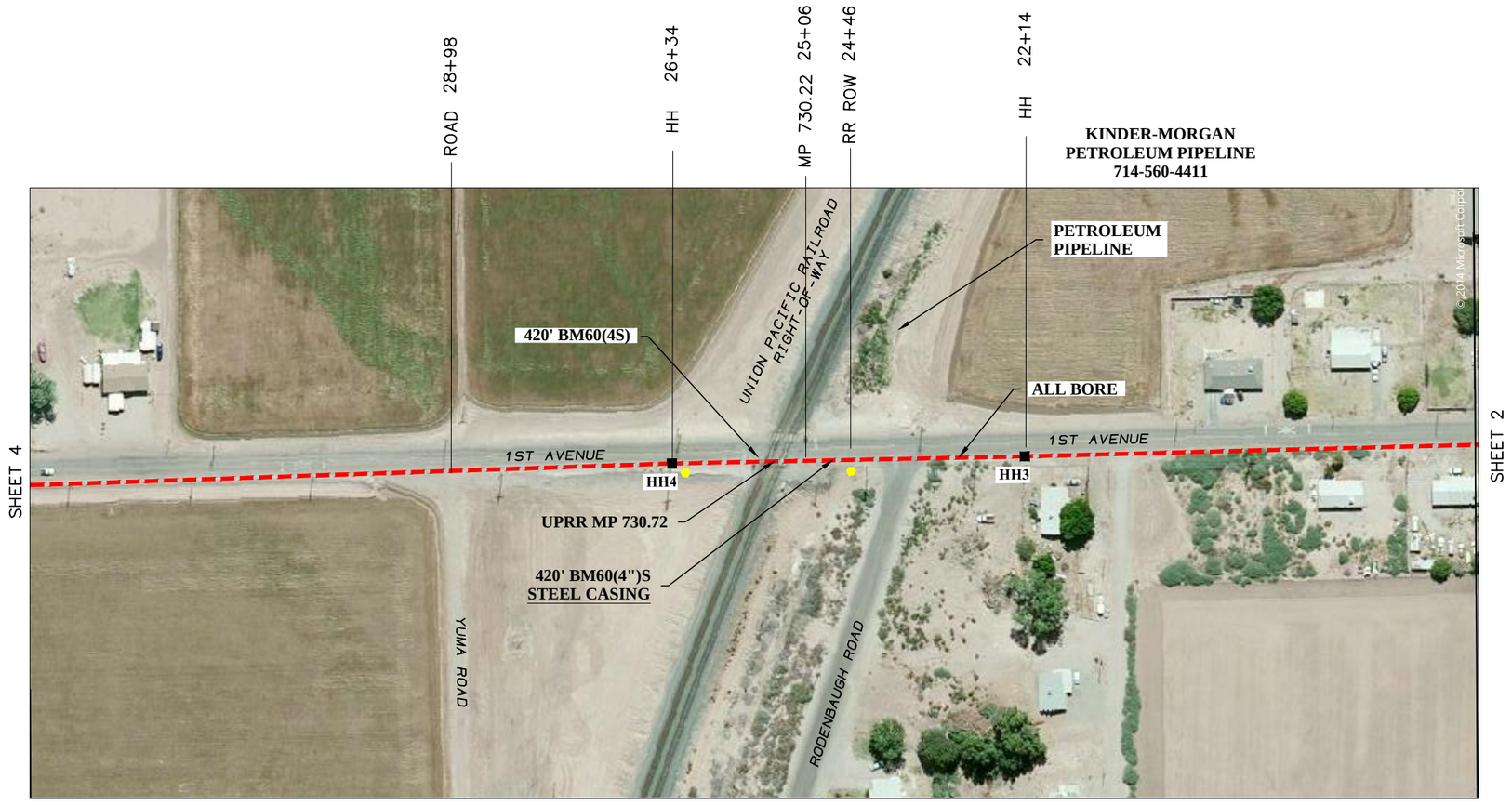
W.O. TC-CA351ENG-001

REV

REV

REV

FILE:




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

*SEE RAILROAD PERMIT EXHIBIT FOR DETAIL FROM HH3 TO HH4

NOT TO SCALE

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

811 Know what's below. Call 811 before you dig.

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 15+74 | SHT 2 | | | | | | | | |
| | | | | | | | | | |
| 22+14 | HH3 | BH2 / BD3 | | | | | | | |
| | | | | | | | | | |
| 26+34 | HH4 | BH2 / BD3 | | | | | | | |
| | | | | | | | | | |
| 28+98 | ROAD | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| TOTAL | | 2 / 2 | | | | | | | |

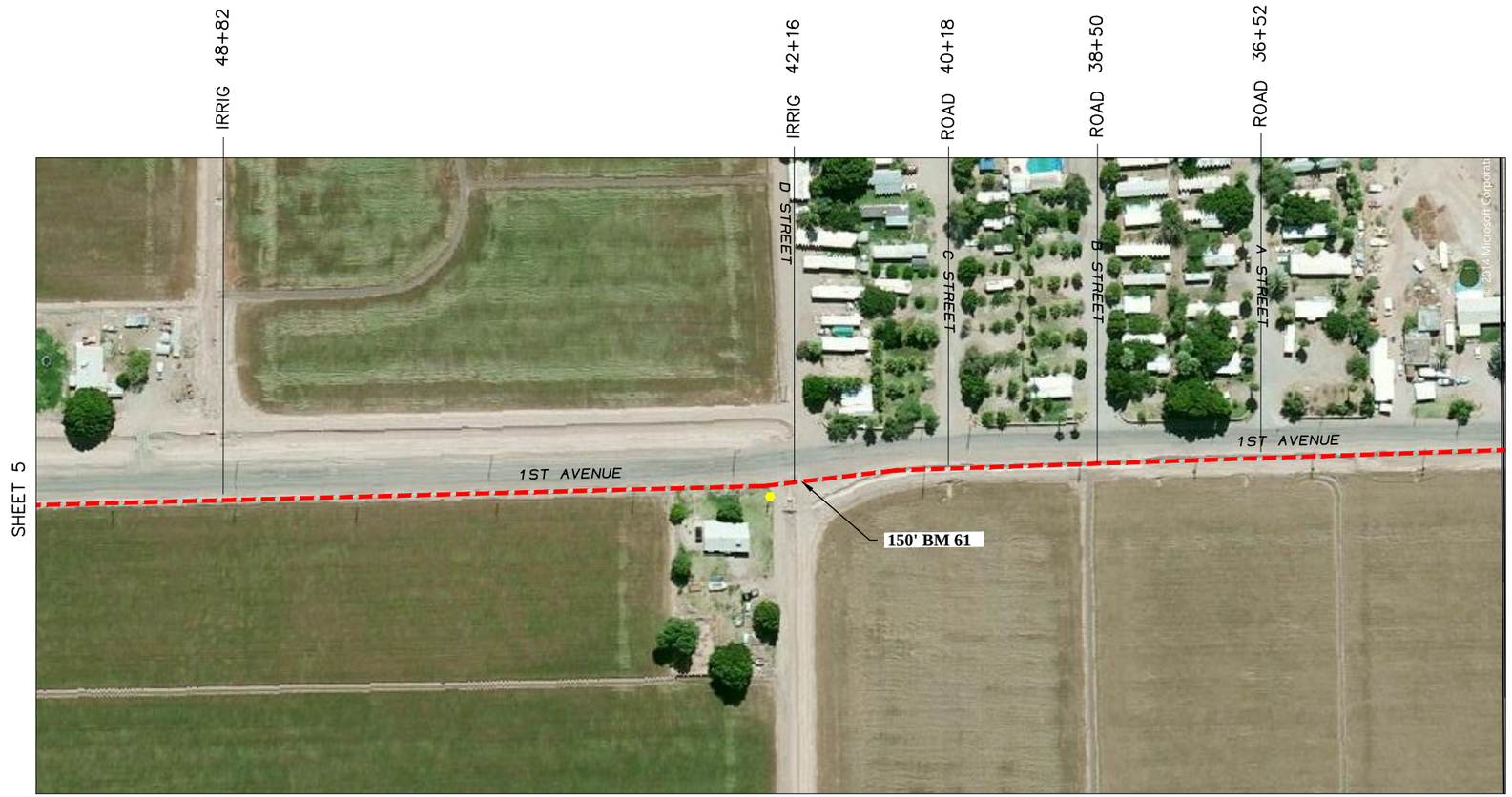
## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| 100 | 680 | 680 | | | |
| | | | | | |
| 100 | 454 | 454 | | | |
| | | | | | |
| | 292 | 292 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 200 | 1426 | 1426 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 55F | BM 61 | BM 60(4")S | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| 1 | | 680 | | | | | | | | |
| | | | | | | | | | | |
| 1 | 2 | | 420 | | | | | | | |
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| | | | | | | | | | | |
| | | | | | | | | | | |
| 2 | 2 | 680 | 420 | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's **below.** Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE HA
SHEET 4 OF 27
EX. ROUTE HA
MAP REF. 351009/351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 28+98 | SHT 3 | | | | | | | | |
| | | | | | | | | | |
| 42+16 | IRRIG | | | | | | | | |
| | | | | | | | | | |
| 48+82 | IRRIG | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1358 | 1358 | | | |
| | | | | | |
| | 706 | 706 | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | 2064 | 2064 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | 1 | 150 | | | | | | | |
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| | 1 | 150 | | | | | | | |

| CUST NO. | | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




SHEET 4

**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

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ROUTE HA/HC
SHEET 5 OF 27
EX. ROUTE HA/HC
MAP REF. 351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 48+82 | SHT 4 | | | | | | | | |
| | | | | | | | | | |
| 55+84 | HH6 | BH4 / BD3 | | | | | | | |
| | | | | | | | | | |
| 56+52 | IRRIG | | | | | | | | |
| | | | | | | | | | |
| 65+20 | PP | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 62+36 | IRRIG | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| TOTAL | | 1 / 1 | | | | | | | |

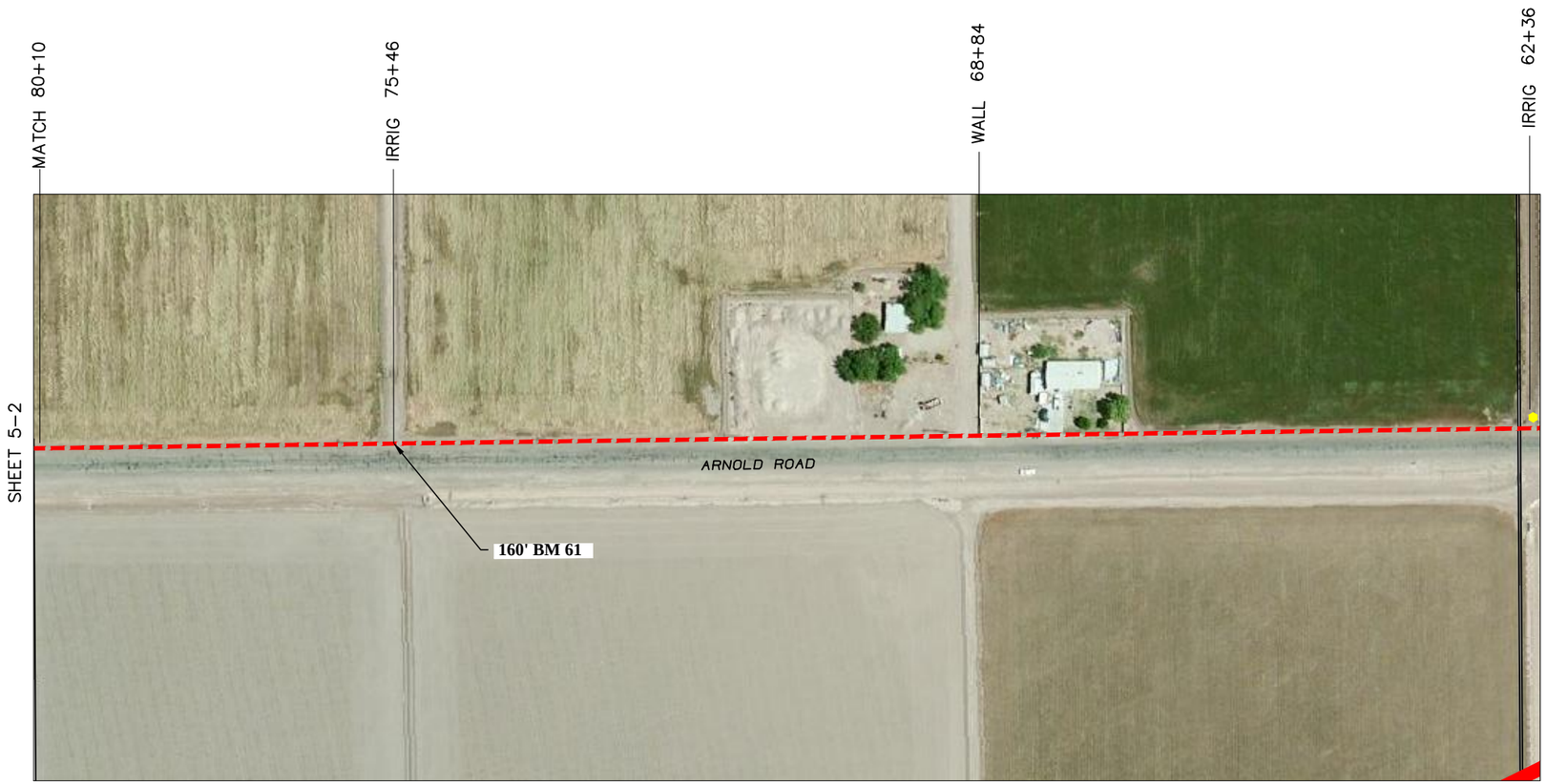
## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 50 | 734 | 734 | | | |
| | | | | | |
| 50 | 82 | 82 | | | |
| | | | | | |
| | 894 | 894 | | | |
| | | | | | |
| | | | | | |
| | 672 | 672 | | | |
| | | | | | |
| | | | | | |
| 100 | 2382 | 2382 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | HBFO (96) | HO1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 1 | 1 | 180 | | | | | | | | | | | 1 | 12 | | | |
| | | | | | | | | | | | | | | | | | |
| | | 160 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | 1 | 140 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 1 | 3 | 480 | | | | | | | | | | | 1 | 12 | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

| |
|---|
| ROUTE HA |
| SHEET 5-1 OF 27 |
| EX. ROUTE HA |
| MAP REF. 351023 |
| COUNTY: IMPERIAL |
| TOWNSHIP: |
| TAX DISTRICT: |
| MUNICIPALITY: WINTERHAVEN |
| TWN/RGE 16S / 22E |
| SEC. 21 |
| STAKED BY FARR |
| DATE 01/14 |
| DRAFTED BY FARR |
| DATE 10/14 |
| W.O. TC-CA351ENG-001 |
| REV |
| REV |
| REV |
| FILE: |

NOT TO SCALE

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TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 62+36 | SHT 5 | | | | | | | | |
| | | | | | | | | | |
| 75+46 | IRRIG | | | | | | | | |
| | | | | | | | | | |
| 80+10 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | 1830 | 1830 | | | |
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| | | | | | |
| | 1830 | 1830 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | 160 | | | | | | | | |
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| | | | | | | | | | | |
| | | 160 | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE HA
SHEET 5-2 OF 27
EX. ROUTE HA
MAP REF. 351023
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 80+10 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 82+54 | ROAD | | | | | | | | |
| | | | | | | | | | |
| 82+54 | DSA | | | | | | | | |
| | | | | | | | | | |
| 82+58 | PH2A3 | | | | | | | | |
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| | | | | | | | | | |
| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFC 100-24 | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| 50 | 540 | 540 | | | |
| | | | | | |
| | | | 300 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 50 | 540 | 540 | 300 | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 2C | BM 20 | BM 53 | BM 61D | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | 1 | 100 | | | | | |
| | | | | | | | | | |
| | | 1 | | 230 | | | | | |
| | | | | | | | | | |
| | 1 | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 1 | 1 | 1 | 330 | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | HC1 | | W BD |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | 1 | 6 | 100 | | |
| | | | | | | | |
| | | | | | 100 | | 1 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | 1 | 6 | 200 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

ROUTE HA

SHEET 5-3 OF 27

EX. ROUTE HA

MAP REF. 351023

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: WINTERHAVEN

TWN/RGE 16S / 22E

SEC. 21

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV

REV

REV

FILE:




NOT TO SCALE

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

| POLES / PEDS | | | | | | | | | | CABLE | | | | | | POLE LINE & PED HARDWARE | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POLE/PED NO. | | BD / HA | BG / PG | LEAD | POLE LENGTH CLASS | YEAR | | JOINT | | BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | | BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | | | | | | | |
| TEL CO. | FOR CO. | | | ANGLE | | SET | REM | % | W/ | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




Know what's below. Call 811 before you dig.

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ROUTE HA
SHEET 5-4 OF 27
EX. ROUTE HA
MAP REF. 351023
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

N

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
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## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

ROUTE HA

SHEET 5-5 OF 27

EX. ROUTE HA

MAP REF. 351023

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT: ????

MUNICIPALITY: WINTERHAVEN

TWN/RGE 16S / 22E

SEC. 21

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

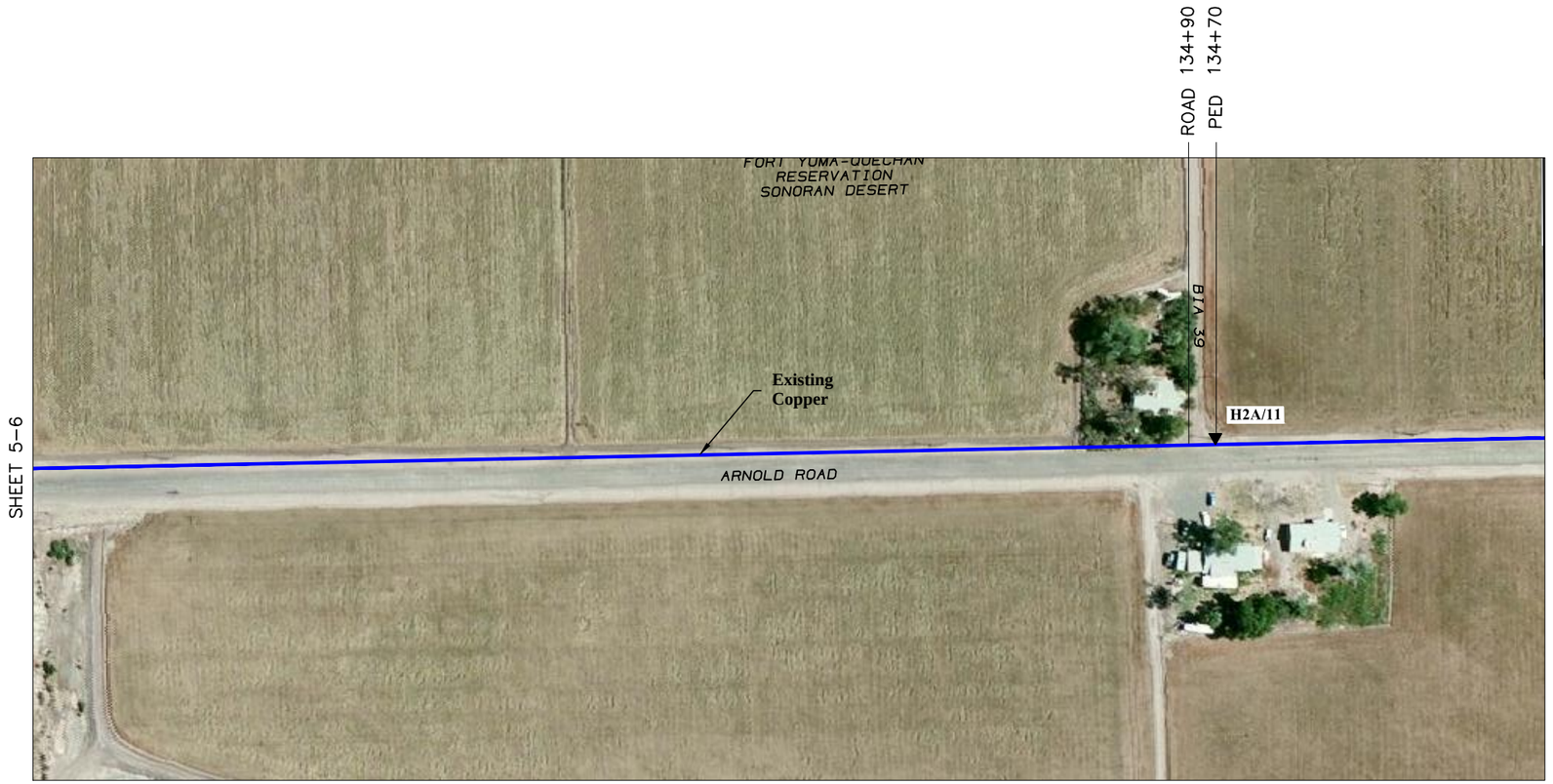
W.O. TC-CA351ENG-001

REV

REV

REV

FILE:




NOT TO SCALE

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

| POLES / PEDS | | | | | | | | | | CABLE | | | | | | POLE LINE & PED HARDWARE | | | | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POLE/ PED NO. | | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ | BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | | BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | | | | | | | | | |
| TEL CO. | FOR CO. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




ROUTE HA

SHEET 5-6 OF 27

EX. ROUTE HA

MAP REF. 351023

COUNTY:
IMPERIAL

TOWNSHIP:

TAX DISTRICT:
????

MUNICIPALITY:
WINTERHAVEN

TWN/RGE 16S / 22E

SEC. 21

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV

REV

REV

FILE:

N

NOT TO SCALE

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEPLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 155+98 | DSA | | | | | | | | |
| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
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## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | BM 20 | | | | | | |
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| | | | 1 | | | | | | |

| CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE HC/AL
SHEET 6 OF 27
EX. ROUTE HC/AL
MAP REF. 351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 55+84 | HH6 | | | | | | | | |
| | | | | | | | | | |
| 84+00 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 2900 | 2900 | | | |
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| | | | | | |
| | | | | | |
| | 2900 | 2900 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
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| | 2 | 1160 | | | | | | | | | | | | | | | |
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| | 2 | 1160 | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AL
SHEET 7 OF 27
EX. ROUTE AL
MAP REF. 351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 84+00 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 90+02 | IRRIG | | | | | | | | |
| | | | | | | | | | |
| 95+94 | IRRIG | | | | | | | | |
| | | | | | | | | | |
| 100+55 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
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| | 1704 | 1704 | | | |
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| | | | | | |
| | 1704 | 1704 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | 180 | | | | | | | |
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| | 1 | 180 | | | | | | | |
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| | 1 | 360 | | | | | | | |

| CUST NO. | | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AL
SHEET 8 OF 27
EX. ROUTE AL
MAP REF. 351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 100+55 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 109+42 | HH | BH4 / BD3 | | | | | | | |
| 111+26 | DSA | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 114+96 | PA3J1 | | | | | | | | |
| | | | | | | | | | |
| 109+68 | ROAD | | | | | | | | |
| | | | | | | | | | |
| 117+76 | MATCH | | | | | | | | |
| | | | | | | | | | |
| TOTAL | | 1 / 1 | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFOV (3)(1.25) | BFC 400–24 | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 100 / 50 | 914 | 914 | | | |
| 50/50/50 | 190 | | 190 | | |
| | 190 | | | | |
| | 190 | | | | |
| | | | | 250 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | 860 | 860 | | | |
| | | | | | |
| 300 | 2344 | 1774 | 190 | 250 | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 2C | BM 20 | BM 53 | BM 61D | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 170 | | | | | |
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| 1 | | | 1 | | | | | | |
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| | | | | 80 | | | | | |
| | | | | | | | | | |
| | | | | 200 | | | | | |
| | | | | | | | | | |
| 1 | 1 | 1 | 1 | 630 | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | HC1 | | W BD |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | 1 | 72 | 400 | | |
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| | | | | | | | |
| | | | 1 | 72 | 800 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AJ
SHEET 8N-1 OF 27
EX. ROUTE AJ
MAP REF. 351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 109+42 | (HH) | | | | | | | | |
| | | | | | | | | | |
| 130+50 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

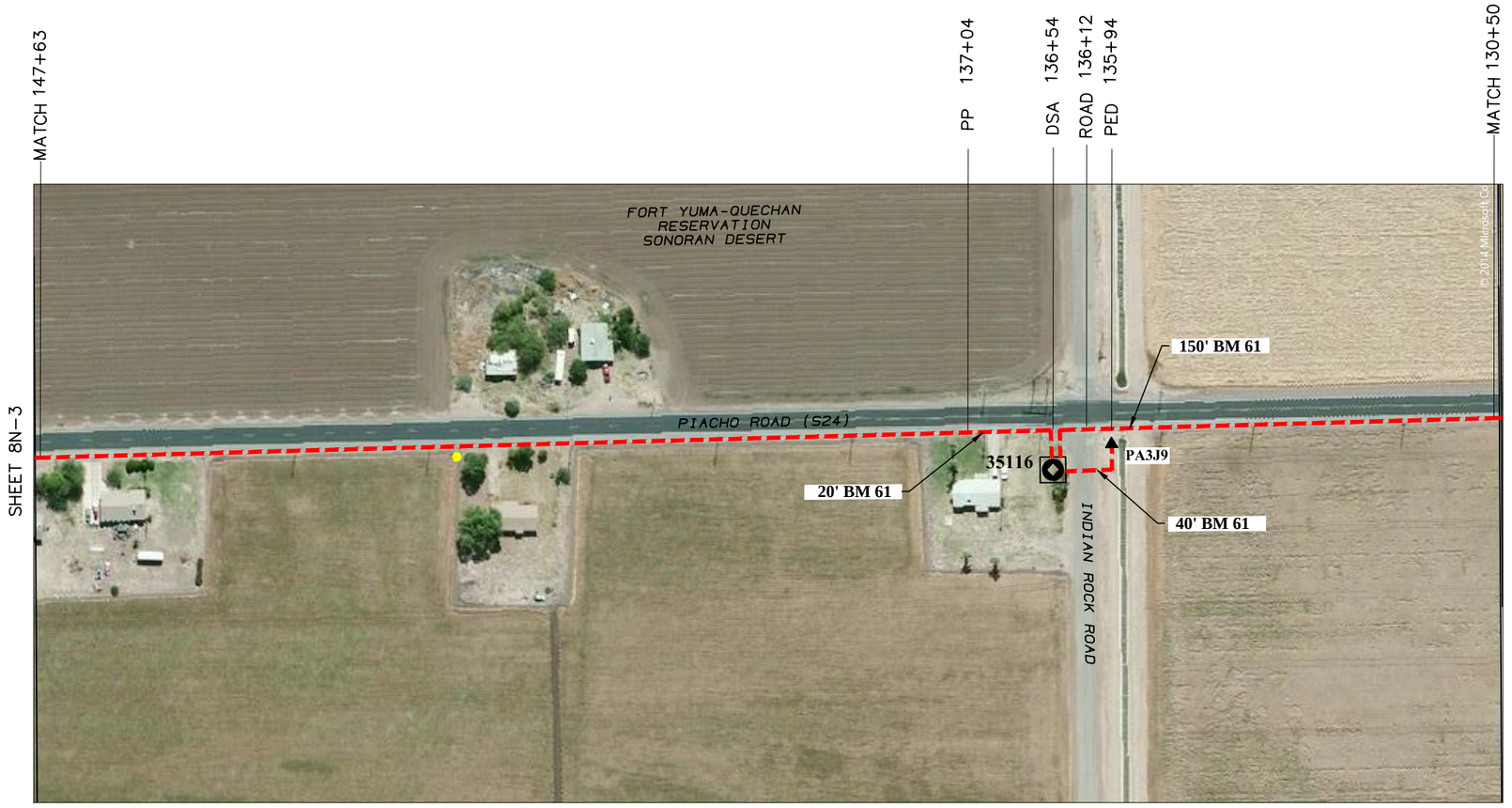
## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 2172 | 2172 | | | |
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| | 2172 | 2172 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | BM 73 | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| | 1 | | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AJ
SHEET 8N-2 OF 27
EX. ROUTE AJ
MAP REF. 351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 130+50 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 136+54 | DSA | | | | | | | | |
| 135+94 | PED | | | | | | | | |
| | | | | | | | | | |
| 137+04 | PP | | | | | | | | |
| | | | | | | | | | |
| 147+63 | MATCH | | | | | | | | |
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| | | | | | | | | | |
| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFOV (2)(1.25) | BFC 100-24 | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 50 / 50 | 660 | 660 | | | |
| | | | | 120 | |
| | | | | | |
| | 120 | | 120 | | |
| | | | | | |
| | 1090 | 1090 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 100 | 1870 | 1750 | 120 | 120 | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 2C | BM 20 | BM 53 | BM 61D | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 150 | | | | | |
| | | | | | | | | | |
| | | 1 | | | | | | | |
| | 1 | | | 40 | | | | | |
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| | | | | 20 | | | | | |
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| | 1 | 1 | 1 | 210 | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | HC1 | | W BD |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | 1 | 6 | 100 | | |
| | | | | | 100 | | 1 |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| | | | 1 | 6 | 200 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AJ
SHEET 8N-3 OF 27
EX. ROUTE AJ
MAP REF. 351026
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 147+63 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 164+46 | MATCH | | | | | | | | |
| | | | | | | | | | |
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| TOTAL | | | | | | | | | |

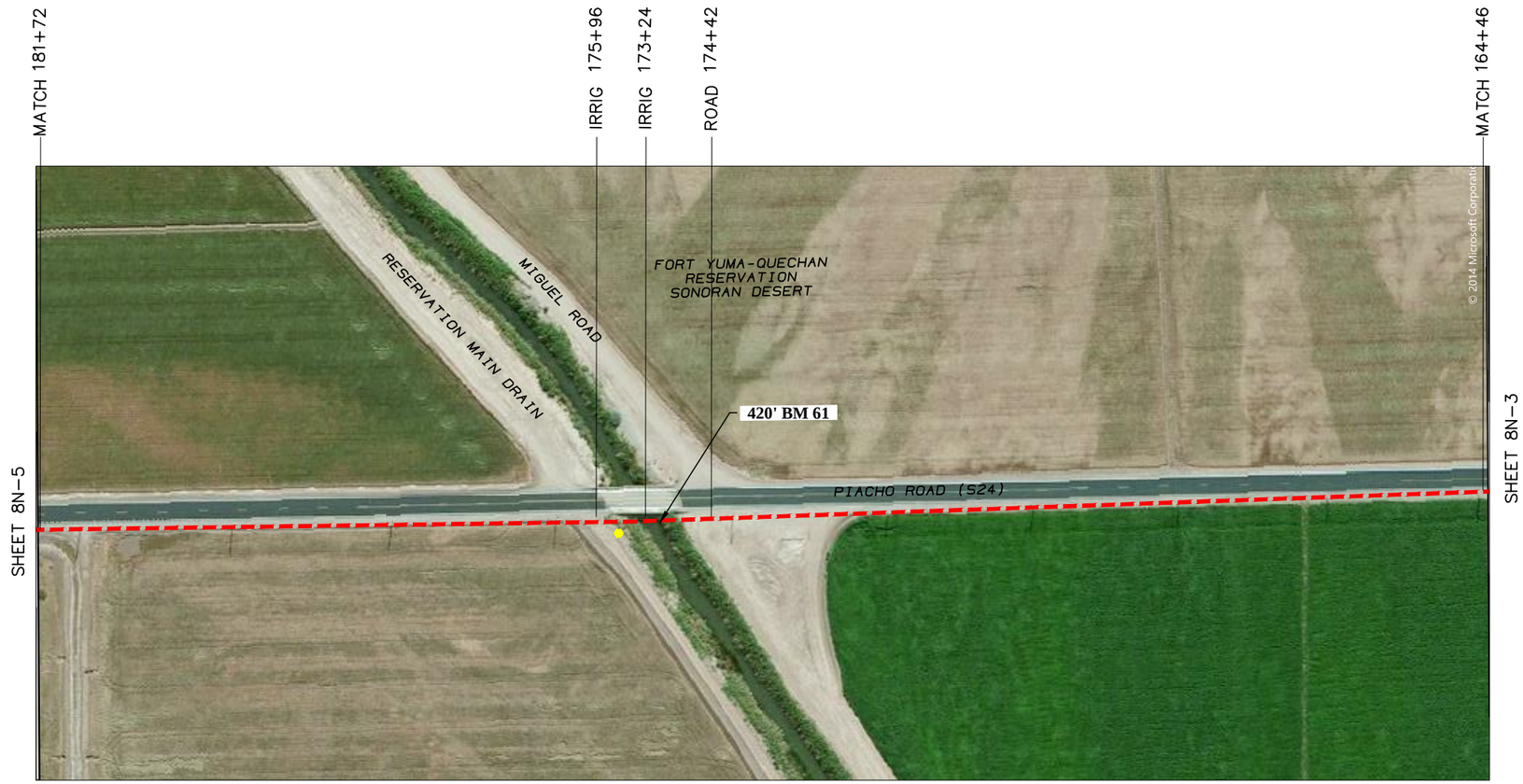
## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 1734 | 1734 | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | 1734 | 1734 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | 150 | | | | | | | | |
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| | | | | | | | | | | |
| | | 150 | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AJ
SHEET 8N-4 OF 27
EX. ROUTE AJ
MAP REF. 351026
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 164+46 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 181+72 | MATCH | | | | | | | | |
| | | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 1780 | 1780 | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | 1780 | 1780 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | 1 | 420 | | | | | | | | |
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| | | | | | | | | | | |
| | 1 | 420 | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AJ/AK
SHEET 8N-5 OF 27
EX. ROUTE AJ/AK
MAP REF. 351026
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 181+72 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 188+75 | ROAD | | | | | | | | |
| | | | | | | | | | |
| 189+00 | PED | | | | | | | | |
| | | | | | | | | | |
| 196+50 | DSA | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFC 100–24 | | |
|---|---|---|---|---|---|
| | | | | | |
| | 724 | 724 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 50 | 800 | 800 | 840 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 50 | 1524 | 1524 | 840 | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 2C | BM 20 | BM 53F | BM 61D | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | 1 | 190 | | | | | |
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| | 1 | | | | | | | | |
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| | | | | | | | | | |
| | 1 | 1 | 1 | 190 | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | HC1 | | W BD |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | 100 | | 1 |
| | | | | | | | |
| | | | | | | | |
| | | | 1 | 6 | 100 | | |
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| | | | | | | | |
| | | | 1 | 6 | 200 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

ROUTE AA

SHEET 8S-1 OF 27

EX. ROUTE AA

MAP REF. 351010

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: WINTERHAVEN

TWN/RGE 16S / 22E

SEC. 21

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

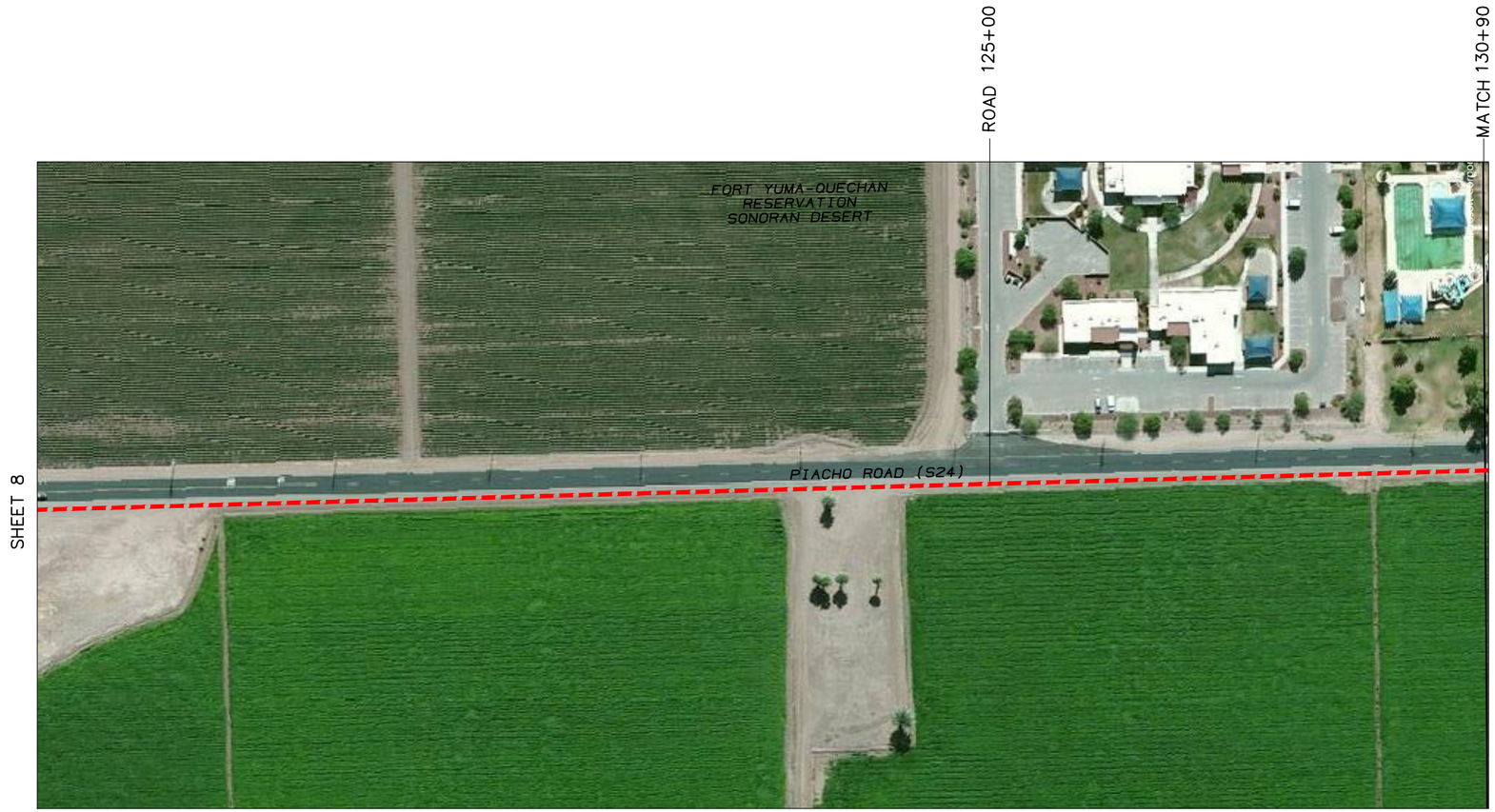
W.O. TC-CA351ENG-001

REV

REV

REV

FILE:




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

NOT TO SCALE

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

811 Know what's below. Call 811 before you dig.

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 111+26 | (DSA) | | | | | | | | |
| | | | | | | | | | |
| 130+90 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 2022 | 2022 | | | |
| | | | | | |
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| | | | | | |
| | 2022 | 2022 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

NOT TO SCALE

TDS

ROUTE AA/09-1000
SHEET 8S-2 OF 27
EX. ROUTE AA/09-1000
MAP REF. 351012
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 130+90 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 146+88 | MATCH | | | | | | | | |
| | | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

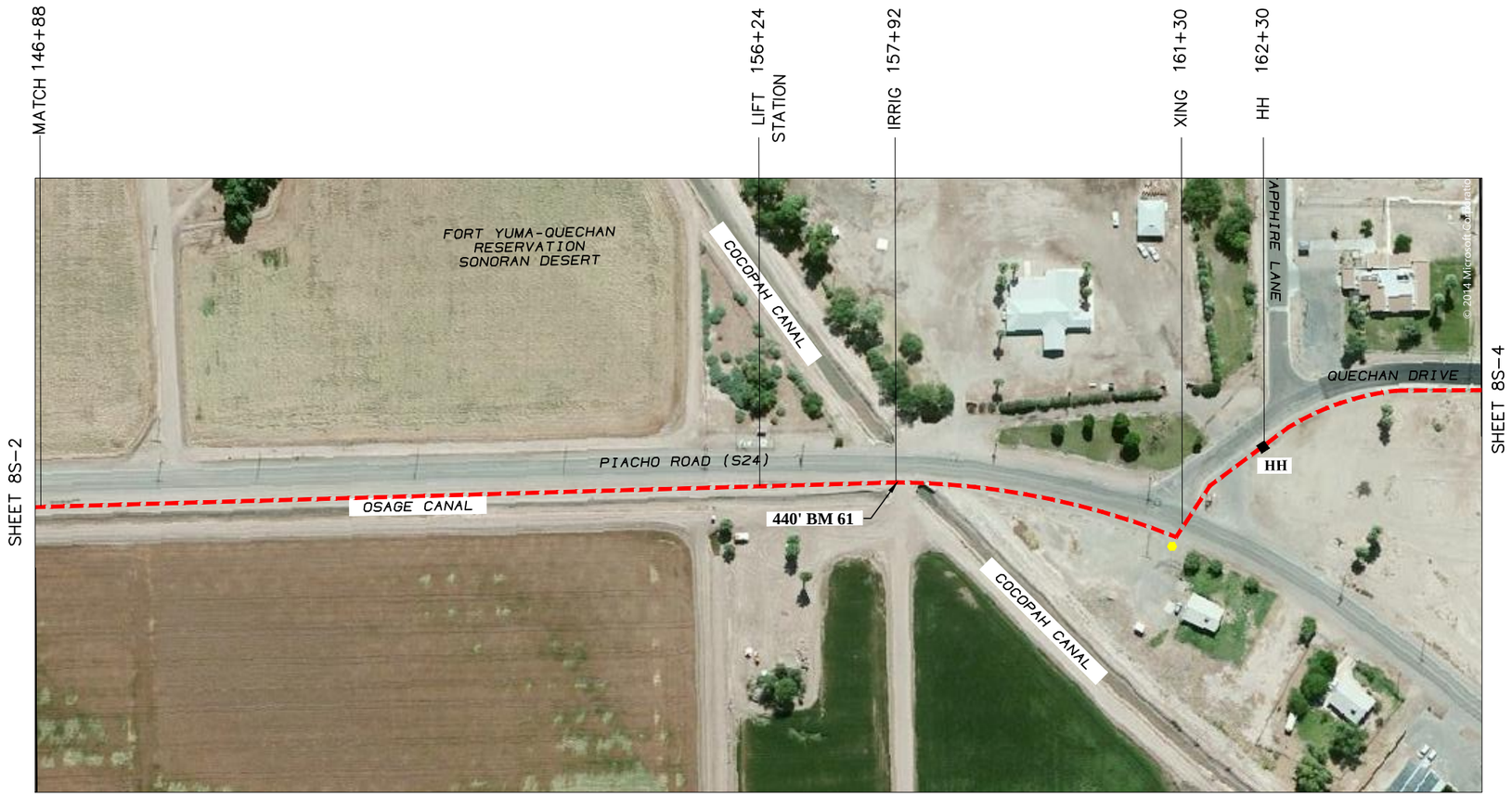
| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 1646 | 1646 | | | |
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| | 1646 | 1646 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
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| CUST NO. | | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE 09-1000
SHEET 8S-3 OF 27
EX. ROUTE 09-1000
MAP REF. 351006
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 146+88 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 162+30 | HH | BH2 / BD3 | | | | | | | |
| TOTAL | | 1 / 1 | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 100 | 1590 | 1590 | | | |
| TOTAL 100 | 1590 | 1590 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1 | 1 | 440 | | | | | | | | |
| TOTAL 1 | 1 | 440 | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 2'**
**FROM BACK OF WALK**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE 09-1000
SHEET 8S-4 OF 27
EX. ROUTE 09-1000
MAP REF. 351006
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/ PED NO. TEL CO. | POLE/ PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 162+30 | (HH) | | | | | | | | |
| | | | | | | | | | |
| 162+30 | HH | BH4 | | | | | | | |
| | | | | | | | | | |
| DSA | | | | | | | | | |
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| TOTAL | | 1 | | | | | | | |

## CABLE

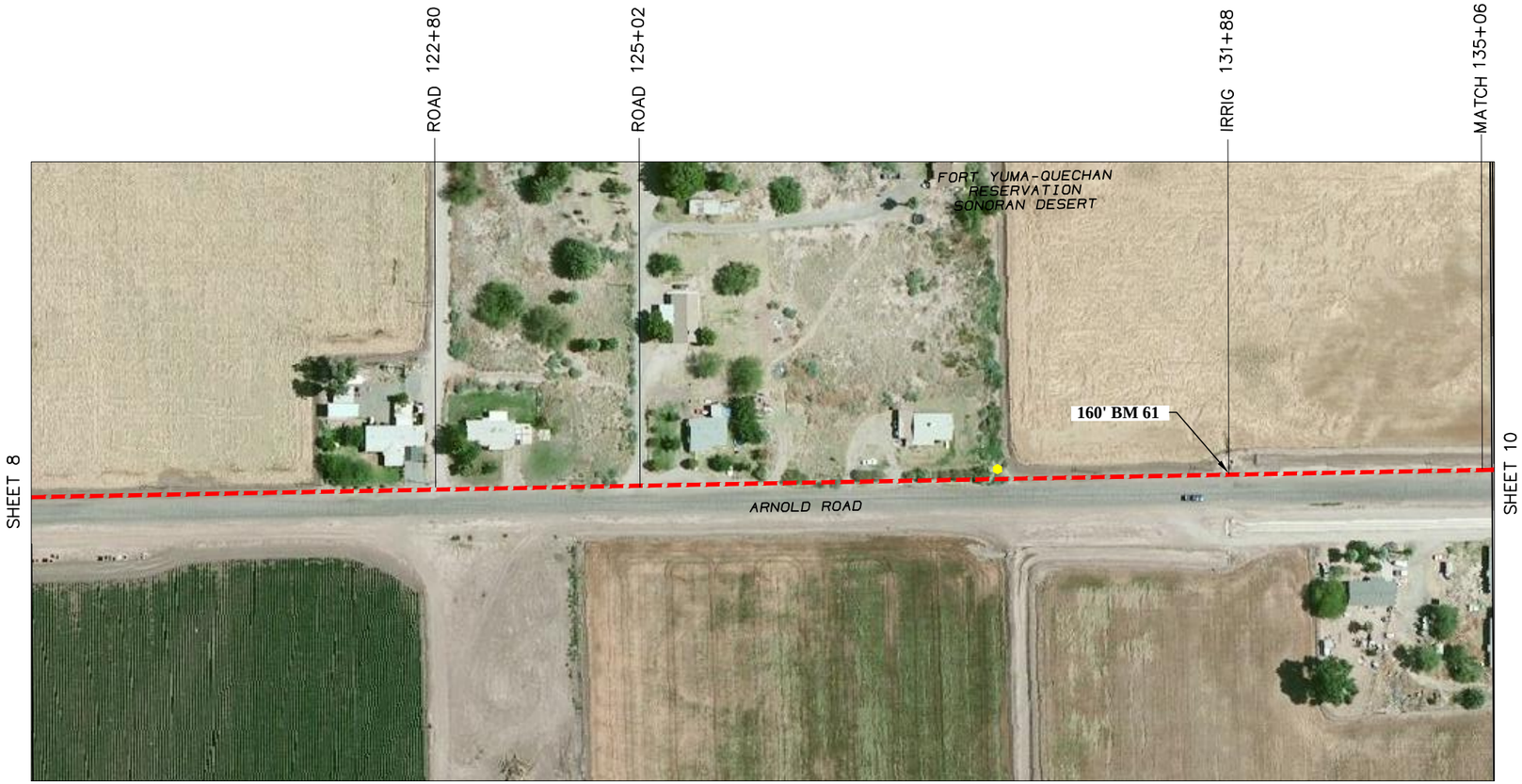
| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFOV (2)(2) | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 50 | 1188 | 1188 | | | |
| | | | | | |
| 50 | 60 | 60 | 60 | | |
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| | | | | | |
| 100 | 1248 | 1248 | 60 | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 20 | BM 53 | BM 61D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| | | 1 | 100 | | | | | | |
| | 1 | | 60 | | | | | | |
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| | 1 | 1 | 160 | | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | | | |
|---|---|---|---|---|---|---|---|
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| | | | 1 | 6 | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AA
SHEET 9 OF 27
EX. ROUTE AA
MAP REF. 351027
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 21
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 109+42 | (HH) | | | | | | | | |
| | | | | | | | | | |
| 135+06 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 2640 | 2640 | | | |
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| | 2640 | 2640 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | 1 | 160 | | | | | | | |
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| | 1 | 160 | | | | | | | |

| CUST NO. | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 135+06 | ROAD 135+92 | ROAD 142+52 | MATCH 152+04




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AA

SHEET 10 OF 27

EX. ROUTE AA

MAP REF. 351031

COUNTY:
IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY:
WINTERHAVEN

TWN/RGE 16S / 22E

SEC. 21

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV

REV

REV

FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/ PED NO. TEL CO. | POLE/ PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 135+06 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 152+04 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1748 | 1748 | | | |
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| | | | | | |
| | 1748 | 1748 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
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| | | 160 | | | | | | | | |
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| | | 160 | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

811 Know what's below. Call 811 before you dig.

| | |
|---|---|
| ROUTE | AA |
| SHEET | 11 OF 27 |
| EX. ROUTE | AA |
| MAP REF. | 351031 |
| COUNTY: | IMPERIAL |
| TOWNSHIP: | |
| TAX DISTRICT: | |
| MUNICIPALITY: | WINTERHAVEN |
| TWN/RGE | 16S / 22E & 23E |
| SEC. | 24/19 |
| STAKED BY | FARR |
| DATE | 01/14 |
| DRAFTED BY | FARR |
| DATE | 10/14 |
| W.O. | TC-CA351ENG-001 |
| REV | 02/15 |
| REV | |
| REV | |
| FILE: | |

N

NOT TO SCALE

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

| POLES / PEDS | | | | | | | | | | CABLE | | | | | | POLE LINE & PED HARDWARE | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POLE/ PED NO. | | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR | | JOINT | | BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | | BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | HBFO (96) | HO1 | | | | |
| TEL CO. | FOR CO. | | | | | SET | REM | % | W/ | | | | | | | | | | | | | | | | | | | | | | | | | |
| 152+04 | MATCH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 200 | | | | | | | | | | | | | | | | |
| 169+04 | MATCH | | | | | | | | | | 1752 | 1752 | | | | | 1 | 300 | | | | | | | | | | | | | | | | |
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| TOTAL | | | | | | | | | | | 1752 | 1752 | | | | | 1 | 500 | | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




**RUNNING LINE:**
**Arnold Road = 6' FROM EDGE PVMT**
**Cocopah Road = 3' East of Power Poles**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AA
SHEET 12 OF 27
EX. ROUTE AA
MAP REF. 351048
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 23E
SEC. 19
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 169+04 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 172+80 | HH 8 | BH4 / BD3 | | | | | | | |
| | | | | | | | | | |
| 177+24 | DSA | | | | | | | | |
| | | | | | | | | | |
| 177+34 | EX. DSA | | | | | | | | |
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| 177+19 | MATCH | | | | | | | | |
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| | | | | | | | | | |
| TOTAL | | 1 / 1 | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| 50/50/50 | 390 | 390 | | | |
| | | | | | |
| 50 | 520 | 520 | | | |
| | | | | | |
| | | 12 | | | |
| | | | | | |
| | 452 | 152 | | | |
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| | | | | | |
| | | | | | |
| 200 | 1362 | 1362 | | | |

## POLE LINE & PED HARDWARE

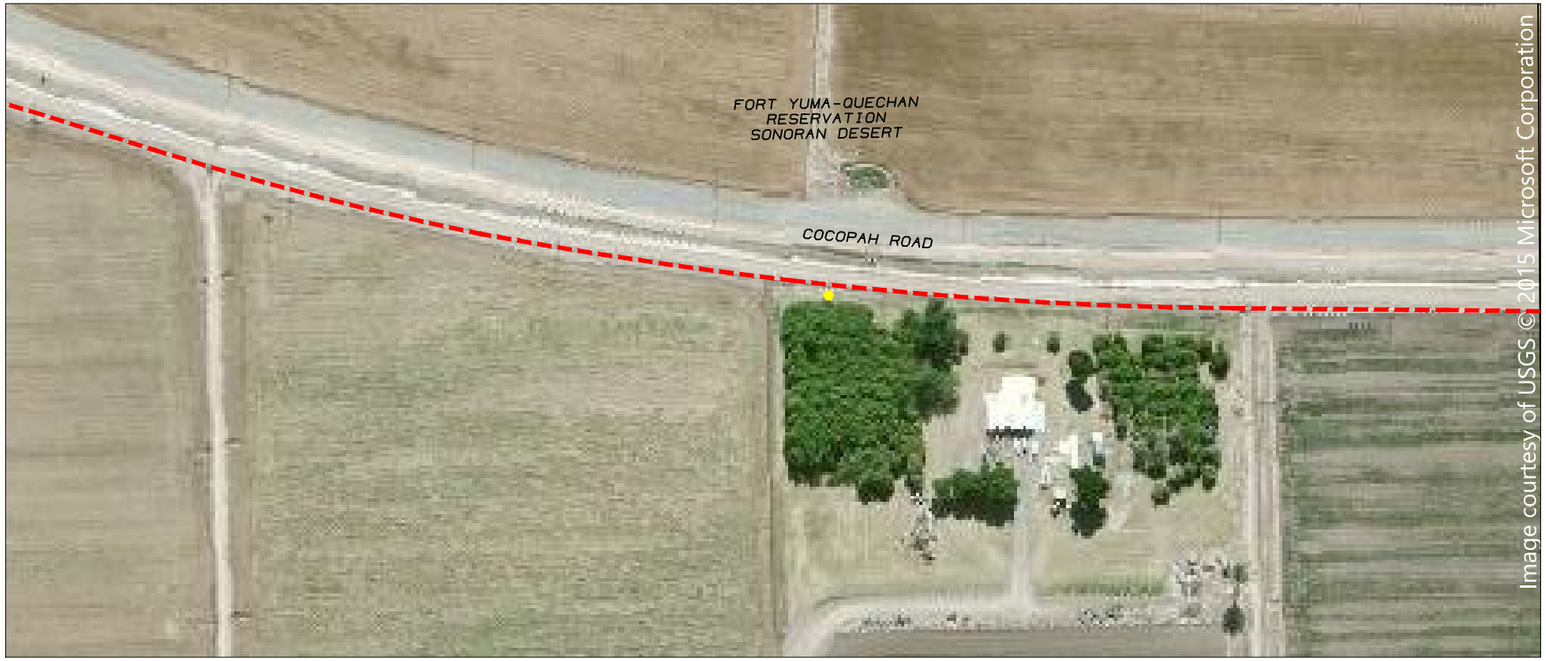
| BM2 (5/8)(8) | BM 20 | BM 53 | BM 61D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 160 | | | | | | |
| 1 | | 1 | | | | | | | |
| | | | | | | | | | |
| | 1 | | 50 | | | | | | |
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| 1 | 1 | 1 | 210 | | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | 1 | 6 | | | |
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| | | | 1 | 6 | | | |
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| | | | 2 | 8 | | | |

| PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351 |
|---|---|---|

MATCH 194+60

SHEET 14




MATCH 177+19

SHEET 12

**RUNNING LINE = 3' EAST OF POWER POLES**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

| |
|---|
| ROUTE AA |
| SHEET 13 OF 27 |
| EX. ROUTE AA |
| MAP REF. 351031 |
| COUNTY: IMPERIAL |
| TOWNSHIP: |
| TAX DISTRICT: |
| MUNICIPALITY: WINTERHAVEN |
| TWN/RGE 16S / 23E |
| SEC. 19 |
| STAKED BY FARR |
| DATE 01/14 |
| DRAFTED BY FARR |
| DATE 10/14 |
| W.O. TC-CA351ENG-001 |
| REV 02/15 |
| REV |
| REV |
| FILE: |

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/ PED NO. TEL CO. | POLE/ PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 177+19 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 194+60 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1796 | 1796 | | | |
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| | 1796 | 1796 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 213+69

SHEET 15




MATCH 194+60

SHEET 13

Image courtesy of USGS © 2015 Microsoft

RUNNING LINE = 3' EAST OF POWER POLES
MIN DEPTH= 36"

811 Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AA
SHEET 14 OF 27
EX. ROUTE AA
MAP REF. 351031
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 23E
SEC. 19
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 194+60 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 213+69 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 1970 | 1970 | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | 1970 | 1970 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 235+08 | HH9 229+21 | BORE 228+87 | BORE 215+96 | MATCH 213+69




SHEET 16

SHEET 14

231+92 HH10

236+94 MATCH

SHEET 15–1

Know what's below. Call 811 before you dig.

**RUNNING LINE:**
**COCOPAH ROAD = 3' EAST OF POWER POLES**
**HAUGHTELIN ROAD = 3' SOUTH OF POWER POLES**
**PEREZ ROAD = 3' EAST OF POWER POLES**
**MIN DEPTH= 36"**

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AA

SHEET 15 OF 27

EX. ROUTE AA

MAP REF. 351030

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: WINTERHAVEN

TWN/RGE 16S / 23E

SEC. 18

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV 02/15

REV

REV

FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 231+69 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 229+21 | HH9 | BH4 / BD3 | | | | | | | |
| | | | | | | | | | |
| 231+92 | HH10 | BH4 / BD3 | | | | | | | |
| | | | | | | | | | |
| 235+08 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 236+94 | MATCH | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| TOTAL | | 2 / 2 | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| 100 | 1600 | 1600 | | | |
| | | | | | |
| 100/50 | 280 | 280 | | | |
| | | | | | |
| | 330 | 330 | | | |
| | | | | | |
| | 520 | 520 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 250 | 2730 | 2730 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | HBFO (96) | HO1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 80 | | | | | | | | | | | | | | | |
| 1 | 1 | 80 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 1 | 1 | | | | | | | | | | | | 1 | 6 | | | |
| | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |
| 2 | 2 | 160 | | | | | | | | | | | 1 | 6 | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 236+94 | BORE IRR 245+00 | MATCH 236+94

SHEET 15-2




SHEET 15

**RUNNING LINE:**
**3' SOUTH OF POWER POLES TO YARD,**
**THEN TRANSITION TO 3' NORTH OF IRRIGATION BERM**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AF
SHEET 15-1 OF 27
EX. ROUTE AF
MAP REF. 351030
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 23E
SEC. 18
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

N

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 236+94 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 254+07 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1800 | 1800 | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | 1800 | 1800 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | HBFO (96) | HO1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | 80 | | | | | | | | | | | | | | | |
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| | | 80 | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

HH10–1 257+89

MATCH 254+07




SHEET 15–1

DSA 260+86

**RUNNING LINE:**
**HAUGHTELIN ROAD: 3' NORTH OF IRRIGATION BERM**
**BASELINE ROAD: 3' WEST OF POWER POLES**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE AA
SHEET 15-2 OF 27
EX. ROUTE AA
MAP REF. 351030
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 23E
SEC. 18
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 254+07 | MATCH | | | | | | | | |
| 257+89 | HH10–1 | BH4 / BD3 | | | | | | | |
| 260+86 | DSA | | | | | | | | |
| | A5F7 | | | | | | | | |
| TOTAL | | 1 / 1 | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFC 150–24 | | |
|---|---|---|---|---|---|
| 100 | 440 | 440 | | | |
| 50 | 380 | 380 | | | |
| | | | 30 | | |
| 150 | 820 | 820 | 30 | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 20 | BM 53 | BM 61D | | | | | | | CUST NO. | | | HBFO (96) | HO1 | HC1 | | WBD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 1 | | | | | | | | | | | | | | | |
| | 1 | | 100 | | | | | | | | | | 1 | 6 | 150 | | |
| | | | | | | | | | | | | | | | 150 | | 1 |
| 1 | 1 | 1 | 100 | | | | | | | | | | 1 | 6 | 300 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCCH 252+21

MATCCH 235+08

SHEET 17

SHEET 15




**RUNNING LINE = 3' EAST OF POWER POLES**
**MIN DEPTH= 36"**

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

Know what's below. Call 811 before you dig.

ROUTE N/A

SHEET 16 OF 27

EX. ROUTE N/A

MAP REF. 351030

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: WINTERHAVEN

TWN/RGE 16S / 23E

SEC. 18

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV 02/15

REV

REV

FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/ PED NO. TEL CO. | POLE/ PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 235+08 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 252+21 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 1764 | 1764 | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | 1764 | 1764 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | 1 | | | | | | | | | |
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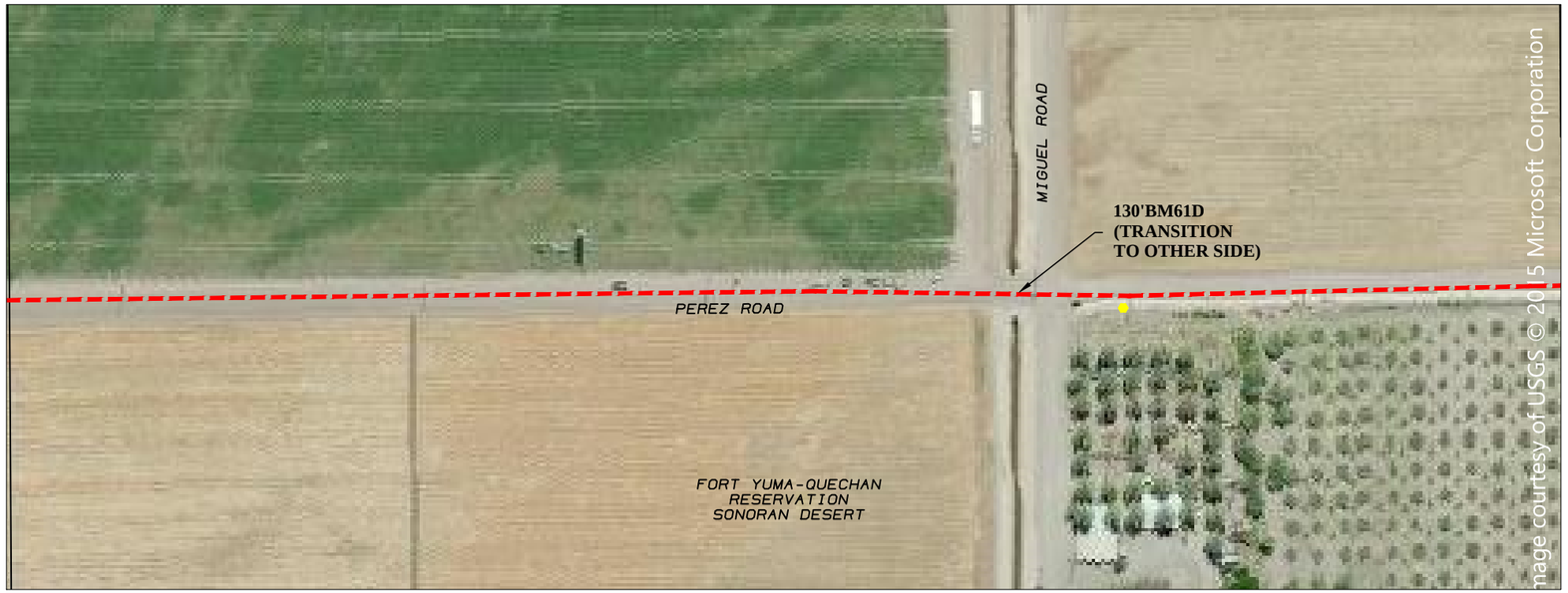
PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 269+33

MATCH 252+21

SHEET 18

SHEET 16




Know what's below. Call 811 before you dig.

**RUNNING LINE:**
**SOUTH OF MIGUEL ROAD = 3' EAST OF POWER POLES**
**NORTH OF MIGUEL ROAD = 3' NORTH OF POWER POLES**
**MIN DEPTH= 36"**

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE N/A

SHEET 17 OF 27

EX. ROUTE N/A

MAP REF. 351030/35129

COUNTY:
IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY:
WINTERHAVEN

TWN/RGE 16S / 23E

SEC. 18

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV 02/15

REV

REV

FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 252+21 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 269+33 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1780 | 1780 | | | |
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| | | | | | |
| | | | | | |
| | 1780 | 1780 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | 1 | 130 | | | | | | | | | | | | | | | |
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| | 1 | 130 | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

HH 284+13

288+44 MATCH

SHEET 19




**RUNNING LINE:**
**PEREZ ROAD = 3' WEST OF POWER POLES**
**ROSS ROAD = 6' FROM EDGE PVMT**
**MIN DEPTH= 36"**

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

Know what's below. Call 811 before you dig.

ROUTE AB
SHEET 18 OF 27
EX. ROUTE AB
MAP REF. 351029
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 23E
SEC. 7
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 269+33 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 284+13 | HH11 | BH4 / BD3 | | | | | | | |
| | | | | | | | | | |
| 288+44 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| 100 | 1524 | 1542 | | | |
| | | | | | |
| | 444 | 444 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 100 | 1968 | 1968 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
| 1 | 1 | | | | | | | | | | | | | | | | |
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| 1 | 1 | | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

288+44 MATCH

305+56 MATCH




**RUNNING LINE = 6' FROM EDGE PVMT**
**MIN DEPTH= 36"**

811 Know what's below. Call 811 before you dig.

| | |
|---|---|
| ROUTE | BA |
| SHEET | 19 OF 27 |
| EX. ROUTE | BA |
| MAP REF. | 351029 |
| COUNTY: | IMPERIAL |
| TOWNSHIP: | |
| TAX DISTRICT: | |
| MUNICIPALITY: | BARD |
| TWN/RGE | 16S / 23E |
| SEC. | 7 |
| STAKED BY | FARR |
| DATE | 01/14 |
| DRAFTED BY | FARR |
| DATE | 10/14 |
| W.O. | TC-CA351ENG-001 |
| REV | 02/15 |
| REV | |
| REV | |
| FILE: | |

N

NOT TO SCALE

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 288+44 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 305+56 | MATCH | | | | | | | | |
| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1766 | 1766 | | | |
| TOTAL | | 1766 | 1766 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
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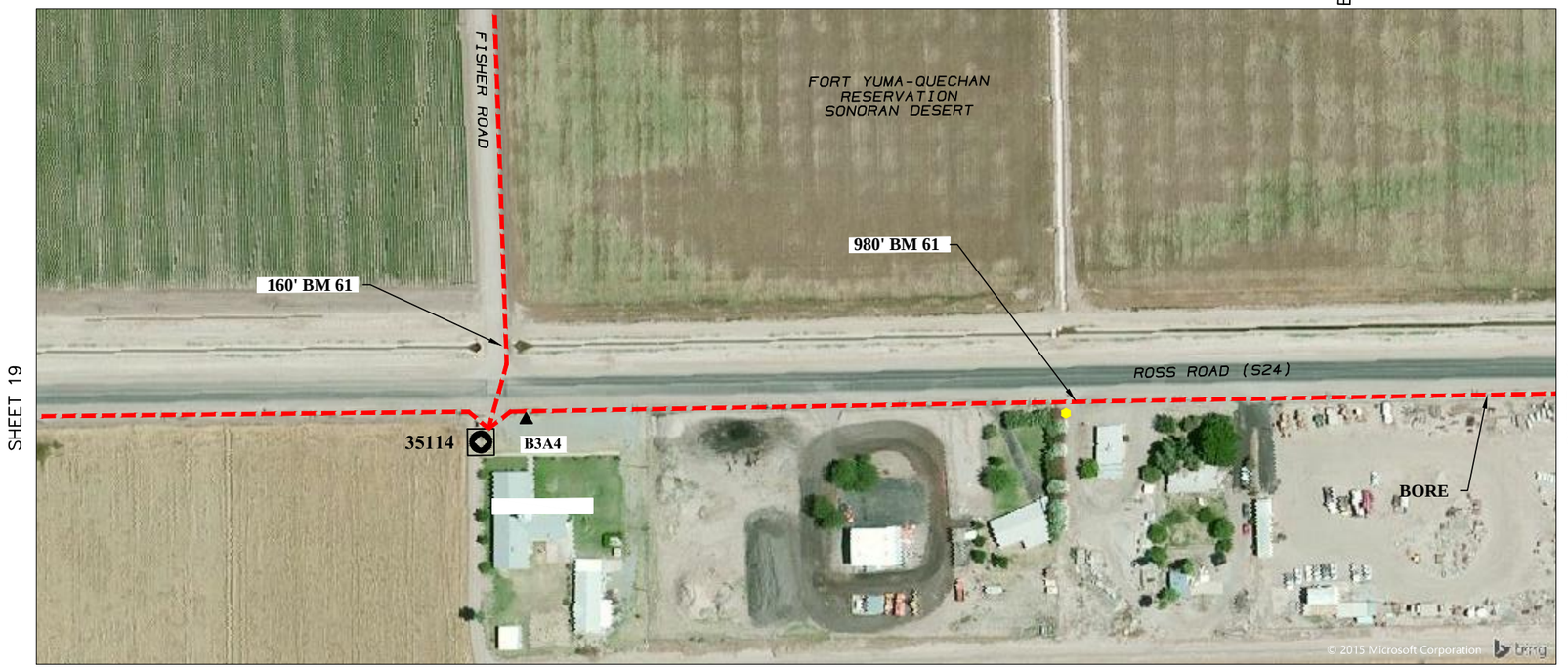
PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

305+56 MATCH | 310+59 DSA | 311+10 PP | 320+39 END BORE | 322+68 MATCH

315+47 MATCH

311+71 IRRIG.

SHEET 20–1




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

ROUTE BA
SHEET 20 OF 27
EX. ROUTE BA
MAP REF. 351035
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 22E
SEC. 7
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/05
REV
REV
FILE:

NOT TO SCALE

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 305+56 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 310+59 | DSA | | | | | | | | |
| | B3A4 | | | | | | | | |
| | | | | | | | | | |
| 322+68 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 315+37 | MATCH | | | | | | | | |
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| | | | | | | | | | |
| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFC 100–24 | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 100 | 560 | 560 | | | |
| | | | 110 | | |
| | | | | | |
| | 1290 | 1290 | | | |
| | | | | | |
| 50 | 550 | 550 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 150 | 2400 | 2400 | 110 | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 2C | BM 20 | BM 53 | BM 61D | | | | | | CUST NO. | | | HBFO (96) | HO1 | HC1 | | W BD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | 1 | | | | | | | | | | | 1 | 24 | 100 | | |
| | 1 | | | | | | | | | | | | | | 100 | | 1 |
| | | | | | | | | | | | | | | | | | |
| | | | | 980 | | | | | | | | | | | | | |
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| | | | | 160 | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | |
| | 1 | 1 | | 1140 | | | | | | | | | 1 | 24 | 200 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 332+64 | ROAD 324+15 | MATCH 315+37

SHEET 20-2




SHEET 20

**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BD

SHEET 20-1 OF 27

EX. ROUTE BD

MAP REF. 351035

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: BARD

TWN/RGE 16S / 23E

SEC. 8

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV 02/15

REV

REV

FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/ PED NO. TEL CO. | POLE/ PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 315+37 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 332+64 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

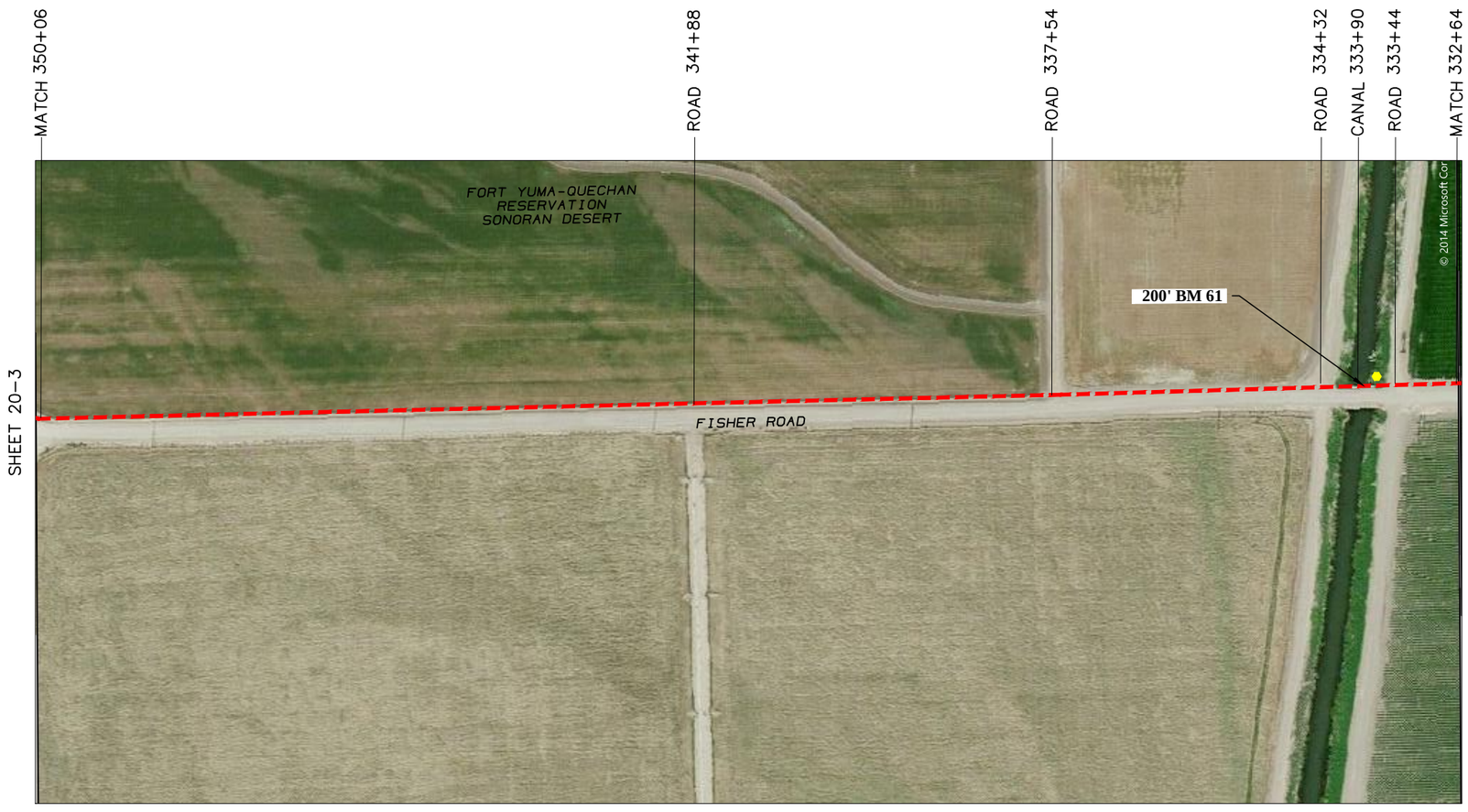
## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
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| | 1784 | 1784 | | | |
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| | 1784 | 1784 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 2'
WEST OF POWER POLES
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BD
SHEET 20-2 OF 27
EX. ROUTE BD
MAP REF. 351035
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 8/5
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

| POLES / PEDS | | | | | | | | | | CABLE | | | | | | POLE LINE & PED HARDWARE | | | | | | | | | | | CUST NO. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POLE/ PED NO. | | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR | | JOINT | | BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | | BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | | | | | | | | | |
| TEL CO. | FOR CO. | | | | | SET | REM | % | W/ | | | | | | | | | | | | | | | | | | | | | | | | | |
| 332+64 | MATCH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 350+06 | MATCH | | | | | | | | | | 1794 | 1794 | | | | | 1 | 200 | | | | | | | | | | | | | | | | |
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| TOTAL | | | | | | | | | | | 1794 | 1794 | | | | | 1 | 200 | | | | | | | | | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BD
SHEET 20-3 OF 27
EX. ROUTE BD
MAP REF. 351034
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 5
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 350+06 | MATCH | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 365+48 | ROAD | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
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| | 1588 | 1588 | | | |
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| | | | | | |
| | 1588 | 1588 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | 250 | | | | | | | |
| | | 140 | | | | | | | |
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| | 1 | 390 | | | | | | | |

CUST NO.

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

Know what's below. Call 811 before you dig.

ROUTE BD
SHEET 20-4 OF 27
EX. ROUTE BD
MAP REF. 351034
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 5
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 365+48 | MATCH | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 377+90 | PB3R5 | | | | | | | | |
| | | | | | | | | | |
| 382+65 | DSA | | | | | | | | |
| | | | | | | | | | |
| 382+95 | PB3R3 | | | | | | | | |
| | | | | | | | | | |
| 383+90 | MATCH | | | | | | | | |
| | | | | | | | | | |
| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFOV (2)(1.25) | BFC 25-24 | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | 1280 | 1280 | | | |
| | | | | | |
| | 490 | | 490 | | |
| | 490 | | | | |
| | | | | 50 | |
| | | | | | |
| | 618 | 618 | | | |
| | | | | | |
| | 2878 | 1898 | 490 | 50 | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 2C | BM 20 | BM 53 | BM 61D | | | | | |
|---|---|---|---|---|---|---|---|---|---|
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| | | | | 150 | | | | | |
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| | 1 | 1 | | 300 | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | HC1 | | W BD |
|---|---|---|---|---|---|---|---|
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| | | | | | 25 | | 1 |
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| | | | | | | | |
| | | | 1 | 6 | 50 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BP
SHEET 20-5 OF 27
EX. ROUTE BP
MAP REF. 351034
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 5
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 10/14
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 383+80 | MATCH | | | | | | | | |
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| | | | | | | | | | |
| 396+94 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
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| | 1360 | 1360 | | | |
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| | 1360 | 1360 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
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| CUST NO. | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BP
SHEET 20-6 OF 27
EX. ROUTE BP
MAP REF. 351034
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 5
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 396+94 | MATCH | | | | | | | | |
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| 413+44 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | 1700 | 1700 | | | |
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| | | | | | |
| | | | | | |
| | 1700 | 1700 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | 1 | 200 | | | | | | | |
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| | 1 | 200 | | | | | | | |

| CUST NO. | | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 413+44 | ROAD 416+46 | ROAD 423+30 | ROAD 431+08




SHEET 20-6

SHEET 20-8

**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

**ROUTE BP**

**SHEET 20-7 OF 27**

**EX. ROUTE BP**

**MAP REF. 351034**

**COUNTY:**
**IMPERIAL**

**TOWNSHIP:**

**TAX DISTRICT:**

**MUNICIPALITY:**
**BARD**

**TWN/RGE 16S / 23E**

**SEC. 5**

**STAKED BY FARR**

**DATE 01/14**

**DRAFTED BY FARR**

**DATE 10/14**

**W.O. TC-CA351ENG-001**

**REV 02/15**

**REV**

**REV**

**FILE:**

**NOT TO SCALE**

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 413+44 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 431+08 | ROAD | | | | | | | | |
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| TOTAL | | | | | | | | | |

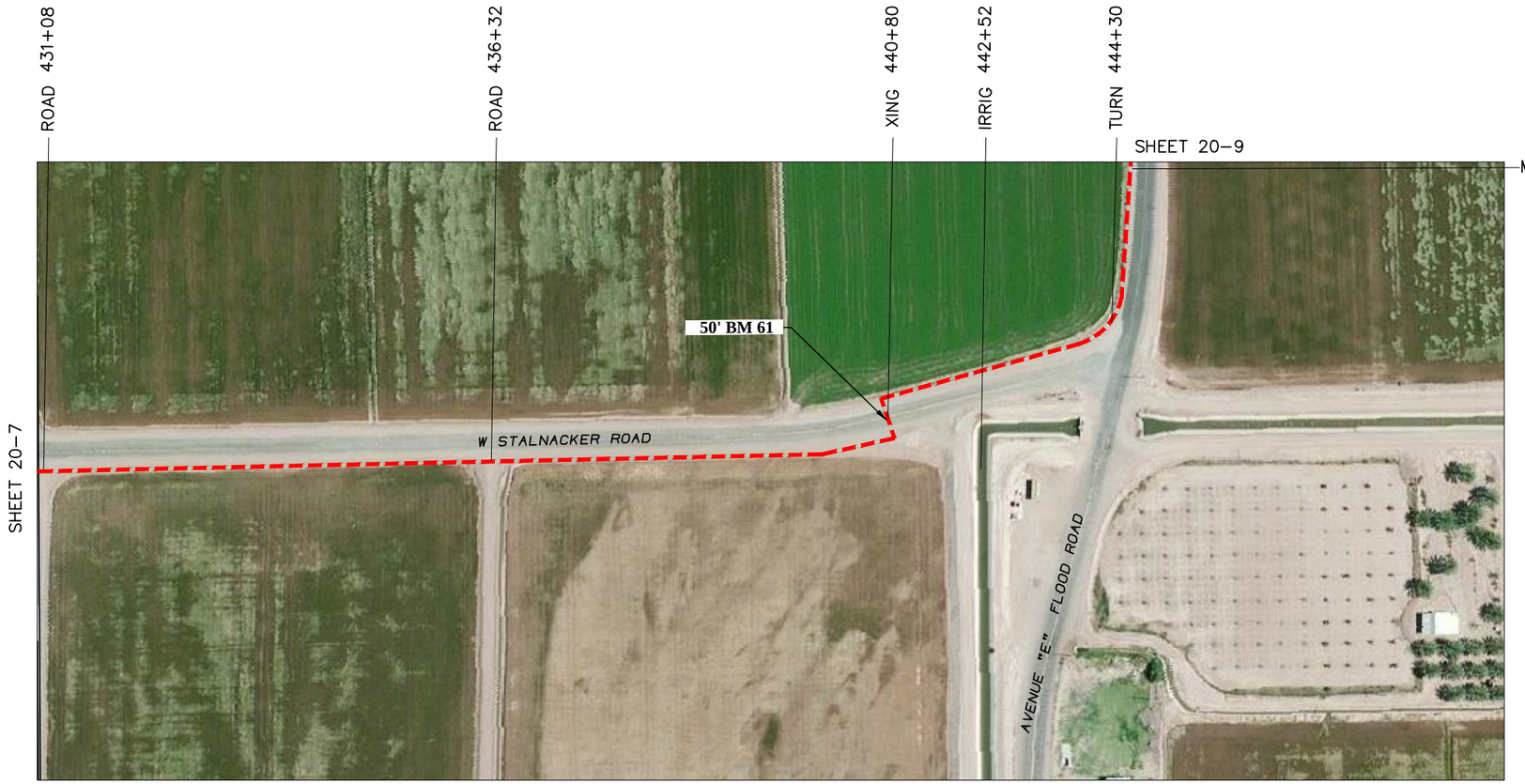
## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
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| | 1820 | 1820 | | | |
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| | 1820 | 1820 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BP
SHEET 20-8 OF 27
EX. ROUTE BP
MAP REF. 351034
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 5/32
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 431+08 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 449+80 | XING | | | | | | | | |
| | | | | | | | | | |
| 445+58 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

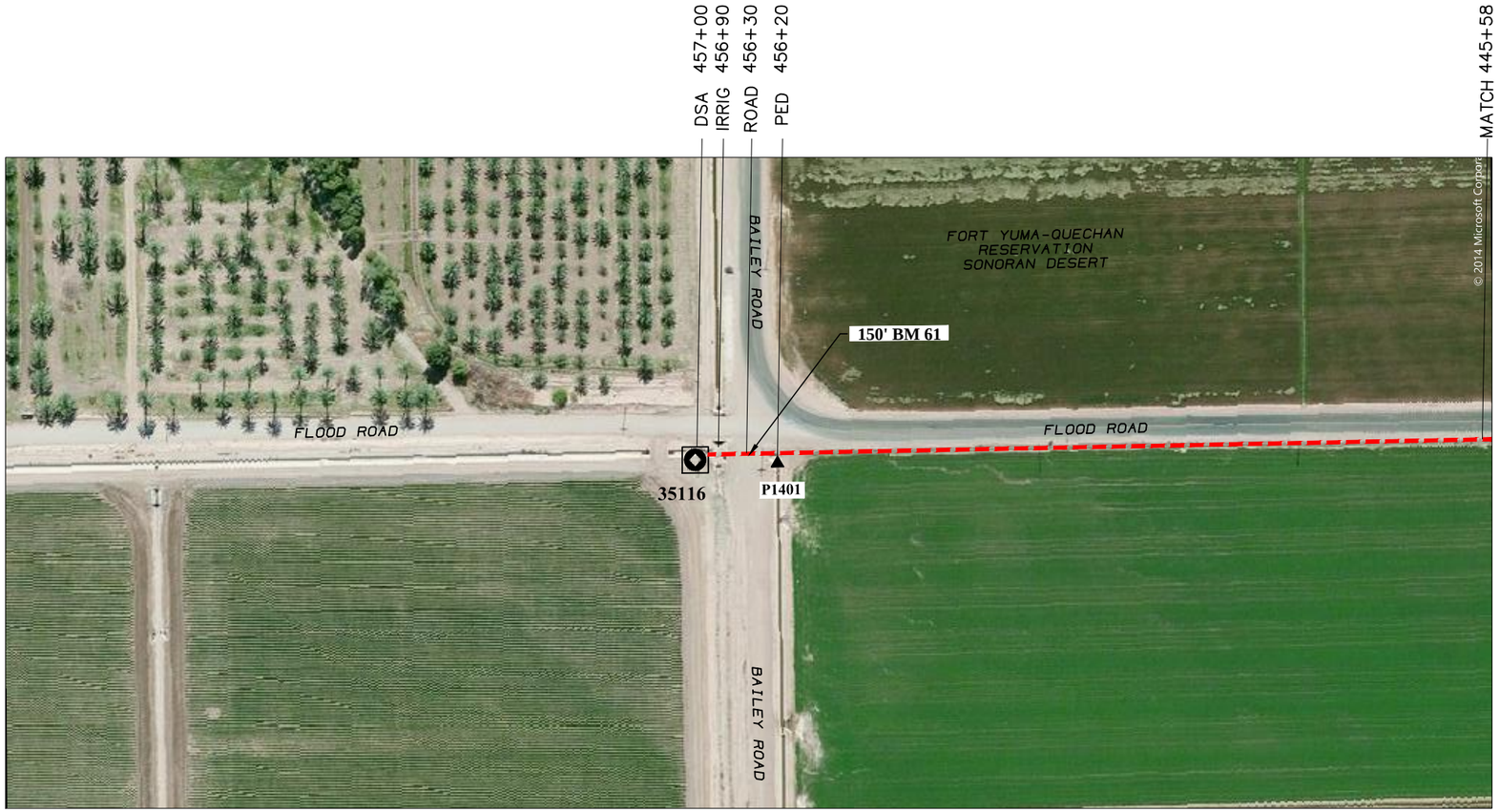
## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
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| | | | | | |
| | 1550 | 1550 | | | |
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| | | | | | |
| | 1550 | 1550 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
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| | | 50 | | | | | | | | |
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| | | | | | | | | | | |
| | | 50 | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BP
SHEET 20-9 OF 27
EX. ROUTE BP
MAP REF. 351033
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 15S / 23E
SEC. 32
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 445+58 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 456+20 | P1401 | | | | | | | | |
| | | | | | | | | | |
| 457+00 | DSA | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFC 50-24 | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1094 | 1094 | | | |
| | | | | | |
| 50 | 150 | 150 | 150 | | |
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| | | | | | |
| 50 | 1244 | 1244 | 150 | | |

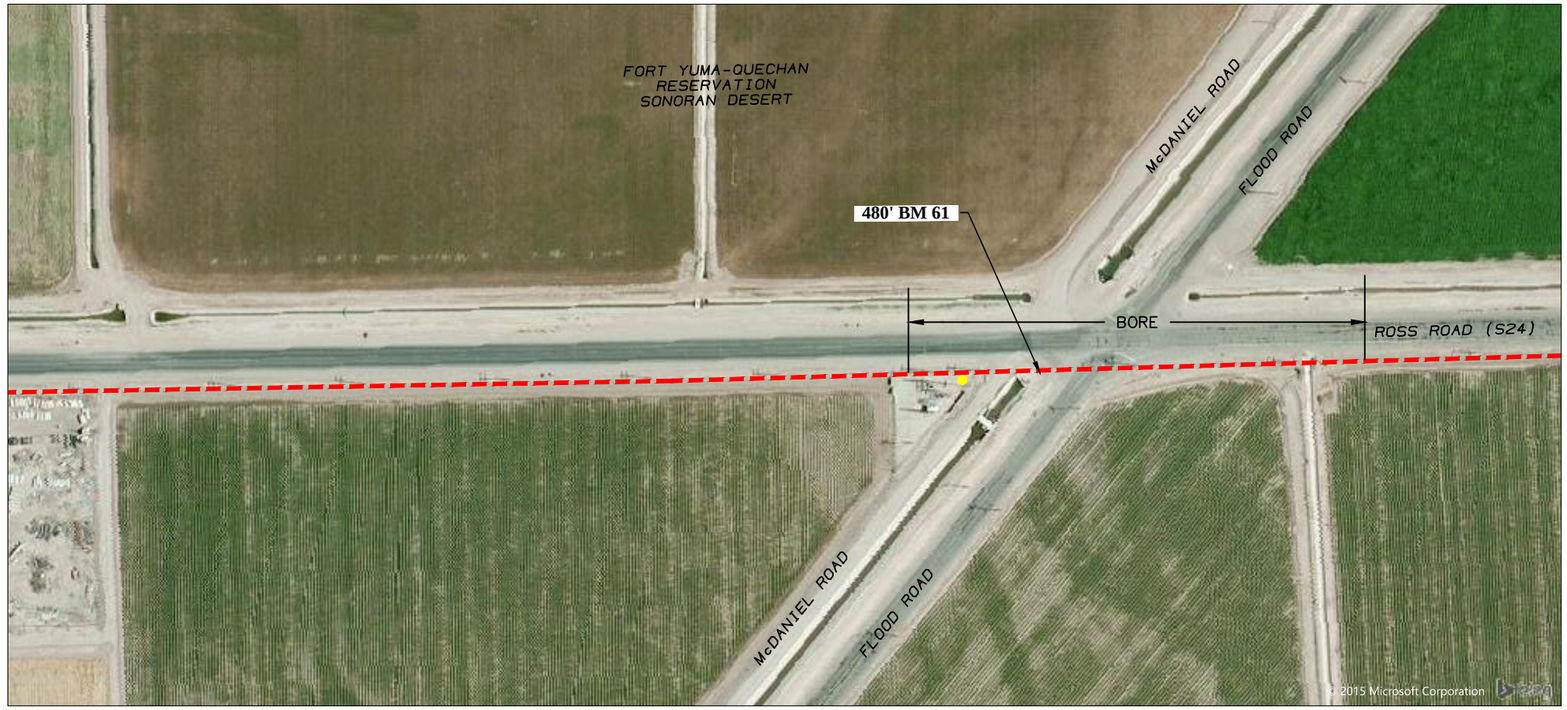
## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 2C | BM 20 | BM 53 | BM 61D | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| | 1 | | | | | | | | |
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| | | 1 | | 150 | | | | | |
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| | | | | | | | | | |
| | 1 | 1 | | 150 | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | HC1 | | W BD |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | 50 | | 1 |
| | | | | | | | |
| | | | 1 | 6 | 50 | | |
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| | | | 1 | 6 | 100 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

322+68 | 330+42 ROAD | 333+87 IRRIG | 334+53 ROAD | 336+96 IRRIG | 339+90 MATCH




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

811 Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BA
SHEET 21 OF 27
EX. ROUTE BA
MAP REF. 351035
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 8
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 322+68 | MATCH | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 339+90 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | 1766 | 1766 | | | |
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| | | | | | |
| | 1766 | 1766 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | 480 | | | | | | | |
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| | 1 | 480 | | | | | | | |

| CUST NO. | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 339+90 | IRRIG 349+18 | MATCH 357+02

SHEET 21




SHEET 23

**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BA
SHEET 22 OF 27
EX. ROUTE BA
MAP REF. 351035
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 8
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 339+90 | MATCH | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 357+02 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
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| | 1770 | 1770 | | | |
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| | 1770 | 1770 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | 480 | | | | | | | |
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| | | 480 | | | | | | | |

| CUST NO. | | | | | | | |
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

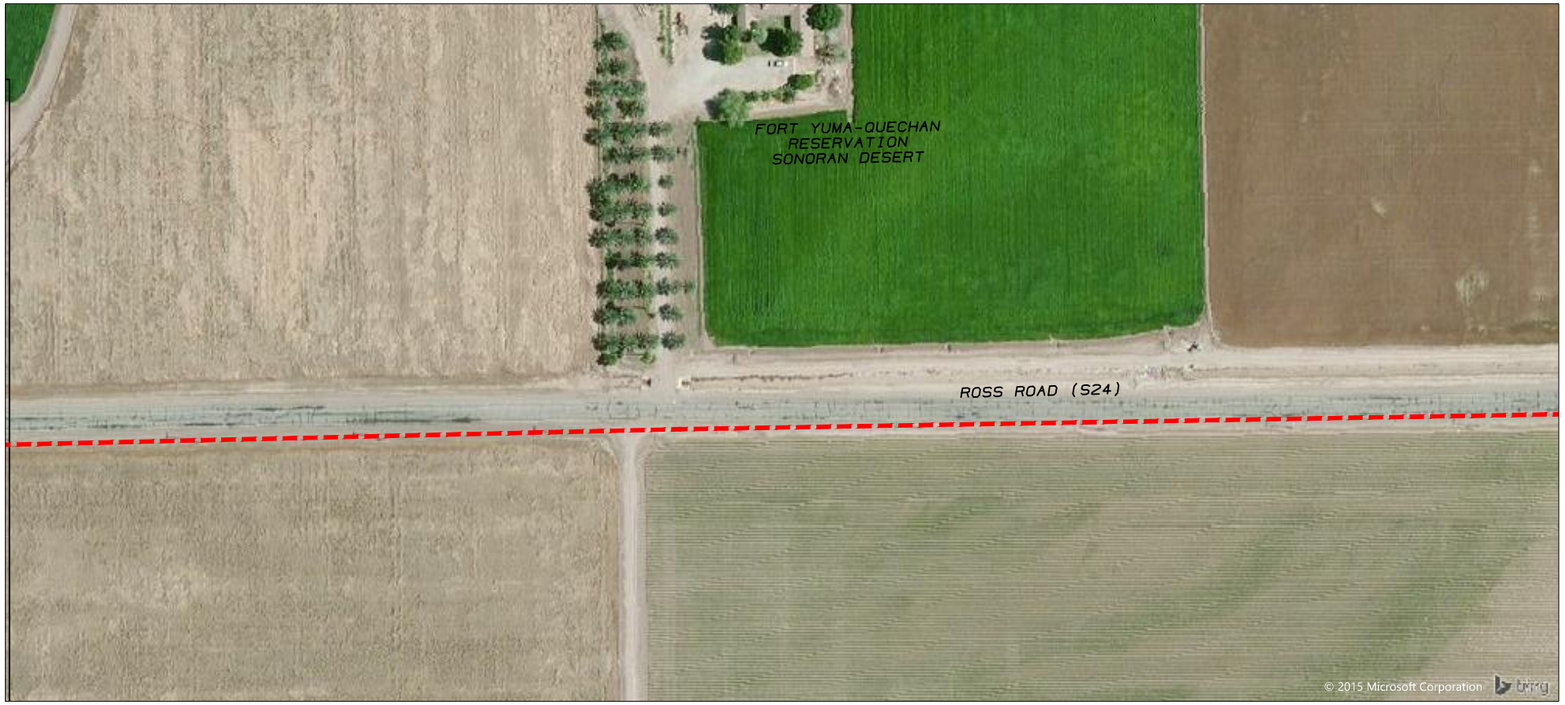
MATCH 357+02

ROAD 364+18

MATCH 374+16

SHEET 22

SHEET 24




**RUNNING LINE = 6'**
**FROM EDGE PVMT**
**MIN DEPTH= 36"**

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BB

SHEET 23 OF 27

EX. ROUTE BB

MAP REF. 351035

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: BARD

TWN/RGE 16S / 23E

SEC. 8

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV 02/15

REV

REV

FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 357+02 | MATCH | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 374+16 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
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| | 1770 | 1770 | | | |
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| | | | | | |
| | 1770 | 1770 | | | |

## POLE LINE & PED HARDWARE

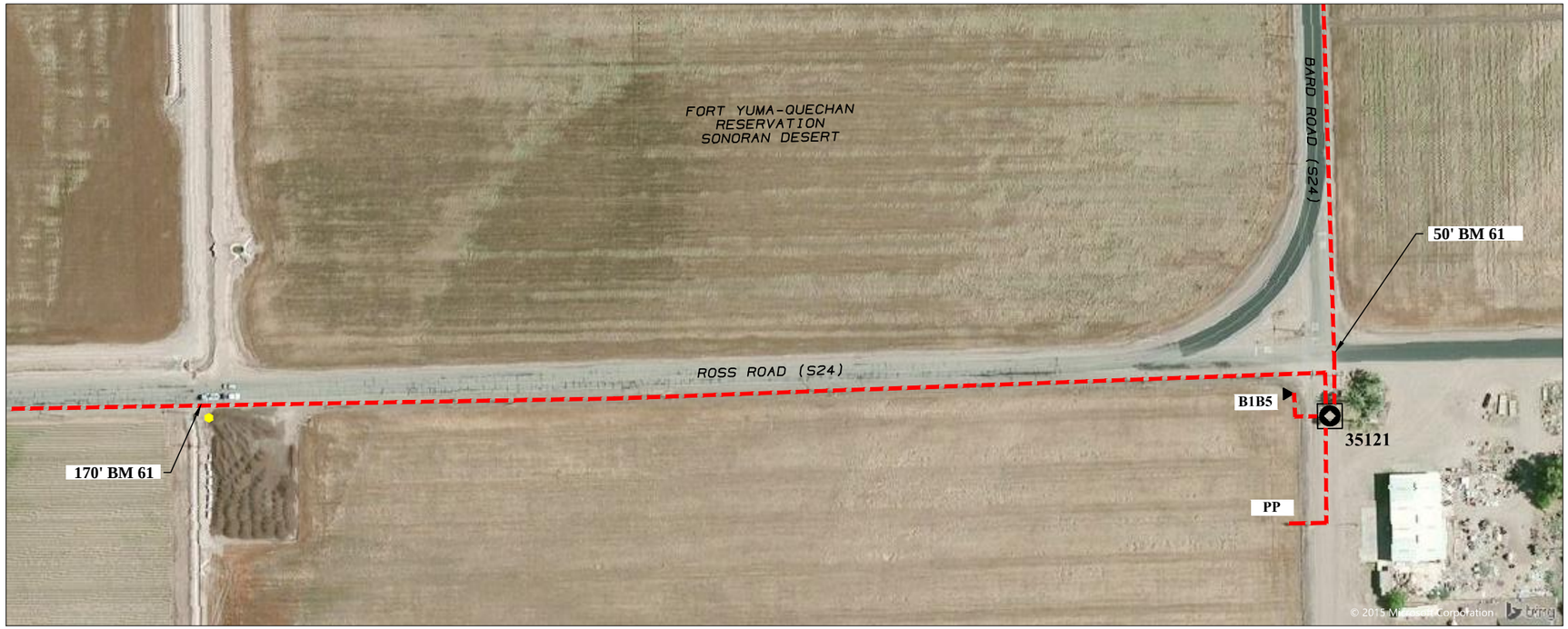
| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 374+16 | IRRIG 376+45 | ROAD 389+99

SHEET 25

MATCH 397+19




SHEET 23

DSA 390+25

RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BB
SHEET 24 OF 27
EX. ROUTE BB
MAP REF. 351035
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: BARD
TWN/RGE 16S / 23E
SEC. 9
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV 02/15
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 374+16 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 390+25 | DSA | | | | | | | | |
| | B1B5 | | | | | | | | |
| | PP | | | | | | | | |
| | | | | | | | | | |
| 397+19 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | BFC 100–24 | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 100 | 1700 | 1700 | | | |
| | | | 110 | | |
| | | 180 | | | |
| | | | | | |
| | 780 | 780 | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| 100 | 2480 | 2660 | 110 | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 20 | BM 53 | BM 61D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| | 1 | 1 | 170 | | | | | | |
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| | 1 | 1 | 170 | | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | HC1 | | WBD |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | 1 | 6 | 100 | | |
| | | | | | 100 | | 1 |
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| | | | | | | | |
| | | | 1 | 6 | 200 | | 1 |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 411+79

ROAD 403+67

MATCH 397+19




RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

811 Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BB

SHEET 25 OF 27

EX. ROUTE BB

MAP REF. 351040

COUNTY: IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY: BARD

TWN/RGE 16S / 23E

SEC. 9

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV 02/15

REV

REV

FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 397+19 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 411+79 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
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| | 1510 | 1510 | | | |
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| | 1510 | 1510 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
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PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

MATCH 428+83 | ROAD 417+19 | IRRIG 416+23 | MATCH 411+79




SHEET 27

SHEET 25

RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

NOT TO SCALE

TDS

ROUTE BB

SHEET 26 OF 27

EX. ROUTE BB

MAP REF. 351040

COUNTY:
IMPERIAL

TOWNSHIP:

TAX DISTRICT:

MUNICIPALITY:
BARD

TWN/RGE 16S / 23E

SEC. 9/4

STAKED BY FARR

DATE 01/14

DRAFTED BY FARR

DATE 10/14

W.O. TC-CA351ENG-001

REV 02/15

REV

REV

FILE:

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 411+79 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 428+83 | MATCH | | | | | | | | |
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| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV (1)(1.25) | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 1760 | 1760 | | | |
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| | | | | | |
| | 1760 | 1760 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 53 | BM 61D | | | | | | | | CUST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | 1 | 170 | | | | | | | | |
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| | 1 | 170 | | | | | | | | |

PROJECT NO. 23325 | TEL. CO. TDS | EXCHANGE 351

DSA 439+19
ROAD 436+75

MATCH 428+83




SHEET 26

RUNNING LINE = 6'
FROM EDGE PVMT
MIN DEPTH= 36"

Know what's below. Call 811 before you dig.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATIONS BUT ARE NOT NECESSARILY EXACT. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE ALL UNDERGROUND OBSTRUCTIONS AND UTILITIES PRIOR TO CONSTRUCTION. COMPLETE REPAIR OF ANY AND ALL DAMAGES INCURRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

ROUTE BB
SHEET 28 OF 27
EX. ROUTE BB
MAP REF. 351040
COUNTY: IMPERIAL
TOWNSHIP:
TAX DISTRICT:
MUNICIPALITY: WINTERHAVEN
TWN/RGE 16S / 22E
SEC. 4
STAKED BY FARR
DATE 01/14
DRAFTED BY FARR
DATE 10/14
W.O. TC-CA351ENG-001
REV
REV
REV
FILE:

NOT TO SCALE

TDS

## POLES / PEDS

| POLE/PED NO. TEL CO. | POLE/PED NO. FOR CO. | BD / HA | BG / PG | LEAD ANGLE | POLE LENGTH CLASS | YEAR SET | YEAR REM | JOINT % | JOINT W/ |
|---|---|---|---|---|---|---|---|---|---|
| 428+83 | MATCH | | | | | | | | |
| | | | | | | | | | |
| 439+19 | DSA | | | | | | | | |
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| | | | | | | | | | |
| TOTAL | | | | | | | | | |

## CABLE

| BFO (96) | BFOI (96) | BFOV 1.25 | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 50 | 1070 | 1070 | | | |
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| 50 | 1070 | 1070 | | | |

## POLE LINE & PED HARDWARE

| BM2 (5/8)(8) | BM 20 | BM 53 | BM 61D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
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| | 1 | 1 | | | | | | | |
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| | 1 | 1 | | | | | | | |

| CUST NO. | | | HBFO (96) | HO1 | | | |
|---|---|---|---|---|---|---|---|
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| | | | 1 | 6 | | | |

# APPENDIX B. CALEEMOD RESULTS

# CASF Winterhaven

**Imperial County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 3.4 | **Precipitation Freq (Days)** | 12 |
| **Climate Zone** | 15 | | | **Operational Year** | 2016 |
| **Utility Company** | Imperial Irrigation District | | | | |
| **CO2 Intensity (lb/MWhr)** | 1270.9 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Buried conduit would be installed by plowing and directional boring and the nodes would be installed by backhoe. Progress rates are 2 miles/day for plowing, 400 feet/day for boring, and two nodes/day would be installed.

Off-road Equipment - Plowed conduit would be installed by a dozer equipped with a plow and cable reel. A second dozer may be used in tandem with the plow dozer in difficult areas. The air compressor will be used for conduit pigging and blowing fiber through the conduit.

Off-road Equipment - Bored conduit would be installed with a horizontal drilling rig with the assistance of a backhoe. The air compressor wil be used for conduit pigging and blowing fiber through the conduit. The mud pump will be used for evacuating drilling fluid and the backhoe will be used for digging bore pits.

Off-road Equipment - Nodes (buried vaults) would be installed using a backhoe.

Trips and VMT - Vendor trips include conduit and cable delivery and water truck visits for dust control. Workers are assumed to be based in Winterhaven and vendors in Yuma. Conduit and fiber reels would be delivered at a rate of 2/day for plowed installations and 1/day for bored installations. Node vaults would be delivered in a daily trip carrying both vaults to be installed. The water truck, included as a vendor trip, would apply water for dust control twice a day for each construction phase

Construction Off-road Equipment Mitigation - Disturbed areas will be watered twice a day and vehicle speed will be limited to 25mph on unpaved roads.

On-road Fugitive Dust - Approximately 10% of the roads in the project area are not paved (Haughtelin, Perez, and Fisher).

Road Dust - Approximately 10% of the roads in the project area are not paved. See previous comment.

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstDustMitigation | WaterExposedAreaPM10PercentReduction | 55 | 61 |
| tblConstDustMitigation | WaterExposedAreaPM25PercentReduction | 55 | 61 |
| tblConstructionPhase | PhaseStartDate | 3/5/2016 | 3/7/2016 |
| tblOffRoadEquipment | LoadFactor | 0.37 | 0.37 |
| tblOffRoadEquipment | OffRoadEquipmentType | Concrete/Industrial Saws | Crawler Tractors |
| tblOffRoadEquipment | OffRoadEquipmentType | Graders | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOnRoadDust | VendorPercentPave | 50.00 | 10.00 |
| tblOnRoadDust | VendorPercentPave | 50.00 | 10.00 |
| tblOnRoadDust | VendorPercentPave | 50.00 | 10.00 |

| | | | |
|---|---|---|---|
| tblOnRoadDust | WorkerPercentPave | 50.00 | 10.00 |
| tblOnRoadDust | WorkerPercentPave | 50.00 | 10.00 |
| tblOnRoadDust | WorkerPercentPave | 50.00 | 10.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2016 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |
| tblRoadDust | RoadPercentPave | 50 | 90 |
| tblTripsAndVMT | VendorTripLength | 11.90 | 8.90 |
| tblTripsAndVMT | VendorTripLength | 11.90 | 8.90 |
| tblTripsAndVMT | VendorTripLength | 11.90 | 8.90 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 3.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 3.00 |
| tblTripsAndVMT | WorkerTripLength | 10.20 | 7.30 |
| tblTripsAndVMT | WorkerTripLength | 10.20 | 7.30 |
| tblTripsAndVMT | WorkerTripLength | 10.20 | 7.30 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 3.00 |
| tblTripsAndVMT | WorkerTripNumber | 20.00 | 3.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 3.2609 | 30.3137 | 19.8301 | 0.0418 | 76.1793 | 1.7907 | 77.1859 | 7.6047 | 1.7254 | 8.5518 | 0.0000 | 4,173.7067 | 4,173.7067 | 0.9095 | 0.0000 | 4,192.8066 |
| **Total** | **3.2609** | **30.3137** | **19.8301** | **0.0418** | **76.1793** | **1.7907** | **77.1859** | **7.6047** | **1.7254** | **8.5518** | **0.0000** | **4,173.7067** | **4,173.7067** | **0.9095** | **0.0000** | **4,192.8066** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 3.2609 | 30.3137 | 19.8301 | 0.0418 | 60.2241 | 1.7907 | 61.2307 | 6.0092 | 1.7254 | 6.9563 | 0.0000 | 4,173.7067 | 4,173.7067 | 0.9095 | 0.0000 | 4,192.8066 |
| **Total** | **3.2609** | **30.3137** | **19.8301** | **0.0418** | **60.2241** | **1.7907** | **61.2307** | **6.0092** | **1.7254** | **6.9563** | **0.0000** | **4,173.7067** | **4,173.7067** | **0.9095** | **0.0000** | **4,192.8066** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **20.94** | **0.00** | **20.67** | **20.98** | **0.00** | **18.66** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Plowed conduit installation | Trenching | 1/12/2016 | 1/20/2016 | 5 | 7 | |
| 2 | Bored conduit installation | Trenching | 1/21/2016 | 3/4/2016 | 5 | 32 | |
| 3 | Node installation | Trenching | 3/7/2016 | 3/11/2016 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Node installation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Bored conduit installation | Pumps | 2 | 8.00 | 84 | 0.74 |
| Plowed conduit installation | Crawler Tractors | 2 | 8.00 | 208 | 0.43 |
| Bored conduit installation | Air Compressors | 2 | 4.00 | 78 | 0.48 |
| Plowed conduit installation | Air Compressors | 2 | 4.00 | 78 | 0.48 |
| Bored conduit installation | Bore/Drill Rigs | 2 | 8.00 | 205 | 0.50 |
| Bored conduit installation | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Plowed conduit installation | 4 | 3.00 | 4.00 | 0.00 | 7.30 | 8.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Bored conduit installation | 8 | 3.00 | 3.00 | 0.00 | 7.30 | 8.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Node installation | 1 | 3.00 | 3.00 | 0.00 | 7.30 | 8.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

## 3.2 Plowed conduit installation - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9070 | 22.2421 | 8.2000 | 0.0194 | | 0.9978 | 0.9978 | | 0.9390 | 0.9390 | | 1,975.9201 | 1,975.9201 | 0.5271 | | 1,986.9883 |
| **Total** | **1.9070** | **22.2421** | **8.2000** | **0.0194** | | **0.9978** | **0.9978** | | **0.9390** | **0.9390** | | **1,975.9201** | **1,975.9201** | **0.5271** | | **1,986.9883** |

## 3.2 Plowed conduit installation - 2016

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0525 | 0.4120 | 0.6723 | 1.0100e-003 | 47.1667 | 8.7100e-003 | 47.1754 | 4.7090 | 8.0100e-003 | 4.7170 | | 100.3676 | 100.3676 | 6.2000e-004 | | 100.3806 |
| Worker | 0.0155 | 0.0202 | 0.1677 | 1.8000e-004 | 29.0126 | 1.3000e-004 | 29.0127 | 2.8957 | 1.2000e-004 | 2.8959 | | 14.2589 | 14.2589 | 1.3400e-003 | | 14.2870 |
| **Total** | **0.0680** | **0.4322** | **0.8400** | **1.1900e-003** | **76.1793** | **8.8400e-003** | **76.1881** | **7.6047** | **8.1300e-003** | **7.6129** | | **114.6265** | **114.6265** | **1.9600e-003** | | **114.6676** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9070 | 22.2421 | 8.2000 | 0.0194 | | 0.9978 | 0.9978 | | 0.9390 | 0.9390 | 0.0000 | 1,975.9201 | 1,975.9201 | 0.5271 | | 1,986.9883 |
| **Total** | **1.9070** | **22.2421** | **8.2000** | **0.0194** | | **0.9978** | **0.9978** | | **0.9390** | **0.9390** | **0.0000** | **1,975.9201** | **1,975.9201** | **0.5271** | | **1,986.9883** |

## 3.2 Plowed conduit installation - 2016

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0525 | 0.4120 | 0.6723 | 1.0100e-003 | 37.2883 | 8.7100e-003 | 37.2971 | 3.7212 | 8.0100e-003 | 3.7292 | | 100.3676 | 100.3676 | 6.2000e-004 | | 100.3806 |
| Worker | 0.0155 | 0.0202 | 0.1677 | 1.8000e-004 | 22.9357 | 1.3000e-004 | 22.9359 | 2.2881 | 1.2000e-004 | 2.2882 | | 14.2589 | 14.2589 | 1.3400e-003 | | 14.2870 |
| **Total** | **0.0680** | **0.4322** | **0.8400** | **1.1900e-003** | **60.2241** | **8.8400e-003** | **60.2329** | **6.0092** | **8.1300e-003** | **6.0174** | | **114.6265** | **114.6265** | **1.9600e-003** | | **114.6676** |

## 3.3 Bored conduit installation - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.2061 | 29.9845 | 19.1582 | 0.0408 | | 1.7840 | 1.7840 | | 1.7193 | 1.7193 | | 4,084.1721 | 4,084.1721 | 0.9077 | | 4,103.2342 |
| **Total** | **3.2061** | **29.9845** | **19.1582** | **0.0408** | | **1.7840** | **1.7840** | | **1.7193** | **1.7193** | | **4,084.1721** | **4,084.1721** | **0.9077** | | **4,103.2342** |

## 3.3 Bored conduit installation - 2016

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0394 | 0.3090 | 0.5043 | 7.5000e-004 | 35.3750 | 6.5300e-003 | 35.3816 | 3.5318 | 6.0100e-003 | 3.5378 | | 75.2757 | 75.2757 | 4.6000e-004 | | 75.2855 |
| Worker | 0.0155 | 0.0202 | 0.1677 | 1.8000e-004 | 29.0126 | 1.3000e-004 | 29.0127 | 2.8957 | 1.2000e-004 | 2.8959 | | 14.2589 | 14.2589 | 1.3400e-003 | | 14.2870 |
| **Total** | **0.0548** | **0.3292** | **0.6719** | **9.3000e-004** | **64.3876** | **6.6600e-003** | **64.3943** | **6.4275** | **6.1300e-003** | **6.4336** | | **89.5346** | **89.5346** | **1.8000e-003** | | **89.5724** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.2061 | 29.9845 | 19.1582 | 0.0408 | | 1.7840 | 1.7840 | | 1.7193 | 1.7193 | 0.0000 | 4,084.1721 | 4,084.1721 | 0.9077 | | 4,103.2342 |
| **Total** | **3.2061** | **29.9845** | **19.1582** | **0.0408** | | **1.7840** | **1.7840** | | **1.7193** | **1.7193** | **0.0000** | **4,084.1721** | **4,084.1721** | **0.9077** | | **4,103.2342** |

## 3.3 Bored conduit installation - 2016

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0394 | 0.3090 | 0.5043 | 7.5000e-004 | 27.9663 | 6.5300e-003 | 27.9728 | 2.7909 | 6.0100e-003 | 2.7969 | | 75.2757 | 75.2757 | 4.6000e-004 | | 75.2855 |
| Worker | 0.0155 | 0.0202 | 0.1677 | 1.8000e-004 | 22.9357 | 1.3000e-004 | 22.9359 | 2.2881 | 1.2000e-004 | 2.2882 | | 14.2589 | 14.2589 | 1.3400e-003 | | 14.2870 |
| **Total** | **0.0548** | **0.3292** | **0.6719** | **9.3000e-004** | **50.9020** | **6.6600e-003** | **50.9087** | **5.0789** | **6.1300e-003** | **5.0851** | | **89.5346** | **89.5346** | **1.8000e-003** | | **89.5724** |

## 3.4 Node installation - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3392 | 3.2419 | 2.4028 | 3.1000e-003 | | 0.2496 | 0.2496 | | 0.2296 | 0.2296 | | 322.3651 | 322.3651 | 0.0972 | | 324.4071 |
| **Total** | **0.3392** | **3.2419** | **2.4028** | **3.1000e-003** | | **0.2496** | **0.2496** | | **0.2296** | **0.2296** | | **322.3651** | **322.3651** | **0.0972** | | **324.4071** |

## 3.4 Node installation - 2016

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0394 | 0.3090 | 0.5043 | 7.5000e-004 | 35.3750 | 6.5300e-003 | 35.3816 | 3.5318 | 6.0100e-003 | 3.5378 | | 75.2757 | 75.2757 | 4.6000e-004 | | 75.2855 |
| Worker | 0.0155 | 0.0202 | 0.1677 | 1.8000e-004 | 29.0126 | 1.3000e-004 | 29.0127 | 2.8957 | 1.2000e-004 | 2.8959 | | 14.2589 | 14.2589 | 1.3400e-003 | | 14.2870 |
| **Total** | **0.0548** | **0.3292** | **0.6719** | **9.3000e-004** | **64.3876** | **6.6600e-003** | **64.3943** | **6.4275** | **6.1300e-003** | **6.4336** | | **89.5346** | **89.5346** | **1.8000e-003** | | **89.5724** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3392 | 3.2419 | 2.4028 | 3.1000e-003 | | 0.2496 | 0.2496 | | 0.2296 | 0.2296 | 0.0000 | 322.3651 | 322.3651 | 0.0972 | | 324.4071 |
| **Total** | **0.3392** | **3.2419** | **2.4028** | **3.1000e-003** | | **0.2496** | **0.2496** | | **0.2296** | **0.2296** | **0.0000** | **322.3651** | **322.3651** | **0.0972** | | **324.4071** |

### 3.4 Node installation - 2016

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0394 | 0.3090 | 0.5043 | 7.5000e-004 | 27.9663 | 6.5300e-003 | 27.9728 | 2.7909 | 6.0100e-003 | 2.7969 | | 75.2757 | 75.2757 | 4.6000e-004 | | 75.2855 |
| Worker | 0.0155 | 0.0202 | 0.1677 | 1.8000e-004 | 22.9357 | 1.3000e-004 | 22.9359 | 2.2881 | 1.2000e-004 | 2.2882 | | 14.2589 | 14.2589 | 1.3400e-003 | | 14.2870 |
| **Total** | **0.0548** | **0.3292** | **0.6719** | **9.3000e-004** | **50.9020** | **6.6600e-003** | **50.9087** | **5.0789** | **6.1300e-003** | **5.0851** | | **89.5346** | **89.5346** | **1.8000e-003** | | **89.5724** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 16.40 | 9.50 | 11.90 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.452463 | 0.070907 | 0.165532 | 0.163183 | 0.043777 | 0.005595 | 0.012812 | 0.078576 | 0.001869 | 0.000152 | 0.002393 | 0.000687 | 0.002054 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

### 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Vegetation

# APPENDIX C. BIOLOGICAL RESOURCES EVALUATION

**TDS Telecom**
**Winterhaven Last Mile Underserved Broadband Project**
**Imperial County, California**

# Biological Resources Evaluation

*Prepared by*:
Tim Jordan, Senior Biologist

*Prepared for*:
TDS Telecommunications Corporation
Attn: Nate Stanislawski
525 Junction Road
Madison, Wisconsin, 53717

*Submitted by*:
Tierra Right of Way Services, Ltd.
1575 East River Road, Suite 201
Tucson, Arizona 85718

April 17, 2015

# TDS Telecom
# Winterhaven Last Mile Underserved Broadband Project
# Imperial County, California

## Biological Resources Evaluation

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*Submitted by*:
Tierra Right of Way Services, Ltd.
1575 East River Road, Suite 201
Tucson, Arizona 85718

April 17, 2015

## ABSTRACT

Winterhaven Telephone Company d.b.a. TDS Telecom proposes to construct the Winterhaven Last Mile Underserved Broadband Project (the project), which will provide high-speed internet services to portions of the Fort Yuma-Quechan Indian Reservation, as well as portions of unincorporated Imperial County, California.

This Biological Resources Evaluation (BRE) has been prepared to provide a summary of existing biological conditions, the potential presence of special status species and resources, an initial evaluation of impacts of the project on biological resources, and feasible avoidance and minimization measures to reduce potential impacts to a level typically considered less than significant under the California Environmental Quality Act (CEQA). This report is useful for the preparation of the proposed project's CEQA Proponent's Environmental Assessment/Mitigated Negative Declaration and is in compliance with the National Environmental Policy Act (NEPA).

As discussed herein, the BRE determines to what extent the proposed project may potentially impact biological resources that are subject to provisions of CEQA and NEPA. Based on existing conditions and characteristics of the study area, Sonoran Desert Toad *(Incilius alvarius)*, Lowland Leopard Frog *(Lithobates yavapaiensis)*, Loggerhead Shrike *(Lanius ludovicianus)*, Vermilion Flycatcher *(Pyrocephalus rubinus)*, Yellow-headed Blackbird *(Xanthocephalus xanthocephalus)*, Townsend's Big-eared Bat *(Corynorhinus townsendii)*, and Yuma Hispid Cotton Rat *(Sigmodon hispidus eremicus)* are known to occur or have the potential to occur in the study area; therefore these species are evaluated for potential impacts.

It was determined that the proposed project would have no effect on species or critical habitats listed under the Endangered Species Act and that the project would have no impact on habitats meeting the criteria of sensitive natural communities as defined by the California Department of Fish and Wildlife (CDFW). In addition, it was determined that irrigation canals in the study area that may be Waters of the U.S. subject to U.S. Army Corps of Engineers, Regional Water Quality Control Board, and/or CDFW jurisdiction would not be impacted by the proposed project.

The BRE concludes that the proposed project would potentially impact special status species listed by CDFW and it may result in the spread of invasive plant species; however, implementation of the recommended avoidance and minimization measures will reduce these potential impacts to a less than significant level.

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# 1.0 INTRODUCTION

Winterhaven Telephone Company d.b.a. TDS Telecom (TDS) proposes to construct the Winterhaven Last Mile Underserved Broadband Project (the Project) which will provide high-speed internet services to portions of the Fort Yuma-Quechan Indian Reservation, as well as portions of unincorporated Imperial County, California.

This Biological Resource Evaluation (BRE) presents the results of a database search and a reconnaissance level biological survey of regionally-occurring special-status species and sensitive biological resources within the project area. The purpose of this report is to document the dominant plant and animal species observed at the time of the survey, to discuss the general habitat types present, and to evaluate the potential for the project site and vicinity to contain, or provide habitat for, Federal or State listed special status plant and animal species and sensitive natural communities. Additionally, this report provides standard recommended avoidance and minimization measures to reduce potential impacts to sensitive biological resources.

## *1.1 Project Location*

The project area is located in southeastern Imperial County, California, just north of Yuma, Arizona, and the Colorado River. Baseline Road, which runs north-south, marks the boundary between the Fort Yuma-Quechan Reservation and private land; the Reservation is west of Baseline, and private land is to the east. The southern edge of the project area is roughly bounded by the Union Pacific Railroad (UPRR) tracks, the community of Winterhaven, and the Paradise Casino on Picacho Road. The Cocopah Canal runs along the eastern boundary of the project area, and the community of Bard is located at the northeastern limits of the project area. Stalnacker and Ross Roads along with the community of Ross Corner make up the approximate northern limits of the project area, and the western edge of the project area is near Arnold Road where the road approaches the UPRR. Specifically, the project area is located in portions of Section 2, Township 15 South, Range 24 East; Sections 11, 14, and 21–27, Township 16 South, Range 22 East; and Sections 4, 5, 7–9, 18, and 19 Township 16 South Range 23 East; San Bernardino Baseline and Meridian (SBB&M), as depicted on the Araz, Bard, Yuma East, and Yuma West, AZ/CA, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps (Figures 1 and 2).

## *1.2 Project Description*

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 24.65 km (15.31 miles) of new fiber-optic cable will be buried within protective conduit along existing roads in the project area and approximately 2.25 km (1.40 miles) of existing buried copper line will be used to connect a proposed DLC site on Arnold Road to the new system. A summary of the associated lengths to be installed on and off the Fort Yuma–Quechan Reservation can be found in Table 1. The buried line installation, which consists of the telecommunications cable and its protective conduit, will be performed using plowing construction techniques, and a directional boring machine will be used to install the line at canal and road crossings. Ancillary equipment to be installed includes 10 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 concrete 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.

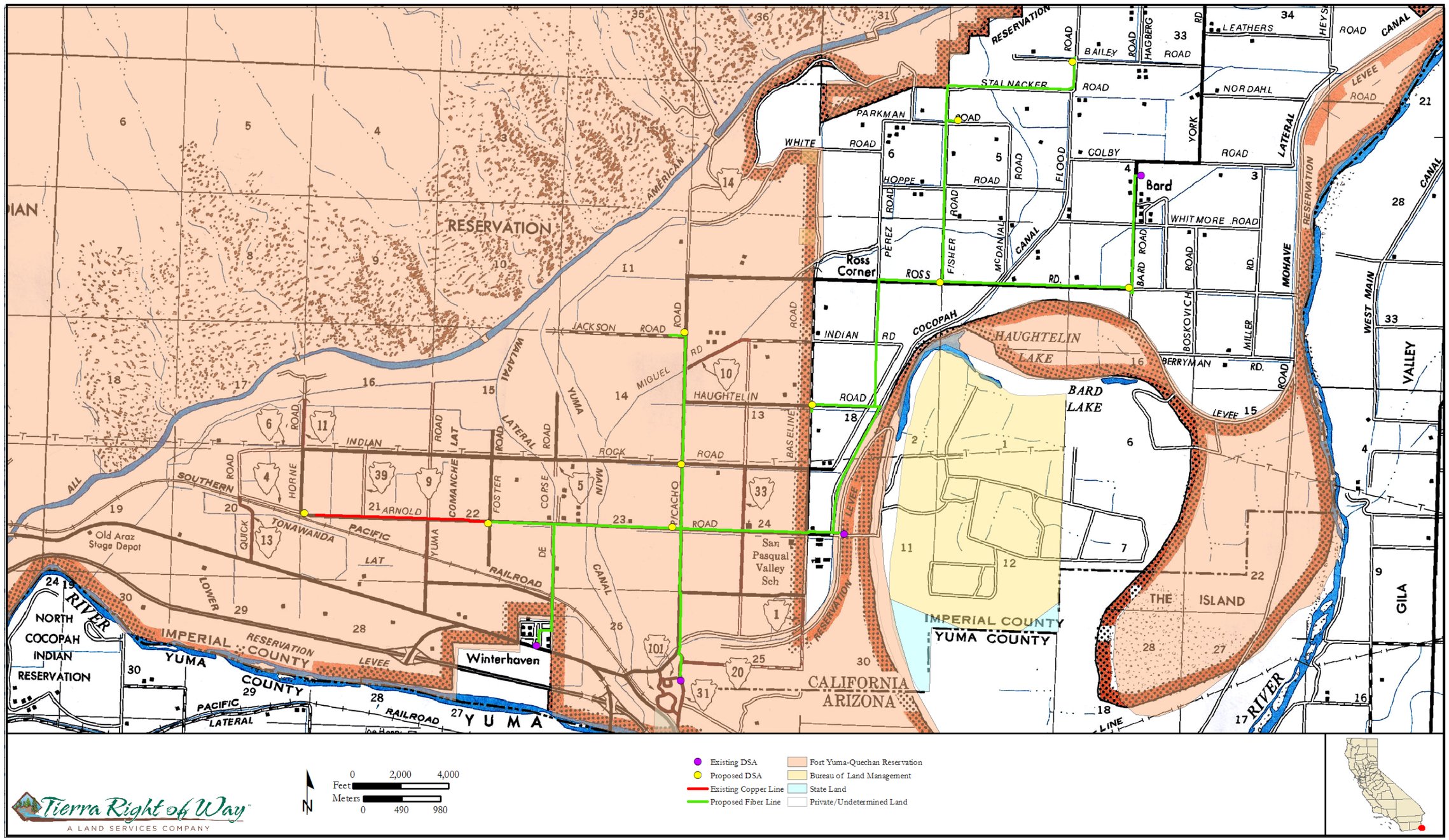



**Figure 1. Project location.**

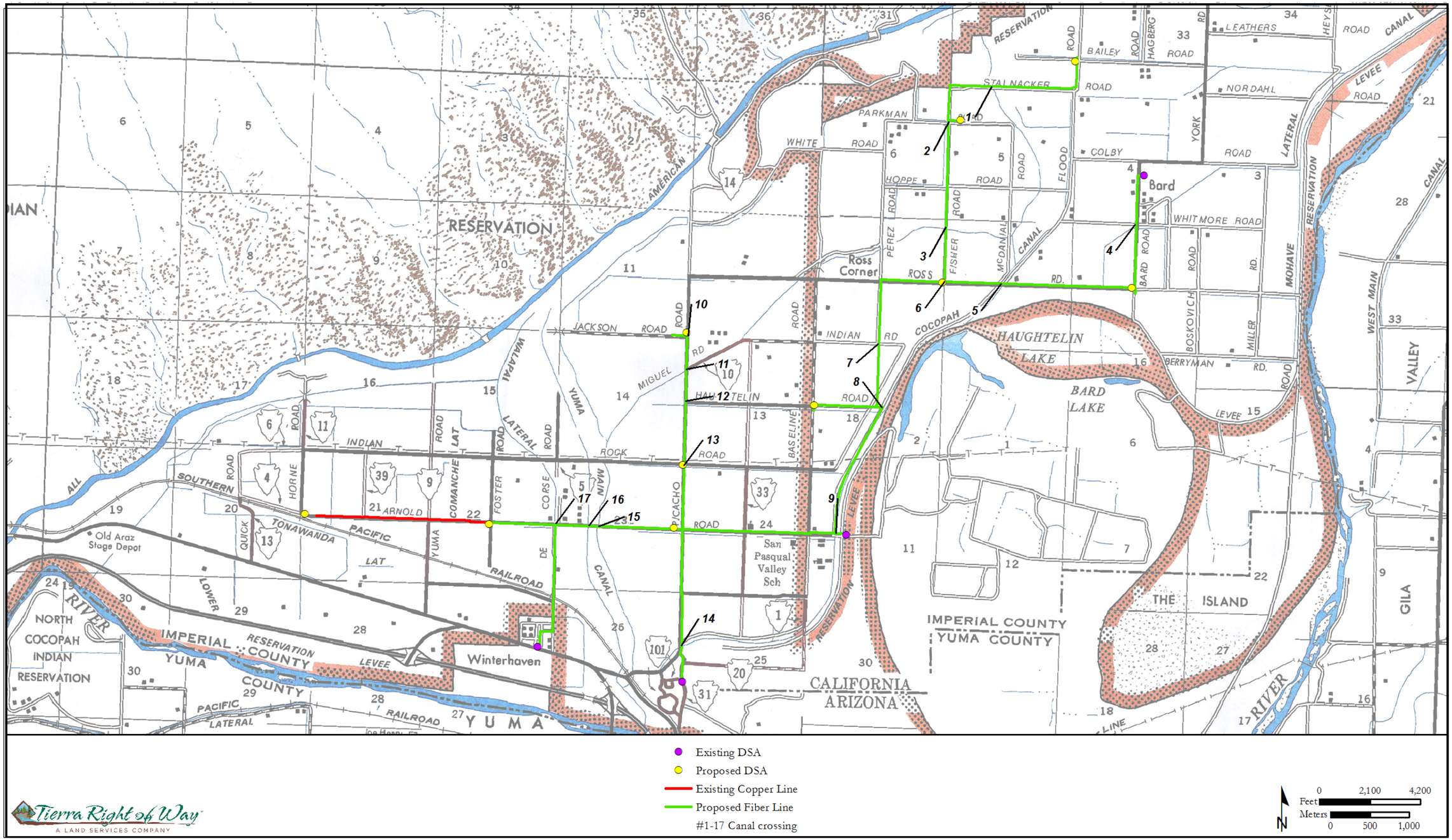



**Figure 2. Project area.**

**Table 1. Cable Installation Lengths**

| Installation | Length (m) | Length (km) | Length (feet) | Length (miles) |
|---|---|---|---|---|
| On-Reservation | 10,139 | 10.14 | 33,264 | 6.30 |
| Off-Reservation | 14,507 | 14.51 | 47,595 | 9.01 |
| Total | **24,646** | **24.65** | **80,859** | **15.31** |

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.

The line installation will be performed in two steps. First, a protective conduit for the fiber-optic cable will be installed by either plowing or directional boring construction methods. Second, the fiber-optic cable will be "blown" through the conduit using compressed air. The total combined ground disturbance associated with the project, including both the plowed and bored installations, would not exceed an area approximately 5.1 ha (12.5 acres) in size.

### 1.2.1 Plowed Conduit Installation

Plowed conduit is installed using a machine equipped with a specialized single ripper that loosens the soil along the installation path. Conduit is fed either from the plow machine or from a separate truck-mounted reel through a plow chute attached to the ripper and laid directly at a nominal depth of 1 m (3 feet). A compaction machine follows directly behind the plow machine, restoring the ground surface to its original contour. The installation path may be "pre-ripped" if necessary to loosen the soil in areas where subsurface rock or other buried obstructions may be present. Ground disturbance associated with the plowed installation will be limited to an approximately 2.4-m-wide (8.0-foot-wide) corridor.

### 1.2.2 Bored Conduit Installation

Directional boring is a method used to install underground utilities without the need for trenching. Typically it is used to install utility lines under waterways, roads, and other areas where the avoidance of surface disturbance is desirable (Figure 3). Directional boring machines are essentially horizontal drilling rigs and have a drill bit that is steerable. The drill bit is guided by the operator as it progresses along the desired boring path. After boring, the drill pipe is pulled out and conduit is threaded through the bore. In "drill and leave" installations, the drill pipe is left in place and serves as the conduit.

Two boring pits for bore ingress and egress would be required for each canal crossing installation—one on each side of the canal. These bore pits would be located at varying distances from the canals and roads. The depth of the bore would be a minimum of 1.5 m (5.0 feet) below the bottom of the canals and roads, 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; and it would be disposed of accordingly.

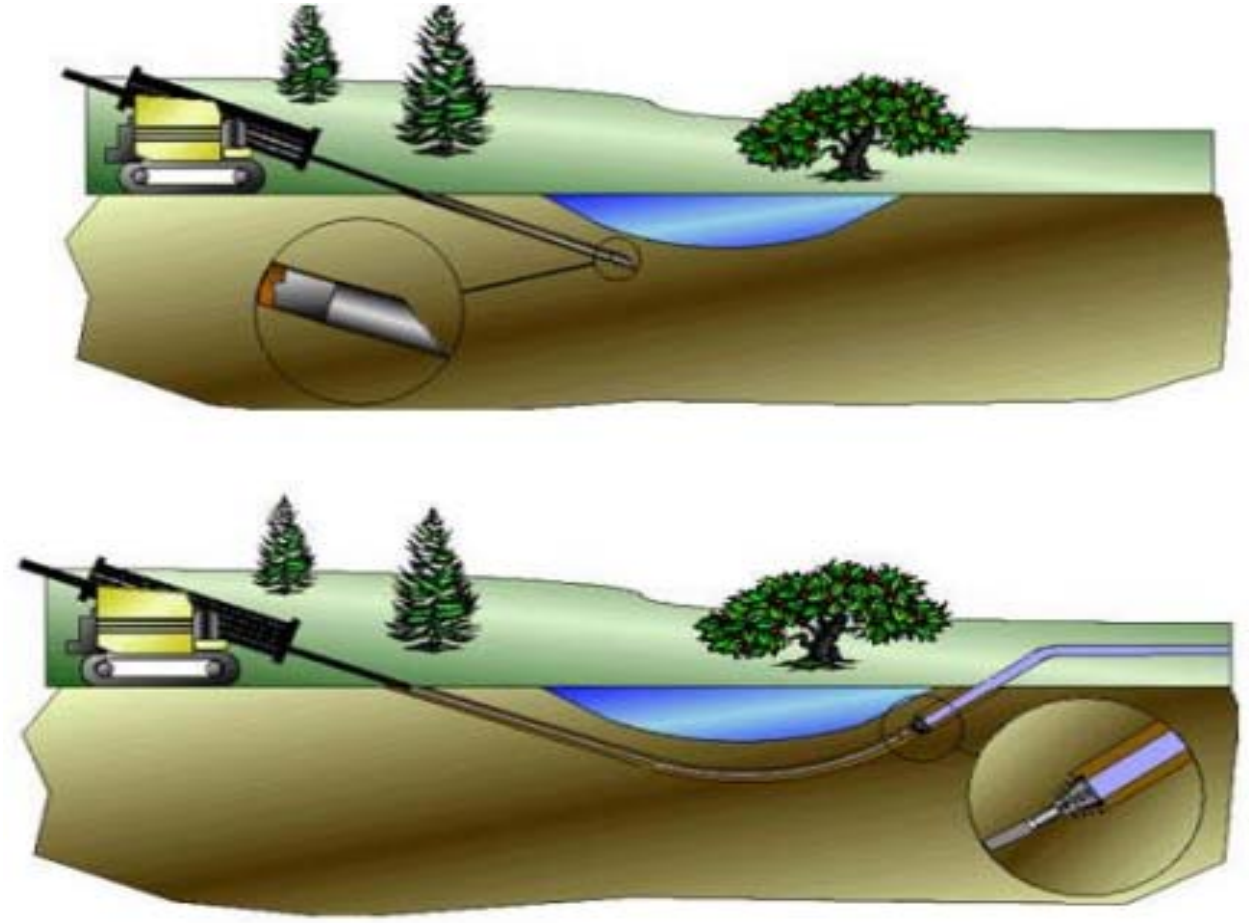


**Figure 3. Example of a directional bore beneath a waterway.**

Following the installation of the pipe beneath the canal or road, the bore pits would be filled in and compacted and the ground surface restored to its original contour. The locations of all canal bores associated with the project are summarized in Table 2. Ground disturbance associated with the bored conduit installations will occur within the same 2.4-m-wide (8.0-foot-wide) corridor as the plowed installations.

### 1.2.3 Project Schedule

The anticipated start date for the proposed project is mid-January, 2016 and construction would take approximately two months.

**Table 2. Canal Bore Locations**

| Map No. | Canal Name | Location | Canal Width |
|---|---|---|---|
| 1 | Reservation Main Drain | Stahlnacker Road | 20.5 m (67 feet) |
| 2 | Unnamed canal | Fisher and Parkman Roads | 3.6 m (12 feet) |
| 3 | Reservation Main Drain | Fisher Road | 19.6 m (64 feet) |
| 4 | Hopi Canal | Bard and Whitmore Roads | 6.3 m (21 feet) |
| 5 | Cocopah Canal | Ross Road | 9.0 m (30 feet) |
| 6 | Unnamed canal | Fisher and Ross Roads | 5.3 m (17 feet) |
| 7 | Papago Canal | Perez Road | 4.5 m (15 feet) |
| 8 | Pima Canal | Haughtelin and Perez Roads | 4.5 m (15 feet) |
| 9 | Cocopah Canal | Flood and Arnold Roads | 7.0 m (23 feet) |
| 10 | Navajo Canal | Picacho and Jackson Roads | 7.3 m (24 feet) |
| 11 | Reservation Main Drain | Picacho Road | 27.3 m (90 feet) |
| 12 | Pima Canal | Picacho and Haughtelin Roads | 3.7 m (12 feet) |
| 13 | Pueblo Canal | Picacho and Indian Rock Roads | 3.6 m (12 feet) |
| 14 | Cocopah Canal | Picacho Road | 8.3 m (27 feet) |
| 15 | Reservation Main Drain | Arnold Road | 27.3 m (90 feet) |
| 16 | Yuma Main Canal | Arnold Road | 46.0 m (151 feet) |
| 17 | Walapai Canal | Arnold Road | 2.4 m (8 feet) |

## *1.3 Applicable Environmental Regulations*

### 1.3.1 Federal Requirements for Species Protection

***Endangered Species Act—***The U.S. Fish and Wildlife Service (FWS) and the National Oceanographic and Atmospheric Administration's National Marine Fisheries Service (NMFS) 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 whether 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 whether 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 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.

### 1.3.2 State Requirements for Species Protection

***California Endangered Species Act/California Environmental Quality Act***—The California Endangered Species Act (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 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, which serve as "watch lists." Pursuant to the requirements of CESA, a State or local agency reviewing a proposed project within its jurisdiction must determine whether any State-listed species may be present in the project area and determine whether 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.

The California Environmental Quality Act (CEQA) of 1970 (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 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 U.S. Fish and Wildlife Service (USFWS) 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.

***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.

### 1.3.3 Protection of Wetlands, Waters of the United States, and Waters of the State

Any person, firm, or agency planning to alter or work in Waters of the U.S. (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 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; 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 which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters (33 CFR Part 328). With non-tidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction extends to the ordinary high water mark (OHWM)—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, 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 (Porter-Cologne Act) (California Water Code § 13000 et. seq.) This Act delegates responsibility to the State Water Resource Control Board (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 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 § 13263).

### 1.3.4 Lower Colorado River Multi-Species Conservation Program

The Lower Colorado River Multi-Species Conservation Program **(**LCR MSCP) was created to balance the use of the Colorado River water resources with the conservation of native species and

their habitats. The program works toward the recovery of species currently listed under the ESA. It also reduces the likelihood of additional species listings. Implemented over a 50-year period, the program accommodates current water diversions and power production and will optimize opportunities for future water and power development by providing ESA compliance through the implementation of a Habitat Conservation Plan (HCP) which was finalized in December 2004. The program area extends over 643.7 km (400 miles) of the lower Colorado River from Lake Mead to the southernmost border with Mexico and includes Lakes Mead, Mohave, and Havasu, as well as the historic 100-year floodplain where the proposed project is located, along the main stem of the lower Colorado River. The HCP calls for the creation of more than 3,278 ha (8,100 acres) of habitat for fish and wildlife species and the production of over 1.2 million native fish to augment existing populations. The plan will benefit at least 26 species, most of which are State or Federally listed Endangered, Threatened, or Sensitive species.

The Bureau of Reclamation (BOR) is the implementing agency for the LCR MSCP. Partnership involvement occurs primarily through the LCR MSCP Steering Committee (currently representing 57 entities, including State and Federal agencies, water and power users, municipalities, Native American Tribes, conservation organizations, and other interested parties), which provides input and oversight functions in support of LCR MSCP implementation. Program costs are evenly divided between the Federal government and non-Federal partners (Lower Colorado River Multi-Species Conservation Program 2013).

### 1.3.5 Imperial County General Plan

The Imperial County General Plan (GP), which applies to all public and private projects in unincorporated Imperial County, consists of 10 Elements entitled Land Use, Housing, Circulation and Scenic Highways, Noise, Seismic and Public Safety, Agricultural, Conservation and Open Space, Geothermal/Alternative Energy and Transmission, Water, and Parks & Recreation.

The Conservation and Open Space Element of the GP provides detailed plans and measures for the preservation and management of biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space. The purpose of the Conservation and Open Space Element is to promote the protection, maintenance, and use of the County's natural resources with particular emphasis on scarce resources and to prevent wasteful exploitation, destruction, and neglect of the State's natural resources. Additionally, the purpose of this Element is to recognize that natural resources must be maintained for their ecological value for the direct benefit to the public, protect open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and for public health and safety (Imperial County Planning and Development Services 2014). Recommended mitigation for invasive species control has been included in this report that will be consistent with the conservation objectives of the GP.

## 2.0 METHODOLOGY

Tierra Right of Way Services, Ltd. (Tierra), senior biologist, Tim Jordan, conducted a reconnaissance survey of the project area on July 15 and 16, 2014 (Table 3). Special status species (listed in Appendix A) 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.

**Table 3. Field Survey Schedule**

| Date/Weather Conditions | Surveyor | Survey Time/Survey Purpose |
|---|---|---|
| 7/15/2014; 100–101° F, calm, slight haze | Tim Jordan | 1200–1430, general biological |
| 7/16/2014; 82–104° F, calm to slight breeze, clear | Tim Jordan | 0700–1230, general biological, canal location recording |

For the purposes of this report, the entire area assessed during the reconnaissance survey 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 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 Araz, Bard, Imperial Reservoir, Laguna Dam, Little Picacho Peak, Picacho Peak, Yuma East, and Yuma West 7.5-minute USGS topographic quadrangles (CNDDB 2014) (Figure 4) and a list of Natural Resources of Concern that includes Federally listed special-status species for Imperial County that was obtained from the FWS Information, Planning, and Conservation (IPAC) system. CNDDB occurrence records include those that are mapped—meaning that occurrence data has been verified by CDFW—and unprocessed records that have not been verified. The CNDDB and FWS lists are included in Appendix A. Habitats present in the study area were compared to the habitat requirements of these regionally occurring special-status species; this comparison was used to determine which of these species had the potential to occur in the study area. Those species with a potential to occur within the study area and/or be adversely affected by the proposed project are addressed in Section 4.3. Species whose range (geographic or elevation) does not include the study area or for which the study area does not provide suitable habitat, were excluded from further consideration. This analysis is included in Appendix B.

# 3.0 BIOLOGICAL RESOURCES IN THE PROJECT AREA

## *3.1 Environmental Setting*

The project area is located in southeastern California on the lower Colorado River in an area primarily used for agricultural cultivation. Several irrigation canals operated by the BOR Imperial Irrigation District and Bard Water District either cross or run parallel to the project corridors. Elevations in the project area range from approximately 38–43 m (126–140 feet) above mean sea level (AMSL).

The Western Regional Climate Center (WRCC) recorded seasonal climatic data from 1993–2013 at the Yuma Quartermaster Depot, located just south 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 90.1° F (32.2° C); the hottest month of the year is July with an average maximum temperature of 109.4° F (43.0° C). The average annual minimum temperature within the project area is 59.0° F (15.0° C), with December having the coldest average temperature of 43.4° F (6.3° C). The project area receives an average of 6.80 cm (2.67 inches) of precipitation annually; February has the highest average precipitation at 1.20 cm (0.48 inches). The project area receives no snowfall in the average year.

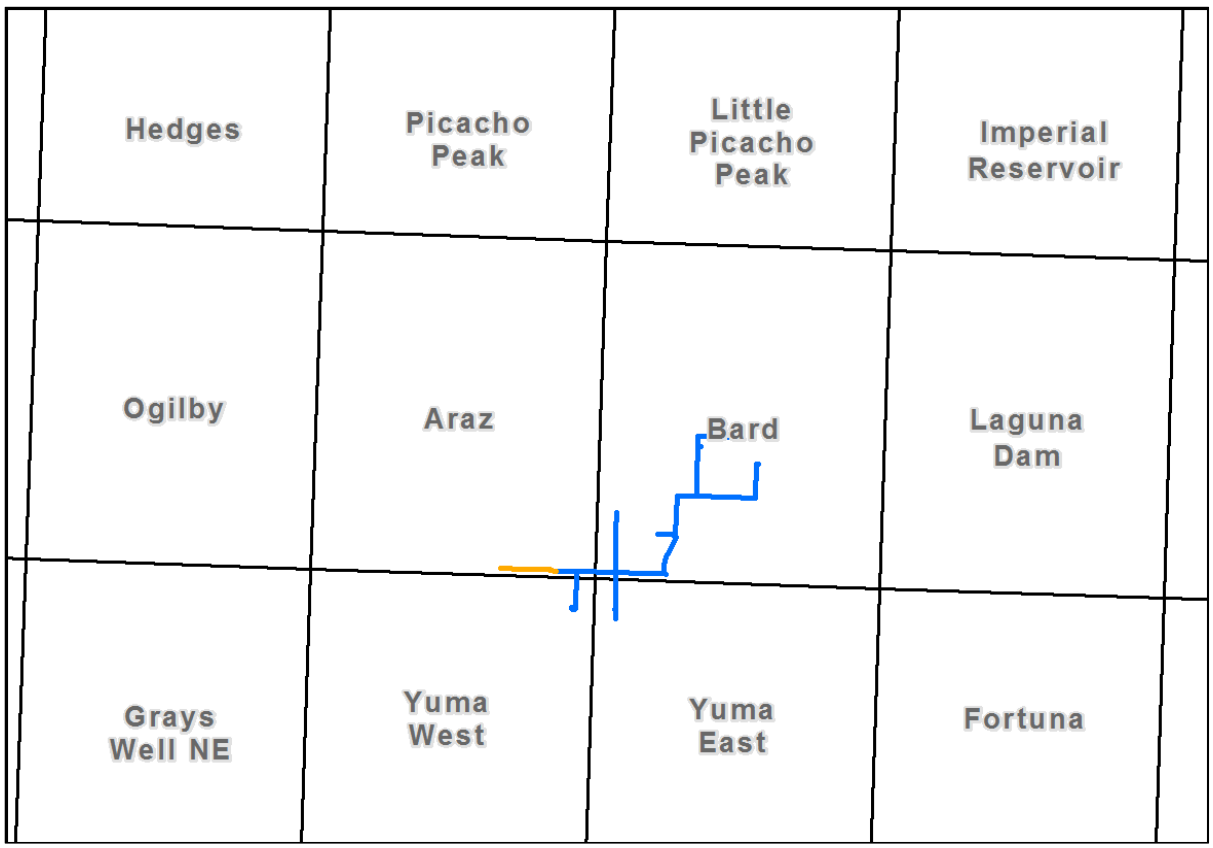



**Figure 4. USGS topographic quadrangles in CNDDB search.**

## *3.2 Habitat Types*

### 3.2.1 Terrestrial Habitat

The study area is located within the Colorado Desert, as classified in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 2009); however, the dominant type of terrestrial habitat present in the project area consists of agricultural land that is being actively cultivated to produce Sudangrass, wheat, cotton, alfalfa, dates, citrus, and other crops. The road shoulders where the proposed telecommunications line is to be installed are mostly devoid of vegetation as a result of blading activities associated with road maintenance and agricultural activities. Because of this previous disturbance, little-to-no native vegetation remains in the project area. 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.

### 3.2.2 Aquatic Habitat

Aquatic habitat in the study area is limited to that associated with agricultural canals. There are no ponds or ephemeral or perennial waterways within the study area.

Grass Carp *(Ctenopharyngodon idella)*, a fish species native to southeastern Russia and northwestern China, has been stocked in the Yuma Main Canal by the Yuma County Water User's Association since October 2013 for vegetation control purposes.

### 3.2.3 Sensitive Natural Communities

**Riparian Areas**

No sensitive natural communities, as defined by CDFW, are present in the study area. However, the margins of unlined canals in the study area, especially the Reservation Main Drain, contain limited riparian vegetation consisting mostly of dense Common Reed *(Phragmites australis)* and invasive species such as Salt Cedar *(Tamarix ramosissima)* (see Photos 4 and 9 in Appendix E). This vegetation is mostly low-growing, is not structurally complex, and does not have a tree overstory.

**Wetlands**

Riverine wetlands may be present along the unlined canals that are crossed by the project corridors. These potential wetlands were not delineated during the field surveys because TDS will be boring beneath all of the canals crossed by the line installations with sufficient set backs from either the canal edges or the extent of associated vegetation, if present, thus avoiding any potential impacts to wetlands.

## *3.3 Special Status Species*

Based on the assessment methodology outlined in Section 2.0, seven Special Status wildlife species are either known to occur or have the potential to occur in the study area (Table 4). Because of the previously disturbed nature of the study area and its lack of native vegetation, no Special Status plant species were expected to be found during the surveys, and none were identified.

### 3.3.1 Special Status Wildlife Species

**Table 4. Special Status Species with the Potential to Occur in the Study Area**

| Scientific Name | Common Name | Status (FWS/State/CNPS) |
|---|---|---|
| **Amphibians** | | |
| *Incilius alvarius* | Sonoran Desert Toad | –/SSC/– |
| *Lithobates yavapaiensis* | Lowland Leopard Frog | –/SSC/– |
| **Birds** | | |
| *Lanius ludovicianus* | Loggerhead Shrike | –/SSC/– |
| *Pyrocephalus rubinus* | Vermilion Flycatcher | –/SSC/– |
| *Xanthocephalus xanthocephalus* | Yellow-headed Blackbird | –/SSC/– |
| **Mammals** | | |
| *Corynorhinus townsendii* | Townsend's Big-eared Bat | –/CT, SSC/– |
| *Sigmodon hispidus eremicus* | Yuma Hispid Cotton Rat | –/SSC/– |

*Key:* SSC = Species of Special Concern, CT = Candidate Threatened.

#### 3.3.1.1 Sonoran Desert (Colorado River) Toad *(Incilius alvarius)*

**Federal Status:** None

**State/CDFW Status:** Species of Special Concern

**Habitat/Biology:** The Colorado River Toad is found in the lower Colorado River and in irrigated lowlands of the extreme southeast portion of Imperial County. In the main part of its range it can be found at elevations from sea level to 1,600 m (5,300 feet) AMSL. It can be found in a variety of desert and semi-arid habitats, including brushy desert with creosote bush, washes with mesquite, and semi-arid grasslands and woodlands. It is semi-aquatic and is usually found associated with large, somewhat permanent streams. It is occasionally found near small springs, temporary rain pools, and human-made canals and irrigation ditches. This species is active from March to July during periods of warm rainfall (CDFW 2014).

**Critical Habitat Designation:** Not applicable

**CNDDB Records:** This species has mapped occurrences on the Araz and Bard USGS quadrangles.

**Potential to Occur within the Study Area:** No Sonoran Desert Toad individuals were identified during the biological survey. Sonoran Desert Toad has a moderate potential to occur along the unlined and vegetated canals crossed by the project corridors because they contain suitable cover, foraging, and general habitat for this species. It would be unlikely for this species to occur along the lined canals crossed by the project corridors and in the remaining portions of the study area located away from the canals because of the general lack of cover in these areas.

#### 3.3.1.2 Lowland Leopard Frog *(Lithobates yavapaiensis)*

**Federal Status:** None

**State/CDFW Status:** Species of Special Concern

**Habitat/Biology:** Historically, the Lowland Leopard Frog ranged from northwestern Arizona through central and southeastern Arizona, southwestern New Mexico, and northern Sonora, Mexico. Populations were also known from southwestern Arizona and southeastern California along the lower Colorado River and in the Coachella Valley. This species inhabits aquatic systems in lower elevation desert grasslands up to mid-elevation pinyon-juniper woodland. They are habitat generalists and breed in a variety of natural and human-made aquatic systems. Natural systems include rivers, permanent streams and permanent pools in intermittent streams, beaver ponds, cienegas, wetlands, and springs; while human-made systems include earthen cattle tanks, livestock drinkers, canals, irrigation sloughs, wells, mine adits, abandoned swimming pools, and ornamental backyard ponds. Most historical localities are from small-to-medium-sized streams and rivers. In these stream and river habitats, Lowland Leopard Frogs are typically concentrated at springs, near debris piles, at heads of pools, and near deep pools associated with root masses (Arizona Game and Fish Department 2006).

**Critical Habitat Designation:** Not applicable

**CNDDB Records:** This species has mapped occurrences on the Imperial Reservoir and Laguna USGS quadrangles.

**Potential to Occur within the Study Area:** No Lowland Leopard Frog individuals were identified during the biological survey. Lowland Leopard Frog has a moderate potential to occur along the unlined and vegetated canals crossed by the project corridors because they contain suitable cover, foraging, and general habitat for this species. It would be unlikely for this species to occur along the lined canals crossed by the project corridors and in the remaining portions of the study area located away from the canals because of the general lack of cover in these areas.

#### 3.3.1.3 Loggerhead Shrike *(Lanius ludovicianus)*

**Federal Status:** None

**State/CDFW Status:** Species of Special Concern

**Habitat/Biology:** Loggerhead Shrike is a common resident and winter visitor in lowlands and foothills throughout California. It prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest population density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. This species rarely occurs in heavily urbanized areas but is often found in open cropland. It sometimes uses edges of denser habitats (CDFW 2014).

**Critical Habitat Designation:** Not applicable

**CNDDB Records:** This species has an unprocessed occurrence on the Laguna Dam USGS quadrangle.

**Potential to Occur within the Study Area:** No Loggerhead Shrike individuals were identified during the biological survey. Loggerhead Shrike has a low potential to occur in the study area because of the presence of scattered residences and commercial areas with their associated activity levels; however, the agricultural fields in and adjacent to the study area located away from these developed areas may provide suitable open habitat for this species.

#### 3.3.1.4 Vermilion Flycatcher *(Pyrocephalus rubinus)*

**Federal Status:** None

**State/CDFW Status:** Species of Special Concern

**Habitat/Biology:** Vermilion Flycatcher is a rare, local, yearlong resident along the Colorado River, especially in vicinity of Blythe, Riverside County. Nesting individuals inhabit cottonwood, willow, mesquite, and other vegetation in desert riparian habitat adjacent to irrigated fields, irrigation ditches, pastures and other open, mesic areas in isolated patches throughout central southern California. Populations of this species have declined drastically in the Imperial and Coachella Valleys and along the Colorado River, primarily as a result of loss of habitat. Despite local extirpations in these two valleys, the overall breeding range of Vermilion Flycatcher has expanded in recent years to the north and west (CDFW 2014).

**Critical Habitat Designation:** Not applicable

**CNDDB Records:** This species has mapped occurrences on the Yuma East and Laguna USGS quadrangles. It also has unprocessed and mapped occurrences on the Little Picacho Peak and Imperial Reservoir quadrangles.

**Potential to Occur within the Study Area:** No Vermilion Flycatcher individuals were identified during the biological survey. Vermilion Flycatcher has a low potential to nest in the study area because of the lack of well-developed riparian areas. This species has a moderate potential to occur in the irrigated fields and vegetated canals in and adjacent to the study area because these areas may provide suitable foraging habitat for this species.

#### 3.3.1.5 Yellow-headed Blackbird *(Xanthocephalus xanthocephalus)*

**Federal Status:** None

**State/CDFW Status:** Species of Special Concern

**Habitat/Biology:** In California, the Yellow-headed Blackbird breeds commonly but locally east of the Cascade Range and Sierra Nevada, in the Imperial and Colorado River Valleys, in the Central Valley, and at selected locations in the coast ranges west of the Central Valley. This species nests in fresh emergent wetlands with dense vegetation and deep water, often along the borders of lakes or ponds. Individuals forage in emergent wetlands and moist, open areas, especially cropland and the muddy shores of lakes. Yellow-headed Blackbird has a restricted distribution in the Central Valley in winter, occurring mainly in the western portion. This species is fairly common in winter in the Imperial Valley and it occurs as a migrant and local breeder in desert and along the Orange County coast. Yellow-headed Blackbird has bred, at least irregularly, as high as 2,000 m (6,600 feet) AMSL in the San Bernardino Mountains (CDFW 2014).
**Critical Habitat Designation:** Not applicable

**CNDDB Records:** This species has unprocessed occurrences on the Bard and Imperial Reservoir quadrangles.

**Potential to Occur within the Study Area:** No Yellow-headed Blackbird individuals were identified during the biological survey. There are no emergent wetlands in the study area suitable for nesting Yellow-headed Blackbirds; however, this species has a moderate potential to occur because the agricultural field in and adjacent to the study area may provide suitable foraging habitat.

#### 3.3.1.6 Townsend's Big-eared Bat *(Corynorhinus townsendii)*

**Federal Status:** None

**State/CDFW Status:** Candidate Threatened, Species of Special Concern

**Habitat/Biology:** Townsend's Big-eared Bat is found throughout California, but the details of its distribution are not well-known. This species is found in all but subalpine and alpine habitats, and may be found at any season throughout its range. Once considered common, Townsend's Big-eared Bat is now considered uncommon in California. It is most abundant in mesic habitats. This species requires caves, mines, tunnels, buildings, or other human-made structures for roosting. It may use separate sites for night, day, hibernation, or maternity roosts. Hibernation roosts are cold but not

below freezing, and individuals may move within the hibernacula to find suitable temperatures. Maternity roosts are warmer than hibernation roosts.

Small moths are the principal food source for Townsend's Big-eared Bat, although beetles and a variety of soft-bodied insects are also consumed. This species captures prey in flight using echolocation or by gleaning from foliage. Flight is slow and maneuverable, and this bat is capable of hovering (CDFW 2014).

**Critical Habitat Designation**: Not applicable

**CNDDB Records:** This species has mapped occurrences on the Bard, Yuma East, Yuma West, Imperial Reservoir, Little Picacho Peak, and Picacho Peak quadrangles.

**Potential to Occur within the Study Area:** No Townsend's Big-eared Bat individuals or potential roosting sites were identified in the study area during the biological survey. Townsend's Big-eared Bat has a moderate potential to occur in the study area while foraging because the vegetated areas, including agricultural fields, in and adjacent to the study area may provide suitable foraging habitat.

#### 3.3.1.7 Yuma Hispid Cotton Rat *(Sigmodon hispidus eremicus)*

**Federal Status:** None

**State/CDFW Status:** Species of Special Concern

**Habitat/Biology**: In California, Yuma Hispid Cotton Rat occurs only along the Colorado River and in the Imperial Valley. Establishment of cotton rats in the Imperial Valley apparently was in response to agricultural irrigation practices. This species is most common in grassland and cropland habitats near water, including grass-forb understory vegetation in early successional stages of other habitats. Cotton rats also occur in overgrown clearings and herbaceous borders of fields and brushy areas (CDFW 2014). Grass height and density have been documented as important habitat components for hispid cotton rats; they utilize runways through dense herbaceous growth and nests are built of woven grass (BOR 2008).

**Critical Habitat Designation:** Not applicable

**CNDDB Records:** This species has mapped occurrences on the Bard, Yuma West, Little Picacho Peak, and Laguna Dam quadrangles. It also has mapped and unprocessed occurrences on the Yuma East quadrangle.

**Potential to Occur within the Study Area:** No Yuma Hispid Cotton Rat individuals were identified in the study area during the biological survey. Yuma Hispid Cotton Rat has a moderate potential to occur in the study area along the unlined Reservation Main Drain because the dense vegetation present represents suitable cover and foraging habitat. It would be unlikely for this species to occur along the lined canals crossed by the project corridors and in the remaining portions of the study area located away from the canals because of the lack of dense cover vegetation in these areas.

### 3.3.2 Migratory Birds

The study area and areas adjacent to it were determined to contain suitable habitat for two migratory birds appearing on the American Bird Conservancy's *U.S. Watchlist of Birds of Conservation Concern*. Both of these species were identified in the CNDDB search, which included mapped and unprocessed occurrences of Prairie Falcon *(Falco mexicanus)* on the Picacho Peak quadrangle and unprocessed occurrences of White-faced Ibis *(Plegadis chihi)* on the Bard quadrangle.

No bird nests were observed in the project corridors at the time of the surveys; this lack of nests was because the project corridors being essentially devoid of vegetation large enough to support bird nests. 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 33, Sonoran and Mojave Deserts U.S. Portion Only, can be found in Table 5.

**Table 5. Bird Conservation Region 33 Migratory Bird List**

| | |
|---|---|
| Least Bittern | Elf Owl |
| Bald Eagle | Burrowing Owl |
| Peregrine Falcon | Costa's Hummingbird |
| Prairie Falcon | Gila Woodpecker |
| Black Rail | Gilded Flicker |
| Snowy Plover | Bell's Vireo |
| Mountain Plover | Gray Vireo |
| Whimbrel | Bendire's Thrasher |
| Long-billed Curlew | LeConte's Thrasher |
| Marbled Godwit | Lucy's Warbler |
| Red Knot | Yellow Warbler |
| Gull-billed Tern | Rufous-winged Sparrow |
| Black Skimmer | Black-chinned Sparrow |
| Yellow-billed Cuckoo | Lawrence's Goldfinch |

## *3.4 Invasive Species*

Three invasive plant species appearing on the California Department of Food and Agriculture (CDFA) Noxious Weed Species List and/or the California Invasive Plant Council (CIPC) Invasive Plant Inventory list were identified in the study area. These invasive species include Russian Thistle *(Salsola kali)*, Kariba Weed *(Salvinia molesta)*, and Salt Cedar *(Tamarix ramosissima)* (See Appendix C).

With the exception of Russian Thistle and a few scattered dryland infestations of Salt Cedar, all of these invasive species were found associated with the irrigation canals crossed by the project corridors. The only aquatic invasive species identified, Kariba Weed, was found in the Reservation Main Drain at the proposed corridor crossings on Fisher, Picacho, and Stalnacker, Roads (crossings 7–9 indicated in Figure 2).

Two of the invasive species, Kariba Weed and Salt Cedar, have a High rating assigned by CIPC and the remaining species, Russian Thistle, has a Limited rating. The CIPC rating system 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.

## *3.5 Jurisdictional Waters*

There are no ephemeral drainages such as washes within or in the vicinity of the study area. There are several irrigation canals in the project area, and it was assumed that they flow at least intermittently and in some cases, perennially. An example of the latter would be the Yuma Main Canal and the Reservation Main Drain, two of the largest canals observed during the surveys. In total, the proposed fiber installations would cross irrigation canals at 17 locations.

The USACE and/or CDFW jurisdictional status of the canals in the project area was not determined conclusively because all of the canals would be avoided during the proposed telecommunications line installations (See the *Waterway Delineation and Assessment Report*, under separate cover). No dredge and fill operations will occur within the canals and no subsequent loss of WUS will take place because all canals in the project area will be bored beneath during the proposed installations. Likewise, a stream alteration permit from CDFW is unnecessary for the proposed installations because the canals and any potential wildlife habitat, either in the canals themselves or riparian habitat along the canal margins, will be avoided. A summary of the crossings, including the names of the canals, their locations, and corresponding identification numbers as indicated on Figure 2, can be found in Table 6.

**Table 6. Irrigation Canal Crossings in the Study Area**

| Map No. | Canal Name | Location | Lined? |
|---|---|---|---|
| 1 | Reservation Main Drain | Stahlnacker Road | no |
| 2 | unnamed canal | Fisher and Parkman Roads | no |
| 3 | Reservation Main Drain | Fisher Road | no |
| 4 | Hopi Canal | Bard and Whitmore Road | no |

| Map No. | Canal Name | Location | Lined? |
|---|---|---|---|
| 5 | Cocopah Canal | Ross Road | yes |
| 6 | unnamed canal | Fisher and Ross Roads | yes |
| 7 | Papago Canal | Perez Road | no |
| 8 | Pima Canal | Haughtelin and Perez Roads | yes |
| 9 | Cocopah Canal | Flood Road | yes |
| 10 | Navajo Canal | Picacho and Jackson Roads | no |
| 11 | Reservation Main Drain | Picacho Road | no |
| 12 | Pima Canal | Picacho and Haughtelin Roads | yes |
| 13 | Pueblo Canal | Picacho and Indian Rock Roads | yes |
| 14 | Cocopah Canal | Picacho Road | no |
| 15 | Reservation Main Drain | Arnold Road | no |
| 16 | Yuma Main Canal | Arnold Road | no |
| 17 | Walapai Canal | Arnold Road | no |

# 4.0 IMPACTS OF THE PROPOSED PROJECT

## *4.1 Significance Criteria*

Per the regulatory requirements outlined in Section 1.3, including CEQA and NEPA statutes and guidelines, the proposed project will have a significant adverse impact on biological resources if it will:

- Have a substantial adverse effect, either directly through "take" or indirectly through habitat modifications, on any species identified as Threatened, Endangered, Candidate, or Proposed for Candidacy by FWS, or as Sensitive or as a Special-status Species in local or regional plans, policies, or regulations, or by FWS, CDFW, or CNPS;
- Have a substantial adverse effect on a species' Critical Habitat as designated by USFWS;
- Result in the introduction or spread of an invasive species;
- Have a substantial adverse effect on any sensitive natural community identified in local or regional plans, policies, regulations, or by the FWS or CDFW;
- Have a substantial adverse effect on Federally protected wetlands or other WUS as defined by Sections 10 and 404 of the Clean Water Act, including special aquatic sites such as wetlands, through direct removal, filling, hydrologic disruption, 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;
- Have a substantial adverse effect on habitat for commercially or recreationally important fisheries;
- Have a substantial adverse effect on waterfowl breeding or wintering habitat by reducing acreage or quality, or have a substantial adverse effect on the acreage or quality of migrant or wintering shorebird habitat; or,

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

## *4.2 Effects of the Proposed Project*

The proposed project will involve the installation of a buried telecommunications line in the previously disturbed road shoulders of existing roads. Following line installation, the only surface-level ancillary equipment that will be visible will be line markers, splice boxes, and ten equipment cabinets mounted on concrete pads. The majority of the ground disturbance associated with the installation would be temporary and would occur during plowing operations and at the bore pit locations used for the bored installations. The only permanent ground disturbance would occur at the new equipment cabinet locations. Impacts to wildlife and wildlife habitat from the proposed project would be temporary. Equipment noise and the presence of work crews may disturb wildlife in the areas surrounding the project corridors. Because the installations would occur along existing roads that carry regular vehicular traffic, any increases in noise and activity levels during construction would be minimal.

## *4.3 Impact Assessment and Recommended Avoidance and Minimization Measures*

The following impact assessment is based on the criteria summarized in Section 4.1. For each impact identified, recommended avoidance, minimization, or mitigation measures are identified.

### 4.3.1 Special Status Species

**Potential Impact #1: Construction of the proposed project has the potential to impact Sonoran Desert Toad and Lowland Leopard Frog.**

Sonoran Desert Toad and Lowland Leopard Frog have the potential to occur along the irrigation canals in the study area. Implementation of the proposed project has the potential to impact these two species if individuals come into contact with construction equipment or personnel or individuals attempt to flee the construction area and are subject to increased chances of predation or other harm. With the implementation of avoidance and minimization measures listed below, impacts are expected to be reduced to a less than significant level.

Recommended Avoidance and Minimization Measures for Impact #1:

- All irrigation canals in the study area will be avoided during construction.
- Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of the canal bank or the maximum extent of any vegetation present along the canal's margin.

**Potential Impact #2: Construction of the proposed project has the potential to impact Loggerhead Shrike, Yellow-headed Blackbird, and Townsend's Big-eared Bat.**

Loggerhead Shrike and Yellow-headed Blackbird have the potential to occur in the agricultural fields adjacent to the study area. In addition to potentially occurring in the agricultural fields, Townsend's Big-eared Bat has the potential to occur in vegetated areas adjacent to the study area.

Recommended Avoidance and Minimization Measures for Impact #2:

- All agricultural fields will be avoided during construction.
- It is extremely unlikely that any vegetation trimming will be necessary during project implementation; however, if trimming is required to facilitate the installations, it will be kept to the absolute minimum necessary.

**Potential Impact #3: Construction of the proposed project has the potential to impact Vermilion Flycatcher and Yuma Hispid Cotton Rat.**

Vermilion Flycatcher and Yuma Hispid Cotton Rat have the potential to occur in the agricultural fields adjacent to the study area and along the vegetated irrigation canals within the study area.

Recommended Avoidance and Minimization Measures for Impact #3:

- All agricultural fields will be avoided during construction.
- All irrigation canals in the study area will be avoided during construction.
- Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of the canal bank or the maximum extent of any vegetation present along the canal's margin.

### 4.3.2 Invasive Species

**Potential Impact #4: Construction of the proposed project has the potential to result in the spread of invasive plant species.**

Because of the presence of invasive plant species in the study area, implementation of the proposed project has the potential to result in further spread of existing noxious weeds. Invasive species could also be introduced into the study area by construction equipment, vehicles, personnel, or imported fill or other material. Further introduction of invasive plant species could adversely impact the irrigation canals in the project area and their associated riparian areas, where present. However, with the implementation of the avoidance and minimization measures listed below, impacts are expected to be reduced to a less than significant level.

Recommended Avoidance and Minimization Measures for Impact #4:

- All irrigation canals in the study area will be avoided during construction.
- Bore pits will be placed a minimum distance of 5 m (16 feet) beyond either the top of the canal bank or the maximum extent of any vegetation present along the canal's margin.
- All equipment and vehicles will be thoroughly cleaned to remove dirt and weed seeds prior to being transported or driven to or from the study area.

## 5.0 SUMMARY

This BRE has been prepared for the Winterhaven Last Mile Underserved Broadband Project in order to evaluate the potential for the proposed project to impact sensitive biological resources. Based on the results of the analysis conducted in preparation of this report, the proposed project has the potential to impact special-status species and result in the introduction or spread of invasive species. With the implementation of the proposed avoidance and minimization measures, all potential adverse impacts are expected to be reduced to a less than significant level.

## 6.0 REPORT PREPARERS AND CERTIFICATION

Tierra believes that the proposed project would not violate any of the regulatory requirements outlined in Section 1.3, provided that all recommended avoidance and minimization measures indicated in Section 1.4 are implemented during construction. Results and conclusions contained in this report are based on actual field reconnaissance and represent my best professional judgment, based on information provided by the project proponent, applicable agencies, and other sources.

Report Author:



11/17/2014
Date

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## 7.0 REFERENCES


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# APPENDIX A. REGIONALLY OCCURRING SPECIAL STATUS SPECIES LISTS

**Table A.1. Regionally Occurring Special Status Species Lists**

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Amphibians | *Incilius alvarius* | Sonoran Desert Toad | AAABB01010 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Amphibians - *Bufonidae - Incilius alvarius* |
| Animals - Amphibians | *Incilius alvarius* | Sonoran Desert Toad | AAABB01010 | none | none | SSC | - | 3211476 | Araz | mapped | Animals - Amphibians - *Bufonidae - Incilius alvarius* |
| Animals - Amphibians | *Lithobates yavapaiensis* | Lowland (=Yavapai, San Sebastian, and San Felipe) Leopard Frog | AAABH01250 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped | Animals - Amphibians - *Ranidae - Lithobates yavapaiensis* |
| Animals - Amphibians | *Lithobates yavapaiensis* | Lowland (=Yavapai, San Sebastian, and San Felipe) Leopard Frog | AAABH01250 | none | none | SSC | - | 3211474 | Laguna Dam | mapped | Animals - Amphibians - *Ranidae - Lithobates yavapaiensis* |
| Animals - Birds | *Accipiter cooperii* | Cooper's Hawk | ABNKC12040 | none | none | WL | - | 3211474 | Laguna Dam | mapped | Animals - Birds - *Accipitridae - Accipiter cooperii* |
| Animals - Birds | *Accipiter cooperii* | Cooper's Hawk | ABNKC12040 | none | none | WL | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Accipitridae - Accipiter cooperii* |
| Animals - Birds | *Accipiter cooperii* | Cooper's Hawk | ABNKC12040 | none | none | WL | - | 3211475 | Bard | mapped and unprocessed | Animals - Birds - *Accipitridae - Accipiter cooperii* |
| Animals - Birds | *Aquila chrysaetos* | Golden Eagle | ABNKC22010 | none | none | FP; WL | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Accipitridae - Aquila chrysaetos* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Haliaeetus leucocephalus* | Bald Eagle | ABNKC10010 | delisted | Endangered | FP | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Accipitridae* - *Haliaeetus leucocephalus* |
| Animals - Birds | *Haliaeetus leucocephalus* | Bald Eagle | ABNKC10010 | delisted | Endangered | FP | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Accipitridae* - *Haliaeetus leucocephalus* |
| Animals - Birds | *Pandion haliaetus* | Osprey | ABNKC01010 | none | none | WL | - | 3211475 | Bard | unprocessed | Animals - Birds - *Accipitridae* - *Pandion haliaetus* |
| Animals - Birds | *Chaetura vauxi* | Vaux's Swift | ABNUA03020 | none | none | SSC | - | 3211475 | Bard | unprocessed | Animals - Birds - *Apodidae* - *Chaetura vauxi* |
| Animals - Birds | *Chaetura vauxi* | Vaux's Swift | ABNUA03020 | none | none | SSC | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Apodidae* - *Chaetura vauxi* |
| Animals - Birds | *Ardea herodias* | Great Blue Heron | ABNGA04010 | none | none | - | - | 3211475 | Bard | mapped | Animals - Birds - *Ardeidae* - *Ardea herodias* |
| Animals - Birds | *Ardea herodias* | Great Blue Heron | ABNGA04010 | none | none | - | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Ardeidae* - *Ardea herodias* |
| Animals - Birds | *Ardea herodias* | Great Blue Heron | ABNGA04010 | none | none | - | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Ardeidae* - *Ardea herodias* |
| Animals - Birds | *Ixobrychus exilis* | Least Bittern | ABNGA02010 | none | none | SSC | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Ardeidae* - *Ixobrychus exilis* |
| Animals - Birds | *Ixobrychus exilis* | Least Bittern | ABNGA02010 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Ardeidae* - *Ixobrychus exilis* |
| Animals - Birds | *Ixobrychus exilis* | Least Bittern | ABNGA02010 | none | none | SSC | - | 3211474 | Laguna Dam | unprocessed | Animals - Birds - *Ardeidae* - *Ixobrychus exilis* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Nycticorax nycticorax* | Black-Crowned Night Heron | ABNGA11010 | none | none | - | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Ardeidae* - *Nycticorax nycticorax* |
| Animals - Birds | *Nycticorax nycticorax* | Black-Crowned Night Heron | ABNGA11010 | none | none | - | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Ardeidae* - *Nycticorax nycticorax* |
| Animals - Birds | *Mycteria americana* | Wood Stork | ABNGF02010 | none | none | SSC | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Ciconiidae* - *Mycteria americana* |
| Animals - Birds | *Coccyzus americanus occidentalis* | Western Yellow-Billed Cuckoo | ABNRB02022 | Proposed Threatened | Endangered | - | - | 3211484 | Imperial Reservoir | mapped | Animals - Birds - *Cuculidae* - *Coccyzus americanus occidentalis* |
| Animals - Birds | *Coccyzus americanus occidentalis* | Western Yellow-Billed Cuckoo | ABNRB02022 | Proposed Threatened | Endangered | - | - | 3211475 | Bard | mapped | Animals - Birds - *Cuculidae* - *Coccyzus americanus occidentalis* |
| Animals - Birds | *Coccyzus americanus occidentalis* | Western Yellow-Billed Cuckoo | ABNRB02022 | Proposed Threatened | Endangered | - | - | 3211465 | Yuma East | unprocessed | Animals - Birds - *Cuculidae* - *Coccyzus americanus occidentalis* |
| Animals - Birds | *Coccyzus americanus occidentalis* | Western Yellow-Billed Cuckoo | ABNRB02022 | Proposed Threatened | Endangered | - | - | 3211466 | Yuma West | mapped | Animals - Birds - *Cuculidae* - *Coccyzus americanus occidentalis* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Coccyzus americanus occidentalis* | Western Yellow-Billed Cuckoo | ABNRB02022 | Proposed Threatened | Endangered | - | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Cuculidae - Coccyzus americanus occidentalis* |
| Animals - Birds | *Coccyzus americanus occidentalis* | Western Yellow-Billed Cuckoo | ABNRB02022 | Proposed Threatened | Endangered | - | - | 3211485 | Little Picacho Peak | mapped | Animals - Birds - *Cuculidae - Coccyzus americanus occidentalis* |
| Animals - Birds | *Melozone aberti* | Abert's Towhee | ABPBX74050 | none | none | - | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Emberizidae - Melozone aberti* |
| Animals - Birds | *Melozone aberti* | Abert's Towhee | ABPBX74050 | none | none | - | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Emberizidae - Melozone aberti* |
| Animals - Birds | *Melozone aberti* | Abert's Towhee | ABPBX74050 | none | none | - | - | 3211475 | Bard | unprocessed | Animals - Birds - *Emberizidae - Melozone aberti* |
| Animals - Birds | *Spizella passerina* | Chipping Sparrow | ABPBX94020 | none | none | - | - | 3211475 | Bard | unprocessed | Animals - Birds - *Emberizidae - Spizella passerina* |
| Animals - Birds | *Falco mexicanus* | Prairie Falcon | ABNKD06090 | none | none | WL | - | 3211486 | Picacho Peak | mapped and unprocessed | Animals - Birds - *Falconidae - Falco mexicanus* |
| Animals - Birds | *Xanthocephalus xanthocephalus* | Yellow-Headed Blackbird | ABPBXB3010 | none | none | SSC | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Icteridae - Xanthocephalus xanthocephalus* |
| Animals - Birds | *Xanthocephalus xanthocephalus* | Yellow-Headed Blackbird | ABPBXB3010 | none | none | SSC | - | 3211475 | Bard | unprocessed | Animals - Birds - *Icteridae - Xanthocephalus xanthocephalus* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Lanius ludovicianus* | Loggerhead Shrike | ABPBR01030 | none | none | SSC | - | 3211474 | Laguna Dam | unprocessed | Animals - Birds - *Laniidae - Lanius ludovicianus* |
| Animals - Birds | *Toxostoma crissale* | Crissal Thrasher | ABPBK06090 | none | none | SSC | - | 3211474 | Laguna Dam | mapped | Animals - Birds - *Mimidae - Toxostoma crissale* |
| Animals - Birds | *Toxostoma crissale* | Crissal Thrasher | ABPBK06090 | none | none | SSC | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Mimidae - Toxostoma crissale* |
| Animals - Birds | *Toxostoma crissale* | Crissal Thrasher | ABPBK06090 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Birds - *Mimidae - Toxostoma crissale* |
| Animals - Birds | *Toxostoma crissale* | Crissal Thrasher | ABPBK06090 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Mimidae - Toxostoma crissale* |
| Animals - Birds | *Toxostoma crissale* | Crissal Thrasher | ABPBK06090 | none | none | SSC | - | 3211485 | Little Picacho Peak | mapped | Animals - Birds - *Mimidae - Toxostoma crissale* |
| Animals - Birds | *Toxostoma lecontei* | Le Conte's Thrasher | ABPBK06100 | none | none | SSC | - | 3211476 | Araz | unprocessed | Animals - Birds - *Mimidae - Toxostoma lecontei* |
| Animals - Birds | *Toxostoma lecontei* | Le Conte's Thrasher | ABPBK06100 | none | none | SSC | - | 3211475 | Bard | unprocessed | Animals - Birds - *Mimidae - Toxostoma lecontei* |
| Animals - Birds | *Dendroica occidentalis* | Hermit Warbler | ABPBX03090 | none | none | - | - | 3211475 | Bard | unprocessed | Animals - Birds - *Parulidae - Dendroica occidentalis* |
| Animals - Birds | *Dendroica occidentalis* | Hermit Warbler | ABPBX03090 | none | none | - | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Parulidae - Dendroica occidentalis* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Dendroica occidentalis* | Hermit Warbler | ABPBX03090 | none | none | - | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Parulidae* - *Dendroica occidentalis* |
| Animals - Birds | *Dendroica petechia brewsteri* | Yellow Warbler | ABPBX03018 | none | none | SSC | - | 3211474 | Laguna Dam | unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia brewsteri* |
| Animals - Birds | *Dendroica petechia brewsteri* | Yellow Warbler | ABPBX03018 | none | none | SSC | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia brewsteri* |
| Animals - Birds | *Dendroica petechia sonorana* | Sonoran Yellow Warbler | ABPBX03017 | none | none | SSC | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia sonorana* |
| Animals - Birds | *Dendroica petechia sonorana* | Sonoran Yellow Warbler | ABPBX03017 | none | none | SSC | - | 3211475 | Bard | mapped and unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia sonorana* |
| Animals - Birds | *Dendroica petechia sonorana* | Sonoran Yellow Warbler | ABPBX03017 | none | none | SSC | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia sonorana* |
| Animals - Birds | *Dendroica petechia sonorana* | Sonoran Yellow Warbler | ABPBX03017 | none | none | SSC | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia sonorana* |
| Animals - Birds | *Dendroica petechia sonorana* | Sonoran Yellow Warbler | ABPBX03017 | none | none | SSC | - | 3211465 | Yuma East | unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia sonorana* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Dendroica petechia sonorana* | Sonoran Yellow Warbler | ABPBX03017 | none | none | SSC | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Parulidae* - *Dendroica petechia sonorana* |
| Animals - Birds | *Icteria virens* | Yellow-Breasted Chat | ABPBX24010 | none | none | SSC | - | 3211485 | Little Picacho Peak | mapped and unprocessed | Animals - Birds - *Parulidae* - *Icteria virens* |
| Animals - Birds | *Icteria virens* | Yellow-Breasted Chat | ABPBX24010 | none | none | SSC | - | 3211465 | Yuma East | unprocessed | Animals - Birds - *Parulidae* - *Icteria virens* |
| Animals - Birds | *Icteria virens* | Yellow-Breasted Chat | ABPBX24010 | none | none | SSC | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Parulidae* - *Icteria virens* |
| Animals - Birds | *Icteria virens* | Yellow-Breasted Chat | ABPBX24010 | none | none | SSC | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Parulidae* - *Icteria virens* |
| Animals - Birds | *Icteria virens* | Yellow-Breasted Chat | ABPBX24010 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Parulidae* - *Icteria virens* |
| Animals - Birds | *Icteria virens* | Yellow-Breasted Chat | ABPBX24010 | none | none | SSC | - | 3211475 | Bard | mapped and unprocessed | Animals - Birds - *Parulidae* - *Icteria virens* |
| Animals - Birds | *Oreothlypis luciae* | Lucy's Warbler | ABPBX01090 | none | none | SSC | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Parulidae* - *Oreothlypis luciae* |
| Animals - Birds | *Oreothlypis luciae* | Lucy's Warbler | ABPBX01090 | none | none | SSC | - | 3211474 | Laguna Dam | unprocessed | Animals - Birds - *Parulidae* - *Oreothlypis luciae* |
| Animals - Birds | *Oreothlypis luciae* | Lucy's Warbler | ABPBX01090 | none | none | SSC | - | 3211465 | Yuma East | unprocessed | Animals - Birds - *Parulidae* - *Oreothlypis luciae* |
| Animals - Birds | *Oreothlypis luciae* | Lucy's Warbler | ABPBX01090 | none | none | SSC | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Parulidae* - *Oreothlypis luciae* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Phalacrocorax auritus* | Double-Crested Cormorant | ABNFD01020 | none | none | WL | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Birds - *Phalacrocoracidae* - *Phalacrocorax auritus* |
| Animals - Birds | *Colaptes chrysoides* | Gilded Flicker | ABNYF10040 | none | Endangered | - | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Picidae* - *Colaptes chrysoides* |
| Animals - Birds | *Colaptes chrysoides* | Gilded Flicker | ABNYF10040 | none | Endangered | - | - | 3211475 | Bard | mapped | Animals - Birds - *Picidae* - *Colaptes chrysoides* |
| Animals - Birds | *Colaptes chrysoides* | Gilded Flicker | ABNYF10040 | none | Endangered | - | - | 3211465 | Yuma East | mapped and unprocessed | Animals - Birds - *Picidae* - *Colaptes chrysoides* |
| Animals - Birds | *Colaptes chrysoides* | Gilded Flicker | ABNYF10040 | none | Endangered | - | - | 3211466 | Yuma West | mapped | Animals - Birds - *Picidae* - *Colaptes chrysoides* |
| Animals - Birds | *Colaptes chrysoides* | Gilded Flicker | ABNYF10040 | none | Endangered | - | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Picidae* - *Colaptes chrysoides* |
| Animals - Birds | *Colaptes chrysoides* | Gilded Flicker | ABNYF10040 | none | Endangered | - | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Picidae* - *Colaptes chrysoides* |
| Animals - Birds | *Melanerpes lewis* | Lewis' Woodpecker | ABNYF04010 | none | none | - | - | 3211475 | Bard | unprocessed | Animals - Birds - *Picidae* - *Melanerpes lewis* |
| Animals - Birds | *Melanerpes uropygialis* | Gila Woodpecker | ABNYF04150 | none | Endangered | - | - | 3211475 | Bard | mapped | Animals - Birds - *Picidae* - *Melanerpes uropygialis* |
| Animals - Birds | *Melanerpes uropygialis* | Gila Woodpecker | ABNYF04150 | none | Endangered | - | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Picidae* - *Melanerpes uropygialis* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Melanerpes uropygialis* | Gila Woodpecker | ABNYF04150 | none | Endangered | - | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Picidae - Melanerpes uropygialis* |
| Animals - Birds | *Melanerpes uropygialis* | Gila Woodpecker | ABNYF04150 | none | Endangered | - | - | 3211466 | Yuma West | mapped | Animals - Birds - *Picidae - Melanerpes uropygialis* |
| Animals - Birds | *Melanerpes uropygialis* | Gila Woodpecker | ABNYF04150 | none | Endangered | - | - | 3211485 | Little Picacho Peak | mapped | Animals - Birds - *Picidae - Melanerpes uropygialis* |
| Animals - Birds | *Laterallus jamaicensis coturniculus* | California Black Rail | ABNME03041 | none | Threatened | FP | - | 3211485 | Little Picacho Peak | mapped | Animals - Birds - *Rallidae - Laterallus jamaicensis coturniculus* |
| Animals - Birds | *Laterallus jamaicensis coturniculus* | California Black Rail | ABNME03041 | none | Threatened | FP | - | 3211466 | Yuma West | mapped | Animals - Birds - *Rallidae - Laterallus jamaicensis coturniculus* |
| Animals - Birds | *Laterallus jamaicensis coturniculus* | California Black Rail | ABNME03041 | none | Threatened | FP | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Rallidae - Laterallus jamaicensis coturniculus* |
| Animals - Birds | *Laterallus jamaicensis coturniculus* | California Black Rail | ABNME03041 | none | Threatened | FP | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Rallidae - Laterallus jamaicensis coturniculus* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Laterallus jamaicensis coturniculus* | California Black Rail | ABNME03041 | none | Threatened | FP | - | 3211475 | Bard | mapped | Animals - Birds - *Rallidae* - *Laterallus jamaicensis coturniculus* |
| Animals - Birds | *Rallus longirostris yumanensis* | Yuma Clapper Rail | ABNME0501A | Endangered | Threatened | FP | - | 3211475 | Bard | mapped | Animals - Birds - *Rallidae* - *Rallus longirostris yumanensis* |
| Animals - Birds | *Rallus longirostris yumanensis* | Yuma Clapper Rail | ABNME0501A | Endangered | Threatened | FP | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Rallidae* - *Rallus longirostris yumanensis* |
| Animals - Birds | *Rallus longirostris yumanensis* | Yuma Clapper Rail | ABNME0501A | Endangered | Threatened | FP | - | 3211474 | Laguna Dam | mapped | Animals - Birds - *Rallidae* - *Rallus longirostris yumanensis* |
| Animals - Birds | *Rallus longirostris yumanensis* | Yuma Clapper Rail | ABNME0501A | Endangered | Threatened | FP | - | 3211466 | Yuma West | mapped | Animals - Birds - *Rallidae* - *Rallus longirostris yumanensis* |
| Animals - Birds | *Rallus longirostris yumanensis* | Yuma Clapper Rail | ABNME0501A | Endangered | Threatened | FP | - | 3211465 | Yuma East | mapped and unprocessed | Animals - Birds - *Rallidae* - *Rallus longirostris yumanensis* |
| Animals - Birds | *Rallus longirostris yumanensis* | Yuma Clapper Rail | ABNME0501A | Endangered | Threatened | FP | - | 3211485 | Little Picacho Peak | mapped and unprocessed | Animals - Birds - *Rallidae* - *Rallus longirostris yumanensis* |
| Animals - Birds | *Micrathene whitneyi* | Elf Owl | ABNSB09010 | none | Endangered | - | - | 3211474 | Laguna Dam | mapped | Animals - Birds - *Strigidae* - *Micrathene whitneyi* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Micrathene whitneyi* | Elf Owl | ABNSB09010 | none | Endangered | - | - | 3211484 | Imperial Reservoir | mapped | Animals - Birds - *Strigidae* - *Micrathene whitneyi* |
| Animals - Birds | *Micrathene whitneyi* | Elf Owl | ABNSB09010 | none | Endangered | - | - | 3211475 | Bard | mapped | Animals - Birds - *Strigidae* - *Micrathene whitneyi* |
| Animals - Birds | *Polioptila melanura* | Black-Tailed Gnatcatcher | ABPBJ08030 | none | none | - | - | 3211475 | Bard | mapped | Animals - Birds - *Sylviidae* - *Polioptila melanura* |
| Animals - Birds | *Polioptila melanura* | Black-Tailed Gnatcatcher | ABPBJ08030 | none | none | - | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Sylviidae* - *Polioptila melanura* |
| Animals - Birds | *Polioptila melanura* | Black-Tailed Gnatcatcher | ABPBJ08030 | none | none | - | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Sylviidae* - *Polioptila melanura* |
| Animals - Birds | *Polioptila melanura* | Black-Tailed Gnatcatcher | ABPBJ08030 | none | none | - | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Sylviidae* - *Polioptila melanura* |
| Animals - Birds | *Piranga rubra* | Summer Tanager | ABPBX45030 | none | none | SSC | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Thraupidae* - *Piranga rubra* |
| Animals - Birds | *Piranga rubra* | Summer Tanager | ABPBX45030 | none | none | SSC | - | 3211465 | Yuma East | unprocessed | Animals - Birds - *Thraupidae* - *Piranga rubra* |
| Animals - Birds | *Piranga rubra* | Summer Tanager | ABPBX45030 | none | none | SSC | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Thraupidae* - *Piranga rubra* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Piranga rubra* | Summer Tanager | ABPBX45030 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Thraupidae - Piranga rubra* |
| Animals - Birds | *Piranga rubra* | Summer Tanager | ABPBX45030 | none | none | SSC | - | 3211475 | Bard | mapped and unprocessed | Animals - Birds - *Thraupidae - Piranga rubra* |
| Animals - Birds | *Piranga rubra* | Summer Tanager | ABPBX45030 | none | none | SSC | - | 3211485 | Little Picacho Peak | unprocessed | Animals - Birds - *Thraupidae - Piranga rubra* |
| Animals - Birds | *Plegadis chihi* | White-Faced Ibis | ABNGE02020 | none | none | WL | - | 3211475 | Bard | unprocessed | Animals - Birds - *Threskiornithidae - Plegadis chihi* |
| Animals - Birds | *Calypte costae* | Costa's Hummingbird | ABNUC47020 | none | none | - | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Trochilidae - Calypte costae* |
| Animals - Birds | *Contopus cooperi* | Olive-Sided Flycatcher | ABPAE32010 | none | none | SSC | - | 3211466 | Yuma West | unprocessed | Animals - Birds - *Tyrannidae - Contopus cooperi* |
| Animals - Birds | *Empidonax traillii extimus* | Southwestern Willow Flycatcher | ABPAE33043 | Endangered | Endangered | - | - | 3211474 | Laguna Dam | mapped | Animals - Birds - *Tyrannidae - Empidonax traillii extimus* |
| Animals - Birds | *Myiarchus tyrannulus* | Brown-Crested Flycatcher | ABPAE43080 | none | none | WL | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Tyrannidae - Myiarchus tyrannulus* |
| Animals - Birds | *Myiarchus tyrannulus* | Brown-Crested Flycatcher | ABPAE43080 | none | none | WL | - | 3211465 | Yuma East | unprocessed | Animals - Birds - *Tyrannidae - Myiarchus tyrannulus* |
| Animals - Birds | *Myiarchus tyrannulus* | Brown-Crested Flycatcher | ABPAE43080 | none | none | WL | - | 3211475 | Bard | mapped | Animals - Birds - *Tyrannidae - Myiarchus tyrannulus* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Myiarchus tyrannulus* | Brown-Crested Flycatcher | ABPAE43080 | none | none | WL | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Tyrannidae - Myiarchus tyrannulus* |
| Animals - Birds | *Myiarchus tyrannulus* | Brown-Crested Flycatcher | ABPAE43080 | none | none | WL | - | 3211485 | Little Picacho Peak | mapped and unprocessed | Animals - Birds - *Tyrannidae - Myiarchus tyrannulus* |
| Animals - Birds | *Pyrocephalus rubinus* | Vermilion Flycatcher | ABPAE36010 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Tyrannidae - Pyrocephalus rubinus* |
| Animals - Birds | *Pyrocephalus rubinus* | Vermilion Flycatcher | ABPAE36010 | none | none | SSC | - | 3211475 | Bard | mapped and unprocessed | Animals - Birds - *Tyrannidae - Pyrocephalus rubinus* |
| Animals - Birds | *Pyrocephalus rubinus* | Vermilion Flycatcher | ABPAE36010 | none | none | SSC | - | 3211465 | Yuma East | mapped | Animals - Birds - *Tyrannidae - Pyrocephalus rubinus* |
| Animals - Birds | *Pyrocephalus rubinus* | Vermilion Flycatcher | ABPAE36010 | none | none | SSC | - | 3211474 | Laguna Dam | mapped | Animals - Birds - *Tyrannidae - Pyrocephalus rubinus* |
| Animals - Birds | *Vireo bellii arizonae* | Arizona Bell's Vireo | ABPBW01111 | none | Endangered | - | - | 3211474 | Laguna Dam | mapped and unprocessed | Animals - Birds - *Vireonidae - Vireo bellii arizonae* |
| Animals - Birds | *Vireo bellii arizonae* | Arizona Bell's Vireo | ABPBW01111 | none | Endangered | - | - | 3211465 | Yuma East | mapped and unprocessed | Animals - Birds - *Vireonidae - Vireo bellii arizonae* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Birds | *Vireo bellii arizonae* | Arizona Bell's Vireo | ABPBW01111 | none | Endangered | - | - | 3211466 | Yuma West | mapped | Animals - Birds - *Vireonidae - Vireo bellii arizonae* |
| Animals - Birds | *Vireo bellii arizonae* | Arizona Bell's Vireo | ABPBW01111 | none | Endangered | - | - | 3211475 | Bard | mapped | Animals - Birds - *Vireonidae - Vireo bellii arizonae* |
| Animals - Birds | *Vireo bellii arizonae* | Arizona Bell's Vireo | ABPBW01111 | none | Endangered | - | - | 3211484 | Imperial Reservoir | mapped and unprocessed | Animals - Birds - *Vireonidae - Vireo bellii arizonae* |
| Animals - Birds | *Vireo bellii arizonae* | Arizona Bell's Vireo | ABPBW01111 | none | Endangered | - | - | 3211485 | Little Picacho Peak | mapped and unprocessed | Animals - Birds - *Vireonidae - Vireo bellii arizonae* |
| Animals - Fish | *Xyrauchen texanus* | Razorback Sucker | AFCJC11010 | Endangered | Endangered | FP | - | 3211484 | Imperial Reservoir | mapped | *Animals - Fish - Catostomidae - Xyrauchen texanus* |
| Animals - Fish | *Xyrauchen texanus* | Razorback Sucker | AFCJC11010 | Endangered | Endangered | FP | - | 3211475 | Bard | mapped | *Animals - Fish - Catostomidae - Xyrauchen texanus* |
| Animals - Fish | *Xyrauchen texanus* | Razorback Sucker | AFCJC11010 | Endangered | Endangered | FP | - | 3211474 | Laguna Dam | mapped | *Animals - Fish - Catostomidae - Xyrauchen texanus* |
| Animals - Fish | *Ptychocheilus lucius* | Colorado Pikeminnow | AFCJB35020 | Endangered | Endangered | FP | - | 3211474 | Laguna Dam | mapped | *Animals - Fish - Cyprinidae - Ptychocheilus lucius* |
| Animals - Fish | *Ptychocheilus lucius* | Colorado Pikeminnow | AFCJB35020 | Endangered | Endangered | FP | - | 3211475 | Bard | mapped | *Animals - Fish - Cyprinidae - Ptychocheilus lucius* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Mammals | *Ovis canadensis nelsoni* | Desert Bighorn Sheep | AMALE04013 | none | none | FP | - | 3211486 | Picacho Peak | mapped and unprocessed | Animals - Mammals - *Bovidae - Ovis canadensis nelsoni* |
| Animals - Mammals | *Neotoma albigula venusta* | Colorado Valley Woodrat | AMAFF08031 | none | none | - | - | 3211484 | Imperial Reservoir | mapped | Animals - Mammals - *Muridae - Neotoma albigula venusta* |
| Animals - Mammals | *Neotoma albigula venusta* | Colorado Valley Woodrat | AMAFF08031 | none | none | - | - | 3211485 | Little Picacho Peak | mapped | Animals - Mammals - *Muridae - Neotoma albigula venusta* |
| Animals - Mammals | *Neotoma albigula venusta* | Colorado Valley Woodrat | AMAFF08031 | none | none | - | - | 3211475 | Bard | mapped | Animals - Mammals - *Muridae - Neotoma albigula venusta* |
| Animals - Mammals | *Neotoma albigula venusta* | Colorado Valley Woodrat | AMAFF08031 | none | none | - | - | 3211466 | Yuma West | mapped | Animals - Mammals - *Muridae - Neotoma albigula venusta* |
| Animals - Mammals | *Sigmodon hispidus eremicus* | Yuma Hispid Cotton Rat | AMAFF07013 | none | none | SSC | - | 3211474 | Laguna Dam | mapped | Animals - Mammals - *Muridae - Sigmodon hispidus eremicus* |
| Animals - Mammals | *Sigmodon hispidus eremicus* | Yuma Hispid Cotton Rat | AMAFF07013 | none | none | SSC | - | 3211466 | Yuma West | mapped | Animals - Mammals - *Muridae - Sigmodon hispidus eremicus* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Mammals | *Sigmodon hispidus eremicus* | Yuma Hispid Cotton Rat | AMAFF07013 | none | none | SSC | - | 3211465 | Yuma East | mapped and unprocessed | Animals - Mammals - *Muridae - Sigmodon hispidus eremicus* |
| Animals - Mammals | *Sigmodon hispidus eremicus* | Yuma Hispid Cotton Rat | AMAFF07013 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Mammals - *Muridae - Sigmodon hispidus eremicus* |
| Animals - Mammals | *Sigmodon hispidus eremicus* | Yuma Hispid Cotton Rat | AMAFF07013 | none | none | SSC | - | 3211485 | Little Picacho Peak | mapped | Animals - Mammals - *Muridae - Sigmodon hispidus eremicus* |
| Animals - Mammals | *Taxidea taxus* | American Badger | AMAJF04010 | none | none | SSC | - | 3211485 | Little Picacho Peak | mapped | Animals - Mammals - *Mustelidae - Taxidea taxus* |
| Animals - Mammals | *Taxidea taxus* | American Badger | AMAJF04010 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped | Animals - Mammals - *Mustelidae - Taxidea taxus* |
| Animals - Mammals | *Taxidea taxus* | American Badger | AMAJF04010 | none | none | SSC | - | 3211476 | Araz | mapped | Animals - Mammals - *Mustelidae - Taxidea taxus* |
| Animals - Mammals | *Taxidea taxus* | American Badger | AMAJF04010 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Mammals - *Mustelidae - Taxidea taxus* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Mammals | *Macrotus californicus* | California Leaf-Nosed Bat | AMACB01010 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Mammals - *Phyllostomidae - Macrotus californicus* |
| Animals - Mammals | *Macrotus californicus* | California Leaf-Nosed Bat | AMACB01010 | none | none | SSC | - | 3211484 | Imperial Reservoir | unprocessed | Animals - Mammals - *Phyllostomidae - Macrotus californicus* |
| Animals - Mammals | *Corynorhinus townsendii* | Townsend's Big-Eared Bat | AMACC08010 | none | Candidate Threatened | SSC | - | 3211484 | Imperial Reservoir | mapped | Animals - Mammals - *Vespertilionidae - Corynorhinus townsendii* |
| Animals - Mammals | *Corynorhinus townsendii* | Townsend's Big-Eared Bat | AMACC08010 | none | Candidate Threatened | SSC | - | 3211485 | Little Picacho Peak | mapped | Animals - Mammals - *Vespertilionidae - Corynorhinus townsendii* |
| Animals - Mammals | *Corynorhinus townsendii* | Townsend's Big-Eared Bat | AMACC08010 | none | Candidate Threatened | SSC | - | 3211486 | Picacho Peak | mapped | Animals - Mammals - *Vespertilionidae - Corynorhinus townsendii* |
| Animals - Mammals | *Corynorhinus townsendii* | Townsend's Big-Eared Bat | AMACC08010 | none | Candidate Threatened | SSC | - | 3211475 | Bard | mapped | Animals - Mammals - *Vespertilionidae - Corynorhinus townsendii* |
| Animals - Mammals | *Corynorhinus townsendii* | Townsend's Big-Eared Bat | AMACC08010 | none | Candidate Threatened | SSC | - | 3211466 | Yuma West | mapped | Animals - Mammals - *Vespertilionidae - Corynorhinus townsendii* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Mammals | *Corynorhinus townsendii* | Townsend's Big-Eared Bat | AMACC08010 | none | Candidate Threatened | SSC | - | 3211465 | Yuma East | mapped | Animals - Mammals - *Vespertilionidae - Corynorhinus townsendii* |
| Animals - Mammals | *Myotis lucifugus* | Little Brown Bat | AMACC01010 | none | none | - | - | 3211475 | Bard | unprocessed | Animals - Mammals - *Vespertilionidae - Myotis lucifugus* |
| Animals - Mammals | *Myotis occultus* | Arizona Myotis | AMACC01160 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Mammals - *Vespertilionidae - Myotis occultus* |
| Animals - Mammals | *Myotis occultus* | Arizona Myotis | AMACC01160 | none | none | SSC | - | 3211465 | Yuma East | mapped | Animals - Mammals - *Vespertilionidae - Myotis occultus* |
| Animals - Mammals | *Myotis yumanensis* | Yuma Myotis | AMACC01020 | none | none | - | - | 3211475 | Bard | mapped | Animals - Mammals - *Vespertilionidae - Myotis yumanensis* |
| Animals - Reptiles | *Heloderma suspectum cinctum* | Banded Gila Monster | ARACE01011 | none | none | SSC | - | 3211484 | Imperial Reservoir | mapped | Animals - Reptiles - *Helodermatidae - Heloderma suspectum cinctum* |
| Animals - Reptiles | *Kinosternon sonoriense* | Sonoran Mud Turtle | ARAAE01040 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Reptiles - *Kinosternidae - Kinosternon sonoriense* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Reptiles | *Kinosternon sonoriense* | Sonoran Mud Turtle | ARAAE01040 | none | none | SSC | - | 3211465 | Yuma East | mapped | Animals - Reptiles - *Kinosternidae - Kinosternon sonoriense* |
| Animals - Reptiles | *Kinosternon sonoriense* | Sonoran Mud Turtle | ARAAE01040 | none | none | SSC | - | 3211474 | Laguna Dam | mapped | Animals - Reptiles - *Kinosternidae - Kinosternon sonoriense* |
| Animals - Reptiles | *Kinosternon sonoriense* | Sonoran Mud Turtle | ARAAE01040 | none | none | SSC | - | 3211466 | Yuma West | mapped | Animals - Reptiles - *Kinosternidae - Kinosternon sonoriense* |
| Animals - Reptiles | *Phrynosoma mcallii* | Flat-Tailed Horned Lizard | ARACF12040 | none | none | SSC | - | 3211466 | Yuma West | mapped | Animals - Reptiles - *Phrynosomatidae - Phrynosoma mcallii* |
| Animals - Reptiles | *Phrynosoma mcallii* | Flat-Tailed Horned Lizard | ARACF12040 | none | none | SSC | - | 3211465 | Yuma East | mapped | Animals - Reptiles - *Phrynosomatidae - Phrynosoma mcallii* |
| Animals - Reptiles | *Phrynosoma mcallii* | Flat-Tailed Horned Lizard | ARACF12040 | none | none | SSC | - | 3211475 | Bard | mapped | Animals - Reptiles - *Phrynosomatidae - Phrynosoma mcallii* |
| Animals - Reptiles | *Phrynosoma mcallii* | Flat-Tailed Horned Lizard | ARACF12040 | none | none | SSC | - | 3211476 | Araz | mapped and unprocessed | Animals - Reptiles - *Phrynosomatidae - Phrynosoma mcallii* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals - Reptiles | *Gopherus agassizii* | Desert Tortoise | ARAAF01012 | Threatened | Threatened | - | - | 3211466 | Yuma West | mapped | Animals - Reptiles - *Testudinidae - Gopherus agassizii* |
| Community - Terrestrial | *Sonoran Cottonwood Willow Riparian Forest* | Sonoran Cottonwood Willow Riparian Forest | CTT61810CA | none | none | - | - | 3211466 | Yuma West | mapped | Community - Terrestrial - *Sonoran Cottonwood Willow Riparian Forest* |
| Community - Terrestrial | *Sonoran Cottonwood Willow Riparian Forest* | Sonoran Cottonwood Willow Riparian Forest | CTT61810CA | none | none | - | - | 3211474 | Laguna Dam | mapped | Community - Terrestrial - *Sonoran Cottonwood Willow Riparian Forest* |
| Community - Terrestrial | *Sonoran Cottonwood Willow Riparian Forest* | Sonoran Cottonwood Willow Riparian Forest | CTT61810CA | none | none | - | - | 3211475 | Bard | mapped | Community - Terrestrial - *Sonoran Cottonwood Willow Riparian Forest* |
| Community - Terrestrial | *Sonoran Cottonwood Willow Riparian Forest* | Sonoran Cottonwood Willow Riparian Forest | CTT61810CA | none | none | - | - | 3211484 | Imperial Reservoir | mapped | Community - Terrestrial - *Sonoran Cottonwood Willow Riparian Forest* |
| Community - Terrestrial | *Sonoran Cottonwood Willow Riparian Forest* | Sonoran Cottonwood Willow Riparian Forest | CTT61810CA | none | none | - | - | 3211485 | Little Picacho Peak | mapped | Community - Terrestrial - *Sonoran Cottonwood Willow Riparian Forest* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plants - Vascular | *Palafoxia arida var. gigantea* | Giant Spanish-Needle | PDAST6T012 | none | none | - | 1B.3 | 3211466 | Yuma West | mapped | Plants - Vascular - *Asteraceae - Palafoxia arida var. gigantea* |
| Plants - Vascular | *Cryptantha holoptera* | Winged Cryptantha | PDBOR0A180 | none | none | - | 4.3 | 3211466 | Yuma West | unprocessed | Plants - Vascular - *Boraginaceae - Cryptantha holoptera* |
| Plants - Vascular | *Cryptantha holoptera* | Winged Cryptantha | PDBOR0A180 | none | none | - | 4.3 | 3211474 | Laguna Dam | unprocessed | Plants - Vascular - *Boraginaceae - Cryptantha holoptera* |
| Plants - Vascular | *Cryptantha holoptera* | Winged Cryptantha | PDBOR0A180 | none | none | - | 4.3 | 3211476 | Araz | unprocessed | Plants - Vascular - *Boraginaceae - Cryptantha holoptera* |
| Plants - Vascular | *Cryptantha holoptera* | Winged Cryptantha | PDBOR0A180 | none | none | - | 4.3 | 3211485 | Little Picacho Peak | unprocessed | Plants - Vascular - *Boraginaceae - Cryptantha holoptera* |
| Plants - Vascular | *Cryptantha holoptera* | Winged Cryptantha | PDBOR0A180 | none | none | - | 4.3 | 3211484 | Imperial Reservoir | unprocessed | Plants - Vascular - *Boraginaceae - Cryptantha holoptera* |
| Plants - Vascular | *Cryptantha holoptera* | Winged Cryptantha | PDBOR0A180 | none | none | - | 4.3 | 3211486 | Picacho Peak | unprocessed | Plants - Vascular - *Boraginaceae - Cryptantha holoptera* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plants - Vascular | *Nama stenocarpum* | Mud Nama | PDHYD0A0H0 | none | none | - | 2B.2 | 3211466 | Yuma West | mapped | Plants - Vascular - *Boraginaceae - Nama stenocarpum* |
| Plants - Vascular | *Nama stenocarpum* | Mud Nama | PDHYD0A0H0 | none | none | - | 2B.2 | 3211465 | Yuma East | mapped | Plants - Vascular - *Boraginaceae - Nama stenocarpum* |
| Plants - Vascular | *Carnegiea gigantea* | Saguaro | PDCAC12010 | none | none | - | 2B.2 | 3211474 | Laguna Dam | mapped and unprocessed | Plants - Vascular - *Cactaceae - Carnegiea gigantea* |
| Plants - Vascular | *Carnegiea gigantea* | Saguaro | PDCAC12010 | none | none | - | 2B.2 | 3211475 | Bard | mapped | Plants - Vascular - *Cactaceae - Carnegiea gigantea* |
| Plants - Vascular | *Carnegiea gigantea* | Saguaro | PDCAC12010 | none | none | - | 2B.2 | 3211484 | Imperial Reservoir | mapped | Plants - Vascular - *Cactaceae - Carnegiea gigantea* |
| Plants - Vascular | *Carnegiea gigantea* | Saguaro | PDCAC12010 | none | none | - | 2B.2 | 3211485 | Little Picacho Peak | mapped | Plants - Vascular - *Cactaceae - Carnegiea gigantea* |
| Plants - Vascular | *Koeberlinia spinosa ssp. tenuispina* | Slender-Spined All-Thorn | PDCPP05012 | none | none | - | 2B.2 | 3211486 | Picacho Peak | mapped | Plants - Vascular - *Capparaceae - Koeberlinia spinosa ssp. tenuispina* |
| Plants - Vascular | *Croton wigginsii* | Wiggins' Croton | PDEUP0H140 | none | rare | - | 2B.2 | 3211475 | Bard | mapped | Plants - Vascular - *Euphorbiaceae - Croton wigginsii* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plants - Vascular | *Croton wigginsii* | Wiggins' Croton | PDEUP0H140 | none | rare | - | 2B.2 | 3211476 | Araz | mapped | Plants - Vascular - *Euphorbiaceae - Croton wigginsii* |
| Plants - Vascular | *Ditaxis claryana* | Glandular Ditaxis | PDEUP080L0 | none | none | - | 2B.2 | 3211486 | Picacho Peak | mapped and unprocessed | Plants - Vascular - *Euphorbiaceae - Ditaxis claryana* |
| Plants - Vascular | *Ditaxis claryana* | Glandular Ditaxis | PDEUP080L0 | none | none | - | 2B.2 | 3211485 | Little Picacho Peak | mapped | Plants - Vascular - *Euphorbiaceae - Ditaxis claryana* |
| Plants - Vascular | *Astragalus insularis var. harwoodii* | Harwood's Milk-Vetch | PDFAB0F491 | none | none | - | 2B.2 | 3211476 | Araz | mapped | Plants - Vascular - *Fabaceae - Astragalus insularis var. harwoodii* |
| Plants - Vascular | *Astragalus insularis var. harwoodii* | Harwood's Milk-Vetch | PDFAB0F491 | none | none | - | 2B.2 | 3211466 | Yuma West | mapped | Plants - Vascular - *Fabaceae - Astragalus insularis var. harwoodii* |
| Plants - Vascular | *Calliandra eriophylla* | Pink Fairy-Duster | PDFAB0N040 | none | none | - | 2B.3 | 3211486 | Picacho Peak | mapped | Plants - Vascular - *Fabaceae - Calliandra eriophylla* |
| Plants - Vascular | *Juncus acutus ssp. leopoldii* | Southwestern Spiny Rush | PMJUN01051 | none | none | - | 4.2 | 3211484 | Imperial Reservoir | unprocessed | Plants - Vascular - *Juncaceae - Juncus acutus ssp. leopoldii* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plants - Vascular | *Horsfordia newberryi* | Newberry's Velvet-Mallow | PDMAL0J020 | none | none | - | 4.3 | 3211486 | Picacho Peak | unprocessed | Plants - Vascular - *Malvaceae - Horsfordia newberryi* |
| Plants - Vascular | *Digitaria californica var. californica* | Arizona Cottontop | PMPOA27051 | none | none | - | 2B.3 | 3211475 | Bard | mapped | Plants - Vascular - *Poaceae - Digitaria californica var. californica* |
| Plants - Vascular | *Panicum hirticaule ssp. hirticaule* | Roughstalk Witch Grass | PMPOA4K170 | none | none | - | 2B.1 | 3211466 | Yuma West | mapped | Plants - Vascular - *Poaceae - Panicum hirticaule ssp. hirticaule* |
| Plants - Vascular | *Panicum hirticaule ssp. hirticaule* | Roughstalk Witch Grass | PMPOA4K170 | none | none | - | 2B.1 | 3211465 | Yuma East | mapped | Plants - Vascular - *Poaceae - Panicum hirticaule ssp. hirticaule* |
| Plants - Vascular | *Colubrina californica* | Las Animas Colubrina | PDRHA05030 | none | none | - | 2B.3 | 3211486 | Picacho Peak | mapped | Plants - Vascular - *Rhamnaceae - Colubrina californica* |
| Plants - Vascular | *Colubrina californica* | Las Animas Colubrina | PDRHA05030 | none | none | - | 2B.3 | 3211485 | Little Picacho Peak | mapped | Plants - Vascular - *Rhamnaceae - Colubrina californica* |
| Plants - Vascular | *Condalia globosa var. pubescens* | Spiny Abrojo | PDRHA06031 | none | none | - | 4.2 | 3211485 | Little Picacho Peak | unprocessed | Plants - Vascular - *Rhamnaceae - Condalia globosa var. pubescens* |

| Element Type | Scientific Name | Common Name | Element Code | Federal Status | State Status | CDFW Status | CA Rare Plant Rank | Quad Code | Quad Name | Data Status | Taxonomic Sort |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plants - Vascular | *Condalia globosa var. pubescens* | Spiny Abrojo | PDRHA06031 | none | none | - | 4.2 | 3211486 | Picacho Peak | unprocessed | Plants - Vascular - *Rhamnaceae - Condalia globosa var. pubescens* |
| Plants - Vascular | *Condalia globosa var. pubescens* | Spiny Abrojo | PDRHA06031 | none | none | - | 4.2 | 3211475 | Bard | unprocessed | Plants - Vascular - *Rhamnaceae - Condalia globosa var. pubescens* |
| Plants - Vascular | *Penstemon pseudospectabilis ssp. pseudospectabilis* | Desert Beardtongue | PDSCR1L562 | none | none | - | 2B.2 | 3211475 | Bard | mapped | Plants - Vascular - *Scrophulariaceae - Penstemon pseudospectabilis ssp. pseudospectabilis* |
| Plants - Vascular | *Penstemon pseudospectabilis ssp. pseudospectabilis* | Desert Beardtongue | PDSCR1L562 | none | none | - | 2B.2 | 3211486 | Picacho Peak | mapped | Plants - Vascular - *Scrophulariaceae - Penstemon pseudospectabilis ssp. pseudospectabilis* |

# APPENDIX B. LISTED, PROPOSED SPECIES, AND CRITICAL HABITAT POTENTIALLY OCCURRING OR KNOWN TO OCCUR IN THE PROJECT REGION EXCLUDED FROM FURTHER CONSIDERATION

**Table B.1. Listed, Proposed Species, and Critical Habitat Potentially Occurring or Known to Occur in the Project Region Excluded from Further Consideration**

| Scientific Name | Common Name | Status (FWS/State/CNPS) | Habitat[a] | Exclusion Justification |
|---|---|---|---|---|
| **Birds** | | | | |
| *Accipiter cooperii* | Cooper's Hawk | -/WL/- | low-to-mid-elevation riparian areas, woodlands, and forests | no suitable riparian, woodland, or forest habitat present in study area |
| *Aquila chrysaetos* | Golden Eagle | -/FP,WL/- | open habitats, including tundra, grasslands and desert; nesting cliffs, with typical heights of at least 30 m (100 feet), are normally directly adjacent to foraging habitat of desert grasslands or desert scrub | no suitable cliff habitat for nesting or open desert habitat for foraging present in study area |
| *Chaetura vauxi* | Vaux's Swift | -/SSC/- | Redwood and Douglas-fir habitats with nest-sites in large hollow trees and snags, especially tall, burned-out stubs; a fairly common migrant throughout most of the state in April and May and August and September; a few individuals winter irregularly in southern coastal lowlands | no suitable habitat present in study area. may occur in the vicinity of the study area as a transient during migration, but not in the study area itself |
| *Coccyzus americanus occidentalis* | Western Yellow-billed Cuckoo | PT/E/- | dense cottonwood/willow stands in areas of standing water | no suitable riparian habitat present in study area |
| *Colaptes chrysoides* | Gilded Flicker | -/E/- | upper and lower Sonoran Desert with Saguaros | no suitable Sonoran desert habitat present in study area |
| *Contopus cooperi* | Olive-sided Flycatcher | -/SSC/- | forest and woodland habitats below 2,800 m (9,000 feet) throughout California exclusive of the deserts, the central valley, and other lowland valleys and basins; preferred nesting habitats include mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine; arrives from South American wintering areas in mid-April (southern California) to early May (northern California), with transient individuals still moving north in early June; departs breeding areas in August; most have left the state by early October | no suitable habitat present in study area. may occur in the vicinity of the study area as a transient during migration, but not in the study area itself |

| Scientific Name | Common Name | Status (FWS/State/CNPS) | Habitat[a] | Exclusion Justification |
|---|---|---|---|---|
| *Dendroica petechia brewsteri* | Yellow Warbler | -/SSC/- | riparian areas with cottonwoods, willows, and alder | no suitable riparian habitat present in study area |
| *Dendroica petechia sonorana* | Sonoran Yellow Warbler | -/SSC/- | riparian areas including tamarisk thickets | no suitable riparian or tamarisk thicket habitat present in study area |
| *Empidonax traillii extimus* | Southwestern Willow Flycatcher | E/E/- | dense and layered willow, cottonwood, and tamarisk thickets and woodland along streams and rivers | no suitable riparian or tamarisk thicket habitat present in study area |
| *Haliaeetus leucocephalus* | Bald Eagle | -/E,FP/- | open areas, forest edges, and mountains near large lakes and rivers; requires tall trees for nesting | no suitable habitat in the vicinity of large waterbodies present in study area |
| *Icteria virens* | Yellow-breasted Chat | -/SSC/- | riparian thickets with willows and other brushy vegetation near watercourses | no suitable riparian habitat present in study area |
| *Ixobrychus exilis* | Least Bittern | -/SSC/- | densely vegetated emergent wetlands near sources of fresh water and desert riparian areas including tamarisk thickets | no suitable riparian or tamarisk thicket habitat present in study area |
| *Kinosternon sonoriense* | Sonoran Mud Turtle | -/SSC/- | rivers, streams, stock tanks, ponds, and reservoirs | no suitable aquatic habitat present in study area |
| *Laterallus jamaicensis coturniculus* | California Black Rail | -/T,FP/- | tidal salt marshes. Also occurs in brackish and fresh-water marshes, all at low elevations | no suitable marsh habitat present in study area |
| *Melanerpes uropygialis* | Gila Woodpecker | -/E/- | desert riparian and wash habitats. Cottonwoods and other desert riparian trees, shade trees, and date palms supply cover | no suitable riparian or wash habitat present in study area |
| *Micrathene whitneyi* | Elf Owl | -/E/- | desert riparian areas with cottonwood, sycamore, willow, or mesquite; absent from habitats dominated by tamarisk | no suitable riparian habitat present in study area |
| *Mycteria americana* | Wood Stork | -/SSC/- | breeds in Mexico, Central and South America, and along the southeastern U.S. coast; this species is a locally common post-breeding visitor to California, with several hundred birds occurring in Imperial County from late May to October in marshes at the south end of the Salton Sea | no suitable marsh habitat present in study area. may occur in the vicinity of the study area as a transient during migration, but not in the study area itself |
| *Myiarchus tyrannulus* | Brown-crested Flycatcher | -/WL/- | riparian areas with cottonwood, willow, or mesquite; desert scrub and tamarisk thickets often used for foraging | no suitable riparian, tamarisk thicket, or desertscrub habitat present in study area |

| Scientific Name | Common Name | Status (FWS/State/CNPS) | Habitat[a] | Exclusion Justification |
|---|---|---|---|---|
| *Oreothlypis luciae* | Lucy's Warbler | -/SSC/- | desert washes and riparian areas dominated by mesquite; also found in tamarisk and other thickets | no suitable wash, riparian, or tamarisk thicket habitat present in study area |
| *Pandion haliaetus* | Osprey | -/WL/- | riparian areas near large, fish-bearing bodies of water | no suitable riparian habitat near large bodies of water present in study area |
| *Phalacrocorax auritus* | Double-crested Cormorant | -/WL/- | large, open bodies of water including slow-moving rivers, lakes, and reservoirs | no suitable large waterbody habitat present in study area. |
| *Piranga rubra* | Summer Tanager | -/SSC/- | desert riparian areas dominated by cottonwoods and willows | no suitable riparian habitat present in study area |
| *Rallus longirostris yumanensis* | Yuma Clapper Rail | E/T,FP/- | freshwater and brackish marshes. Prefers dense cattails, bulrushes, and other aquatic vegetation; nests in riverine wetlands near upland, in shallow sites dominated by mature vegetation, often in the base of a shrub; prefers denser cover in winter than in summer | no suitable marsh habitat present in study area |
| *Toxostoma crissale* | Crissal Thrasher | -/SSC/- | dense vegetation along streams and washes with mesquite, willows, and arrowweed | no suitable riparian or desert wash habitat present in study area |
| *Toxostoma lecontei* | Le Conte's Thrasher | -/SSC/- | arid and sparsely vegetated desertscrub with saltbush and creosote scrub | no suitable desertscrub habitat present in study area |
| *Vireo bellii arizonae* | Arizona Bell's Vireo | -/E/- | riparian areas along the Colorado River from Needles to Blythe | no suitable riparian habitat present in study area |
| *Vireo bellii pusillus* | Least Bell's Vireo | E/E/- | riparian areas with willows | no suitable riparian habitat present in study area |
| **Fish** | | | | |
| *Cyprinodon macularius* | Desert Pupfish | E/E/- | shallow waters of springs, small streams, and marshes. Often associated with areas of soft substrates and clear water | no suitable aquatic habitat present in study area |
| *Ptychocheilus lucius* | Colorado Pikeminnow | E/E,FP/- | large-to-medium-sized rivers (adults) and backwaters (juveniles) | no suitable aquatic habitat present in study area |
| *Xyrauchen texanus* | Razorback Sucker | E/E,FP/- | large to medium-sized rivers including backwaters | no suitable aquatic habitat present in study area |
| **Invertebrates** | | | | |

| Scientific Name | Common Name | Status (FWS/State/CNPS) | Habitat[a] | Exclusion Justification |
|---|---|---|---|---|
| *Euphydryas editha quino* | Quino Checkerspot Butterfly | E/-/- | coastal sage scrub, open chaparral, juniper woodland, and grassland | no suitable scrub, chaparral, woodland, or grassland habitat present in study area |
| **Mammals** | | | | |
| *Macrotus californicus* | California Leaf-nosed Bat | -/SSC/- | desert riparian, wash, scrub, alkali scrub, and succulent shrub | no suitable riparian, wash, or scrub habitat present in study area |
| *Myotis occultus* | Arizona Myotis | -/SSC/- | desert riparian areas | no suitable riparian habitat present in study area |
| *Ovis canadensis nelsoni* | Peninsular Bighorn Sheep | E/T,FP/- | arid, precipitous terrain with rocky ridges, slopes, cliffs, and rugged canyons; typical vegetation consists of low shrubs, grasses, and forbs | no suitable rocky cliff habitat present in study area |
| *Taxidea taxus* | American Badger | -/SSC/- | drier open stages of most shrub, forest, and herbaceous habitats, with friable soils | no suitable habitat present in study area and no individuals of or burrows attributable to this species observed during surveys |
| **Plants** | | | | |
| *Astragalus insularis var. harwoodii* | Harwood's Milkvetch | -/-/2B.2 | sandy or gravelly areas in Mojavean desertscrub including dunes | no suitable Mojavean desertscrub or dune habitat present in study area and no individuals of this species observed during surveys |
| *Astragalus magdalenae v. peirsonii* | Peirson's Milkvetch | T/E/1B.2 | desert dunes | no suitable dune habitat present in study area and no individuals of this species observed during surveys |
| *Calliandra eriophylla* | Pink Fairy Duster | -/-/2B.3 | sandy or rocky Sonoran desertscrub | no suitable Sonoran desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Carnegiea gigantea* | Saguaro | -/-/2B.2 | rocky Sonoran desertscrub | no suitable Sonoran desertscrub habitat present in study area and no individuals of this species observed during surveys |

| Scientific Name | Common Name | Status (FWS/State/CNPS) | Habitat[a] | Exclusion Justification |
|---|---|---|---|---|
| *Colubrina californica* | Las Animas Colubrina | -/-/2B.3 | Mojavean and Sonoran desertscrub | no suitable desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Condalia globosa var. pubescens* | Spiny Abrojo | -/-/4.2 | Sonoran desertscrub | no suitable desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Croton wigginsii* | Wiggins' Croton | -/R/2B.2 | sandy Sonoran desertscrub and desert dunes | no suitable desertscrub or dune habitat present in study area and no individuals of this species observed during surveys |
| *Cryptantha holoptera* | Winged Cryptantha | -/-/2B.3 | Mojavean and Sonoran desertscrub | no suitable desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Digitaria californica v. californica* | Arizona Cottontop | -/-/2B.2 | Mojavean and Sonoran desertscrub | no suitable desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Ditaxis claryana* | Glandular Ditaxis | -/-/2B.3 | sandy Mohavean and Sonoran desertscrub | no suitable desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Horsfordia newberryi* | Newberry's Velvet Mallow | -/-/4.2 | rocky Sonoran desertscrub | no suitable desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Juncus acutus ssp. leopoldii* | Southwestern Spiny Rush | -/-/2B.2 | mesic coastal dunes, alkaline seeps, and coastal salt marshes and swamps | no suitable dune or marsh habitat present in study area and no individuals of this species observed during surveys |

| Scientific Name | Common Name | Status (FWS/State/CNPS) | Habitat[a] | Exclusion Justification |
|---|---|---|---|---|
| *Koeberlinia spinosa ssp. tenuispina* | Slender-spined Allthorn | -/-/4.3 | riparian woodland and Sonoran desertscrub | no suitable riparian or desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Nama stenocarpum* | Mud Nama | -/-/2B.3 | marshes and swamps on lake margins and riverbanks | no suitable marsh habitat present in study area and no individuals of this species observed during surveys |
| *Palafoxia arida v. gigantea* | Giant Spanish Needle | -/-/2B.2 | desert dunes | no suitable dune habitat present in study area and no individuals of this species observed during surveys |
| *Panicum hirticaule ssp. hirticaule* | Roughstalk Witchgrass | -/-/2B.1 | sandy, silty depressions in desert dunes and Mojavean and Sonoran desertscrub | no suitable dune or desertscrub habitat present in study area and no individuals of this species observed during surveys |
| *Penstemon pseudospectabilis ssp. pseudospectabilis* | Desert Beardtongue | -/-/4.2 | sandy, sometimes rocky, washes in Mojavean and Sonoran desertscrub | no suitable desertscrub habitat present in study area and no individuals of this species observed during surveys |
| **Reptiles** | | | | |
| *Gopherus agassizii* | Mohave Desert Tortoise | T/T/- | valleys, bajadas, and hills in Mojavean and Sonoran desertscrub with sandy loam to rocky soils | no suitable desertscrub habitat present in study area |
| *Heloderma suspectum cinctum* | Banded Gila Monster | -/SSC/- | Mojavean desertscrub, primarily in desert mountain ranges | no suitable desertscrub habitat present in study area |
| *Phrynosoma mcallii* | Flat-tailed Horned Lizard | -/SSC/- | desert and alkali scrub, washes, and succulent shrub areas with fine sand and sparse vegetation | no suitable desertscrub habitat present in study area |

[a]Habitat descriptions from California Department of Fish and Wildlife California Wildlife Habitat Relation System, California Native Plant Society Rare and Endangered Plant Inventory, and Arizona Game and Fish Department Heritage Data Management System online species abstracts and U.S. Fish and Wildlife Service Environmental Conservation Online System species bjoprofiles.

*Key:* FWS = U.S. Fish and Wildlife Service; CNPS = California Native Plant Society; E = Endangered; T = Threatened; C = Candidate; P = Proposed; SSC = Species of Special Concern; R = Rare; FP = Fully Protected; WL = Watchlist; 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere; 2B = Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere; 4 = Plants of Limited Distribution – A Watch List; .1 = Seriously Threatened in California; .2 = Moderately Threatened in California; .3 = Not Very Threatened in California.

# APPENDIX C. PLANT SPECIES OBSERVED

**Table C.1. Plant Species Observed**

| Family | Scientific Name | Common Name | Noxious Weed Rating |
|---|---|---|---|
| Amaranthaceae | *Amaranthus palmeri* | Carelessweed | - |
| Asteraceae | *Ambrosia dumosa* | White Bursage | - |
| Chenopodiaceae | *Atriplex canescens* | Fourwing Saltbush | - |
| Chenopodiaceae | *Chenopodium album* | Lambsquarters | - |
| Boraginaceae | *Cryptantha angustifolia* | Narrow-leaved Popcornflower | - |
| Poaceae | *Cynodon dactylon* | Bermuda Grass | - |
| Onagraceae | *Gaura coccinea* | Tall Gaura | - |
| Malvaceae | *Gossypium hirsutum* | Cotton | - |
| Asteraceae | *Helianthus annum* | Common Sunflower | - |
| Asteraceae | *Lactuca serriola* | Prickly Lettuce | - |
| Malvaceae | *Malva parviflora* | Cheeseweed | - |
| Fabacea | *Medicago sativa* | Alfalfa | - |
| Fabacea | *Parkinsonia aculeata* | Mexican Palo Verde | - |
| Arecaceae | *Phoenix dactylifera* | Date Palm | - |
| Poaceae | *Phragmites australis* | Common Reed | - |
| Asteraceae | *Pluchea sericea* | Arrow Weed | - |
| Portulacaceae | *Portulaca oleraceae* | Portulaca | - |
| Fabacea | *Prosopis glandulosa* | Honey Mesquite | - |
| Chenopodiaceae | *Salsola kali* | Russian Thistle | limited (CIPC) |
| Salviniaceae | *Salvinia molesta* | Kariba Weed | high (CIPC) |
| Poaceae | *Sorghum bicolor* | Sudangrass | - |
| Tamaricaceae | *Tamarix ramosissima* | Salt Cedar | high (CIPC), listed (CDFA) |
| Typhaceae | *Typha latifolia* | Cattail | - |

*Key:* CIPC = California Invasive Plant Coucil, CDFA = California Department of Food and Agriculture.

# APPENDIX D. WILDLIFE SPECIES OBSERVED

**Table D.1. Wildlife Species Observed.**

| Scientific Name | Common Name |
|---|---|
| *Ardea alba* | Great Egret |
| *Callipepla gambellii* | Gambel's Quail |
| *Canis latrans* | Coyote |
| *Columba livia* | Pigeon |
| *Quiscalus neomexicanus* | Grackle |
| *Riparia riparia* | Bank Swallow |
| *Zenaida asiatica* | White-winged Dove |

# APPENDIX E. REPRESENTATIVE SITE PHOTOGRAPHS




**Photo E.1. First Avenue and E Street, view to north.**




**Photo E.2. Arnold Road and First Avenue, view to west.**




**Photo E.3. West end of project corridor on Arnold, view to east.**




**Photo E.4. Reservation Main Drain at Arnold Road, view to south.**




**Photo E.5. Arnold and Picacho Roads, view to east.**




**Photo E.6 Cocopah Canal at Arnold Road, view to north.**




**Photo E.7. Haughtelin and Perez Roads, view to north.**




**Photo E.8. Ross and Fisher Roads, view to west.**




**Photo E.9. Reservation Main Drain at Stalnacker Road, view to north. Note Kariba Weed in canal.**




**Photo E.10.North end of project corridor on Bard Road, view to south.**




**Photo E.11. Cocopah Canal at Picacho Road, view to east.**




**Photo E.12. Pima Canal at Picacho Road, view to east.**

# APPENDIX D. WATERWAY DELINEATION AND ASSESSMENT REPORT

# TDS Telecom
# Winterhaven Last Mile Underserved Broadband Project
# Imperial County, California

## Waterway Delineation and Assessment Report

*Prepared by:*
Tim Jordan, Senior Biologist,

*Prepared for:*
TDS Telecommunications Corporation
Attn: Nate Stanislawski
525 Junction Road
Madison, Wisconsin, 53717

*Submitted by:*
Tierra Right of Way Services, Ltd.
1575 East River Road, Suite 201
Tucson, Arizona 85718

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# 1.0 INTRODUCTION

This report provides regulatory information, methods, and results for a delineation of waterways potentially affected by the proposed construction of the Winterhaven Last Mile Underserved Broadband Project. The purpose of the delineation is to assess the limits of potential waters of the United States (WUS) and/or waters of the State of California (WS) within and adjacent to the project area that may be subject to regulation by the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and/or the California Department of Fish and Wildlife (CDFW).

# 2.0 PROJECT LOCATION

The project area is located in southeastern Imperial County, California, just north of Yuma, Arizona, and the Colorado River. Baseline Road, which runs north-south, marks the boundary between the Fort Yuma–Quechan Reservation (the Reservation) and private land; the Reservation is west of Baseline Road and private land is to the east. The southern edge of the project area is roughly bounded by the Union Pacific Railroad (UPRR) tracks, the community of Winterhaven, and the Paradise Casino on Picacho Road. The Cocopah Canal runs along the eastern boundary of the project area, and the community of Bard is located at the northeastern limits of the project area. Stalnacker and Ross Roads, along with the community of Ross Corner, make up the approximate northern limits of the project area, and the western edge of the project area is near Arnold Road, where the road approaches the UPRR. Specifically, the project area is located in portions of Section 2, Township 15 South, Range 24 East; Sections 11, 14, and 21–27, Township 16 South, Range 22 East; and Sections 4, 5, 7–9, 18, and 19, Township 16 South, Range 23 East, San Bernardino Baseline and Meridian (SBB&M), as depicted on the Araz, Bard, Yuma East, and Yuma West, AZ/CA, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps (Figures 1 and 2).

# 3.0 PROJECT DESCRIPTION

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 24.65 km (15.31 miles) of new fiber-optic cable will be buried within protective conduit along existing roads in the project area. Approximately 2.25 km (1.40 miles) of existing buried copper line will be used to connect a proposed DLC site on Arnold Road to the new system. A summary of the associated lengths to be installed on and off the Fort Yuma–Quechan Reservation can be found in Table 1. The buried line installation, which consists of the telecommunications cable and its protective conduit, will be performed using plowing construction techniques, and a directional boring machine will be used to install the line at canal and road crossings. Ancillary equipment to be installed includes 10 new equipment cabinets that will serve as connecting "nodes" for customers, splice boxes, and line markers. The equipment cabinets will be approximately 0.6 m by 1.0 m by 1.2 m (2.0 feet by 3.0 feet by 4.0 feet) in size and will be installed on top of buried concrete 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.

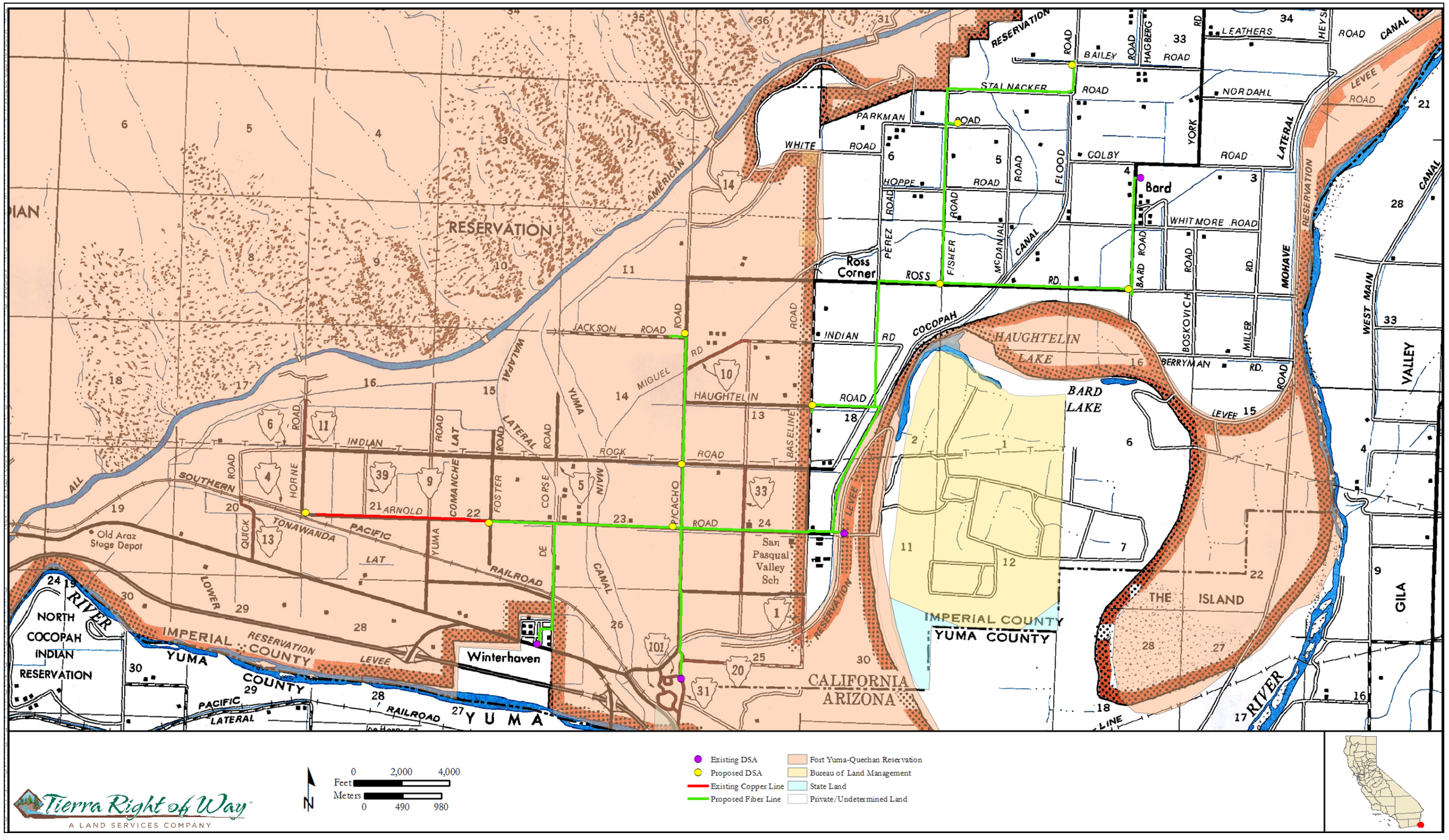



**Figure 1. Project location.**

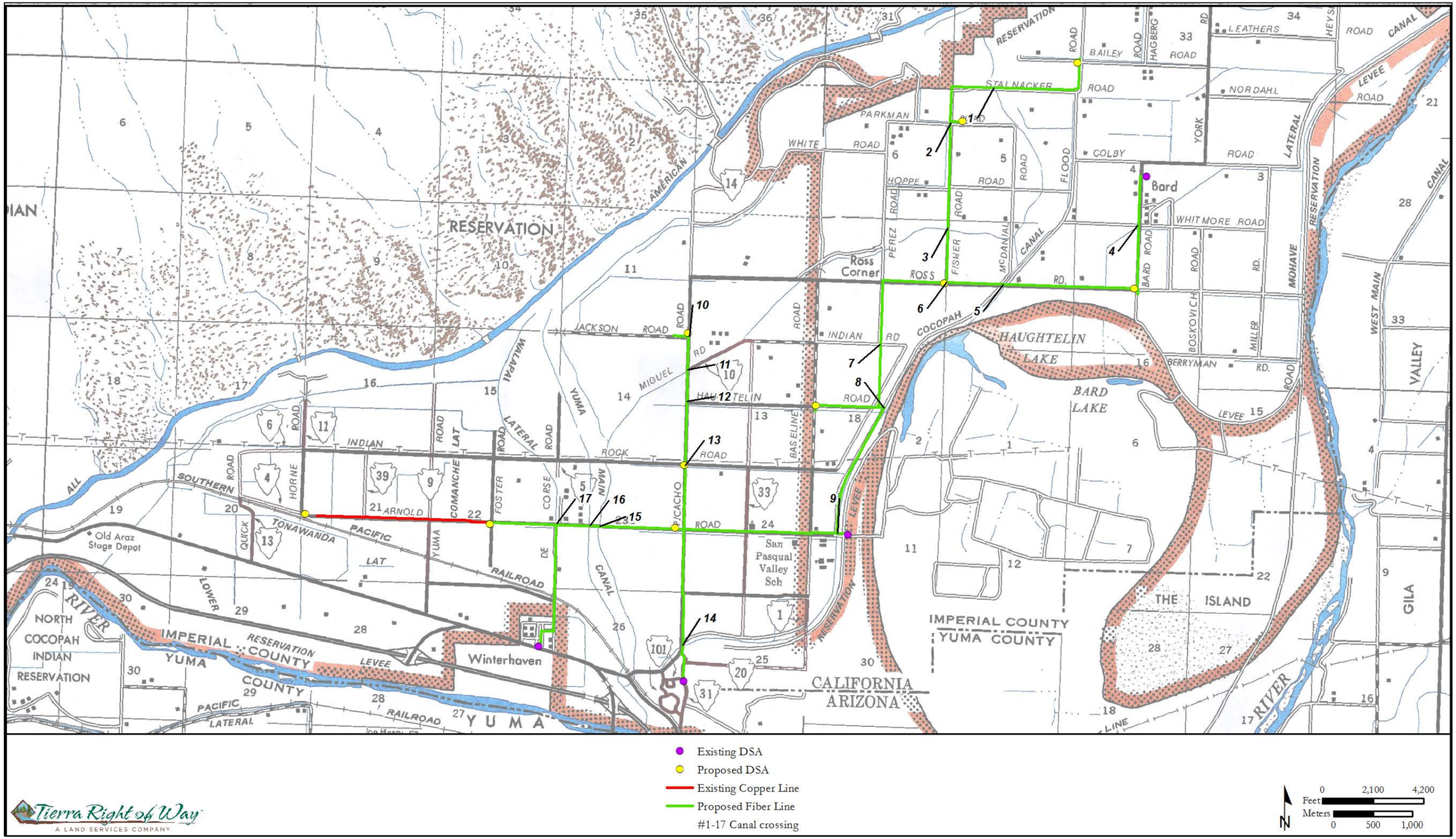



**Figure 2. Project area.**

**Table 1. Cable Installation Lengths**

| Installation | Length (m) | Length (km) | Length (feet) | Length (miles) |
|---|---|---|---|---|
| On-Reservation | 10,139 | 10.14 | 33,264 | 6.30 |
| Off-Reservation | 14,507 | 14.51 | 47,595 | 9.01 |
| **Total** | **24,646** | **24.65** | **80,859** | **15.31** |

The line installation will be performed in two steps. First, a protective conduit for the fiber-optic cable will be installed by either plowing or directional boring construction methods. Second, the fiber-optic cable will be "blown" through the conduit using compressed air. The total combined ground disturbance associated with the project, including both the plowed and bored installations, would not exceed an area approximately 5.1 ha (12.5 acres) in size.

# 4.0 PHYSICAL SETTING

The project area is located in southeastern California on the Colorado River in an area primarily used for agricultural cultivation. Several irrigation canals operated by the Bureau of Reclamation's (BOR's) Imperial Irrigation District (IID) and Bard Water District (BWD) either cross or run parallel to the project corridors. Elevations in the project area range from approximately 38–43 m (126–140 feet) above mean sea level (AMSL).

The Western Regional Climate Center (WRCC) recorded seasonal climatic data from 1993–2013 at the Yuma Quartermaster Depot, located just south of the project area (WRCC 2013). 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 90.1° F (32.2° C), with the hottest month of the year being July with an average maximum temperature of 109.4° F (43.0° C). The average annual minimum temperature within the project area is 59.0° F (15.0° C), with December having the coldest average temperature of 43.4° F (6.3° C). The project area receives an average of 6.8 cm (2.67 inches) of precipitation annually, with February having the highest average precipitation at 1.2 cm (0.48 inches). The project area receives no snowfall in the average year.

While the project area is located within the Colorado Desert, as classified in *A Manual of California Vegetation* (Sawyer 2009), the dominant type of terrestrial habitat present in the project area consists of agricultural land that is being actively cultivated to produce Sudangrass (Sorghum × *drummondii*), wheat (*Triticum* sp.), cotton (*Gossypium* sp.), alfalfa, dates *(Phoenix dactylifera)*, citrus, and other crops. The road shoulders where the proposed telecommunications line is to be installed are mostly devoid of vegetation due to blading activities associated with road maintenance and agricultural activities. Due to this previous disturbance, little to no native vegetation remains in the project area.

# 5.0 JURISDICTIONS

## 5.1 U.S. Army Corps of Engineers

Wetlands and other WUS that are subject to Section 404 of the Clean Water Act are under the jurisdiction of the USACE. Typically, these waters include naturally occurring traditional navigable waters (TNWs), relatively permanent waters (RPWs), and/or ephemeral waters with a significant nexus to a TNW. Agricultural water conveyance systems, which are manmade and constructed wholly in uplands, are typically only considered jurisdictional if they are RPWs. The most recent

guidance on the topic states that "relatively permanent waters typically flow year-round or have continuous flow at least seasonally (e.g. typically three months)" (USACE 2008). Conversely, manmade drainages constructed solely in uplands that are not RPWs are generally not Federally jurisdictional.

### 5.2 California Department of Fish and Wildlife

The CDFW generally assumes jurisdiction over all stream features, including drains and canals, as WS. The CDFW's jurisdiction extends from the top of bank to the opposite top of bank on these features or to the limits of riparian vegetation if this vegetation extends beyond the top of the banks. Wetlands need to meet only one of the three USACE criteria (hydrophytic vegetation, hydric soils, and/or wetland hydrology) to be considered CDFW jurisdictional wetlands.

Under Section 1600 of the California Fish and Game Code, CDFW's jurisdiction includes "…bed, channel or bank of any river, stream or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit…" Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (Cylinder 1995).

## 6.0 METHODOLOGY

The delineation of waterways in the TDS project area began with a review of aerial imagery and topographic maps to determine the locations of waterways along the project corridors that the proposed installations would intersect. Each of the crossings was then digitized as a polygon that included the project corridor centerline and a 15.2-m (50.0-foot) buffer to either side of the centerline along with the extent of any vegetation surrounding the waterway that was evident in the aerial imagery. The crossing polygons were then uploaded as a background file into a Trimble Global Positioning System (GPS) handheld unit. The Trimble was used in the field to navigate to each crossing and the crossings' characteristics, such as canal construction type, presence/absence of water, and vegetation types and extent, were noted and photographs taken. While in the field, all canals intersecting the project corridors, including those not identified prior to the field visit, were recorded. Following the field visit, the pre-field crossing polygons were refined using notes taken in the field to develop the final extents of all waterways and any vegetation associated with the waterways to be crossed and ultimately avoided during the proposed telecommunications line installation.

## 7.0 RESULTS

Eleven irrigation canals and/or drains were identified in the project area that would be crossed by the proposed installations at 17 locations (Table 2). No USACE wetlands were identified within the project corridors during the field visit; however, WS riverine wetlands may be present along the unlined canals in the project area. The margins of unlined canals in the project area, especially the Reservation Main Drain, contain limited vegetation consisting mostly of Common Reed *(Phragmites australis)* and invasive species such as Salt Cedar *(Tamarix ramosissima)* that may provide habitat for wildlife. This vegetation is only marginally riparian because it is mostly low-growing, not structurally complex, and does not have a tree overstory.

**Table 2. Observed Plant Species Wetland Indicator Status**

| Scientific Name | Common Name | Indicator Status[a] |
|---|---|---|
| *Phragmites australis* | Common Reed | FACW |
| *Pluchea sericea* | Arrow Weed | FACW |
| *Salvinia molesta* | Kariba Weed | OBL |
| *Typha latifolia* | Cattail | OBL |

[a] 2012 National Wetland Plant List, USACE Arid West Region.
Key: FACW = facultative wetland, OBL = obligate.

Saturated soil, a primary indicator of wetland hydrology, was observed along the flowing and unlined canals in the project area. Hydrophytic vegetation, including facultative wetland (FACW) and obligate (OBL) plant species, was also observed along the unlined Reservation Main Drain and Tonowanda Canal (see Table 2).

The characteristics of each canal crossing identified in the project area, including the delineated extent to be avoided during construction and other descriptive information, can be found in Appendix A. A summary of the waterways that would be crossed by the proposed installations, including the names of the canals, their locations, and corresponding identification numbers as indicated on Figure 2, can be found in Table 3.

**Table 3. Irrigation Canal Crossings in the Project Area**

| Map No. | Canal Name | Location |
|---|---|---|
| 1 | Reservation Main Drain | Stahlnacker Road |
| 2 | unnamed canal | Fisher and Parkman Roads |
| 3 | Reservation Main Drain | Fisher Road |
| 4 | Hopi Canal | Bard and Whitmore Roads |
| 5 | Cocopah Canal | Ross Road |
| 6 | unnamed canal | Fisher and Ross Roads |
| 7 | Papago Canal | Perez Road |
| 8 | Pima Canal | Haughtelin and Perez Roads |
| 9 | Cocopah Canal | Flood and Arnold Roads |
| 10 | Navajo Canal | Picacho and Jackson Roads |
| 11 | Reservation Main Drain | Picacho Road |
| 12 | Pima Canal | Picacho and Haughtelin Roads |
| 13 | Pueblo Canal | Picacho and Indian Rock Roads |
| 14 | Cocopah Canal | Picacho Road |
| 15 | Reservation Main Drain | Arnold Road |
| 16 | Yuma Main Canal | Arnold Road |
| 17 | Walapai Canal | Arnold Road |

# 8.0 DISCUSSION

## 8.1 Waters of the U.S.

The drains and canals in the project area are part of an agricultural system and therefore, by definition (Environmental Laboratory 1987), are not classified as wetlands, though typical wetland/riparian plant species may be found within canals and drains. It was assumed that the canals and drains in the project area flow at least intermittently and in some cases, perennially. Examples of the latter would be the Yuma Main Canal and the Reservation Main Drain, two of the largest canals in the project area. Because of these assumed flow regimes, at least some of the canals and drains in the project area would be considered RPWs; likewise, they would be considered jurisdictional WUS by USACE (Table 4).

**Table 4. Potentially Jurisdictional WUS**

| Type | Name (crossing #) | Notes |
|---|---|---|
| WUS (Wetlands) | none | agricultural system |
| WUS (Streams) | Cocopah Canal (5, 9, 14) | assumed RPW |
| | Papago Canal (7) | |
| | Reservation Main Drain (1, 3, 11, 15) | |
| | Hopi Canal (4) | |
| | Unnamed Canal (2) | |
| | Unnamed Canal (6) | |
| | Pima Canal (8) | |
| | Yuma Main Canal (16) | |

## 8.2 Waters of the State

The flowing canals and drains in the project area all have varying capacities to provide habitat for terrestrial and/or aquatic species; therefore, they would be considered streams by the CDFW. Because only one of the three USACE wetland indicators needs to be present for CDFW to consider an area a wetland, several of the unlined canals crossed by the project corridors would also be considered State-jurisdictional wetlands (Table 4).

**Table 4. Potentially Jurisdictional WS**

| Type | Name (crossing #) | Notes |
|---|---|---|
| WS (Streams) | all | – |
| WS (Wetlands) | Cocopah Canal (14) | wetland hydrology (saturation) present |
| | Papago Canal (7) | |
| | Reservation Main Drain (1, 3, 11, 15) | wetland hydrology (saturation) and vegetation present |
| | Hopi Canal (4) | wetland hydrology (saturation) present |
| | unnamed canal (2) | |
| | Yuma Main Canal (16) | |

| Type | Name (crossing #) | Notes |
|---|---|---|
| Habitat for wildlife and/or aquatic species | all except Pima (12), Pueblo (13), Navajo (10), and Walapai (17) Canals | – |

## 9.0 CONCLUSIONS

No dredge-and-fill operations will occur within the canals in the project area and no subsequent loss of WUS will take place because all canals will be bored beneath during the proposed installations; therefore, a Clean Water Act Section 404 permit from USACE will not be required prior to project implementation. Likewise, no impacts to WS will occur and a stream alteration permit from CDFW is unnecessary because the canals and any potential wildlife habitat, either in the canals themselves or along the canal margins, will be avoided.

# APPENDIX A. WATERWAY CROSSINGS IDENTIFIED IN THE PROJECT AREA

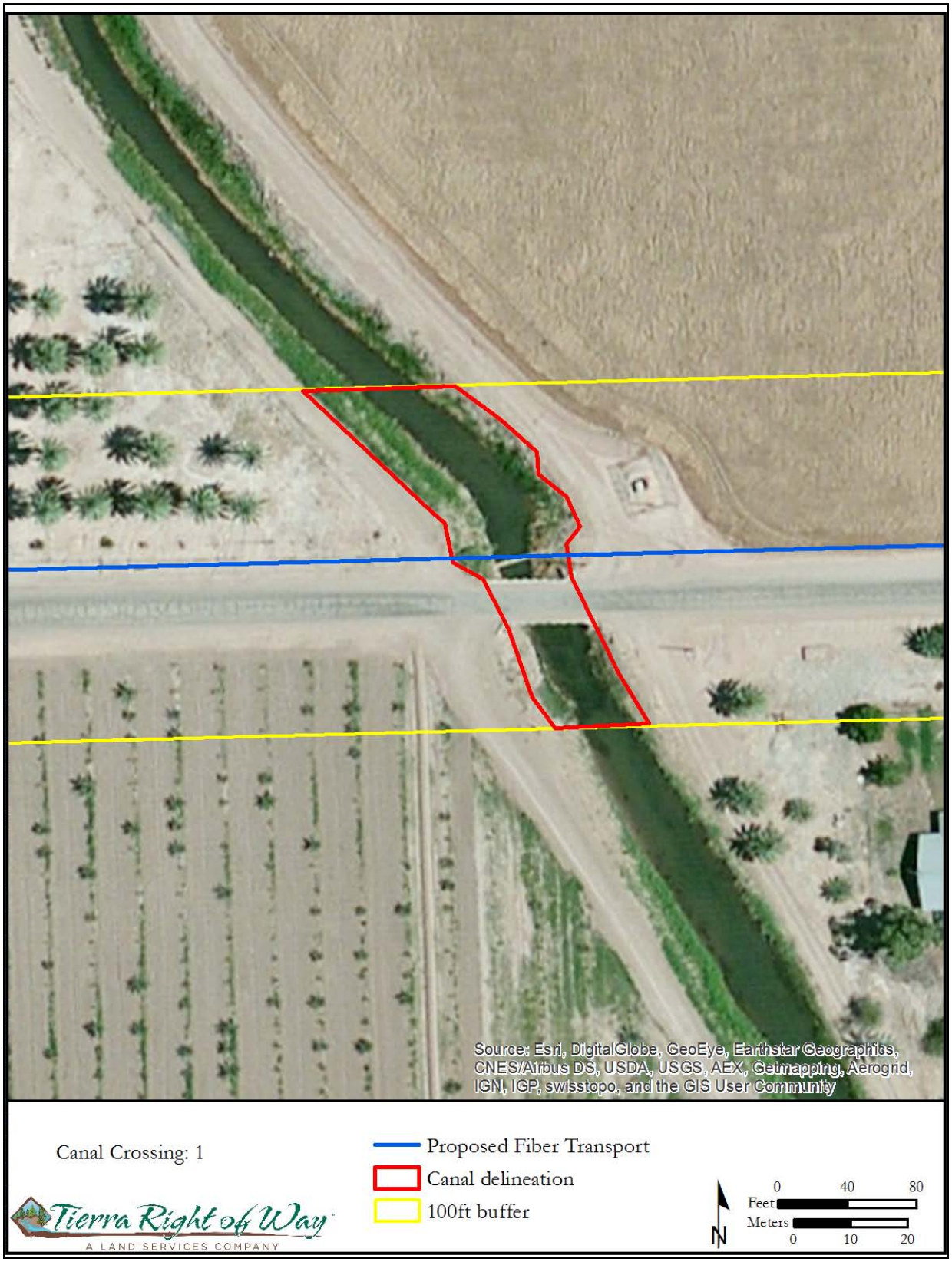



**Figure A.1. Canal Crossing 1.**




**Photo A.1. Crossing 1, view to north.**

**Table A.1. Crossing 1**

| | |
|---|---|
| **Canal Name** | Reservation Main Drain |
| **Construction** | Earthen |
| **Location Description** | Stalnacker Road |
| **Coordinates (NAD 83)** | 32° 48' 14.825" N, 114° 34' 34.415" W |
| **Vegetation** | Dense, low-growing marginal riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.1283 ha (0.3171 acres) |
| **Approximate Directional Bore Length** | 61 m (200 feet) |




**Figure A.2. Canal Crossing 2.**




**Photo A.2. Crossing 2, view to east.**

**Table A.2. Crossing 2**

| | |
|---|---|
| **Canal Name** | Unnamed |
| **Construction** | Earthen |
| **Location Description** | Fisher and Parkman Roads |
| **Coordinates (NAD 83)** | 32° 47' 59.896" N, 114° 34' 55.217" W |
| **Vegetation** | Minimal, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.0169 ha (0.0418 acres) |
| **Approximate Directional Bore Length** | 46 m (150 feet) |




**Figure A.3. Canal Crossing 3.**




**Photo A.3. Crossing 3, view to west.**

**Table A.3. Crossing 3**

| | |
|---|---|
| **Canal Name** | Reservation Main Drain |
| **Construction** | Earthen |
| **Location Description** | Fisher Road |
| **Coordinates (NAD 83)** | 32° 47' 16.959" N, 114° 34' 54.695" W |
| **Vegetation** | Dense, low-growing marginal riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.1176 ha (0.2907 acres) |
| **Approximate Directional Bore Length** | 61 m (200 feet) |

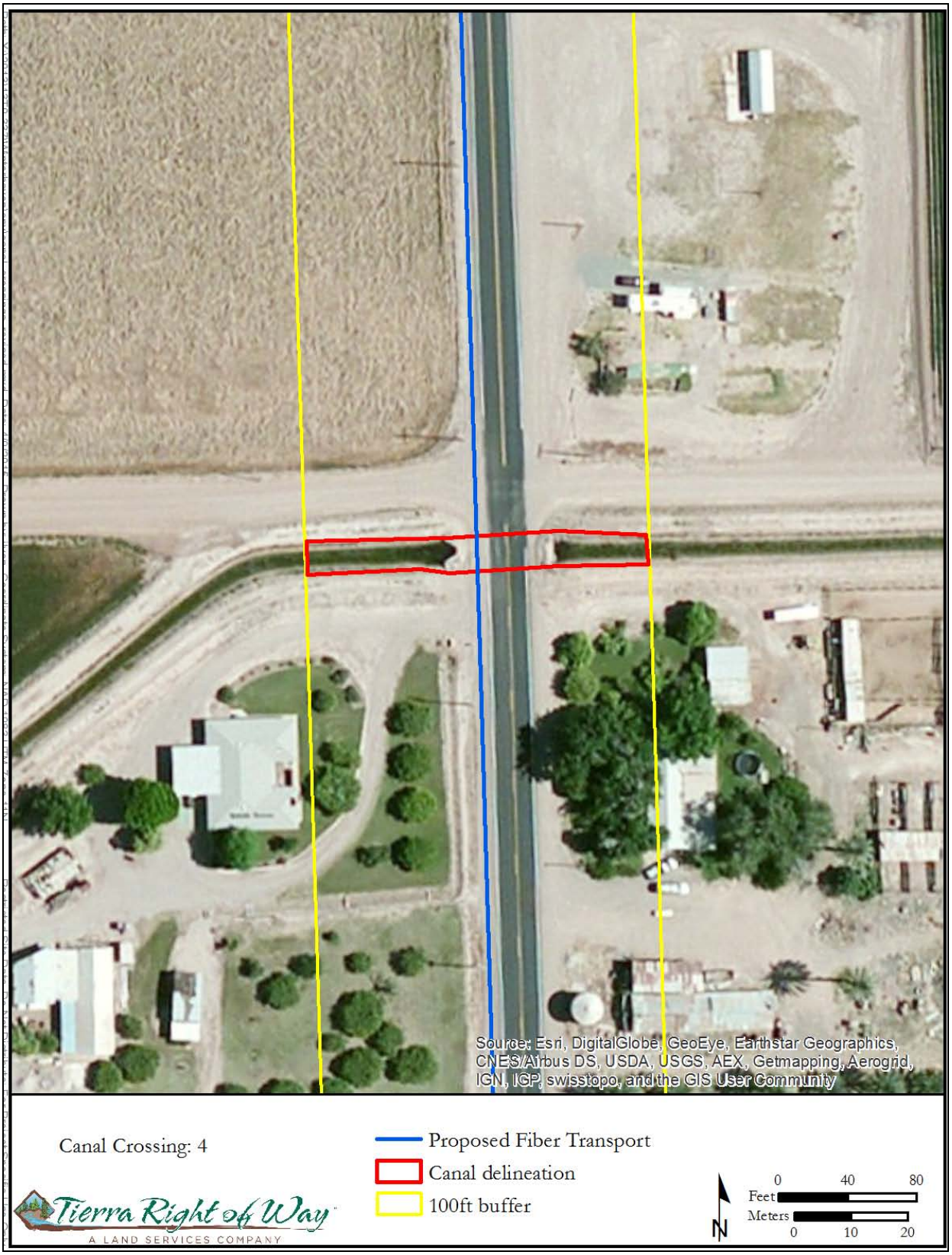



**Figure A.4. Canal Crossing 4.**




**Photo A.4. Crossing 4, view to west.**

**Table A.4. Crossing 4**

| | |
|---|---|
| **Canal Name** | Hopi Canal |
| **Construction** | Earthen |
| **Location Description** | Bard and Whitmore Roads |
| **Coordinates (NAD 83)** | 32° 47' 20.690" N, 114° 33' 22.047" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.0356 ha (0.0879 acres) |
| **Approximate Directional Bore Length** | 52 m (170 feet) |

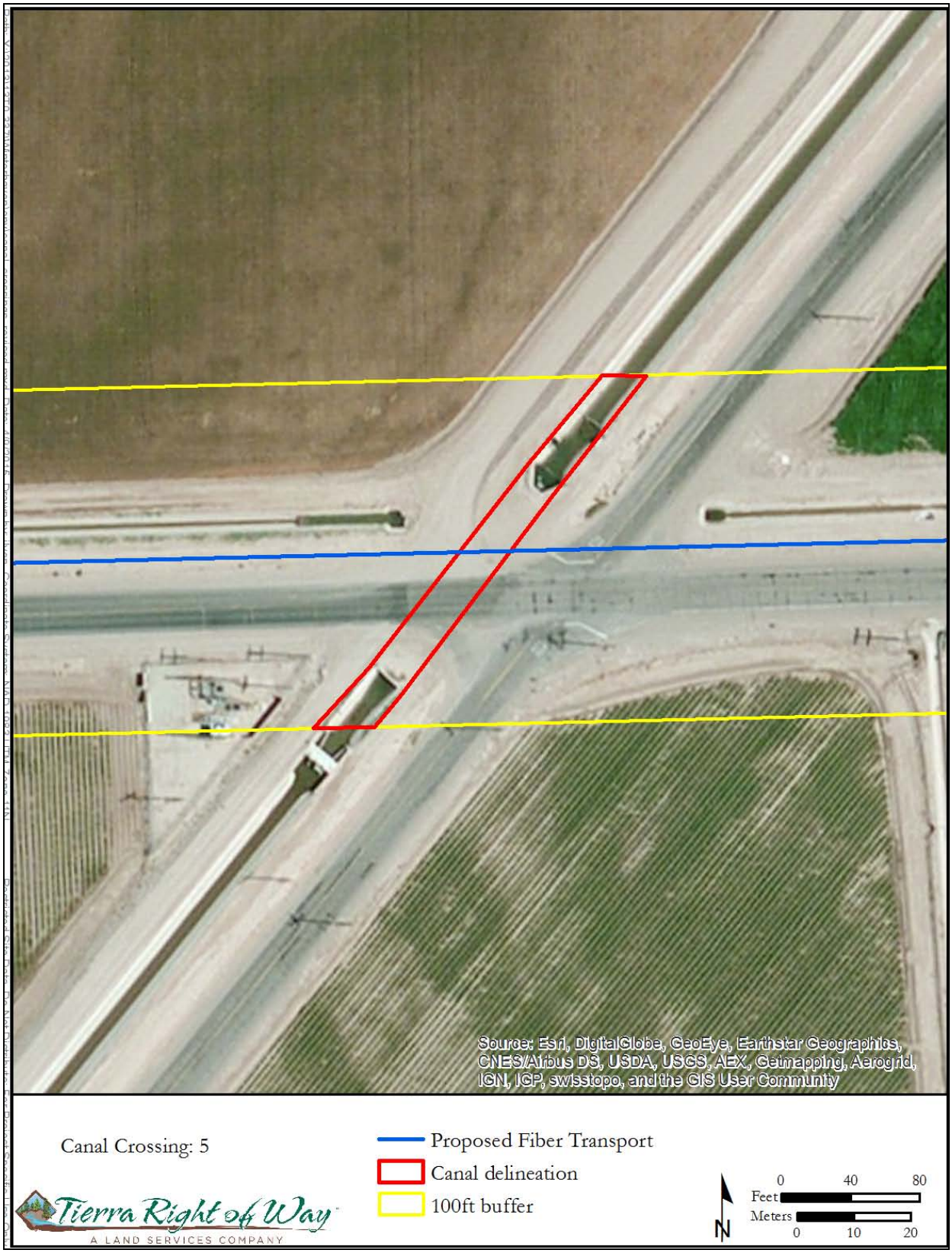



**Figure A.5. Canal Crossing 5.**




**Photo A.5. Crossing 5, view to south.**

**Table A.5. Crossing 5**

| | |
|---|---|
| **Canal Name** | Cocopah Canal |
| **Construction** | Concrete lined |
| **Location Description** | Ross Road |
| **Coordinates (NAD 83)** | 32° 46' 54.538" N, 114° 34' 26.542" W |
| **Vegetation** | Minimal, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.0550 ha (0.1360 acres) |
| **Approximate Directional Bore Length** | 146 m (480 feet) |

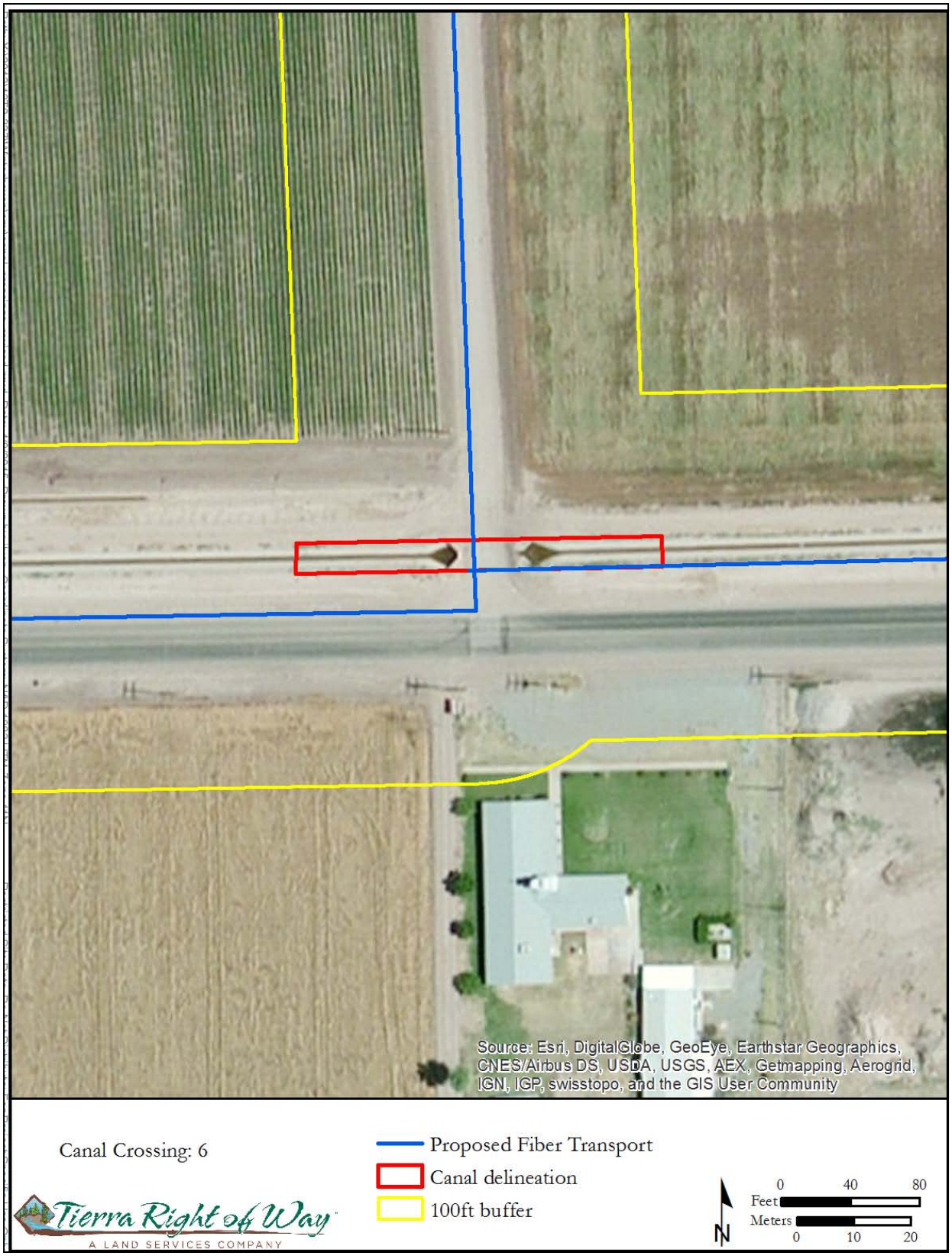



**Figure A.6. Canal Crossing 6.**




**Photo A.6. Crossing 6, view to west.**

**Table A.6. Crossing 6**

| | |
|---|---|
| **Canal Name** | Unnamed |
| **Construction** | Concrete lined |
| **Location Description** | Fisher and Ross Roads |
| **Coordinates (NAD 83)** | 32° 46' 54.589" N, 114° 34' 54.387" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.0343 ha (0.0848 acres) |
| **Approximate Directional Bore Length** | 49 m (160 feet) |

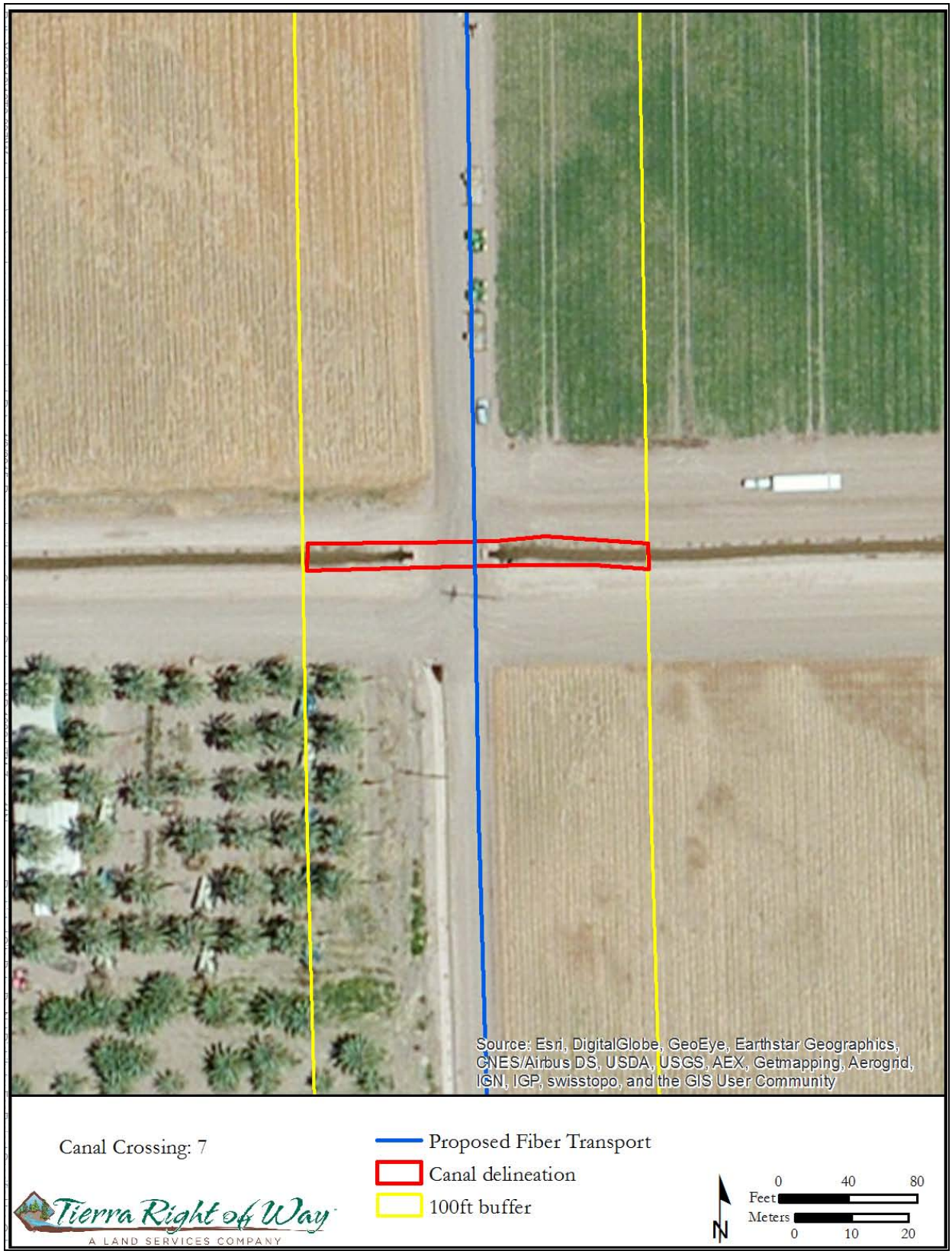



**Figure A.7. Canal Crossing 7.**




**Photo 7: Crossing 7, view to west.**

**Table A.7. Crossing 7**

| | |
|---|---|
| **Canal Name** | Papago Canal |
| **Construction** | Earthen |
| **Location Description** | Perez Road |
| **Coordinates (NAD 83)** | 32° 46' 28.371" N, 114° 35' 25.516" W |
| **Vegetation** | Minimal, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.0277 ha (0.0684 acres) |
| **Approximate Directional Bore Length** | 40 m (130 feet) |

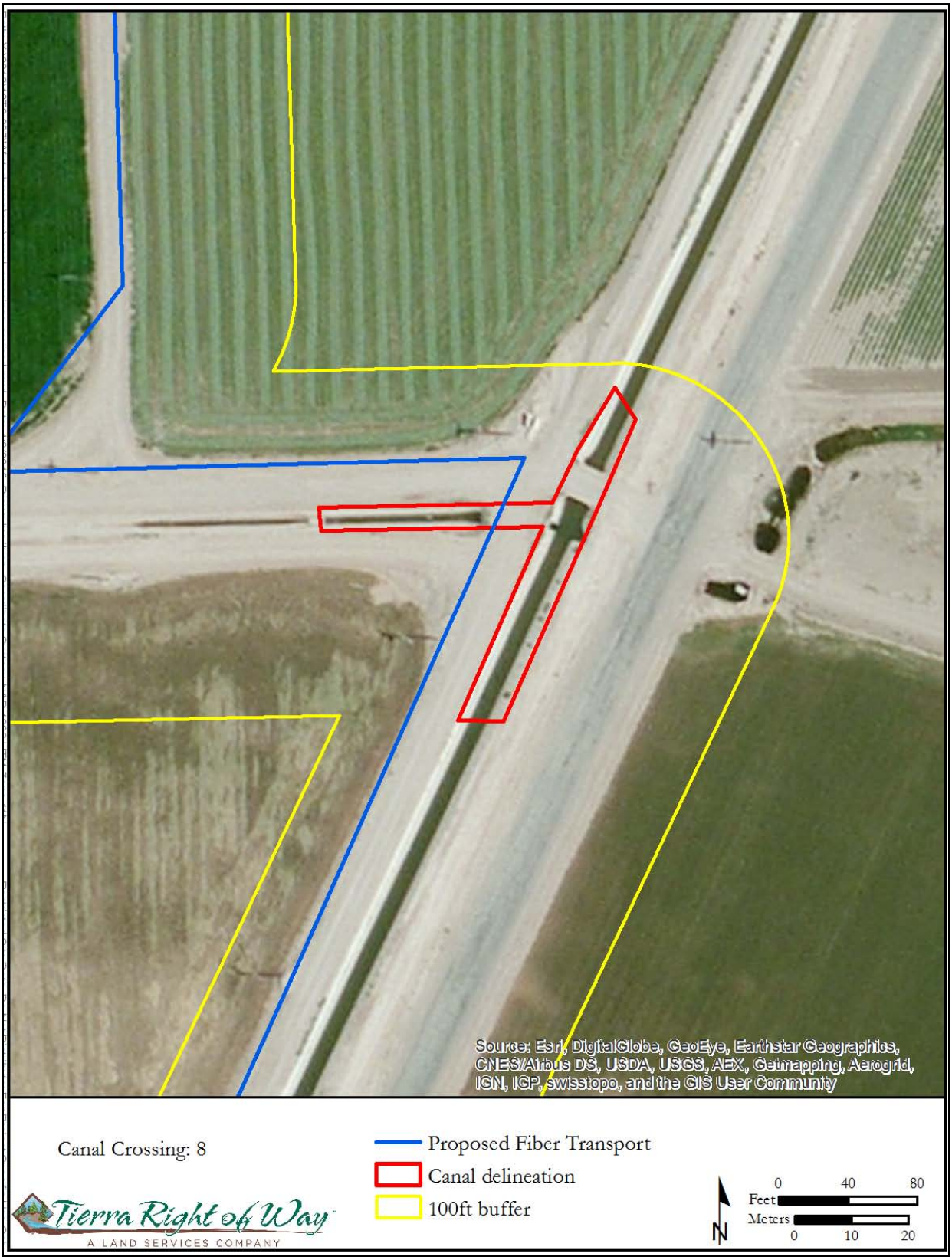



**Figure A.8. Canal Crossing 8.**




**Photo A.8. Crossing 8, view to west.**

**Table A.8. Crossing 8**

| | |
|---|---|
| **Canal Name** | Pima Canal |
| **Construction** | Concrete lined |
| **Location Description** | Haughtelin and Perez Roads |
| **Coordinates (NAD 83)** | 32° 46' 2.012" N, 114° 35' 26.459" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.0259 ha (0.0640 acres) |
| **Approximate Directional Bore Length** | 24 m (80 feet) |

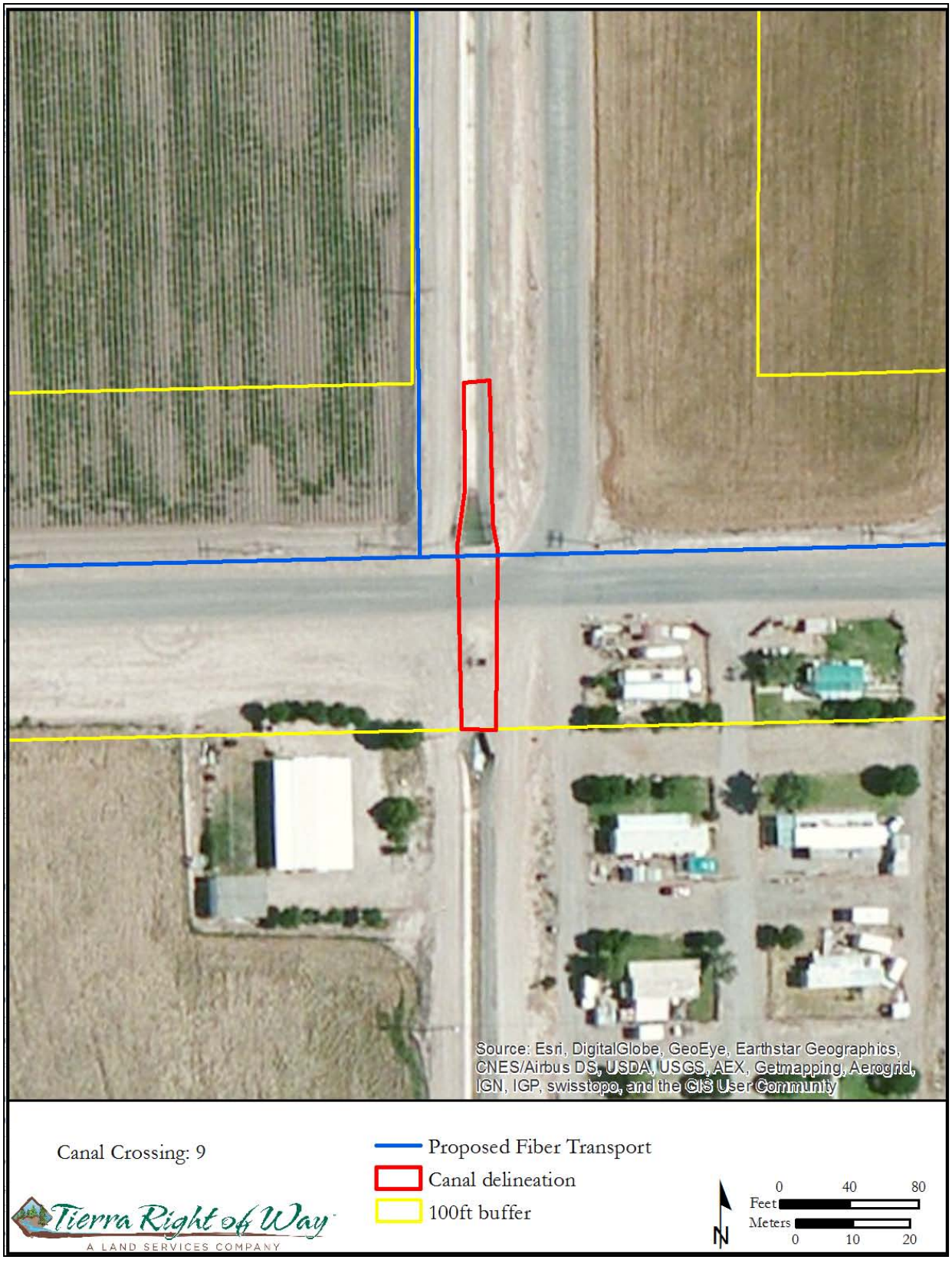



**Figure A.9. Canal Crossing 9.**




**Photo A.9. Crossing 9, view to north.**

**Table A.9. Crossing 9**

| | |
|---|---|
| **Canal Name** | Cocopah Canal |
| **Construction** | Concrete lined |
| **Location Description** | Flood and Arnold Roads |
| **Coordinates (NAD 83)** | 32° 45' 10.348" N, 114° 35' 43.169" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Top of bank |
| **Delineated Area** | 0.0360 ha (0.0890 acres) |
| **Approximate Directional Bore Length** | 49 m (160 feet) |

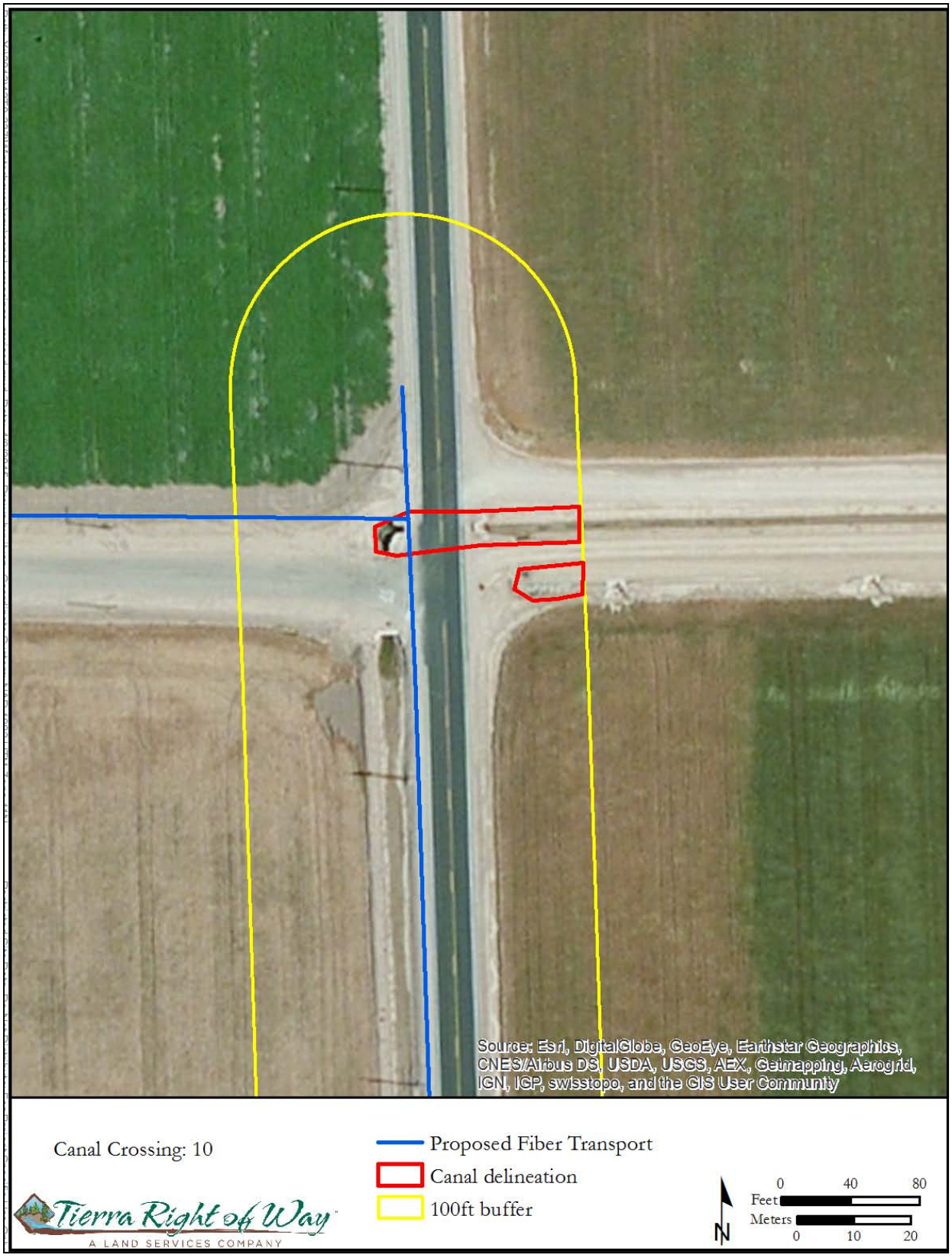



**Figure A.10. Canal Crossing 10.**




**Photo A.10. Crossing 10 northern canal, view to east.**




**Photo A.11. Crossing 10 southern canal, view to east.**

**Table A.10. Crossing 10.**

| | |
|---|---|
| **Canal Name** | Navajo Canal (N)/Unnamed (S) |
| **Construction** | Earthen |
| **Location Description** | Picacho and Jackson Roads |
| **Coordinates (NAD 83)** | 32° 46' 28.491" N, 114° 36' 58.913" W |
| **Vegetation** | Sparse, non-riparian (N)/none (S) |
| **Potentially Jurisdictional Extent** | Top of bank |
| **Delineated Area** | 0.0292 ha (0.0721 acres) |
| **Approximate Directional Bore Length** | 58 m (190 feet) |

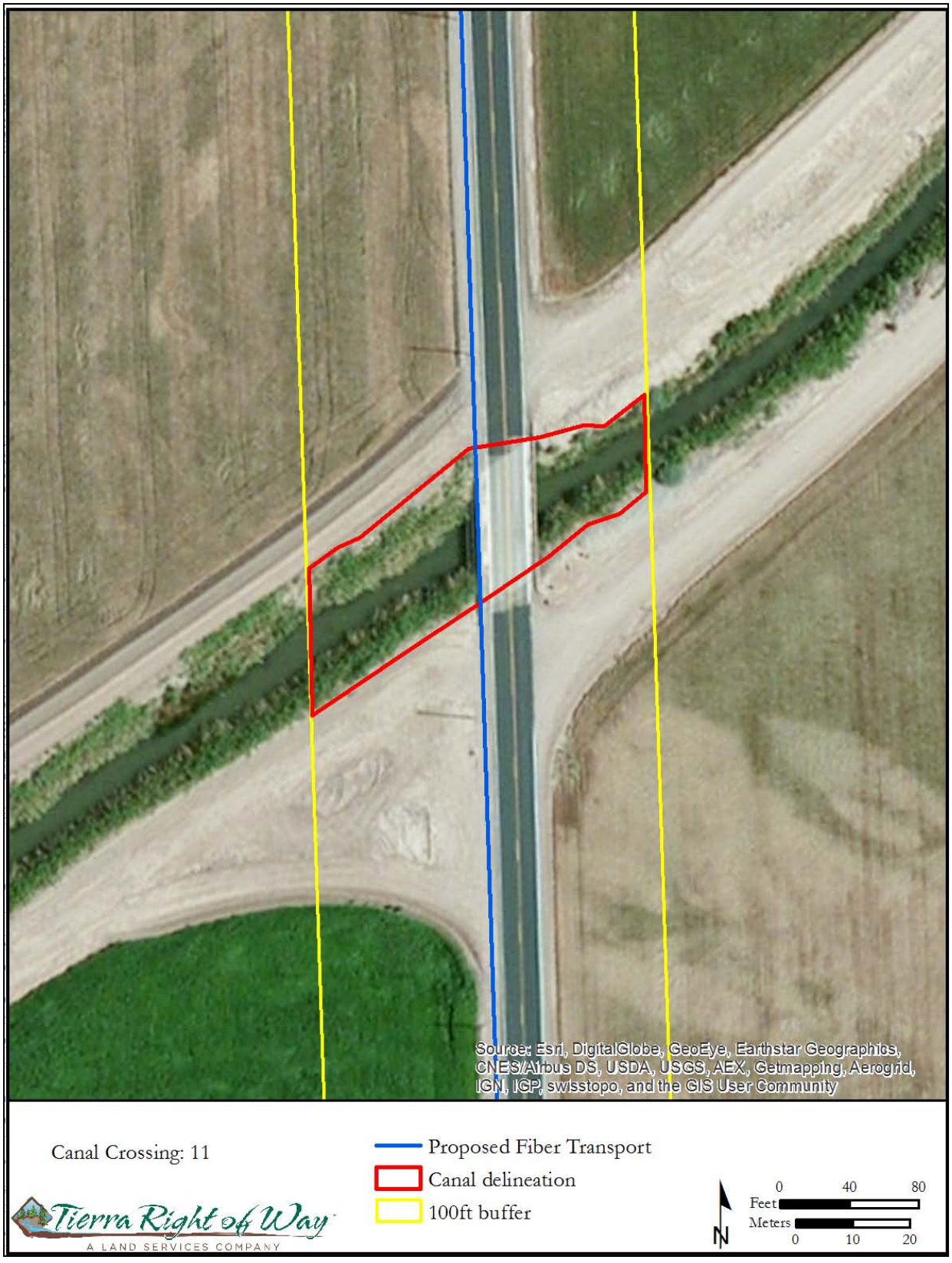



**Figure A.11. Canal Crossing 11.**




**Photo A.12. Crossing 11, view to southwest.**

**Table A.11. Crossing 12**

| | |
|---|---|
| **Canal Name** | Reservation Main Drain |
| **Construction** | Earthen |
| **Location Description** | Picacho Road |
| **Coordinates (NAD 83)** | 32° 46' 15.206" N, 114° 36' 58.732" W |
| **Vegetation** | Dense, low-growing marginal riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.1401 ha (0.3462 acres) |
| **Approximate Directional Bore Length** | 128 m (420 feet) |

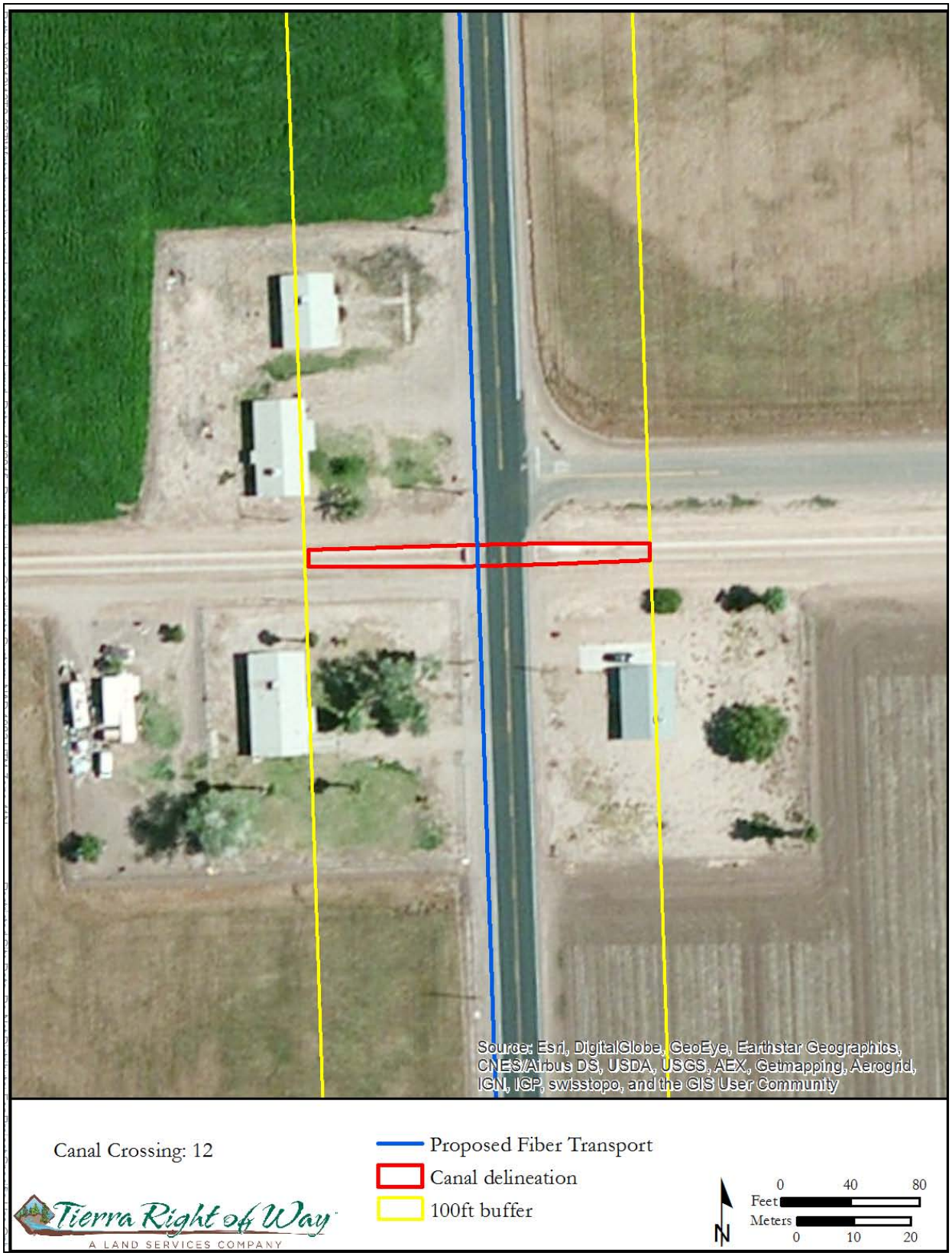



**Figure A.12. Canal Crossing 12.**




**Photo A.13. Crossing 12, view to east.**

**Table A.12. Crossing 12**

| | |
|---|---|
| **Canal Name** | Pima Canal |
| **Construction** | Concrete lined |
| **Location Description** | Picacho and Haughtelin Roads |
| **Coordinates (NAD 83)** | 32° 46' 1.989" N, 114° 36' 58.551" W |
| **Vegetation** | None |
| **Potentially Jurisdictional Extent** | Top of bank |
| **Delineated Area** | 0.0206 ha (0.0509 acres) |
| **Approximate Directional Bore Length** | 46 m (150 feet) |

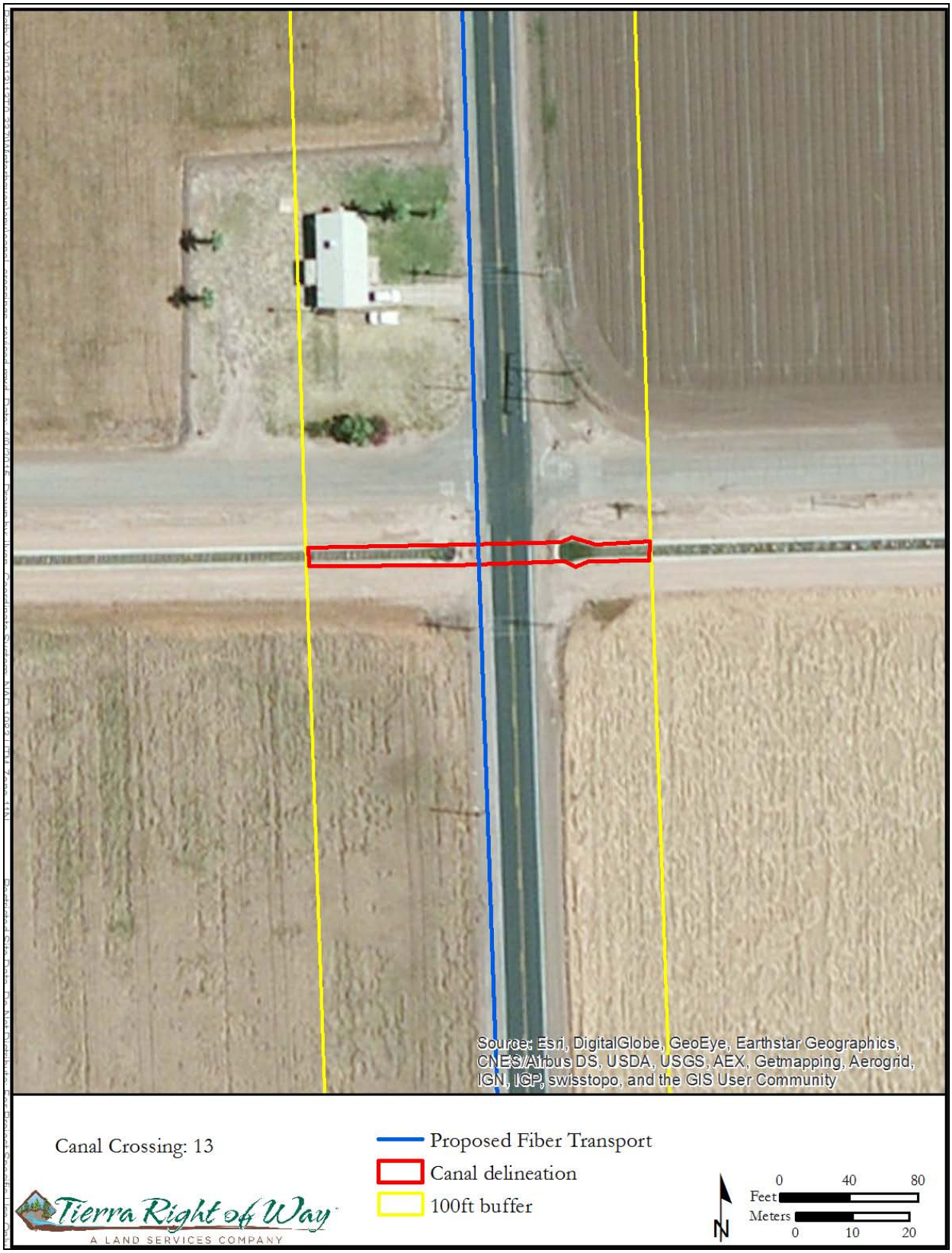



**Figure A.13. Canal Crossing 13.**




**Photo A.14. Crossing 13, view to east.**

**Table A.13. Crossing 13**

| | |
|---|---|
| **Canal Name** | Pueblo Canal |
| **Construction** | Concrete lined |
| **Location Description** | Picacho and Indian Rock Roads |
| **Coordinates (NAD 83)** | 32° 45' 35.792" N, 114° 36' 58.232" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Top of bank |
| **Delineated Area** | 0.0210 ha (0.0518 acres) |
| **Approximate Directional Bore Length** | 46 m (150 feet) |

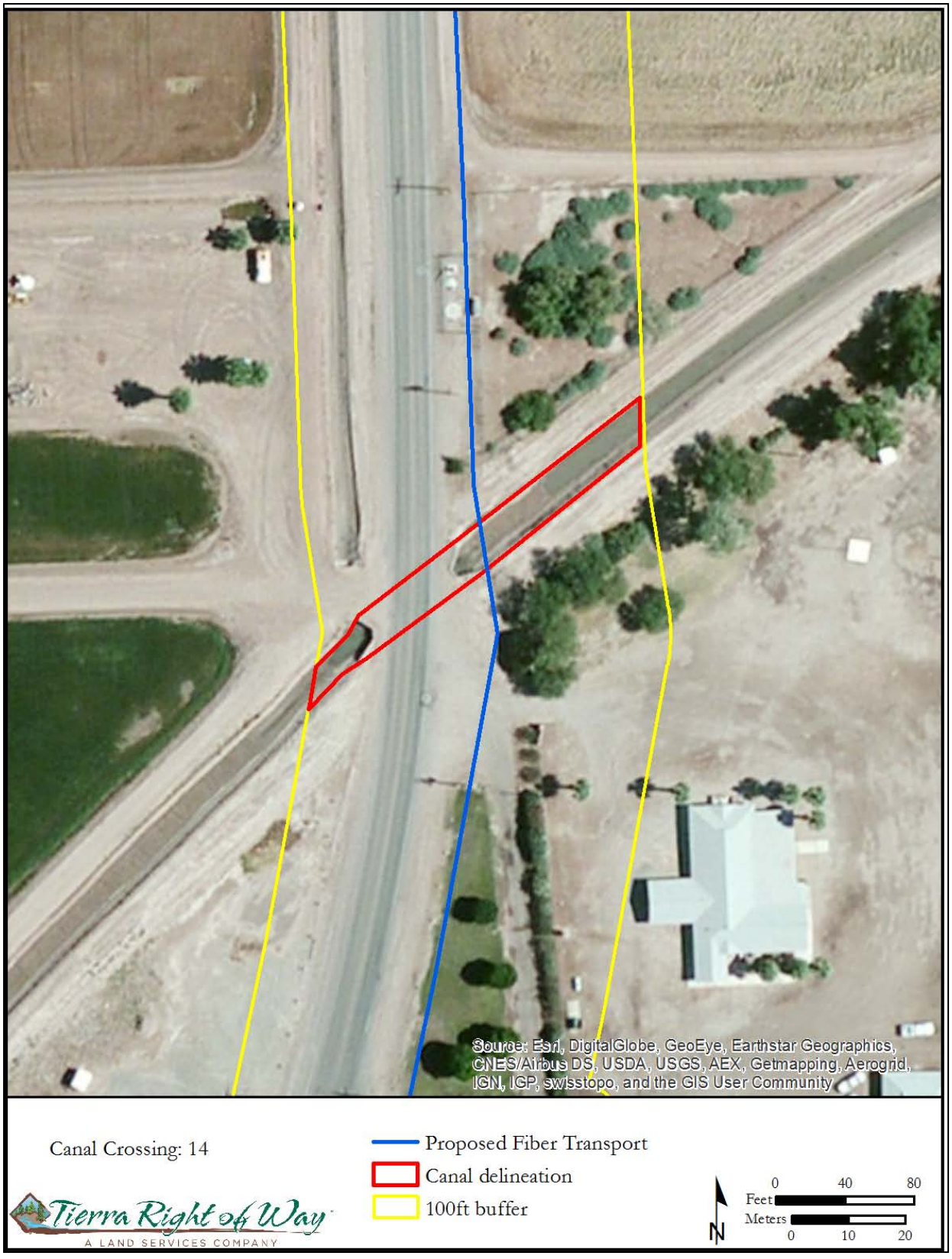



**Figure A.14. Canal Crossing 14.**




**Photo A.15. Crossing 14, view to east.**

**Table A.14. Crossing 14**

| | |
|---|---|
| **Canal Name** | Cocopah Canal |
| **Construction** | Earthen |
| **Location Description** | Picacho Road |
| **Coordinates (NAD 83)** | 32° 44' 21.987" N, 114° 36' 56.446" W |
| **Vegetation** | Minimal, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.0494 ha (0.1222 acres) |
| **Approximate Directional Bore Length** | 134 m (440 feet) |

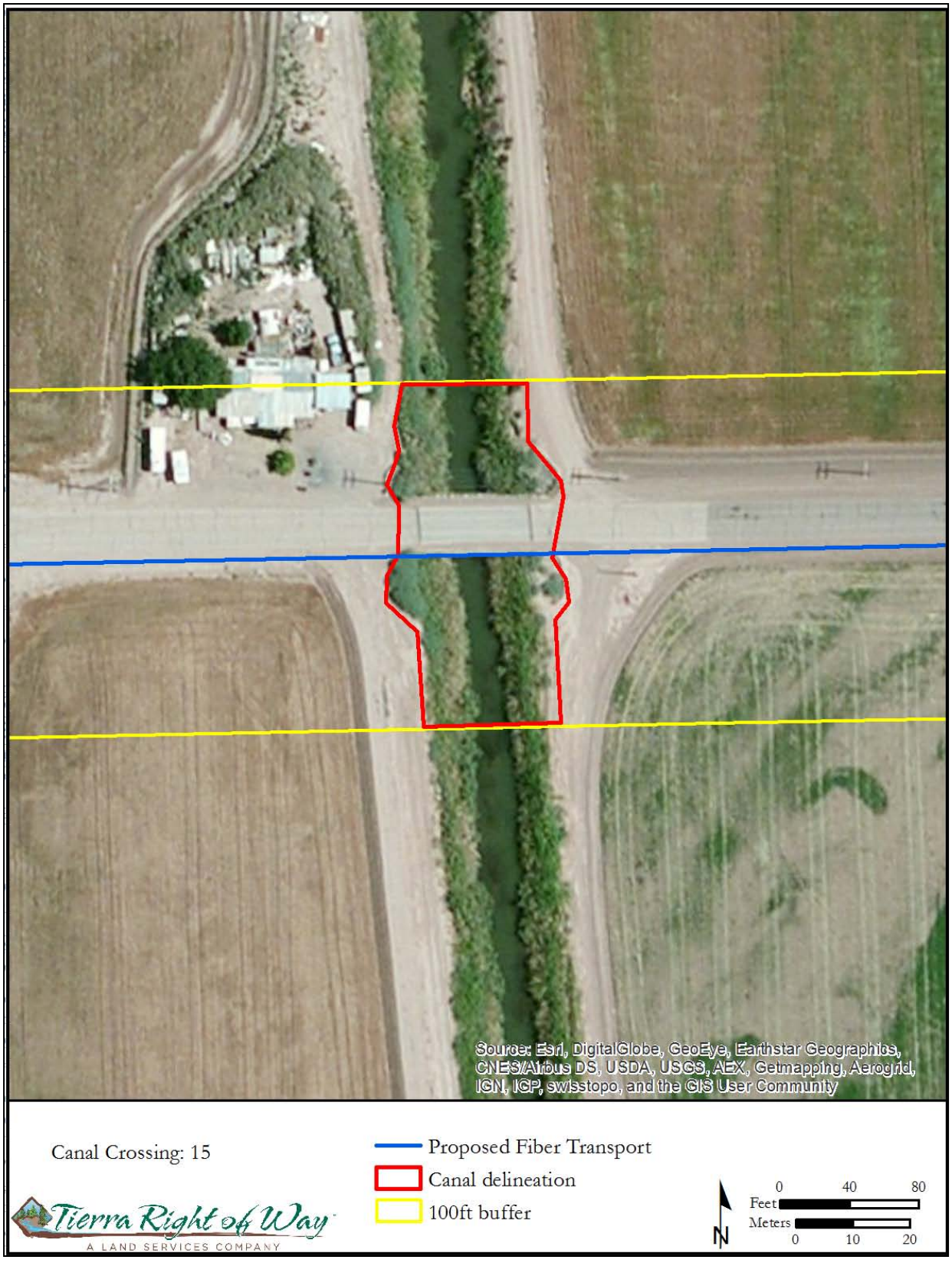



**Figure A.15. Canal Crossing 15.**




**Photo A.16. Crossing 15, view to south.**

**Table A.15. Crossing 15**

| | |
|---|---|
| **Canal Name** | Yuma Main Canal |
| **Construction** | Earthen |
| **Location Description** | Arnold Road |
| **Coordinates (NAD 83)** | 32° 45' 9.849" N, 114° 37' 43.537" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.2583 ha (0.6384 acres) |
| **Approximate Directional Bore Length** | 354 m (1,160 feet) bored with #15 |

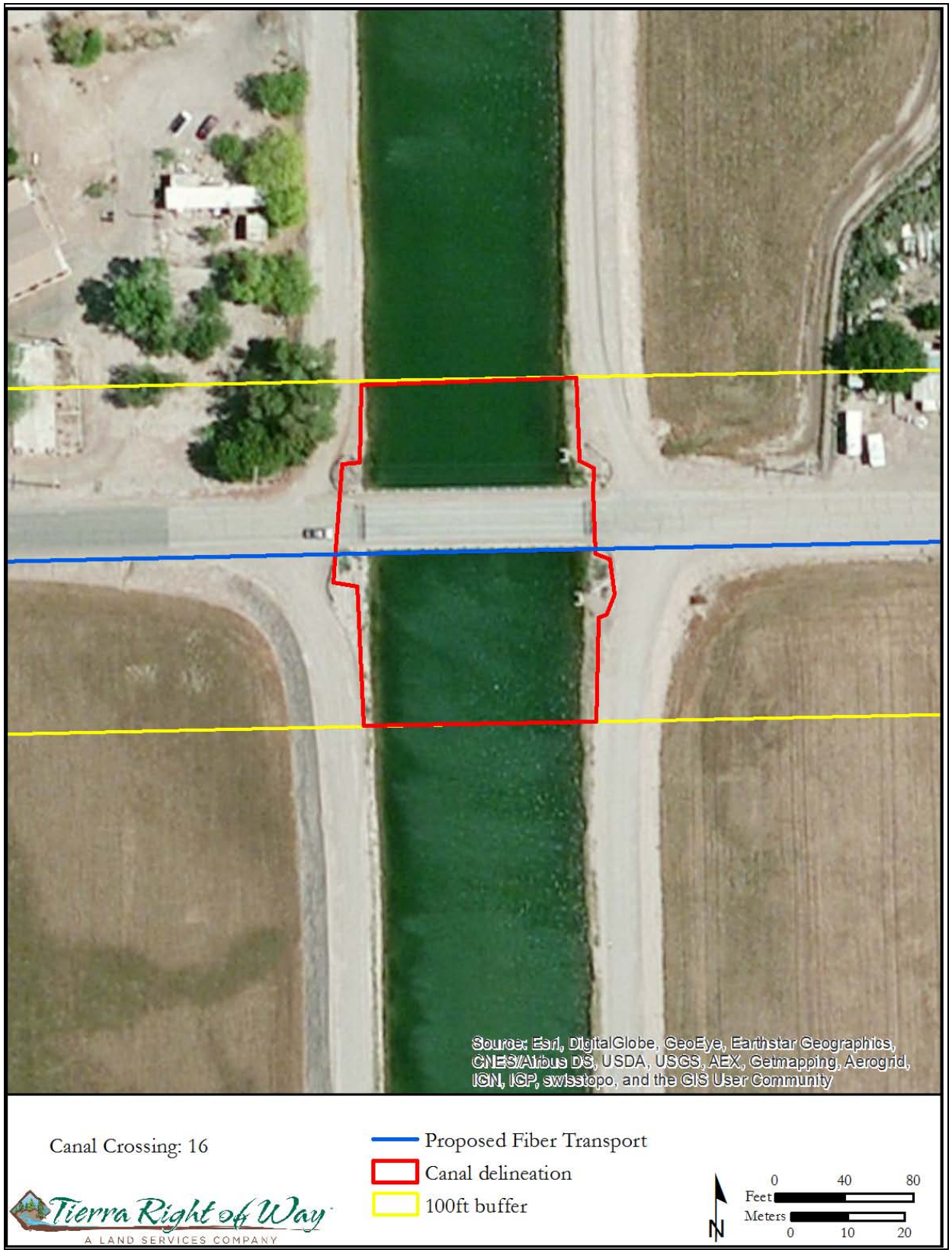



**Figure A.16. Canal Crossing 16.**




**Photo A.17. Crossing A.16, view to west.**

**Table A.16. Crossing 16**

| | |
|---|---|
| **Canal Name** | Yuma Main Canal |
| **Construction** | Earthen |
| **Location Description** | Arnold Road |
| **Coordinates (NAD 83)** | 32° 45' 9.849" N, 114° 37' 43.537" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Edge of vegetation |
| **Delineated Area** | 0.2583 ha (0.6384 acres) |
| **Approximate Directional Bore Length** | 354 m (1,160 feet) bored with #15 |

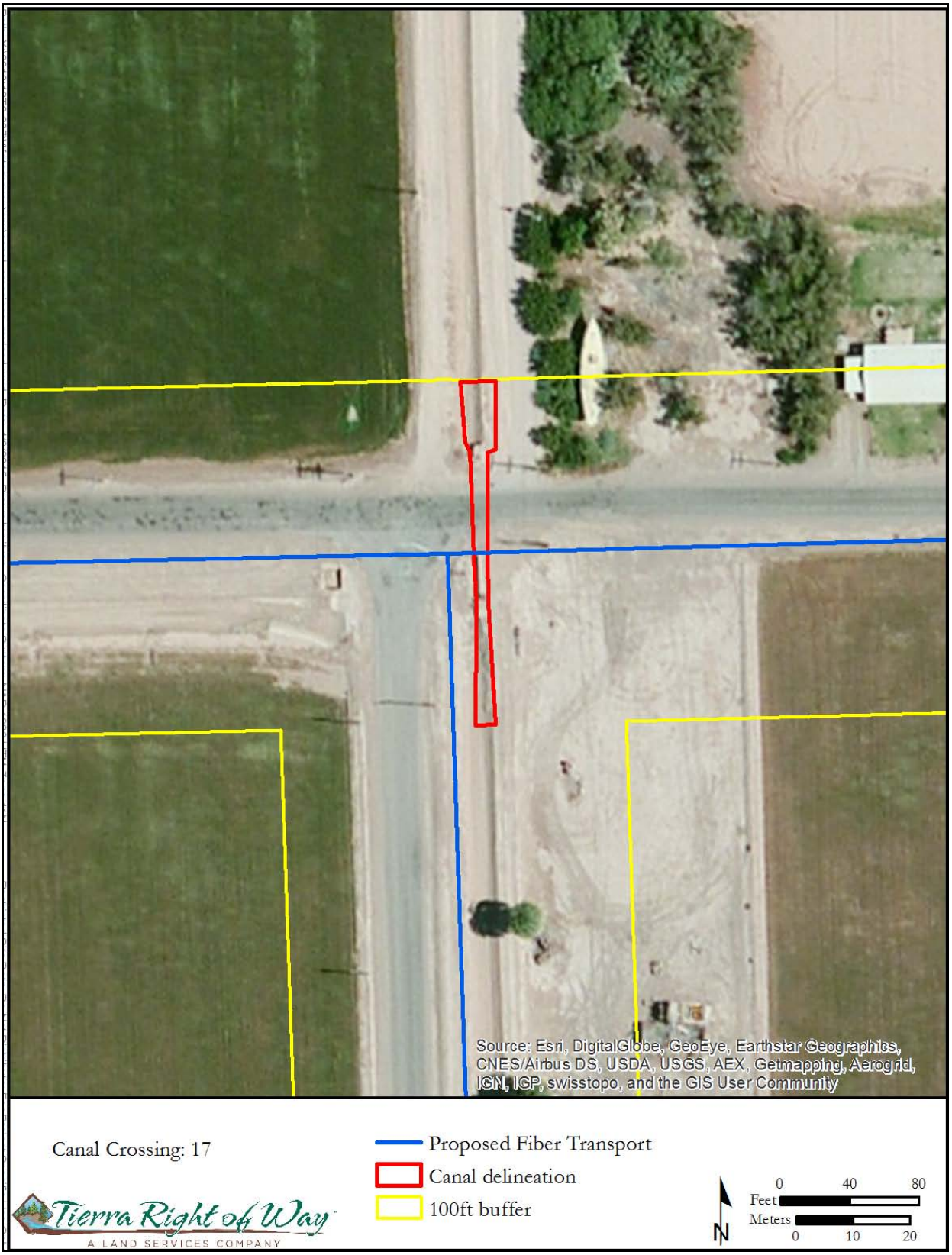



**Figure A.17. Canal Crossing 17.**




**Photo A.18. Crossing 17, view to south.**

**Table A.17. Crossing 17**

| | |
|---|---|
| **Canal Name** | Walapai Canal |
| **Construction** | Earthen |
| **Location Description** | Arnold and De Corse Roads |
| **Coordinates (NAD 83)** | 32° 45' 9.826" N, 114° 37' 59.821" W |
| **Vegetation** | Sparse, non-riparian |
| **Potentially Jurisdictional Extent** | Top of bank |
| **Delineated Area** | 0.0199 ha (0.0493 acres) |
| **Approximate Directional Bore Length** | 49 m (160 feet) |

# APPENDIX E. CLASS III CULTURAL RESOURCES SURVEY REPORT AND CULTURAL RESOURCES CORRESPONDENCE

Tierra Right of Way™
A LAND SERVICES COMPANY

# A Class III Cultural Resources Survey for a Proposed Buried Telecommunications Fiber-Optic Line near Winterhaven, in Imperial County, California

*Prepared by:*
Joseph Howell, M.A.

Tierra Archaeological Report No. 2014-141
Tierra Job No. 13T0-337
March 2, 2015 (revised)

# A Class III Cultural Resources Survey for a Proposed Buried Telecommunications Fiber-Optic Line near Winterhaven, in Imperial County, California

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Tierra Job No. 13T0-337
March 2, 2015 (revised)

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## ABSTRACT


| | |
|---|---|
| PROJECT TITLE: | A Class III Cultural Resource Survey for a Proposed Buried Telecommunications Fiber-Optic Line, in Imperial County, California |
| LAND STATUS: | Fort Yuma–Quechan Indian Reservation, Imperial County, private, Bureau of Reclamation (BOR) |
| AGENCY: | Bureau of Indian Affairs (BIA), Fort Yuma–Quechan Indian Reservation, BOR |
| PROJECT DESCRIPTION: | A Class III cultural resources survey of approximately 26.46 linear km (16.44 linear miles) was conducted in anticipation of a proposed buried fiber-optic telecommunications line installation. |
| TIERRA PROJECT NO.: | 13T0-337 |
| TIERRA REPORT NO.: | 2014-141 |
| DATES OF FIELDWORK: | July 15 and 16, 2014 |
| PROJECT LOCATION: | The project area is located in Sections 31, 32, and 33 of Township 15 South, Range 23 East; Sections 11–14 and 21–27 of Township 16 South, Range 22 East; and Sections 4–9, 18, and 19 of Township 16 South, Range 23 East, San Bernardino Baseline and Meridian, on the Bard (1965), Yuma East (1965), Yuma West (1965; photorevised 1979), and Araz (1964, photoinspected 1973) 7.5-minute U.S. Geological Survey (USGS) quadrangles, in Imperial County, California. |
| AREA SURVEYED: | Approximately 199.3 acres (80.6 ha) |
| NO. OF SITES RECOMMENDED AS NRHP ELIGIBLE: | 6 |
| NO. OF ISOLATED OCCURRENCES: | 10 |
| MANAGEMENT RECOMMENDATIONS: | Six sites, ten isolated occurrences, and one modern cemetery were encountered during the current survey. Four of the sites consist of historic canals that remain in active use. The other two sites consist of the historic Pilot Knob-Tap Drop 4 161kV Transmission Line and |

the historic route of the Southern Pacific Railroad. It is anticipated that the canals, transmission line, and railroad will remain unaffected by the proposed construction activities, and, therefore, there will be No Adverse Effect to these resources. Tierra recommends that the proposed undertaking be allowed to proceed; however, monitoring by a qualified archaeologist and/or Tribal member is recommended during construction work in the vicinity of the Fort Yuma–Quechan Indian Reservation Cemetery.

The clients and all subcontractors are reminded that if human remains or funerary objects are uncovered during future ground-disturbing activities, California Environmental Quality Act (CEQA) Statute 15064.5(e) requires that all work must be stopped in the area of discovery and that the coroner of the County in which the remains are discovered be contacted to determine that no investigation into the cause of death is required. If the discovery is on Indian land and the coroner determines the remains to be Native American, the Quechan Tribe shall be notified immediately to make arrangements for the disposition of the remains. If not on Indian land, the coroner shall contact the Native American Heritage Commission, which will identify the person or persons it believes to be the most likely descendents of the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work as to the means of treating or disposing of the human remains and any associated grave goods with appropriate dignity, as provided in Public Resources Code Section 5097.98.

# INTRODUCTION

At the request of Nate Stanislawski of TDS Telecommunications Corporation (TDS), Tierra Right of Way Services, Ltd. (Tierra), performed a Class III cultural resources survey of approximately 26.46 linear km (16.44 linear miles) in anticipation of the replacement of buried fiber-optic telecommunications lines on the Fort Yuma–Quechan Indian Reservation and on unincorporated land in Imperial County, California. TDS is proposing to upgrade their existing network using California Advanced Services Fund (CASF) funds. Because the project is a public utility, it falls under the regulation of the California Public Utilities Commission (CPUC). The Bureau of Indian Affairs (BIA) will be approached to approve a grant of easement for right-of-way across the reservation and is the lead reviewing agency for the cultural resources component of the project; as such, the project is subject to the regulatory guidelines established by the National Environmental Policy Act (NEPA) and by Section 106 of the National Historic Preservation Act (NHPA) of 1966. The BIA Western Regional Office determined that an Archeological Resources Protection Act (ARPA) permit was not necessary for the non-collection/non-excavation survey (McVey 2014).

The project, as proposed, will consist of the installation of new fiber-optic cable and 10 nodes. The project will extend high-speed internet service to the communities of Winterhaven, Bard, and surrounding areas on the Fort Yuma–Quechan Indian Reservation. Because the fiber-optic project is being permitted through the CPUC, the survey was conducted according to the environmental permitting guidelines for cultural resources mandated by the California Environmental Quality Act (CEQA) (California Public Resources Code 21000–21177). In addition to the CPUC and BIA, the Bureau of Reclamation (BOR) and Imperial County are also participating regulatory agencies. The proposed route of the telecommunications line will cross (via horizontal directional boring) several canals administered by the BOR and is located within the Reservation Division of the Yuma Project, which is administered by the BOR and the Bard Water District. Because part of its length follows portions of Picacho and Ross Roads, Imperial County has been included as a participatory agency.

Of the total fiber-optic line, about 13.98 km (8.68 miles) will be installed on Tribal land, and 12.48 km (7.75 miles) will be installed on lands within unincorporated Imperial County, including the settlements of Winterhaven and Bard.

The survey was conducted by Joseph Howell, M.A. (field director), and Ben Wright (field technician), on July 15 and 16, 2014. Henri Koteen served as Tribal monitor. A total of four person-field-days was required to complete the survey. Barbara K. Montgomery, Ph.D., was principal investigator for the project. Renee Darling served as project manager through September 2014. Tom Euler took over as project manager in October 2014.

# THE PROJECT AREA

The project area, or area of potential effects (APE), consists of approximately 26.46 linear km (16.44 linear miles) of buried utility corridors. Previously installed utilities, in the form of copper telephone cable and other utilities, already exist within the corridors. However, fiber-optic line has not been previously installed in any of the corridors, and all trenches excavated within the APE will be new. The plow insertion of the fiber-optic lines requires trenches measuring between 1 and 2 feet (0.3 to 0.6 m) in width, and 4 feet (1.2 m) in depth. Roughly half of the APE is located on the Fort Yuma–Quechan Indian Reservation, with the remainder located on unincorporated Imperial County land east of the reservation. A small portion is located within the town of Winterhaven, California.

The width of the APE, which corresponds to the surveyed area, was 30 m (98 feet). In total, the project area was approximately 80.6 ha (199.3 acres). The project area is located in Sections 31, 32, and 33 of Township 15 South, Range 23 East; Sections 11–14 and 21–27 of Township 16 South, Range 22 East; and Sections 4–9, 18, and 19 of Township 16 South, Range 23 East, San Bernardino Baseline and Meridian (SBB&M), on the Bard (1965), Yuma East (1965), Yuma West (1965; photorevised 1979), and Araz (1964, photoinspected 1973) 7.5-minute U.S. Geological Survey (USGS) quadrangles, in Imperial County, California (Figure 1).

The utility corridors follow existing roads, and the majority are located between road shoulders and cultivated fields. The major roads paralleled by the project corridor/APE include Picacho Road, Arnold Road (Photos 1 and 2), First Avenue (Photo 3), Cocopah Road (Photo 4), Perez Road (Photos 5 and 6), Ross Road (Photo 7), Bard Road (Photo 8), Fisher Road (Photo 9), Avenue E, Haughtelin Road (Photo 10), and Stalnacker Road (Photo 11). Short segments also exist along Quechan Drive, Parkman Road (Photo 12), E Street (in Winterhaven) (Photo 13), and Railroad Avenue (also in Winterhaven). In a few locations, the APE runs past private residences or businesses. Most of the surface area of the 30-m-wide (98-foot-wide) corridor is covered by asphalt, extends into cultivated areas, and has been leveled and graded during road construction. The leveled and graded areas consist of open raw land. However, several roads are unpaved (e.g., Haughtelin, Perez, and Fisher Roads), which allowed for a more extensive examination than areas where only raw land was visible. Except for cultivated plants in the fields (e.g., cotton [*Gossypium* sp.], maize *[Zea mays]*, and Sudangrass *[Sorghum x drumondii]*) and riparian species near canal crossings, little vegetation was noted within the APE.

The environment of the APE is dominated by intensively cultivated land on an alluvial plain of the Colorado River. This flat, open surface is part of the larger Salton Trough landform that includes the Imperial, Coachella, and Mexicali Valleys. The Salton Trough is a physical remnant of Lake Cahuilla, a large prehistoric freshwater lake that reached a maximum extent of 161 km (100 miles) long by 56 km (35 miles) wide, and extended from the Colorado River delta to the vicinity of Indio (Heuberger n.d.:17–18; Singer 2014). Much of the fertile agricultural land of the Imperial and Coachella Valleys is the result of silts deposited in Lake Cahuilla by the Colorado River, which flowed into it for many centuries. Soils within the project area include Gadsden clay, Glenbar silty clay loam, Holtville clay, Indio silt loam, Kofa clay, Lagunita loamy sand, Lagunita silt loam, and Ripley silt loam (USDA 2014). Detailed descriptions of these soil types can be seen in Appendix A.

## CULTURE HISTORY

Cultural resource surveys conducted during the past two decades have shed new light on the settlement patterns of southeastern California and southwestern Arizona. Sites in the region have traditionally been thought of as ephemeral, shallow deposits consisting of cleared areas in the desert pavement (sleeping circles), trails, trail markers, rock rings, intaglios, and sparse artifact scatters (Hartmann 1986). Relatively few subsurface investigations have taken place, leaving many research questions unanswered. This section presents an overview of the major themes in prehistoric, protohistoric, and historic cultural patterns in the Colorado River region of southwestern North America.

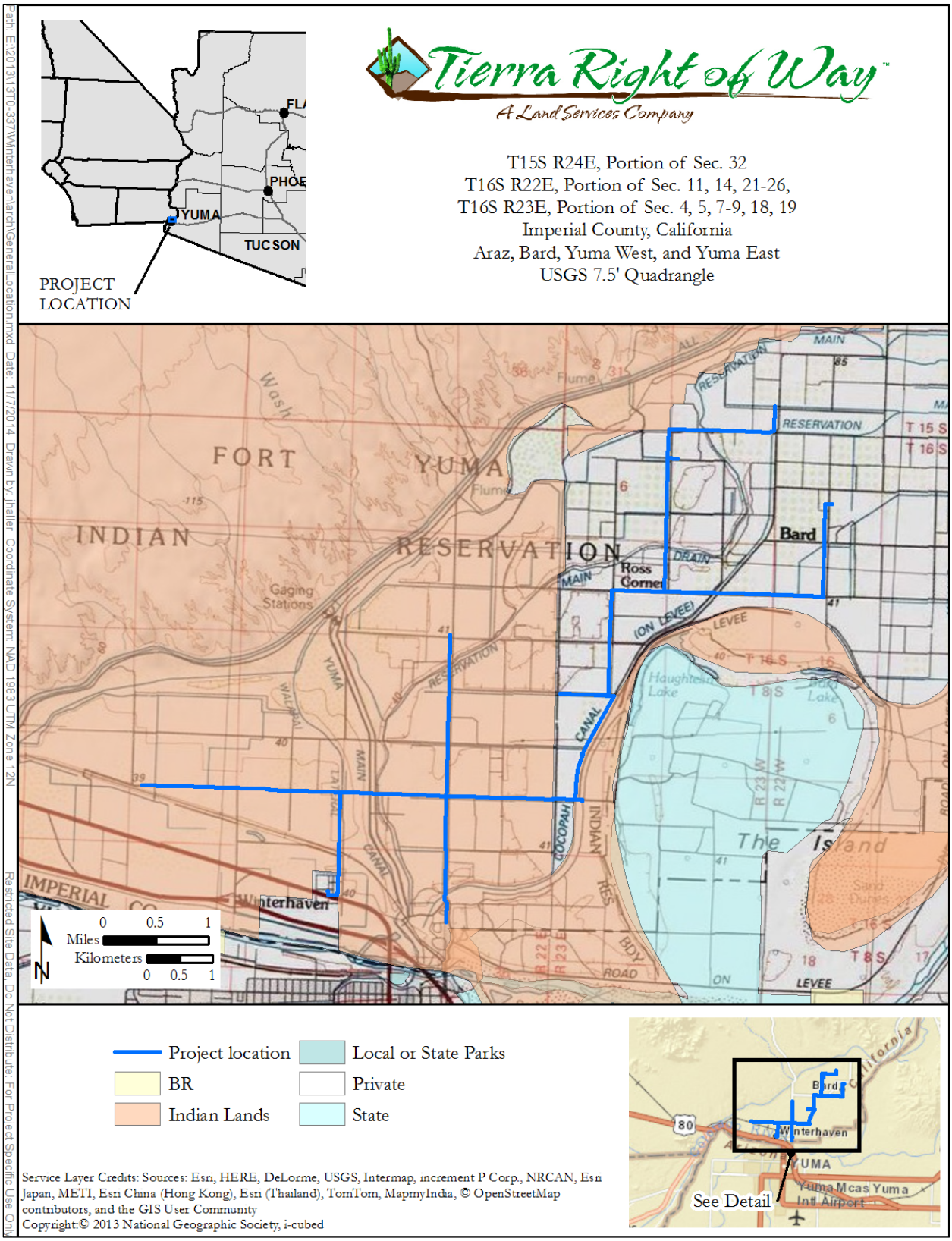



**Figure 1. Location of the APE.**



**Photo 1. Arnold Road, from Picacho Road intersection. View is to the west.**



**Photo 2. Arnold Road, from westernmost end of APE. View is to the east.**



**Photo 3. First Avenue, from E Street intersection in Winterhaven. View is to the north.**



**Photo 4. Cocopah Road. View is to the north-northeast.**



**Photo 5. Perez Road. View is to the north.**



**Photo 6. Perez Road, from junction with Ross Road. View is to the south.**



**Photo 7. Ross Road, from Flood/Cocopah Road intersection. View is to the west.**



**Photo 8. Bard Road, from Whitmore Road intersection. View is to the south.**



**Photo 9. Fisher Road, from Hoppe Road intersection. View is to the north.**



**Photo 10. Haughtelin Road, from Perez Road intersection. View is to the west.**



**Photo 11. Stalnacker Road. View is to the east.**



**Photo 12. Parkman Road. View is to the east.**



**Photo 13. E Street, Winterhaven. View is to the west.**

## *Paleoindian Adaptations (11,300–8,500 B.C.)*

Although there may have been an earlier human presence in North America (cf. Wisner 1997), the earliest securely dated occupation of the southwestern United States was by nomadic bands of hunters collectively referred to as Paleoindians. In the classic formulation (cf. Willey and Phillips 1958), between roughly 13,000–8,000 B.P., a succession of discrete Paleoindian cultures, distinguished in part by their use of distinctive types of projectile point suited to the hunting of particular game species, roamed over broad areas in pursuit of wide-ranging herds of generally large game, although smaller species and plant resources were used as well (Cordell 1984). What is apparently the earliest of these cultures, the Clovis culture, used a bifacial lanceolate point, fluted on both sides and with a concave base; it is perhaps the most distinctive pre-ceramic artifact in the Americas (Hester 1972; Irwin-Williams 1979). Clovis peoples ranged widely over the Americas (Clovis points have been found in situ as far south as Chile), but the vast majority of Clovis sites are located in North America, south of a line (the Mason-Quimby Line) marking the limit of terminal Pleistocene glaciation. The Clovis culture is known largely from excavations conducted at "kill sites" such as Blackwater Draw (Hester 1972) in eastern New Mexico and Naco (Haury 1953), Lehner (Haury and others 1959), and Murray Springs (Haynes 1970) in the San Pedro Valley of southeastern Arizona. Clovis points have been found in association with the remains of many species, including now-extinct forms of elephant, horse, camel, and other species that populated the grasslands of the Southwest (Huckell 1984), but it is their association with mammoth bones that first singled these points out as being extremely old. The Clovis occupation has most recently been dated to a very narrow window of time, between 11,050 and 10,800 *radiocarbon* years B.P. (tentatively interpreted as translating to an actual span between 11,300 and 10,850 B.C.; Waters and Stafford 2007).

Mammoth died out in North America around the same time as the Clovis occupation, and other types of megafauna followed in fairly short order. It was once widely believed (cf. Martin 1967)—and is still thought possible by some (cf. Haynes and Eiselt 1998; Steadman et al 2005)—that these terminal Pleistocene extinctions were caused wholly or partly by "overkill." It was supposed that Clovis hunters came to the Americas from Asia and immediately began to efficiently obliterate an animal population that had not evolved to fear human hunters, driving the least adaptable creatures to extinction in a very short time. Most now believe that the extinction happened instead because of environmental change (Grayson and Meltzer 2003; Guthrie 2006), although several different mechanisms have been proposed by which this might have taken place.

Whether Clovis hunters were the cause of the extinction or not, hunters did stop using Clovis points when mammoths went extinct. In some areas of the Southwest, the Clovis culture appears to have been more or less directly succeeded by another tradition that made use of fluted projectile points known as the Folsom culture. However, virtually no remains associated with this or other post-Clovis Paleoindian groups have been documented in central Arizona (Reid and Whittlesey 1997). One explanation that has been suggested is that with the end of the Pleistocene era and the onset of the notably wetter Early Holocene, the broad expanses of parkland across which large-game species once roamed were broken up by wet patches that the animals could not cross, rendering a Paleoindian lifeway unsustainable in this part of the Southwest. It has been speculated that the descendants of the Paleoindian hunters might have migrated northward to the Great Plains, where appropriate conditions persisted until as late as 5000 B.C.

It is against this backdrop of early human activity in North America that the San Dieguito Complex was formulated. This model was proposed as the local variation on the Clovis and later cultures in southern California and southwestern Arizona.

**The San Dieguito Complex**

The San Dieguito complex was first identified in San Diego County, California, in the 1920s by archaeologist Malcolm Rogers. It is certainly one of considerable antiquity. Some researchers (cf. Hayden 1976) have speculated that the roots of this tradition date back as far as 30,000–40,000 B.C., but in truth very few radiocarbon or other absolute dates have been obtained for this tradition. Instead, there has long been a dependence on the notion that San Dieguito artifacts simply look older than others based on the degree to which artifacts have acquired a glossy "desert varnish," which is produced by exposure to wind, sun, and biological processes. Unfortunately, efforts to place dating through desert varnish on a scientific basis have failed, and at present, there is still no viable means for dating the typical San Dieguito site. San Dieguito artifact assemblages are generally distinguished by the presence of large, crude, desert-varnished scrapers, scraper planes, and choppers, which, in the opinion of some researchers, were best suited for the processing of wood and similar materials rather than foodstuffs. However, assemblages also include heavy, apparently highly specialized projectile points and other tools characterized by the complete removal of cortex from the initial blank (Robbins-Wade 2003), in some cases with the apparent intention of producing plano-convex artifacts (i.e., having one side intentionally flattened and the other left bulging) that could be further refined into specialized tools (Rogers 1966). Percussion flaking was utilized to the virtual exclusion of pressure flaking, at least through the earlier parts of the San Dieguito sequence. Felsite, a mineral with notably good flaking characteristics, is a preferred raw material for the more finely worked artifacts in San Dieguito assemblages. Features typical of San Dieguito sites include "sleeping circles," roughly circular areas several meters across from which desert pavement has

apparently been raked away; trails and cobble shrines adjacent to them used perhaps as route markers or for ceremonial purposes; and rock alignments of uncertain purpose.

Rogers (1939) initially laid out a three-phase sequence for the San Dieguito, the earliest phase being labeled Malpais, followed by the Playa I and Playa II phases. He later renamed these three phases San Dieguito I, II, and III (see Rogers 1966:27–29 for a discussion of the historical development of the San Dieguito nomenclature). Unfortunately, because of the relative simplicity of these sites, the lack of dates, and the general lack of consensus as to what was going on, researchers have tended to fly off in many different directions when trying to evaluate the place and significance of this complex. Hayden (1976) decided, based largely on findings of shell which he dated to 37,000 B.C. (a date derived, perhaps, from a misinterpretation of the manner in which desert-paved surfaces are formed), added a fourth phase to the beginning of the sequence, reusing the term "Malpais" to describe it. Because of the general similarity between Hayden's Malpais sites and what Rogers originally labeled Malpais, this choice has contributed heavily to the confusion. The principal difference between Hayden's Malpais and San Dieguito I is the appearance of great age and the fact that a number of Hayden's Malpais sites had, along with the normal San Dieguito I assortment of features, earth figures (intaglios) in association. These features are, like sleeping circles, made by raking gravels from parts of a desert-paved surface. In the case of intaglios, however, this was done in order to produce large-scale artistic designs visible from above. While Hayden was clear in stating that Malpais was merely the oldest manifestation of the San Dieguito complex (going back perhaps somewhat farther than conventional archaeological sequences), later researchers have cited his work as support for an "Early Man" presence in the Southwest going back perhaps hundreds of thousands of years. Hayden's concept of a Malpais tradition has suffered from the backlash generated by these assertions. Many have chosen to discount the existence of this phase entirely, and it is doubtful, in any case, if this represents any sort of loss to interpretation, given the similarities between Malpais and San Dieguito I and the fact that the starting date for San Dieguito I has never been firmly established.

Setting aside the Malpais, the three San Dieguito phases are distinguished from one another by increasing complexity in the tool kit. San Dieguito I kits consist almost entirely of large, percussion-flaked objects (choppers, spokeshaves, and scraper planes), while San Dieguito II craftsmen added smaller, more finely made blades and points and a wider range of scraper and chopper types to the assemblage. San Dieguito III peoples added pressure-flaked items such as leaf-shaped points, plano-convex scrapers, crescent-shaped objects, and elongated bifacial knives, along with (possibly) portable manos and metates, at least at coastal sites (Iverson et al 2010). It has been suggested, based on ethnographic parallels, that processing of seeds and mesquite might have been done using wooden tools, which would not have survived in the archaeological record (Pendleton 1986).

In 1966, Malcolm Rogers, in his final writings on the subject, subdivided the San Dieguito range into four spatially discrete "aspects," with the deserts of southwestern Arizona falling within the range of the "Southeastern Aspect" of the San Dieguito complex. He believed that, while the San Dieguito I complex could be found across the entire extent of this aspect, during San Dieguito II times (which corresponds to the warm, dry period known as the Altithermal), San Dieguito peoples retreated to the Colorado River Valley, and that by San Dieguito III, they had departed from the Southeastern Aspect altogether (Rogers 1966). Subsequent work (Hayden 1976, Huckell 1998) has largely supported this interpretation.

## *Archaic Traditions (8500 B.C.–ca. A.D. 200/300)*

Paleobotanical evidence recovered from packrat middens indicates that a significant change in climate began around 11,000 years ago, marking the beginning of the Holocene period in Arizona (Van Devender and Spaulding 1979). Continental glaciers retreated, leading to an increase in temperature and aridity and an upward and northward shift in vegetation communities. Many of the large game animals hunted by Paleoindian people became extinct (Martin 1967), and, in response, the relatively simplistic Paleoindian subsistence systems built around following game herds wherever they wandered evolved into a more complex foraging and hunting economy built around a pattern of exploiting resources available seasonally at different locations visited in the course of a yearly round. Such an economy was labeled a Mesoindian, or Archaic, lifeway (Willey and Phillips 1958). Two discrete Archaic traditions have been defined in areas bordering on west-central Arizona: the Amargosa tradition and the Cochise culture.

### The Amargosa Tradition

The Amargosa tradition was first defined during Rogers' (1939, 1966) studies of sites near playas and stream channels in the Mojave Desert of southern California. Rogers originally defined a sequence of three phases termed Pinto-Gypsum, Amargosa I, and Amargosa II. As with Rogers' San Dieguito sequence, this original sequence was revised as a result of Haury's (1950:532–538) investigations at Ventana Cave. The revised phase designations slipped backward somewhat, the term Amargosa I coming to be applied to finds with Pinto and/or Amargosa points, Amargosa II to finds with Gypsum points, and Amargosa III to the later part of the sequence (formerly Amargosa II), a period when elongated knives and primitive brown ware ceramics were beginning to appear in artifact assemblages. Basically, the Amargosa tradition is defined by the addition of formal grinding implements and various projectile point styles to the San Dieguito lithic assemblage (Rogers 1939, 1966). As with the San Dieguito complex, dating remains problematic with the Amargosa tradition, since sites tend not to contain elements that can yield absolute dates (i.e., hearths or posts), and, again, early attempts at dating were based largely on measurements of relative degrees of patination on artifacts. While the use of this method has been largely discredited (although experimentation continues even now), a highly varied set of date ranges for Amargosa findings, based largely on the use of this technique, has appeared in the literature, and is still occasionally cited. Rogers (1966) suggested that the San Dieguito to Amargosa transition occurred by 5000 B.C., while Antevs (1955) gave a date range of 8000–3000 B.C. for the sequence. Haury (1950) suggested a range of 3000 B.C.–A.D. 1, and Irwin-Williams (1979) suggested 3000–500 B.C.

### The Cochise Culture

The Cochise culture was first defined by Sayles and Antevs (1941; Sayles 1983) based on deeply buried cultural deposits found in arroyo banks in southeastern Arizona. Sayles and Antevs defined a series of three stages for the Cochise culture: the Sulphur Spring stage (8500–6800 B.C.), characterized by the use of small ground-stone implements suitable for seed processing and (misleadingly) by an absence of projectile points; the Chiricahua stage (3500–1500 B.C.), characterized by distinctive projectile points and the appearance of "protopestles" for processing new types of resources; and the San Pedro stage (1500–800 B.C.), characterized, among other things, by the first appearance of habitation structures (Sayles 1983). In the 1950s, the existence of a fourth stage in between the Sulphur Spring and Chiricahua was postulated (Sayles 1983). This was essentially a more hunting-oriented manifestation than the otherwise generally similar Sulphur Spring stage, but it was never widely accepted by scholars (cf. Whalen 1971) and was ultimately dropped, consensus having decided that this was simply a variation on the Sulphur Spring

adaptation. Dates for these phases were ultimately obtained from excavations done at rock shelter sites in the Mogollon area. The gap between the Sulphur Spring and Chiricahua phases has been explained as a possible result of drying conditions, which may have caused populations to abandon the low desert valleys of southeastern Arizona in favor of higher ground elsewhere.

**The Cochise-Amargosa Interface**

While the Cochise culture is reasonably well documented in southeastern Arizona, as is the Amargosa tradition in southern California and southwestern Arizona, relatively little is known about the lifeways of peoples living in between the core areas for these cultures during Archaic times. Excavations in the Harquahala Valley in west-central Arizona have been interpreted as representing a mixture of Amargosa and Cochise traits (Bostwick 1988:326–327), and a similar mixture of traits was noted at Ventana Cave (Haury 1950). Haury (1950:531–533) suggested that Ventana Cave was a "meeting ground" between the Amargosa and Cochise traditions, and that by the Late Archaic (San Pedro) phase, the Cochise culture had expanded into western and southwestern Arizona, subsuming the Amargosa tradition. Other explanations for the apparent mixture of Amargosa and Cochise materials have been presented (Bostwick 1988:326–328), and in fact, the very notion that there is a dichotomy between the Amargosa tradition and the Cochise culture has been challenged (Berry and Marmaduke 1982:118; McGuire 1982:177).

Because discussions in which the archaeology of little-studied areas is characterized as a combination of traits from traditions not local to those areas can bias discussions of the archaeology of understudied regions, many archaeologists, following the lead of Bruce Huckell, have attempted in recent years to invoke a pan-Southwestern phase sequence to replace the more localized Cochise, Amargosa, and other sequences that have previously been developed for the Southwest. Under this formulation (Huckell 1996), a three-stage sequence replaces the older sequences and consists of an Early Archaic period dating to between ca. 7500–4300 B.C., a Middle Archaic period dating to between ca. 4300–1800 B.C., and a Late Archaic period dating to between ca. 1800 B.C.–A.D. 1. Each stage is distinguished largely by projectile point and ground stone tool types. This formulation also makes it unnecessary to speak of findings from a given area in terms specific to neighboring regions, an approach that has found greater favor in the area spanned by the Cochise culture than elsewhere.

## *Ceramic Period (Prehistoric and Protohistoric) (ca. A.D. 200/300–1500)*

As the designation implies, this period is characterized by the presence of ceramic vessels. This new storage and food processing technology is generally viewed as an indication of a trend toward a more sedentary lifeway. Early agricultural groups in southeastern Arizona may have begun experimenting with ceramic technology as early as 800 B.C., but vessels large enough for the storage of seeds and small serving bowls did not appear until roughly the beginning of the first millennium A.D. (e.g., Heidke 2005).

In the lower Colorado region, the ancestral Yuman cultural tradition is not as well understood and has not received the same intense interest from archaeologists as the Hohokam tradition to the east. The Patayan (the designation for the archaeological material culture or tradition) cultural sequence was initially developed by Malcolm Rogers (1945), was based largely on ceramic attributes, and was further refined by Waters (1982a, 1982b). The three phases (Patayan I, Patayan II, and Patayan III) were assigned temporal ranges based on the cross-dating of Lower Colorado Buff Ware (Patayan) and occasional Hohokam Buff Ware sherds found in association.

The Patayan tradition is associated with plain and decorated Lower Colorado Buff Ware, floodwater farming along the lower Colorado and lower Gila Rivers, wild resource procurement and processing camps in the surrounding deserts, and limited activity loci where one or few resources were procured over a short period of time (e.g., Doelle 1980; Huckell 1979; Slaughter et al. 2000; Waters 1982a, 1982b). These settlement units were linked together by an elaborate system of trails that were often associated with dedicatory offerings such as broken partial vessels and trail shrines. Patayan peoples practiced agriculture as part of their subsistence strategy, but apparently to a lesser degree than neighboring cultures. While some Patayans practiced floodwater farming and lived at least part of the time in agricultural hamlets consisting of clusters of shallow pit structures or elongated surficial "lodges" along the Colorado River, many lived (or at least spent most of their time) away from the rivers, continuing to dwell, as had Amargosan peoples, in extremely ephemeral structures. Sleeping circles on desert-paved surfaces are the only visible remains of these "habitations" (Ahlstrom et al 2000).

Evidence of socioreligious activity is generally found near permanent or quasi-permanent water sources—*tinajas* (rock tanks), springs, seeps, *pozos* (wells)—in the form of broken partial vessels, wood sticks, petroglyphs, pictographs, and special bedrock grinding features such as slicks, cupules, and mortars (e.g., Hartmann and Thurtle 2000). Temporary camps in the desert region include cleared areas in the desert pavement associated with sparse artifact scatters of ground stone, flaked stone, ceramics, and, often, thermal features (e.g., Hartmann and Thurtle 2000; Slaughter et al. 2000; Tucker 2000). Cremation burial was practiced, but, in contrast to Hohokam practices, the burned ash was not collected after cremation, but rather scattered to the wind.

Malcolm Rogers believed that the differences between Patayan and Hohokam practices were substantial enough to rule out significant influence from the latter, believing instead that Patayan peoples immigrated to the area from southern California, bringing in ideas of their own (Rogers 1939, 1966). In contrast, Albert Schroeder (1957, 1979) believed that Patayan culture developed in situ in the western deserts and that Hohokam influences (as indicated by the use of paddle-and-anvil techniques in pottery making and the adoption of red-on-brown decoration) were indeed critical in the development of the culture. Others have noted influences, particularly in the early phases, from the Basketmaker/Anasazi peoples to the north (Reid and Whittlesey 1997).

Following Rogers (1945), Waters (1982a:Figure 7.3) devised the Patayan ceramic complexes that include Patayan I (A.D. 600–1050) (Black Mesa Buff, Colorado Beige, and Colorado Red), Patayan II (A.D. 1000–1500) (Tumco Buff, Salton Buff, and Topoc Buff), and Patayan III (A.D. 1000–1850) (Palomas Buff, Parker Buff, Tumco Buff, Topoc Buff, and Salton Buff). For both researchers, "traits of primary importance for establishing temporally sensitive Lowland Patayan pottery types are changes in surface treatment, jar rim forms, and vessel form. Temper, a fourth trait, is given secondary importance" (Waters 1982a:281). According to Waters (1982a, 1982b), stucco finish on the exterior surface of cooking pots was a type of surface manipulation found solely in Patayan II and Patayan III vessels.

Except for the Patayan I types (which are distinctive in vessel form, rim [notched] and shoulder shape [Colorado shoulder], and in their decorative elements), the later types are not time sensitive. Patayan I vessel morphological and decorative attributes include the sharp Colorado shoulder, rim notching, incised decorations, burnishing, red clay slip, and, occasionally, loop and lug handles. Patayan II vessels are characterized by the absence of these characteristics. New traits include

recurved rims, high and straight necks, and tear-shaped water jars. Patayan III pottery is comparable to the Patayan II pottery with the occasional addition of folded rims.

Salton Buff pottery is distinct in its tempering agent, which consists of shell from Lake Cahuilla. The production center of Salton Buff is limited to the shores of Lake Cahuilla in southern California. Patayan III pottery was manufactured throughout the Protohistoric period and into the Historic period (Waters 1982a:281–297). A tighter ceramic chronology is unlikely until well-stratified sites are examined through excavation (and such sites are likely buried under deep alluvium along the shores and floodplains of the lower Colorado and lower Gila Rivers).

An increased occurrence of Lower Colorado Buff Ware along the Gila River to Gila Bend and eastward has been observed after A.D. 1100–1150 when small settlement units consisting of dispersed *rancherías* with Lower Colorado Buff Ware dominate and Hohokam settlements (including the large villages with ball courts) are depopulated (e.g., Breternitz 1957; Vivian 1964; Wasley and Johnson 1965). The Patayan expansion, as indicated by *rancherías* settlements and Patayan III pottery, has been interpreted as early evidence of Yuman groups participating in alliances and trade networks that became more apparent and solidified in historic times.

## *Historic Era (A.D. 1500–1960)*

### Spanish Period

The first entry into what is now Arizona by people of European descent came in the late 1530s. A group of four men, including Álvar Nuñez Cabeza de Vaca, who survived a 1528 shipwreck on the coast of the Gulf of Mexico and then wandered across the Southwest before finally reaching Spanish-held territory in Sonora in 1536, may have passed through the state, although this has been questioned in recent years (cf. Chipman 1987). Marcos de Niza, a priest dispatched as an advance scout for an expedition into the lands through which the Cabeza de Vaca party supposedly passed, likely explored the eastern part of the state in 1539, although his activities, too, have been called into question by modern researchers (cf. Sauer 1971). The first European to unequivocally enter Arizona was Francisco Vasquéz de Coronado, who passed through the state on his way to the Pueblo area in New Mexico in 1540. As an adjunct to Coronado's expedition, Hernando de Alarcón was sent by sea up the west coast of Mexico, with the intention of linking up with Coronado at some unspecified place. Alarcón discovered the mouth of the Colorado River and a crossing spot at Yuma, but his visit would not lead to any permanent Spanish presence in western Arizona (Weber 1992). A few months later, the spot was visited by a second Spanish expedition led by Melchior Díaz, who traveled overland from Sonora via a trail that he would name the Camino del Diablo in order to meet up with Alarcón. Díaz was too late to meet up with Alarcón, but found a message left by his countryman (Flint and Flint 2004). Alarcón and Díaz described the lower Colorado River area as a war-torn region and mentioned native groups they identified as the Quiquima or Quicoma and Koxwan or Ciana (*koxkha'n*). It is not clear who these people were, but they are thought to be the Quechan or Kouanas (Greystone Environmental Consultants 2005:3.2-6). Additional information about the Quechan culture is presented in the Ethnography, below.

Over the course of the sixteenth and seventeenth centuries, the Spanish pushed their northern frontier inexorably northward from central Mexico. While they penetrated into present-day New Mexico in the late sixteenth century, establishing a colony along the Rio Grande north of present-day Albuquerque in 1598, no comparable presence was established in Arizona until roughly a

century later, and this settlement (at least initially) took on a very different form. In the 1680s, Jesuit missionaries, led by the Austrian Eusebio Francisco Kino, began to establish missions in Baja California and northern Sonora (Weber 1992), the Sonoran missions ultimately extending north of the modern International Border into Arizona. Most of the Sonoran missions were located along a north-south axis, which, north of the border, corresponds to the Santa Cruz River Valley. One exception, the most remote of the Sonoran missions, was Nuestra Señora de Loreto y San Marcelo de Sonoyta, located about 80.5 km (50.0 miles) southeast of Dateland. This community was (and is) located on the Camino del Diablo pioneered by Díaz 150 years earlier. The Camino del Diablo never became a heavily traveled route, but it was periodically used by missionaries to move overland between the Sonoran and Baja California missions. In 1774, military officer Juan Batista de Anza used the trail to lead a party of 200 colonists overland to California (U. S. Fish and Wildlife Service n.d.). The colonists settled at Monterrey while Anza himself and a small scouting party proceeded north and reconnoitered the sites for what would become the Presidio of San Francisco and the Mission San Francisco de Asís.

Kino had visited the confluence of the Gila and Colorado Rivers during expeditions in 1700 and 1701 (Greystone Environmental Consultants 2005:3.2-7–3.2-8). Kino was the first to refer to the people inhabiting the region, who called themselves the Kwichyana or Kuchiana, as the Yuma or Yuman (Heuberger n.d.:4). The misnomer "Yuma" possibly derived from the missionaries' misunderstanding of the word "yah-may-o," meaning "son of a captain" or chief (Barnes 1935:499) (see Quechan Ethnography, below, for an alternative origin of the name "Yuma"). Following these visits, interaction between the Spanish and the Quechan increased significantly. Nearly a century later, two missions and accompanying settlements were established north of the confluence. The Spanish recognized the strategic importance of the Colorado River crossing at Yuma and consequently desired to remain on good relations with the Quechan. However, disputes over resources between settlers and natives led to a native uprising in 1781. Following the uprising, interactions between Europeans and the Quechan were minimal until the American period.

**American Period**

Following a relatively short interval (A.D. 1821−1848) during which California and the Southwest was controlled by newly independent Mexico, the United States gained possession of most of Arizona with the Treaty of Guadalupe Hidalgo; they gained the remainder with the Gadsden Purchase of 1853. California attained statehood in 1850, becoming the 31st state. The 1850s were particularly tumultuous for the Yuman speaking peoples along the lower Colorado River. With the onset of the California Gold Rush following the discovery of gold at Sutter's Mill in 1848, hostilities erupted as increasing numbers of Euroamerican fortune hunters headed west into California. In the lower Colorado River region, the conflicts between Native Americans and would-be miners resulted in the development of Camp Yuma in 1852 (Greystone Environmental Consultants 2005:3.2-8), after which time the Quechan lost control of the lands around the Yuma Crossing. In 1858, the Mohave War began following a Mohave attack on the Beale's Road immigrant trail (the Battle of Beale's Crossing). This led to the establishment of Fort Mohave near Topoc, the second major U.S. military outpost on the Colorado River, in 1859 (Walker and Bufkin 1979:26). In 1860, the U.S. Army defeated the Mohave in the last major conflict in the lower Colorado River region.

The military post of Fort Yuma had originally been established in 1849 as Camp Calhoun, later becoming known as Camp Independence and then Camp Yuma (State of California 2013; Hart 2014). The initial purpose of the camp was to protect the nascent settlement of Colorado City

(which would eventually become Yuma) and its strategically located river crossing from the Quechan, who were hostile to the incursion of the settlers. The cost of maintaining the post led to a brief period of abandonment in 1851, but it was re-established in 1852 as thousands of gold seekers began passing through the Yuma Crossing. While the California Gold Rush was the primary impetus for the growth of Colorado City, the settlement expanded when it was recognized that bringing goods via ship to the mouth of the Colorado River and distributing them from the fort was an effective means of getting supplies to other military outposts across the Southwest. This led to the establishment of the U.S. Army Quartermaster Depot, which was in operation from the 1860s until the 1880s (Yuma Visitor's Bureau 2014).

Colorado City burgeoned as the result of being both a seaport and a major crossing point on the river for travelers and immigrants heading west. After virtual destruction resulting from major flooding in 1862, Colorado City was rebuilt and renamed Arizona City. Following the Civil War, rather elaborate plans were made for the city's continued development as a commercial center. Arizona City was formally incorporated in 1871 and renamed once again as Yuma in 1873. In 1876, the Yuma Territorial Prison was constructed on a hill across from the fort, where it operated for 33 years until it was relocated to Florence, Arizona, because of overcrowding (Arizona State Parks 2014). In 1877, the first locomotive to cross the Colorado River entered Arizona at Yuma, inaugurating the long-anticipated establishment of the railroad in Arizona. Four years later, the Southern Pacific Railroad connected with the Texas Pacific Railroad east of El Paso (Walker and Bufkin 1979:46).

In 1884, the Fort Yuma Reservation was established for the Quechan on the western (California) side of the river. Prior to this time, the Quechan occupied six rancherías situated above the Colorado floodplain, moving to family farm plots on the floodplain during the growing season after the spring floods and until autumn. It is estimated that the Quechan derived 30–50 percent of their subsistence from agriculture, supplementing a mixed foraging and hunting economy (Greystone Environmental Consultants 2005:3.2-8–3.2-9). Quechan families gradually abandoned this lifeway following the establishment of the reservation, where they were allocated 4-ha (10-acre) plots of farmland under the Dawes Severalty Act of 1887, which in turn opened up the remainder of the traditional lands for settlement by non-natives (Stene 1996:4). In 1893, the extent of the reservation was drastically reduced by the U.S. government, which limited reservation lands to 2 ha (5 acres) per living person. Much of the original reservation land was returned to the Quechan in the 1970s (Halpern 1997:3).

Fort Yuma itself continued as a military installation until 1883, when its management was transferred to the U.S. Department of the Interior. The end of the Civil War and the declining conflicts with Native Americans further rendered the fort unnecessary. In addition, the arrival of the railroad in 1877 had obviated the need for the military's use of the Quartermaster's as a supply distribution hub (Hart 2014). Military operations in the Yuma region would remain dormant until the establishment of the Yuma Proving Grounds during World War II.

Much of the subsequent history of Yuma pertains to agriculture and the management of the Colorado River. The Yuma Project, an ambitious endeavor to irrigate the lower Colorado River valley, was initiated by the U.S. Reclamation Service (later the Bureau of Reclamation) in 1904. The Reclamation Service took over the abandoned Fort Yuma facilities as its headquarters. The first project was the Laguna Dam, which was constructed from 1905–1909 (Stene 1996:5–6; National Park Service 2014). Laguna Dam, located about 21 km (13 miles) northeast of Yuma (Bureau of

Reclamation 2009), gave rise to the construction of several canals, including the Yuma Main Canal (AZ X:6:67[ASM]) and its laterals and the East Main (AZ X:6:65[ASM]) and West Main Canals (AZ X:6:63[ASM]), both of which split from the Yuma Main in the town of Yuma after diversion beneath the river via the Colorado River Siphon (Stene 1996:8–9). Construction on the Colorado River Siphon (AZ X:6:40[ASM]) began in 1909 and was completed three years later. A 4.2-m-diameter (14.0-foot-diameter) tunnel was excavated through the sandstone underlying the river for a distance of nearly 305 m (1,000 feet); the tunnel was lined with concrete and was connected to two 22.5-m-deep (74.0-foot-deep) vertical shafts on either side of the waterway. The Laguna Dam successfully weathered the severe flooding of 1912 and continued diverting water until 1948, when it was superseded by the Imperial Dam (completed 8 km [5 miles] upstream from the Laguna Dam in 1938) and the All-American Canal (Stene 1996:17). The All-American Canal replaced the Alamo Canal, a significant segment of which flowed through Mexico. In order to establish a canal that was located exclusively on U.S. lands, the All-American Canal was constructed by the Bureau of Reclamation beginning in the 1930s. By 1942, it became the sole water source for Imperial Valley (Imperial Irrigation District 2014). The All-American Canal feeds the Bard Water District, which was established in 1927 by water users from the Reservation Division of the Yuma Project (Stene 1996:19). The Bard Water District maintains the Reservation Division, which consists of 3,058 ha (7,556 acres) of land on the Quechan Indian Reservation, and the Bard Division, which consists of 2,881 ha (7,120 acres) of private land (Border Environment Cooperation Commission 2014).

To encourage travel along the proposed Ocean-to-Ocean Highway (U.S. Highway 80) that would connect southern California with the rest of the United States, the Ocean-to-Ocean Bridge was constructed across the Colorado River at Yuma in 1915. Construction of the bridge was a joint effort of the Office of Indian Affairs and the states of California and Arizona, and it was fervently promoted by Yuma's business community. When completed, it was the only highway bridge crossing the Colorado River for some 1,931 km (1,200 miles) (Baker 1978). For a time during the Great Depression, a checkpoint was established by the State Police on the California side of the bridge to prevent the massive influx of people migrating west in search of employment. If the "Okies" or "Arkies" had no money or lacked proof of a job waiting in California, they were not allowed to enter the state. Many of those who were turned away set up camp in Yuma, and a neighborhood still bears the unofficial designation "Okietown." The bridge continued as a crossing point for vehicular traffic until 1988, when it was determined to have become structurally unsound (Yuma Visitor's Bureau 2014; Drive the Old Spanish Trail 2014). However, at some point, the bridge was reopened to vehicles, as it currently serves as an access point to the Fort Yuma–Quechan Reservation. The bridge is now listed on the National Register of Historic Places.

Following the United States' entry into World War II, combat training centers were established across the desert Southwest. The harsh desert conditions were considered ideal to prepare soldiers for combat overseas, particularly in North Africa. Camp Young, located in the Mojave Desert between Indio and Desert Center, California, served as headquarters of the Desert Training Center (DTC). Major General George S. Patton was Camp Young's first commanding officer and was assigned the task of selecting other desert locations for additional training areas (Bureau of Land Management [BLM] 2013). Ten other camps were established across the California and Arizona deserts. After Patton went to North Africa, the DTC was renamed the California-Arizona Maneuver Area (CAMA). Over a million men trained at the DTC/CAMA from 1942–1944, when the camps were closed. Camp Pilot Knob (in California) and Camp Laguna (in Arizona) were located in the Yuma vicinity. In 1943, the Yuma Test Branch was established downriver from the Laguna Dam for

the purpose of testing portable combat bridges (U. S. Army 2014). The Yuma Test Branch closed briefly in 1950 and reopened in 1951 as the Yuma Test Station. The Yuma Test Station became the main artillery and armament testing range in the United States. It was later renamed the Yuma Proving Ground and remains an important military installation today.

## QUECHAN ETHNOGRAPHY

As discussed in the foregoing section, the Quechan are a Native American people inhabiting the region around the confluence of the Gila and Colorado Rivers. The name "Quechan" literally means "those who descended" (Bee 1983:97). The name "Yuma" is the Spanish name for the Quechan and likely derives from the Akimel O'odham/Tohono O'odham name for them: *yumi*. They are one of the several Yuman-speaking groups in southern California and western Arizona. For convenience, ethnologists, beginning with Kroeber in 1943 (Stewart 1983a), have placed the Yuman people into four broad geographical groups. The Delta Yumans include such people as the Cocopah in the Colorado delta area; the Upland Arizona Yumans include the Walapai, Havasupai, and Yavapai; and the California Yuman-speakers consist of southern Californian groups such as the Kumeyaay (or Kamia) and Tipai-Ipai (or Diegueño). The fourth group, the River Yumans, comprise two closely related peoples, the Mohave and the Quechan. The Mohave and Quechan were culturally similar and traditionally were allied in opposition to several other groups in the area, including the Halchidhoma, the Maricopa, and the Cocopah (Stewart 1983b:56).

The following brief ethnographic account attempts to form a model of Quechan culture in pre-reservation times (i.e., prior to 1884), while tracing the impacts from Euroamerican interaction with the Quechan people historically.

### *History and Early Sources*

The early records of contact between the Spanish and the Yuman Tribes that lived along the Lower Colorado are sparse. The earliest records—those of the Hernando de Alarcón and Melchior Diaz expeditions in the 1540s—do not mention the Quechan at all (Spicer 1962:262). The first substantial records of the Quechan made by Europeans were made during Juan de Oñate's 1604 expedition of the Colorado River via the Bill Williams Fork (Bean and Brakke Vane 1978:5-44). The next contact with the Spanish occurred during Father Eusubio Kino's expeditions to ascertain whether California was an island or peninsula, beginning in 1698 (Spicer 1962:263–264). Kino was apparently well-received by the different Yuman groups on the Colorado and Gila Rivers. Kino's last visit to the Quechan was in 1702, during his final expedition to determine California's geographical status.

The next visit from the Spanish did not occur until 1748, when the Jesuit missionary Father Jacobo Sedelmayr visited the area. However, unlike Kino, he was greeted with hostility by the Quechan. Part of the reason for this hostility was likely related to widespread epidemics among the Lower Colorado Tribes from diseases that had been introduced by Europeans. In addition, the Spanish slave trade (a practice later adopted by the Quechan) was also causing increasing hostilities elsewhere in the region (Bean and Brakke Vane 1978:5-44). In 1771, the Spanish had become fixated on establishing a permanent route between Sonora and Alta California, via the Colorado-Gila confluence region, or what would eventually come to be known as the Yuma route, or crossing. Spanish presence in the area accordingly intensified. The explorations for this route were led by General de Anza. At the same time, Father Franciso Garcés was busy trying to find a route through Yuma country to the Hopi region for missionizing purposes and was also conducting vigorous missionary activity among the Quechan.

Over the next ten years, Spanish influence on the Quechan and other Lower Colorado Tribes was great due to these activities but also because of the introduction of wheat as a winter crop and domesticated livestock (particularly poultry). The Spanish established two settlements (the pueblos of Yuma and Xuksi'l) near the crossing that consisted of farmers, priests, and soldiers. These settlers allowed their cattle to graze in the Quechan fields, effectively destroying their crops (Bee 1983:94). This would occur again in 1849 during the California gold rush, when vast numbers of people traveled through the crossing (Bean and Brakke Vane 1978:5-47). Warfare related to the ongoing slave trade continued, as did epidemics; syphilis was introduced to the area during the 1774 De Anza expedition (Spicer 1962:264; Bean and Brakke Vane 1978:5-44–5-45).

In the summer of 1781, the Quechan successfully revolted against the Spanish, destroying both settlements and killing 95 settlers, soldiers, and missionaries (including Garcés) and taking 76 people captive (Bean and Brakke Vane 1978:5-45). The route from Sonora to Alta California via the Colorado-Gila confluence area was effectively closed off, and the Quechan remained relatively isolated until 1827, when the Quechan opened the crossing to Mexican travelers taking the slave trade road between Caborca, Sonora, and southern California (Bean and Brakke Vane 1978:5-46).

Because of the sporadic contact between the Spanish and the Quechan and because of the success of the revolt of 1781, the Quechan retained many of their cultural traditions and lifeways, despite the Spanish enculturation of the 1770s. Nevertheless, during the course of the 19th century, the Quechan became increasingly subjected to Euroamerican political, religious, and economic impacts. These included the influx of would-be miners following the discovery of gold in California in 1848, the establishment of Fort Yuma in 1852, the arrival of the railroad in 1877, the establishment of the reservation and Catholic school in the 1880s, and the 1893 introduction of the Federal government's land allotment system (resulting from a local application of the Dawes Act of 1887) and irrigation projects (Bean and Brakke Vane 1978:5-48–5-51; Smith 2010; Bee 1983:94–95).

## *Territory and Settlement*

The Quechan account of their origin states that they, like most of the other Lower Colorado Tribes and other Tribes farther to the west (such as the Kumeyaay in the San Diego area), came from the sacred mountain of Avikame (Newberry Mountain, near Needles, California). It is here that they were created by a creator being known as Kwikumat or Kukumat. From here, they migrated south. The lands regarded as traditional by the Quechan encompass an area extending from Needles to the Gulf of California. An anthropological model hypothesizes that the Quechan, as a tribal identity, formed between the 13th and 18th centuries when several patrilineal bands formed into a tribal affinity. Group proximity during horticultural activities, linguistic affiliation, and warfare may account for this formation (Bee 1983:86).

Geographically, the Quechan were organized into a number of rancherias, each consisting of several hundred people, organized into extended family groups. The rancherias were distributed along the Colorado River, north and south of the Gila confluence, and along the Gila (according to some Spanish accounts, as far as 26 miles east of the confluence). The internal structure of each rancheria changed throughout the year, with each extended family moving to their river bottomlands during the summer farming season and returning to high ground in the winter and during spring flooding. The rancherias also shifted up and down the rivers in response to food shortages and warfare (Bee 1983:87–89). Because of the warm climate, substantial housing was uncommon. Families dwelt

in dome-shaped arrowweed houses and ramadas both on high ground and near their fields during the growing season. In each rancheria, one or two larger and more substantial houses were occupied by the leading families. These houses could accommodate other rancheria members in extreme cold (Bee 1983:89–90).

## *Subsistence*

Throughout their history (and presumably prehistory), the Quechan were primarily gatherers and horticulturalists, something attested to by the early Spanish chroniclers (Bee 1983:86). Wild game was not a primary source of nutrition, as the harsh desert conditions beyond the Colorado's floodplains limited the viability of hunting. Cultivated foods included maize, tepary beans, various melons, pumpkins, and wild grass seed; other foods, such as watermelons, black-eyed beans, and wheat, were introduced by Euroamerican immigrants. Interestingly, watermelons, a crop that spread extremely rapidly among North American Native populations upon its introduction, had been adopted by the Quechan prior to Kino's visit in the late 17th century (Rea 1997:299).

The Quechan practiced a diversified horticultural strategy, and planting of the several food crops occurred at different times of year. Maize and melons were planted in February and were not dependent on floodwater farming. Other crops were planted after the spring flooding of the Colorado. Winter wheat was sown in the autumn and harvested just before the floods. The wild grasses, which provided seeds to grind into meal, were sown in less fertile soils. The other main wild foods were mesquite and screw bean pods, which were probably the primary source of nutrition during years of crop failure (Bee 1983:86–87).

As discussed earlier, both cultivated and wild foods were affected by the arrival of Euroamericans, who would allow cattle to graze (or could not prevent them from doing so) in Quechan fields. In 1893, a long-term impact was made on Quechan horticulture by an agreement based on the Dawes Severalty Act of 1877 that persuaded Quechan farmers to limit their land holdings to five acres per person. All remaining land was then sold at public auction. This was a direct move by non-Natives to acquire the fertile bottomlands of the Colorado that the Quechan had farmed for centuries. The five-acre-per-person allotments were increased to ten acres in 1912. Meanwhile, the Yuma Project had been initiated by the U.S. Reclamation Service (later the Bureau of Reclamation) in 1904 and had the effect of disrupting the annual flooding and silt deposition of the Colorado River. By the 1920s and 1930s, farming was no longer a viable occupation, and many Quechans had become wage workers in Yuma. After years of claiming that the agreement was signed under duress and that the U.S government had not fulfilled its terms, 25,000 acres of land that had belonged to the original 1884 reservation were restored to the Quechan Tribe in 1978 (Bee 1983:94–95). Today, most of the farmland is leased to non-Native farmers.

## *Kinship and Polity*

Socially, the Quechan were organized into patrilineal clans. The clans were exogamous units, with clan names borne exclusively by women. Some clan names may have originated from other Tribes such as the Mohave, Maricopa, or the Kumayaay. The rancherias were agamous; that is, anyone could marry outside the rancheria, but men most frequently married women from their own rancheria. Consequently, settlement was in practice bilocal, an important factor for the extended family as the primary economic unit (Bee 1983:89). Clan membership did not necessarily correspond to rancheria affiliation. Clan functions were largely disregarded by the 1960s, and many Quechans had forgotten their affiliation by that time (Bee 1983:90–91).

In general, the clan and rancheria were the basic social units among the Quechan and the extended family was the economic unit, as mentioned above. Tribal consciousness—when all the people identified as "Quechan", rather than as members of the smaller-scale social units of clan and Rancheria—occurred during warfare, harvest gatherings and annual mourning ceremonies (Bee 1983:92).

Early European sources described two main leadership positions among the Quechan, one that focused on civil affairs and one that focused on warfare. However, it seems that these roles may have been largely traditional, rather than consisting of any real political power. In practice, decisions were made by the leaders of individual Ranchерias, who probably consulted in council for matters of concern on the Tribal level (Bee 1983:92–93). Although some degree of inheritance may have been a factor in determining leaders, competence was a more powerful attribute. Competence depended upon public approval but also upon personal power bestowed by special dreams (Bee 1983:92–93). The dreams of a leader or candidate for leadership were evaluated by a group of elders, and the individual was required to undergo dreams appropriate to his office, although he was also required to be an effective leader.

## *Warfare*

Warfare was a cornerstone of Quechan culture. Two types of warfare were distinguished: the small raiding party and the war party (Bee 1983:93). The raiding party was focused on creating havoc and obtaining horses or captives. Conflicts involving the war party consisted of a village raid followed by an arranged battle in which the opposing parties faced one another in two lines, ending in a hand-to-hand melee (McCorkle 1978:698). Bee (1983:93) points out that this had greater resemblance to a brutal team sport, where the two sides would agree upon weapons to be used and wait to attack until both sides had fallen into formation. The arsenal consisted of a "potato masher" war club of mesquite wood (typically a tapered cylinder mounted on a handle), wooden spears with fire-hardened tips, and bows. Because of their distinctive war club, the Quechan were sometimes referred to by the Spanish word "Garroteros," literally, "clubbers" (Bee 1983:97; Kroeber 1976:782).

Warfare among all the Yuman Tribes was closely intertwined with myth and ceremony, although casualties were real and occasionally heavy. An account of the first war party is given in the central creation myth. Traditionally, the function of warfare among the Lower Colorado Tribes was connected to Tribal prestige and ritual, rather than conflict over resources or similar, comparatively mundane concerns. For example, when a sorcerer was killed, this was an act that often precipitated group conflict. This is again connected to the importance of dreams in Yuman culture: dreams of success in battle were highly valued and became incorporated into song cycles; in addition, like the rancheria leaders, war leaders, ceremonial managers, and shamans obtained their positions through dreams (McCorkle 1978:698–699).

The Quechan and Mohave (to whom they are closely related culturally and linguistically) did not usually fight one another, but both engaged in conflicts with the Maricopa and Cocopah, who were sometimes allied with the Pima. There was likely a long history of warfare among the Yuman Tribes that predated the arrival of Europeans. However, warfare may have increased in scale and intensity during the 18th and early 19th centuries for economic reasons—a departure from the tradition of "ritual" warfare (Bee 1983:93). The motivation for waging war appears to have been related to the taking of captives to trade to the Spanish and other Tribes for horses and other goods. However, it appears that land acquisition was still not a motivation for war at that time.

### *Death and Mourning*

Mourning, along with dreaming and warfare, was one of the three most important aspects of the Quechan lifeway. Upon an individual's death, all of his or her belongings, including the family home, were destroyed or given away. This sometimes left the deceased's family destitute, and they would be provided for by friends or the rancheria leaders (Bee 1983:89). Inheritance was therefore never an important factor in pre-reservation life. Individual family garden plots were also abandoned, to be used later by non-family members. The *keruk* ceremony, the central mourning ceremony of the Yuman Tribes including the Quechan, was held after the death of an important leader or after an accumulation of deaths to be honored by the families of the deceased (Bee 1983:93). The *keruk* is alternatively known in older literature as *nyimits* (Kroeber 1976) or *nimíts* (Curtis 1906).

A central component of the *keruk* ceremony was a mock battle, prepared for and carried out in the same way as an actual conflict. It also was a reenactment of the battle that was fought following the death of the creator deity Kwikumat. The ceremony also involved the singing of songs commemorating the creation of the world, public mourning, and the destruction of the deceased's property. The ceremony was intertribal and lasted several days, forming an occasion for large-scale social interaction, wherein goods were exchanged, marriages were arranged, and enmities were resolved.

The *keruk* appears to have been associated with a pilgrimage trail between Pilot Knob (approximately 6.75 miles west of modern Winterhaven) and Newberry Mountain (the sacred mountain Avikame). Altschul and Ezzo (1995) have noted that the practice of the *keruk* seems to have intensified during the 18th and 19th centuries, contemporaneous with the intensified conflicts resulting from the horses-for-slaves trade introduced by the Spanish and with an influx of people migrating from the desiccating Lake Cahuilla. They suggest that the *keruk* and the associated pilgrimage was a unifying force transcending conflicts between inimical Tribes. Altschul and Ezzo (1995) likewise suggest that the intaglios along the trail, which are executed in different styles, were the locations of *keruk* rites unique to and performed by different Tribes. The *keruk* has continued into modern times in modified form (Bee 1983:96–97).

## PREVIOUS RESEARCH

Prior to fieldwork, a Class I records search was performed. The Class I search examined all previously conducted surveys and previously recorded sites and historic properties within a 1.6-km-radius (1.0-mile-radius) buffer zone extending from the project footprint. Although the APE is located only on the California side of the state line, the buffer zone extends into Arizona as well. The Class I research was completed through consultation with the California Historical Resources Information System (CHRIS) for the California portion of the buffer and via the Arizona State Museum's (ASM's) AZSITE online database for the Arizona portion. The CHRIS data were received from the South Coastal Information Center (SCIC) on June 20, 2014 (Appendix E). These data were obtained in consultation with Arlene Kingery, Historic Preservation Officer for the Quechan Tribe, on May 16, 2014 (Appendix F). The AZSITE search was completed on April 15, 2014. In addition to the Class I searches, a Sacred Lands File (SLF) request was filed with the California Native American Heritage Commission (NAHC).

To ensure the protection of archaeological sites and historic properties, previous project and site locations depicted on maps are placed as a detachable appendix at the end of this report (Appendix

B). For the client copy of this report, Appendix B has been removed, but all agency copies are intact. The results of the Class I search are discussed by state below.

## *California*

The Class I search found that 43 surveys have been previously conducted and 9 sites have been previously recorded within the 1.6-km (1.0-mile) buffer (Tables 1 and 2; see Appendix B, Figure B.1). In addition, one historic address (the Fort Yuma Train Depot) is present within the buffer zone (Table 3).

Three linear, non-canal, sites are present within the buffer. One of these sites, CA-IMP-7158, the historic Pilot Knob-Tap Drop 4 161kV Transmission Line, crosses the APE at two points. The line is supported, at least in the vicinity of the APE, by wooden towers and is currently in use. The line has been upgraded and maintained since its construction in the 1940s. The line crosses the APE near the intersection of Picacho Road and Indian Rock Road and again along Cocopah Road (Photo 14). Another site, CA-IMP-3456, is described as a "road course NE and SW" and is apparently based on a General Land Office (GLO) surveyor's notes from 1856. According to the site card, this site is now in Arizona because of a change in the course of the Colorado River. However, no indications of the site exist in the AZSITE database. Finally, a portion of the historic Southern Pacific Railroad (SPRR), passes through the buffer and crosses the APE along First Avenue. The SPRR (which was purchased by the Union Pacific Railroad in the 1990s) was constructed beginning in the 1870s and ran from the Los Angeles area to Yuma, and subsequently into Arizona. The line has been in active use since its original construction. Over the past several decades, a number of surveys in southern California have recorded segments of the SPRR and various features related to it. One such feature is the railroad bridge over the Colorado River, located adjacent to the Ocean-To-Ocean Bridge. This and several other railroad bridges in the vicinity (such as the bridges that cross the Yuma Main Canal and the All-American Canal) are subsumed under site number CA-IMP-3424.

**Table 1. Previous Surveys within a 1.6-km (1.0-Mile) Radius of the Project Area (California)**

| Project No. (SHPO-ID) | Performing Institution | Report Reference |
|---|---|---|
| AEI 02-08 | AEI Consultants | AEI Consultants 2002 |
| BIA 96-01 | BIA | BIA 1996 |
| BLM 01-50 | BLM and California Department of Fish and Game | BLM 2001 |
| BREENJ 08-01 | Logan Simpson Design, Inc. | Breen 2008 |
| CROZIS 93-01 | unknown | Crozier 1993 |
| DAVISE 13-01 | Logan Simpson Design, Inc. | Davis and Hart 2013 |
| DUNCAH 07-01 | Transcon Environmental | Duncan and Fertelmes 2007 |
| GREENE 94-02 | Bureau of Reclamation | Green and Middleton 1994 |
| GUMERG 73-01 | Prescott College | Gumerman and Weed 1973 |
| JSA 99-01 | Jones & Stokes Associates | Jones & Stokes Associates 1999 |
| JSA 00-02 | Jones & Stokes Associates | Jones & Stokes Associates 2000 |
| KINKAG 03-01 | BIA | Kinkade 2003 |

| Project No. (SHPO-ID) | Performing Institution | Report Reference |
|---|---|---|
| MAXONJ 84-03 | unknown | Maxon 1984 |
| MCDONM 97-02 | ASM Affiliates | McDonald and Victorino 1997 |
| MEYERD 11-04 | Federal Emergency Management Agency | Meyer 2011 |
| MORENJ 95-01 | Western Cultural Resource Management, Inc. | Moreno et al. 1995 |
| MYERSL 05-01 | Aztlan Archaeology, Inc. | Myers 2005 |
| NASHB 09-01 | Quechan Indian Tribe | Nash-Chrabascz 2009 |
| PFAFFC 92-01 | Bureau of Reclamation | Pfaff et al. 1992 |
| PRESCC 73-01 | Prescott College | Prescott College 1973 |
| ROSENM 93-23 | California Department of Transportation | Rosen 1993 |
| ROXLAK 95-01 | Mariah Associates, Inc. | Roxlau and Acklen 1995 |
| SANDEJ 07-02 | Chambers Group, Inc. | Sander and Maxon 2007 |
| SCHAEJ 07-74 | ASM Affiliates | Schaefer and Becker 2007 |
| SCHAEJ 98-49 | ASM Affiliates | Schaefer and O'Neill 1998 |
| SCHAEJ 01-43 | ASM Affiliates | Schaefer and O'Neill 2001 |
| STONEL 90-01 | Archaeological Research Services, Inc. | Stone and Hathaway 1990 |
| SWART 81-01 | Museum of Northern Arizona | Swarthout and Drover 1981 |
| SWCA 06-02 | SWCA Environmental Consultants, Inc. | SWCA 2006 |
| TMCI 98-02 | Tierra Madre Consultants, Inc. | Tierra Madre Consultants 1998 |
| TRCMA 95-01 | TRC Mariah Associates, Inc. | TRC Mariah Associates 1995 |
| UNDERJ 10-18 | Tierra Environmental Services | Underwood 2010 |
| UNDERJ 11-19 | Tierra Environmental Services | Underwood 2011 |
| VCHP 06-01 | Van Citters: Historic Preservation, LLC | Van Citters: Historic Preservation 2006 |
| VONWEJ 96-215 | Imperial Valley College Desert Museum | Von Werlhof 1996 |
| VONWEJ 02-207 | Imperial Valley College Desert Museum | Von Werlhof 2002a |
| VONWEJ 02-208 | Imperial Valley College Desert Museum | Von Werlhof 2002b |
| VONWEJ 02-233 | Imperial Valley College Desert Museum | Von Werlhof 2002c |
| VONWEJ 02-234 | Imperial Valley College Desert Museum | Von Werlhof 2002d |
| WALSHM 13-01 | Logan Simpson Design, Inc. | Walsh 2013 |
| WHALEN 74-01 | Imperial Valley College Musuem | Whalen 1974 |
| WILCOR 93-01 | Imperial Valley College Desert Museum | Wilcox 1993 |
| YOSTS 01-01 | TRC Mariah Associates, Inc. | Yost et al. 2001 |

**Table 2. Previously Recorded Sites within a 1.6-km (1.0-Mile) Radius of the Project Area (California)**

| Site Number | Site Name or Description | Temporal Placement | Register Status/Whose Opinion |
|---|---|---|---|
| CA-IMP-158 | El Rio site | San Dieguito I; Yuman I and III | not recorded |
| CA-IMP-3424 | Southern Pacific Railroad | Historic (1870s–present) | considered Eligible (Jones & Stokes Associates 1999) |
| CA-IMP-3456 | road course NE and SW | unknown | not recorded |
| CA-IMP-3476 | unknown | unknown | not recorded |
| CA-IMP-6824 | Reservation Main Drain Canal | Historic (constructed 1912–1914) | considered Eligible (Tierra) |
| CA-IMP-6830 | Yuma (California) Main Canal | Historic (constructed 1909–1912) | considered Eligible (Tierra) |
| CA-IMP-6832 | Reservation Main/Cocopah Canal | Historic (constructed beginning in 1907) | considered Eligible (Tierra) |
| CA-IMP-7130 | All-American Canal | Historic (constructed 1934–1940) | not evaluated by recorder |
| CA-IMP-7158 | Pilot Knob-Tap Drop 4 161 kV Transmission Line | Historic (early 1940s) | not evaluated by recorder |

**Table 3. Previously Recorded Historic Address within a 1.6-km (1.0-Mile) Radius of the Project Area (California)**

| Resource Name | Primary No. | Other Name | Description |
|---|---|---|---|
| C-YUMA EAST-B-3 | P-13-008768 | train stop at Fort Yuma | historic Fort Yuma Train Depot; the building consists of two brick structures connected by a breezeway |



**Photo 14. Wooden towers of the historic Pilot Knob-Tap Drop 4 161kV Transmission Line (CA-IMP-7158).**

The remaining three sites are historic canals, each presently in active use. The canals consist of the Yuma Main Canal (CA-IMP-6830), the Cocopah Canal (CA-IMP-6832), and the Reservation Main Drain Canal (CA-IMP-6824). The site records on file at the South Coastal Information Center (SCIC) were updated to reflect observations made where the canals cross the current APE. Descriptions of the canals are provided below.

In addition to the Class I file search conducted through CHRIS, an SLF request was filed with the NAHC. The NAHC maintains inventories of known Native American human burials and sacred places within the State of California. The SLF search indicated that no known burials or sacred sites are present within the APE (Katy Sanchez, Associate Government Program Analyst with the NAHC, personal communication, September 21, 2014). It is emphasized that a negative finding does not preclude the potential presence of unknown or undocumented properties.

**Canal Descriptions**

Three historic canal sites were updated (see Figure B.1). All three were constructed directly or indirectly as part of the Yuma Project. The construction of a system of smaller laterals coincided with that of the larger canals, and these are presumably represented today by the various ditches paralleling the modern roads in the region. The laterals crossed by the APE include the Papago, Tonowanda, Hopi, Pima, Pueblo, and Navajo Canals. Because these laterals represent components of the larger canal system fed by the main canals, they were not recorded as separate sites. It has not been possible to directly correlate specific laterals with their parent canals. Primary Record; Building, Structure, and Object Record; and Linear Feature Record forms have been prepared for each canal. These forms can be viewed in Appendix C. For the Yuma Main Canal, the Reservation Main/Cocopah Canal, and the Reservation Main Drain, these update earlier Historic Resources Inventory Records or Primary Record forms. The Walapai Canal is newly recorded.

**The Yuma Main Canal (CA-IMP-6830)**

The APE crosses the Yuma Main Canal (also known as the California Main Canal) at a point along Arnold Road to the west of the Arnold Road/Picacho Road intersection (see Figure B.1). Arnold Road is bridged at the canal crossing. Today, the Yuma Main Canal continues to convey a large volume of water from the All-American Canal to the south (Photos 15 and 16).

The Yuma Main Canal is a large earthen canal. It was constructed as a diversion canal originating from the Laguna Dam. Construction of the canal began in 1909 and was completed by 1912 (Stene 1996:9). The Yuma Main originally diverted water from the Laguna Dam, but this diversion was discontinued in 1941 following the construction of an earthen dike across the canal (Stene 1996:17). After this time, the canal began to divert water from the Siphon Drop Spillway along the All-American canal. The Yuma Main continued through the Reservation Division to the Colorado River Siphon, where it passed beneath the river into Yuma and the Arizona side, and to the Valley Division of the Reclamation Service's (later the Bureau of Reclamation) Yuma Project (Stene 1996:8). In Yuma, the Yuma Main was split into the East and West Main Canals.

In Arizona, the Yuma Main Canal, the Colorado River Siphon, the East Main Canal, and the West Main Canal have all been recorded as archaeological sites (AZ X:6:67, X:6:40, X:6:65, and X:6:63[ASM], respectively). The canals (but not the siphon) have all been determined individually eligible for inclusion on the NRHP by the Arizona State Historic Preservation Office (SHPO).



**Photo 15. Yuma Main Canal, from Arnold Road. View is to the north.**




**Photo 16. Yuma Main Canal, crossing beneath Arnold Road. View is to the west.**

However, it does not appear that the California reach of the Yuma Main Canal has been officially recorded as a historic site or been evaluated for its NRHP status.

At the crossing at Arnold Road, the canal measures roughly 38 m (125 feet) in width. Because the canal currently conveys a large volume of water, it was not possible to determine the canal's other dimensions or its shape in cross-section. However, according to the existing Historic Resources Inventory Record for this property, the canal bottom averages 15 m (50 feet) in width, and the sides slope 1.25:1 with a water depth of about 2.7 m (9.0 feet).

**Reservation Main/Cocopah Canal (CA-IMP-6832)**

Construction on the Reservation Main Canal began in 1907 (Stene 1996:9); construction on an extensive system of laterals from the Reservation Main commenced the following year. The Reservation Main originally split from the Yuma Main Canal at Indian Heading. The Mojave and Cocopah Canals were split from the Reservation Main. The canal continues to convey a moderate volume of water. Today, the Reservation Main flows westward along Heyser Road and turns south at the interchange of Heyser Road, Stalnacker Road, and Avenue E, where it joins the Cocopah Canal.

The APE does not cross the Reservation Main Canal proper, but it does come within close proximity of it at the road interchange (see Figure B.1). However, the APE does cross the Cocopah Canal along Ross Road, and it parallels the canal along Cocopah Road. The APE also crosses the Cocopah Canal at Picacho Road (Photo 17), Ross Road (Photo 18), and the intersections of Flood Road and Haughtelin and Arnold Roads. Because the Cocopah Canal (along with the Mojave Canal, which is not crossed by the APE) was historically a diversion of the Reservation Main, it is considered a component of the same system and was not recorded as a separate site. Because of the close association of the two properties, the site as a whole is referred to herein as the Reservation Main/Cocopah Canal. Much of the Cocopah Canal has been lined with concrete, but portions of it remain earthen, such as at its crossing at Picacho Road.

**Reservation Main Drain Canal (CA-IMP-6824)**

The Reservation Main Drain Canal spans the Fort Yuma–Quechan Reservation and serves as a drainage for field runoff (see Figure B.1). It empties into the Colorado River about a 0.8 km (0.5 miles) downstream from the Southern Pacific Railroad Bridge. It was constructed between 1912 and 1914 and was designed to drain excess water from the very flat lands in the river valley, which have a high water table (Pfaff et al. 1992). This waterway may also be indicated as a "Ditch" in Sections 23 and 26 on a BLM plat of Township 16 South, Range 22 East, SBB&M, dated September 7, 1951. However, only a segment of the ditch appears on the map.

The APE crosses the Reservation Main Drain along Picacho Road (Photos 19 and 20), Arnold Road, Fisher Road, and Stalnacker Road. At each location, the canal is of earthen construction with a top width of approximately 7.6 m (25.0 feet). The canal is in active use and it was not possible to estimate its bottom width, but the Historic Resources Inventory Record indicates that its bottom width is 4.3 m (14.0 feet) and its average water depth is 0.9 m (3 feet).




**Photo 17. Reservation Main/Cocopah Canal, from Picacho Road. View is to the northeast.**




**Photo 18. Reservation Main/Cocopah Canal, from Ross Road. View is to the south.**



**Photo 19. Reservation Main Drain, from Picacho Road. View is to the northeast.**



**Photo 20. Reservation Main Drain, from Picacho Road. View is to the southwest.**

## *Arizona*

The Class I search found that 18 surveys were previously conducted and 22 sites were previously recorded within Arizona portion of the 1.6-km (1.0-mile) buffer zone surrounding the project area (Tables 4 and 5; Figure B.2). There are also 22 historic properties and 3 historic districts listed on the NRHP within the buffer (Tables 6 and 7; Figure B.3). At least two of the properties, the Ocean-to-Ocean Bridge and the Gandolfo Theater, are cross-listed as archaeological sites and historic properties. These properties lie within Yuma or along the Colorado River.

**Table 4. Previous Surveys within a 1.6-km (1.0-Mile) Radius of the Project Area (Arizona)**

| Project No. | Performing Institution | Project Name or Description | Report Reference |
|---|---|---|---|
| 2003-1362.ASM | Transcon Environmental, Inc. | Baja Norte/Yuma Fiber-Optic Project | Bassett 2002 |
| 2003-1282.ASM | Statistical Research, Inc. | Yuma MPG Site Survey | O'Mack 2002 |
| 2004-1814.ASM | Western Archaeological and Conservation Center | Yuma Gateway Park | Blythe 2005 |
| 2000-437.ASM | Archaeological Consulting Services, Ltd. | Yuma Territorial Prison Parking Lot | Jackman 2000 |
| 1994-111.ASM | SWCA Environmental Consultants, Inc. | Yuma Loop Line—Line Replacement Project | Mitchell 1994 |
| 1998-479.ASM | Archaeological Consulting Services, Ltd. | Salvage Excavation—Yuma Territorial Prison | Jensen et al. 1999 |
| 1994-367.ASM | SWCA Environmental Consultants, Inc. | Monitoring, Natural Gas Line Replacement, Yuma | Doak 1994 |
| 1999-587.ASM | SWCA Environmental Consultants, Inc. | PBNS Level 3 Fiber-Optic Line | Doak 1999 |
| 2008-467.ASM | SWCA Environmental Consultants, Inc. | EPNG Line 2123 MP0 to MP82 | Hesse 2008 |
| 1982-203.ASM | Archaeological Research Services, Inc. | Yuma Crossing and Associated Sites, National Historic Landmark | Stone 1983 |
| 1999-122.ASM | Archaeological Consulting Services, Ltd. | Yuma Interstate Freeway Survey | DeMaagd 1999 |
| 2010-504.ASM | URS Corporation | AZ 4 Yuma North | Erickson 2010 |
| BLM-050-97-25 | Statistical Research, Inc. | dredging activities | Sterner 1998 |
| BLM-050-91-20 | BLM Yuma Field Office | no information available | no information available |
| BLM-050-91-48 | BLM Yuma Field Office | no information available | no information available |
| BLM-050-95-51 | BLM Yuma Field Office | no information available | no information available |
| BLM-050-92-54 | BLM Yuma Field Office | no information available | no information available |
| 14.35.SHPO | no information available | no information available | no information available |

**Table 5. Previously Recorded Sites within a 1.6-km (1.0-Mile) Radius of the Project Area (Arizona)**

| Site Number | Site Name or Description | Temporal Placement | Register Status/Whose Opinion |
|---|---|---|---|
| AZ X:6:11(ASM) | Old Colorado Highway Bridge (Ocean-to-Ocean Bridge) | Historic (A.D. 1500–1950) | not recorded |
| AZ X:6:90(ASM) | trash dump (Yuma Territorial Prison State Historic Park) | Historic (A.D. 1500–1950) | not recorded |
| AZ X:6:94(ASM) | water tower foundation and historic trash | Recent (A.D. 1950–present) | not considered Eligible by recorder |
| AZ X:6:99(ASM) | historic slab and trash scatter | Middle Historic (A.D. 1800–1900); Late Historic (A.D. 1900–1950) | Eligible individually (SHPO) |
| AZ X:6:43(ASM) | Yuma Valley Railroad | Late Historic (A.D. 1900–1950) | Eligible individually (SHPO) |
| AZ X:6:67(ASM) | Yuma/ California Main Canal | Late Historic (A.D. 1900–1950) | Eligible individually (SHPO) |
| AZ X:6:15(ASM) | Yuma Valley Levee | Late Historic (A.D. 1900–1950) | Eligible individually (SHPO) |
| AZ X:6:63(ASM) | West Main Canal | Late Historic (A.D. 1900–1950) | Eligible individually (SHPO) |
| AZ X:6:16(ASM) | bifurcation works, East and West Main Canal | Historic (A.D. 1500–1950) | Eligible individually (SHPO) |
| AZ X:6:65(ASM) | East Main Canal | Late Historic (A.D. 1900–1950 | Eligible individually (SHPO) |
| AZ X:6:44(ASM) | no information available | | |
| AZ X:6:97(ASM) | no information available | | |
| AZ X:6:68(ASM) | Yuma Waterworks And Powerplant | Historic (A.D. 1500–1950) | Eligible individually (SHPO) |
| AZ X:6:40(ASM) | Colorado River Siphon | Historic (A.D. 1500–1950) | considered Eligible (recorder) |
| AZ X:6:2(ASM) | Fort Yuma Headquarters Complex | Historic (A.D. 1500–1950) | considered Eligible (recorder) |
| AZ X:6:12(ASM) | Combined with AZ X:6:1(ASM); also reported to be on Tribal land | | |
| AZ X:6:4(ASM) | Gandolfo Theatre | Historic (A.D. 1500–1950) | considered Eligible (recorder) |
| AZ X:6:70(ASM) | Residential and commercial features | Historic (A.D. 1500–1950); Recent (A.D. 1950–present) | considered Eligible (recorder) |
| AZ X:6:45(ASM) | Fifth Street residences | Historic (A.D. 1500–1950) | considered Eligible (recorder) |
| AZ FF:9:17(ASM) | State Route 80 historic alignment | Historic (A.D. 1500–1950); Recent (A.D. 1950–present) | Eligible individually (SHPO) |
| AZ X:6:1(ASM) | AZSITE reports site is on Tribal land | | |
| AZ Z:2:40(ASM) | Southern Pacific Railroad Mainline Southern Route | Middle Historic (A.D. 1800–1900); Late Historic (A.D. 1900–1950); Recent (A.D. 1950–present) | Eligible individually (SHPO) |

**Table 6. Previously Recorded Historic Properties within a 1.6-km (1.0-Mile) Radius of the Project Area (Arizona)**

| Property Name | NRHP No. | Eligibility |
|---|---|---|
| Blaisdell Slow Sand Filter Washing Machine | 79000430 | listed |
| Brown House | 82001626 | listed |
| Cactus Press—Plaza Paint Building | 87000613 | listed |
| Connor House | 82001629 | listed |
| Dressing Apartments | 82001630 | listed |
| Gandolfo Theater | 82001636 | listed |
| Hotel del Ming | 82001639 | listed |
| Lee Hotel | 84000750 | listed |
| Masonic Temple | 84000752 | listed |
| Methodist Episcopal Church | 82001645 | listed |
| Methodist Parsonage | 82001646 | listed |
| Norton House | 82001649 | listed |
| Ocean-to-Ocean Bridge | 79000431 | listed |
| Ortiz House | 82001650 | listed |
| Pauley Apartments | 82001652 | listed |
| San Carlos Hotel | 84000754 | listed |
| Southern Pacific Railroad Depot | 76000384 | listed |
| Southern Pacific Railroad Passenger Coach Car—SP X-7 | 00000101 | listed |
| Yuma City Hall | 82001660 | listed |
| Yuma County Courthouse | 82001661 | listed |
| Yuma City Hall | 82001660 | listed |
| Yuma Crossing and Associated Sites | 66000197 | listed |

**Table 7. Previously Recorded Historic Districts within a 1.6-km (1.0-Mile) Radius of the Project Area (Arizona)**

| District Name | NRHP No. | Eligibility |
|---|---|---|
| Brinley Avenue Historic District | 82001625 | listed |
| Yuma Main Street Historic District | 94000068 | listed |
| Yuma Multiple Resource Area (MRA) | – | National Park Service designation, but not an NRHP-listed property or district |

### *General Land Office Maps*

General Land Office (GLO) maps for the relevant Township and Range designations within both California and Arizona were also checked for indications of historic properties in the vicinity of the APE (Figure 2). The maps were accessed via the BLM GLO Records website (BLM 2014). All maps on which the APE is located were dated February 6, 1857. The APE itself crosses few properties: a "Cottonwood" along what today would be Picacho Road and an "Indian Field" on the northern end of the APE at Stalnacker Road and Flood Road, which is still a cultivated area today. Within the 1.6-km (1.0-mile) buffer, historic properties include Fort Yuma; the "Settlement of Captain Ankrum," which corresponds approximately to the location of modern Winterhaven; and "Western's House." Several sections note that "there are some Indian villages in this Section."

## SURVEY EXPECTATIONS

Because the APE was known to follow road shoulders traversing heavily cultivated farmland, and because previously existing buried utilities (particularly copper telephone cable) were known to be present in the road rights-of-way, surface indications of archaeological sites were not expected. The presence of isolated occurrences and historic structures (such as canals and possibly buildings) was thought to be more likely.

## SURVEY METHODS

The survey was conducted in accordance with standards established by the BLM for pedestrian surveys. According to these standards, 100 percent coverage of an area can be claimed if the entire area is surveyed by crews walking transects spaced no more than 15 m (50 feet) apart. The current project corridors were of such a width (100 feet) that they could be surveyed in compliance with these standards by having an archaeologist walk a transect down and back along the length of each corridor segment offset 7.5 m (25 feet) from the center line. A Garmin handheld global positioning system (GPS) unit was used for spatial control, and the project area was photodocumented.

Cultural properties identified during any survey are evaluated in accordance with standards established by California Office of Historic Preservation (OHP 1995), which in turn follow the NRHP standards defined by the National Park Service (National Park Service 1990). These standards generally require a property to be at least 45 years old. The 45-year criterion accounts for a typical 5-year lag between the recording of a resource and the implementation of planning decisions (OHP 1995:2). In some circumstances, a property less than 45 years old may be recorded. For a property to be recorded as a historical resource, it must conform to one of the following resource categories:

> **Building**: A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail or a house and barn.
>
> **Structure**: The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.

T15S R24E, Portion of Sec. 32
T16S R22E, Portion of Sec. 11, 14, 21-26,
T16S R23E, Portion of Sec. 4, 5, 7-9, 18, 19
Imperial County, California
Araz, Bard, Yuma West, and Yuma East
USGS 7.5' Quadrangle

Figure 2. General Land Office maps showing location of the APE.

Project location
1 mile buffer

0 1,000 2,000
Feet
Meters
0 240 480

Tierra Right of Way

> **Object**: The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment.
>
> **Site**: A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.
>
> **District**: A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

A property that cannot be readily classified as one of the five NRHP types defined above may be recorded as a "minor resource" (OHP 1995:3). These resources will be referred to herein as *isolated occurrences*. However, if such a property is considered to be of particular interest for some other reason, it may also be recorded as a site. Examples of such isolated occurrences would include rare types of projectile points or isolated but significant historic features.

Cultural properties are further evaluated with regard to significance, which is assessed largely in terms of a property's eligibility for inclusion on the NRHP. As defined by Code of Federal Regulations Title 36, Part 60.2 (36 CFR 60.2), the NRHP is "an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). Pursuant to 36 CFR 60.4, these are the criteria by which properties are evaluated:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> **A.** That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> **B.** That are associated with the lives of persons significant in our past; or
>
> **C.** That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> **D.** That have yielded or may be likely to yield, information important in prehistory or history (National Park Service 2004).

The definition and evaluation of prehistoric and historic properties was furthermore guided by the 2014 CEQA guidelines and statutes (California Association of Environmental Professionals 2014). According to §21083.2:

> **(g)** [a] "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
>
> (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
>
> (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.
>
> **(h)** As used in this section, "nonunique archaeological resource" means an archaeological artifact, object, or site which does not meet the criteria in subdivision (g). A nonunique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects.

## SURVEY RESULTS

The entire APE was inspected for cultural remains. No new prehistoric archaeological sites were observed during the survey. One property, the Walapai Canal (Primary Site Number P-13-014813), was newly recorded as a historic site.

In addition to the canal, several isolated occurrences were recorded. Although not considered an archaeological site, the Fort Yuma–Quechan Indian Reservation Cemetery was also noted as an important cultural landmark in proximity to the APE. All of these properties are described below. Finally, five previously recorded linear sites (the Yuma Main Canal, the Reservation Main/Cocopah Canal, the Reservation Main Drain Canal, the Southern/Union Pacific Railroad, and the Pilot Knob-Tap Drop 4 161kV Transmission Line) were crossed by the APE. The three canal sites had their Primary Record, Linear Feature Record, and Building, Structure, and Object Record forms updated. The railroad and transmission line do not retain any of their original attributes where they cross the APE and were not updated. These previously recorded sites were described earlier in this document (see Previous Research, above).

### *Isolated Occurrences*

Ten isolated occurrences were observed (Table D.1; Figure D.1). All of the lithic artifacts (n = 6) could only be tentatively identified as flaked stone. The fact that these isolated occurrences were in each case discovered on road shoulders or near the margins of cultivated fields (that is, highly disturbed areas) raises two issues. First, it is possible that in some cases an item may have been produced by machinery (such as road grading equipment or tractors) impacting naturally occurring rocks. Second, in all cases, it is highly unlikely that the artifacts are in their original locations or contexts. One artifact, a possible quartzite tool (IO 5), is the item most likely to be an actual artifact (Photo 21). Three artifacts were identified as historic or possibly historic glass; at one location, the glass was accompanied by a white earthenware plate fragment. One isolated occurrence consists of a

roadside memorial shrine (IO 10) located at the southwest corner of the intersection of Picacho Road and Arnold Road. It does not appear to be historic, but it was recorded with the intent of documenting its location for avoidance.

## *Walapai Canal (P-13-014813)*

The Walapai Canal (assigned primary site number P-13-014813) was constructed between 1908 and 1910 (Stene 1996:9). The Walapai branched from the Yuma Main Canal at the Siphon Drop Power Plant, near the point where the Yuma Main splits from the All-American Canal. From there, it flows 3.10 km (1.93 miles) to its southern terminus. Today, the Walapai Canal appears on maps as the Walapai Lateral (see Figure D.1).

The APE crosses the Walapai Canal along Arnold Road (Photo 22). At the crossing point, the canal is of earthen construction, but there is a concrete distribution box at this location. The canal south of this point was not explored or recorded, but this distribution box appears to form the southern terminal end of the canal, except for an extension to its south measuring a few hundred feet in length paralleling First Avenue. The box measures approximately 9.1 m (30.0 feet) long by 1.8 m (6 feet) wide. It is not clear when the box was constructed, but it uses modern metal gates for its distribution openings; slots remain from the wooden gates that it once used. The canal itself is trapezoidal in cross-section (and close to triangular) and measures approximately 5.5 m (18.0 feet) at its top width with an estimated depth of about 1.5 m (5.0 feet).



**Photo 21. Possible quartzite cobble tool.**




**Photo 22. Walapai Canal, from Arnold Road. View is to the south.**

### *Cemetery*

It was noted that the APE passes near the Fort Yuma–Quechan Indian Reservation Cemetery located at the interchange of Quechan Drive, Picacho Road, and Sapphire Lane. The APE does not encroach upon the cemetery; however, the cemetery was noted to allow for the recommendation of monitoring in the vicinity during the construction work (see Conclusions and Recommendations below).

## CONCLUSION AND RECOMMENDATIONS

Tierra's Class III survey of 26.46 linear km (16.44 linear miles) of buried fiber-optic telecommunications line corridor recorded 10 isolated occurrences. No new prehistoric sites were discovered. The APE crosses two previously recorded linear sites, the historic Pilot Knob-Tap Drop 4 161kV Transmission Line (CA-IMP-7158), and the Southern Pacific Railroad (today the Union Pacific Railroad) (CA-IMP-3424). Both sites have been in continuous service since their inception and are regularly maintained. The proposed project is not expected to adversely impact either site.

Three previously recorded historic canals were updated, and one previously unrecorded historic canal was recorded. All four canals were constructed directly or indirectly as part of the Reclamation Service's (later the Bureau of Reclamation) historic Yuma Project. Due to this association, each canal may be considered to be a "unique archaeological resource," as defined by CEQA §21083.2(g)(3). Tierra therefore recommends that the canals are eligible for inclusion in the NRHP under Criterion A. However, it is emphasized that the canals are currently in active use, and as active components of the Imperial Valley agricultural infrastructure, they are regularly maintained. It is also likely that the canals have been modified to varying degrees over the years. It is therefore doubtful that the canals

retain their original integrity. It is assumed that, because they are in active use, the proposed buried fiber-optic line will avoid impacts to the canals by subsurface directional boring.

The isolated occurrences 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. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or Environmental Impact Report, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process" (California Association of Environmental Professionals 2014:35, 134). As such, the documentation of the isolated occurrences is considered complete.

Because the canal sites, the railroad, and the transmission line are not expected to be impacted by construction, and because it is unlikely that the isolated occurrences can yield any additional information beyond that recorded during the survey, Tierra recommends that the proposed undertaking be allowed to proceed. There will be No Adverse Effect to these six cultural resources as a result of project activity (see Table 8 for a summary of management recommendations for each site). However, monitoring by a qualified archaeologist and/or Tribal member is recommended during construction work in the vicinity of the Fort Yuma–Quechan Indian Reservation Cemetery. Given the proximity of the cemetery to the APE (approximately 100 m [328 feet] to the west of the cemetery), monitoring through the APE directly parallel to the western boundary of the cemetery is recommended. Although it is unlikely that human remains will be found, monitoring will ensure proper treatment of these remains if they exist.

A Native American monitor is also recommended during all other construction activities as well. It is expected that a Native American monitor would be present during a project of this nature as a routine practice on the Fort Yuma–Quechan Indian Reservation.

**Table 8. Management Recommendations**

| Site Designation | Eligible | Criteria | Recommended Treatment | Effect |
|---|---|---|---|---|
| CA-IMP-7158; Pilot Knob-Tap Drop 4 161kV Line | yes | a | avoidance | no adverse effect |
| CA-IMP-3424; Southern Pacific Railroad | yes | a | avoidance by boring underneath | no adverse effect |
| CA-IMP-6830; Yuma Main Canal | yes | a | avoidance by boring underneath | no adverse effect |
| CA-IMP-6832; Reservation Main/Cocopah Canal | yes | a | avoidance by boring underneath | no adverse effect |
| CA-IMP-6824; Reservation Main Drain Canal | yes | a | avoidance by boring underneath | no adverse effect |
| P-13-014813; Walapai Canal | yes | a | avoidance by boring underneath | no adverse effect |

The clients and all subcontractors are reminded that if human remains or funerary objects are uncovered during future ground-disturbing activities, CEQA Statute 15064.5(e) requires that all work must be stopped in the area of discovery and that the coroner of the County in which the remains are discovered be contacted to determine that no investigation into the cause of death is required. If the discovery is on Indian land and the coroner determines the remains to be Native American, the Quechan Tribe shall be notified immediately to make arrangements for the disposition of the remains. If not on Indian land, the coroner shall contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendents of the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of the human remains and any associated grave goods with appropriate dignity, as provided in Public Resources Code Section 5097.98.

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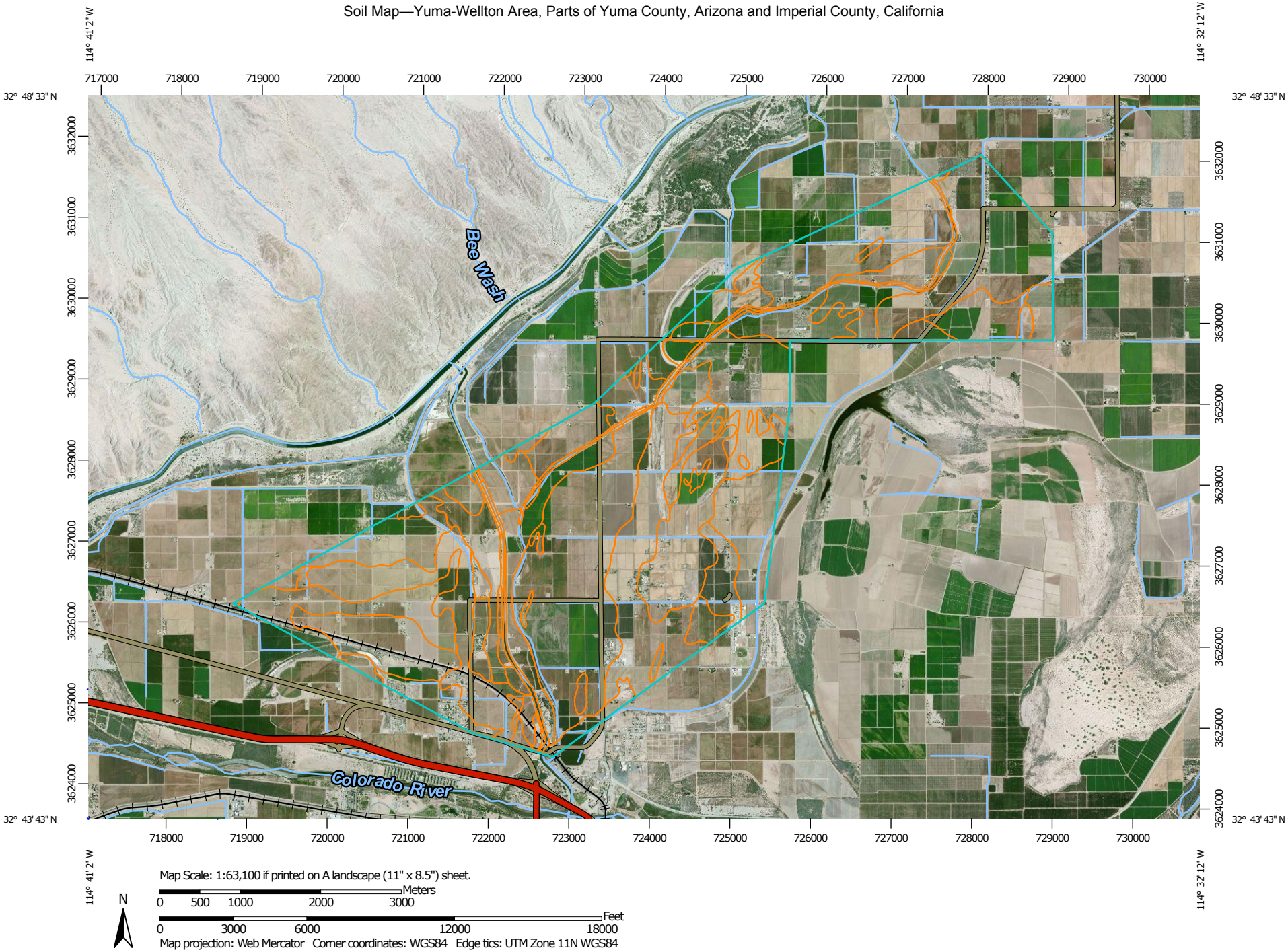
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# APPENDIX A. SOIL TYPES

Soil Map—Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California



## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 29, 2011—May 30, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California (AZ649) | | | |
|---|---|---|---|
| **Map Unit Symbol** | **Map Unit Name** | **Acres in AOI** | **Percent of AOI** |
| 8 | Gadsden clay | 1,408.9 | 21.7% |
| 10 | Glenbar silty clay loam | 14.2 | 0.2% |
| 12 | Holtville clay | 1,858.7 | 28.7% |
| 13 | Indio silt loam | 950.6 | 14.7% |
| 17 | Kofa clay | 1,604.1 | 24.7% |
| 18 | Lagunita loamy sand | 70.5 | 1.1% |
| 19 | Lagunita silt loam | 13.9 | 0.2% |
| 24 | Ripley silt loam | 472.9 | 7.3% |
| 35 | Water | 93.9 | 1.4% |
| **Totals for Area of Interest** | | **6,487.6** | **100.0%** |

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 8—Gadsden clay

### Map Unit Setting

*Elevation:* 80 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Gadsden and similar soils:* 100 percent

### Description of Gadsden

#### Setting

*Landform:* Flood plains, terraces
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread, dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Mixed alluvium

#### Typical profile

*Ap - 0 to 10 inches:* clay
*C - 10 to 60 inches:* clay

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 15 percent
*Salinity, maximum in profile:* Very slightly saline to moderately saline (4.0 to 16.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 60.0
*Available water storage in profile:* High (about 9.6 inches)

#### Interpretive groups

*Farmland classification:* Prime farmland if irrigated and reclaimed of excess salts and sodium
*Land capability classification (irrigated):* 3s
*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 10—Glenbar silty clay loam

### Map Unit Setting

*Elevation:* 80 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Glenbar and similar soils:* 100 percent

### Description of Glenbar

#### Setting

*Landform:* Terraces, flood plains
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread, dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Recent mixed alluvium

#### Typical profile

*Ap - 0 to 16 inches:* silty clay loam
*C - 16 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 30 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 50.0
*Available water storage in profile:* High (about 12.0 inches)

#### Interpretive groups

*Farmland classification:* Prime farmland if irrigated and reclaimed of excess salts and sodium
*Land capability classification (irrigated):* 1
*Land capability classification (nonirrigated):* 7c

*Hydrologic Soil Group:* B

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 12—Holtville clay

### Map Unit Setting

*Elevation:* 80 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Holtville and similar soils:* 100 percent

### Description of Holtville

#### Setting

*Landform:* Flood plains
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Mixed alluvium

#### Typical profile

*Ap - 0 to 13 inches:* clay
*C1 - 13 to 23 inches:* clay
*2C2 - 23 to 75 inches:* stratified silty clay loam

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 15 percent
*Salinity, maximum in profile:* Nonsaline to strongly saline (2.0 to 32.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 13.0
*Available water storage in profile:* Very high (about 12.2 inches)

#### Interpretive groups

*Farmland classification:* Prime farmland if irrigated and reclaimed of excess salts and sodium
*Land capability classification (irrigated):* 3s
*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* C

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 13—Indio silt loam

### Map Unit Setting

*Elevation:* 80 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Indio and similar soils:* 100 percent

### Description of Indio

#### Setting

*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread, dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Mixed alluvium

#### Typical profile

*Ap - 0 to 6 inches:* silt loam
*C - 6 to 63 inches:* stratified very fine sandy loam

#### Properties and qualities

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 30 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 13.0
*Available water storage in profile:* High (about 10.8 inches)

#### Interpretive groups

*Farmland classification:* Prime farmland if irrigated and reclaimed of excess salts and sodium
*Land capability classification (irrigated):* 1
*Land capability classification (nonirrigated):* 7c

*Hydrologic Soil Group:* B

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 17—Kofa clay

### Map Unit Setting

*Elevation:* 80 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Kofa and similar soils:* 100 percent

### Description of Kofa

#### Setting

*Landform:* Flood plains, stream terraces
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread, dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Recent mixed alluvium

#### Typical profile

*Ap - 0 to 12 inches:* clay
*C1 - 12 to 28 inches:* clay
*2C2 - 28 to 60 inches:* sand

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 30 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 5.0
*Available water storage in profile:* Moderate (about 6.1 inches)

#### Interpretive groups

*Farmland classification:* Prime farmland if irrigated
*Land capability classification (irrigated):* 3s
*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 19—Lagunita silt loam

### Map Unit Setting

*Elevation:* 100 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Lagunita and similar soils:* 100 percent

### Description of Lagunita

#### Setting

*Landform:* Alluvial fans, terraces, drainageways, flood plains
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread, dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Recent mixed alluvium

#### Typical profile

*A - 0 to 12 inches:* silt loam
*C - 12 to 60 inches:* sand

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 5 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 30.0
*Available water storage in profile:* Low (about 5.2 inches)

#### Interpretive groups

*Farmland classification:* Not prime farmland
*Land capability classification (irrigated):* 3s
*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* A

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 18—Lagunita loamy sand

### Map Unit Setting

*Elevation:* 80 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Lagunita and similar soils:* 100 percent

### Description of Lagunita

#### Setting

*Landform:* Terraces, alluvial fans, flood plains, drainageways
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread, dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Recent mixed alluvium

#### Typical profile

*A - 0 to 8 inches:* loamy sand
*C - 8 to 60 inches:* loamy sand

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 5 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 30.0
*Available water storage in profile:* Low (about 3.9 inches)

#### Interpretive groups

*Farmland classification:* Not prime farmland
*Land capability classification (irrigated):* 4s
*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* A

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

# Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California

## 24—Ripley silt loam

### Map Unit Setting

*Elevation:* 80 to 600 feet
*Mean annual precipitation:* 0 to 0 inches
*Mean annual air temperature:* 72 to 76 degrees F
*Frost-free period:* 250 to 325 days

### Map Unit Composition

*Ripley and similar soils:* 100 percent

### Description of Ripley

#### Setting

*Landform:* Terraces, flood plains
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread, dip
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Mixed alluvium

#### Typical profile

*Ap - 0 to 6 inches:* silt loam
*C1 - 6 to 25 inches:* very fine sandy loam
*2C2 - 25 to 60 inches:* sand

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 15 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 13.0
*Available water storage in profile:* Low (about 5.4 inches)

#### Interpretive groups

*Farmland classification:* Prime farmland if irrigated
*Land capability classification (irrigated):* 2s
*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* B

## Data Source Information

Soil Survey Area: Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California
Survey Area Data: Version 9, Dec 15, 2013

**APPENDIX B**

**Class I Research**

**CONFIDENTIAL**

This appendix contains information on the locations of cultural properties discussed in the report:

**A Class III Cultural Resource Survey for a Proposed Telecommunications Fiber-Optic Line Installation, in Imperial County, California**

**APPENDIX C**

**Site Forms**

**CONFIDENTIAL**

This appendix contains information on the locations of cultural properties discussed in the report:

**A Class III Cultural Resource Survey for a Proposed Telecommunications Fiber-Optic Line Installation, in Imperial County, California**

**APPENDIX D**

**Results**

**CONFIDENTIAL**

This appendix contains information on the locations of cultural properties discussed in the report:

**A Class III Cultural Resource Survey for a Proposed Telecommunications Fiber-Optic Line Installation, in Imperial County, California**

# APPENDIX F. LETTER FROM THE QUECHAN HISTORIC PRESERVATION OFFICER

# Quechan Indian Tribe

**Historic Preservation Office**
**350 Picacho Road**
**Winterhaven, CA 92283**
**760/572-0213**


May 16, 2014
Tierra Right of Way Services, Ltd.
1575 East River Road
Tucson, AZ 85718

**SUBJECT: Permission to Release Date to Tierra Right of Way Services, Ltd for TDS Telecom CASF Winterhaven Fiber Project**

To Whom It May Concern:
Tierra Right of Way Services, Ltd has permission to receive information from CA SHPO/CHRIS on any previous archeological surveys and previous listed archeological sites on the Quechan Indian Reservation.

Thank you,

Arlene F. Kingery
Historic Preservation Officer

# APPENDIX G. ADDENDUM TO A CLASS III CULTURAL RESOURCES SURVEY FOR A PROPOSED BURIED TELECOMMUNICATIONS FIBER-OPTIC LINE NEAR WINTERHAVEN, IN IMPERIAL COUNTY, CALIFORNIA

# INTRODUCTION

In February of 2015, TDS introduced six minor changes to the route of the proposed fiber-optic line. Five of these changes consist of short extensions of the line at various points along the route, and one consists of moving a segment of the proposed line a short distance to the west of its originally proposed location. These changes necessitated that an addition to the Class III survey, which was conducted in July of 2014, be completed. This addendum will describe the changes to the route and the results of the additional Class III survey.

The additional survey was conducted on March 12, 2015, by Joseph Howell, M.A. (field director). Mr. Henri Koteen again served as monitor for the Quechan Tribe. The fiber-optic line extensions are located at the intersections of Railroad Avenue and G Street (in Winterhaven); Foster Road and Arnold Road; Jackson Road and Picacho Road; Baseline Road and Haughtelin Road; and Ross Road and Levee Road (south of Bard). The relocated segment lies along Cocopah Road. The total combined length of the changes is 2.63 km (1.64 miles), with a total area of 8.0 ha (19.8 acres). All of the lines examined during the survey are located along graded road shoulders or berms, and, with the exception of historic canal laterals (discussed in greater depth below), no cultural resources were located during the survey. Most locations also appear to coincide with or are parallel to previously installed buried utilities. Each of the extensions and the relocated segment is described in greater detail below. An overview of the changes can be seen in Figures G.1–G.4. Figures G.2–G.4 provide views at the scale of 1:24,000.

# RESULTS OF ADDITIONAL SURVEY

## *Extension No. 1*

Extension No. 1 is located in the Town of Winterhaven (Figure G.5). It begins on the west shoulder of Railroad Avenue adjacent to the TDS building (Photo G.1). It then proceeds north to G Street and continues along the north side of that street to 1st Avenue (Photo G.2). The extension totals about 311 m (1,020 feet) in length. No cultural resources were located within this extension.

## *Extension No. 2*

Extension No. 2 is located along the western shoulder of Foster Road, beginning at the intersection with Arnold Road and extending south for approximately 50 m (164 feet) (Figure G.6; Photo G.3). No cultural resources were located within this extension.

## *Extension No. 3*

Extension No. 3 begins at Picacho Road and extends west for approximately 199 m (653 feet) along Jackson Road, ending near the southeast corner of a private lot (Figure G.7; Photo G.4). No cultural resources were located within Extension No. 3.

## *Extension No. 4*

Extension No. 4 begins at a point along the northern shoulder of Haughtelin Road east of the Baseline Road intersection (Figure G.8; Photo G.5). From this point, it continues west and turns south at the intersection, continuing along the eastern shoulder of Baseline Road (Photo G.6). The total length of the extension is 161 m (528 feet).

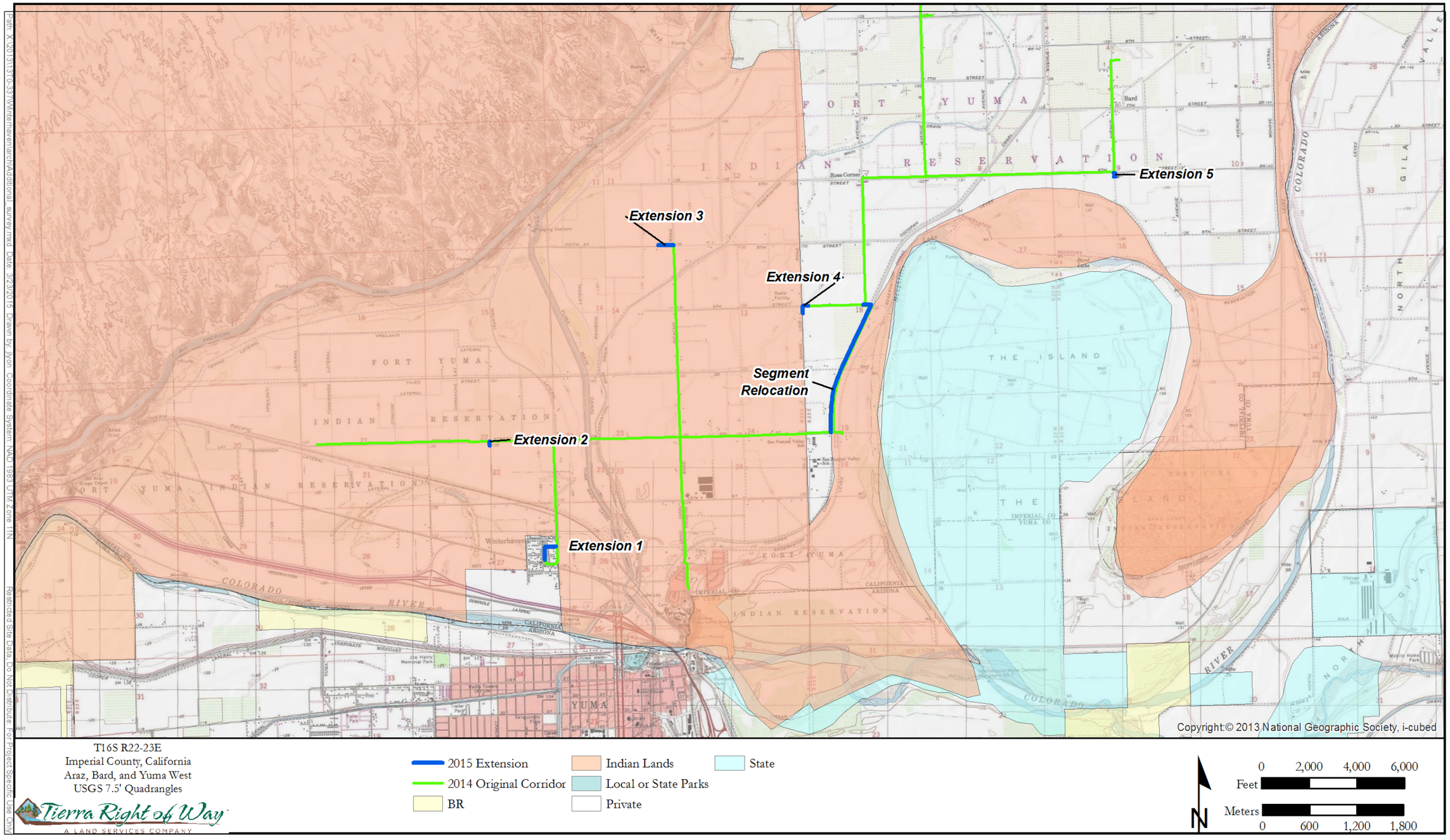



**Figure G.1. Location of the original project corridor and the subsequent route extensions and relocated segment.**

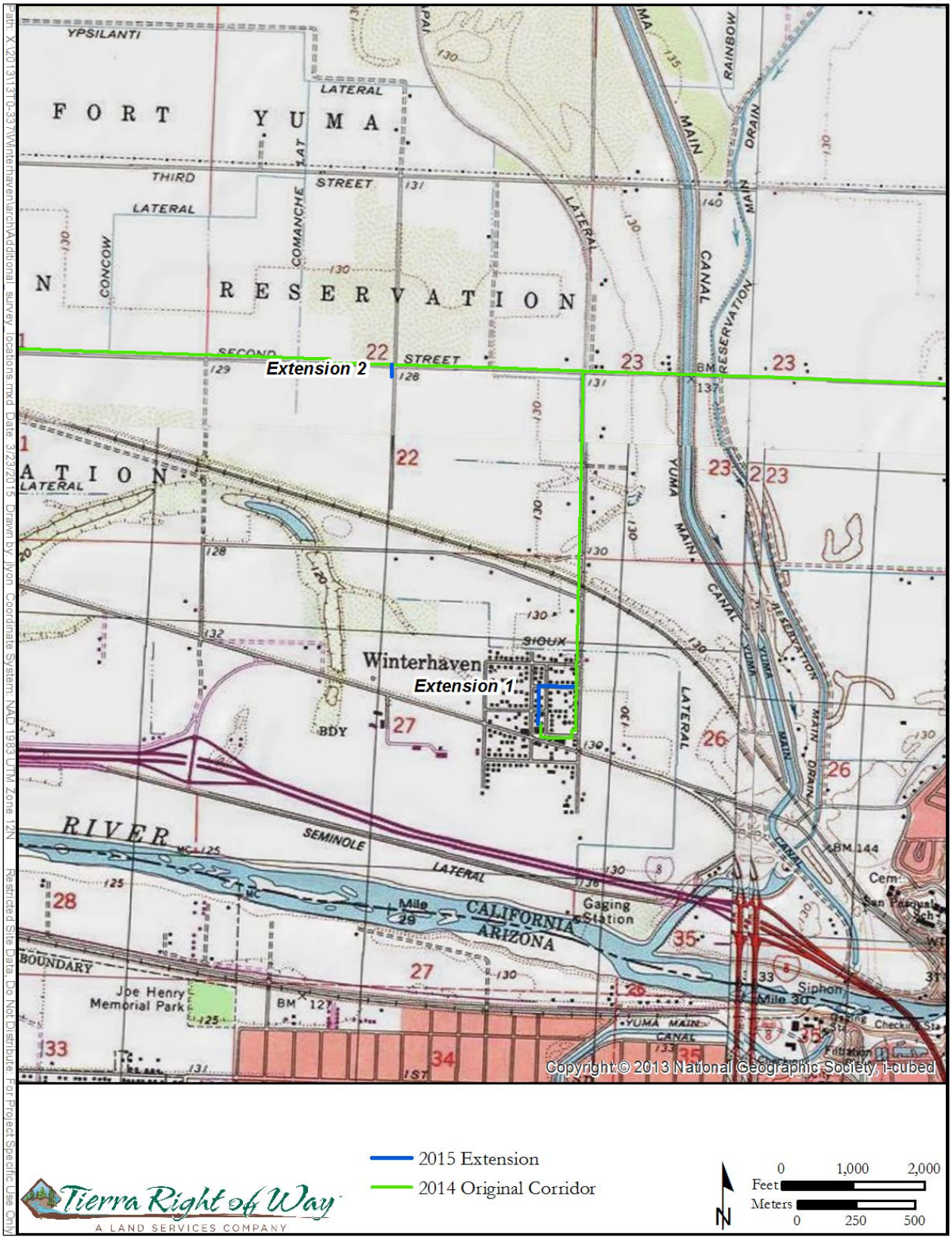



**Figure G.2. Location of Extensions No. 1 and No. 2.**

Path: X:\2013\13I0-337\Winterhaven\archAdditional_survey_locations.mxd Date: 3/23/2015 Drawn by: jlyon Coordinate System: NAD 1983 UTM Zone 12N Restricted Site Data. Do Not Distribute. For Project Specific Use Only

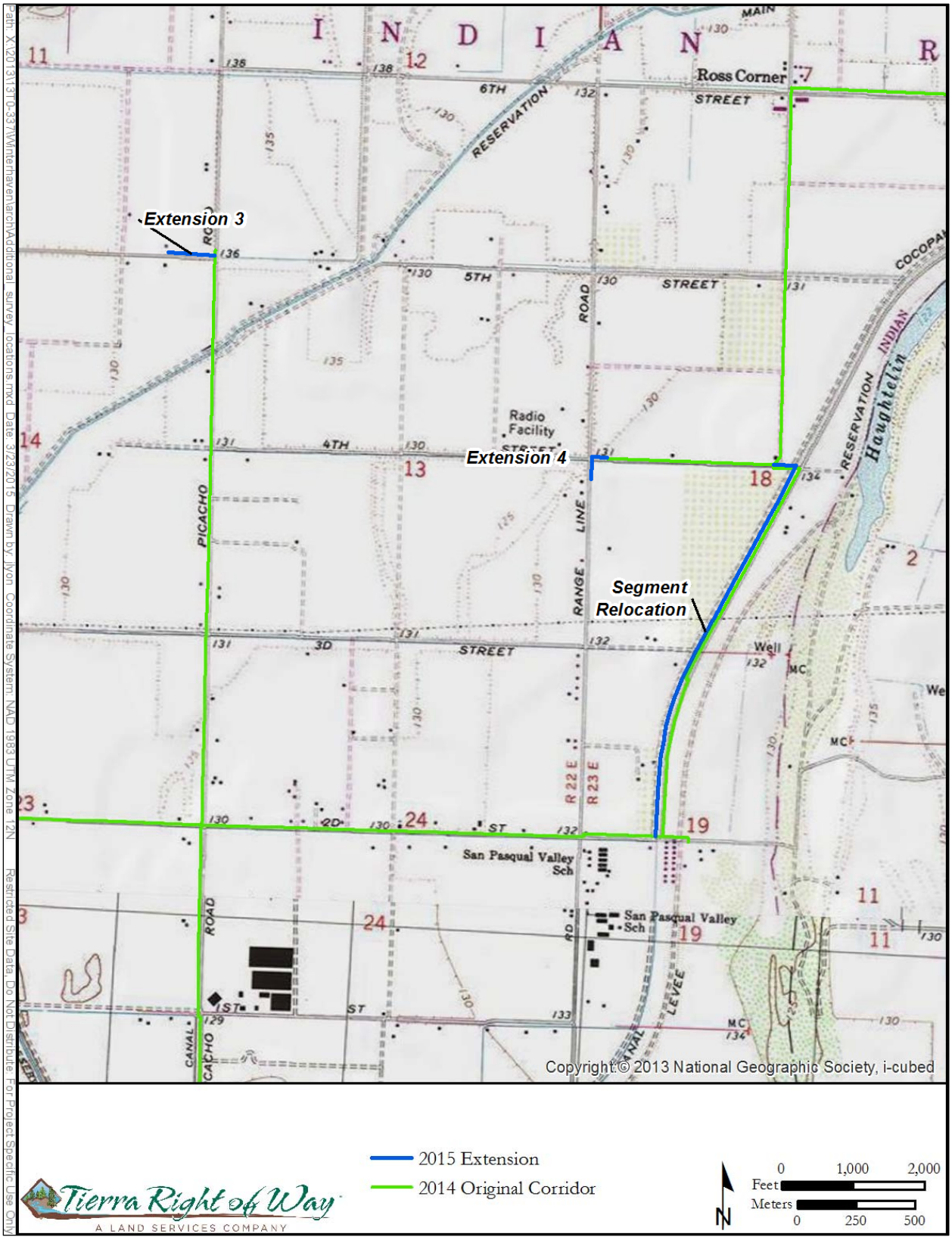



**Figure G.3. Location of Extensions No. 3 and No. 4, and relocated segment.**

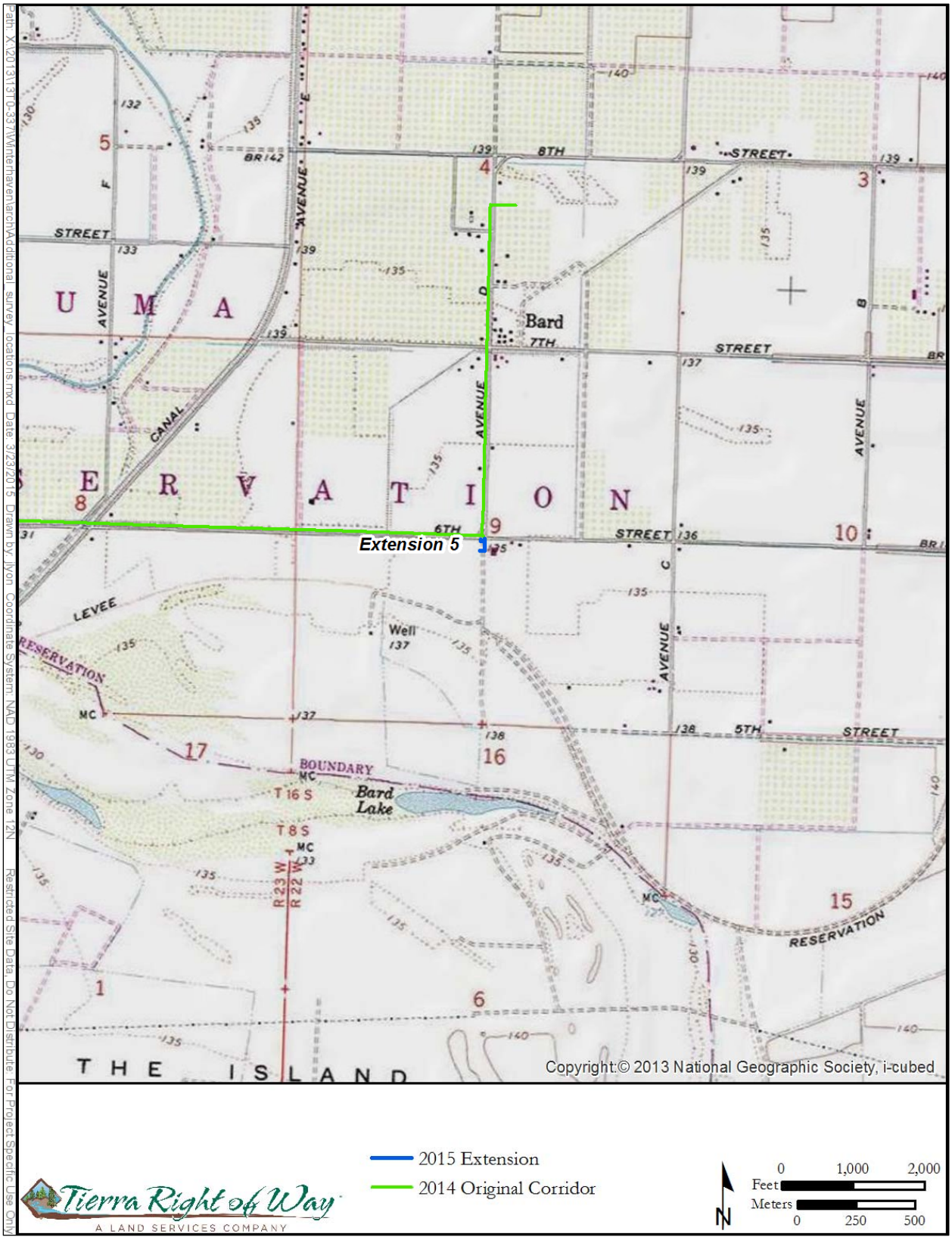



**Figure G.4. Location of Extension No. 5.**

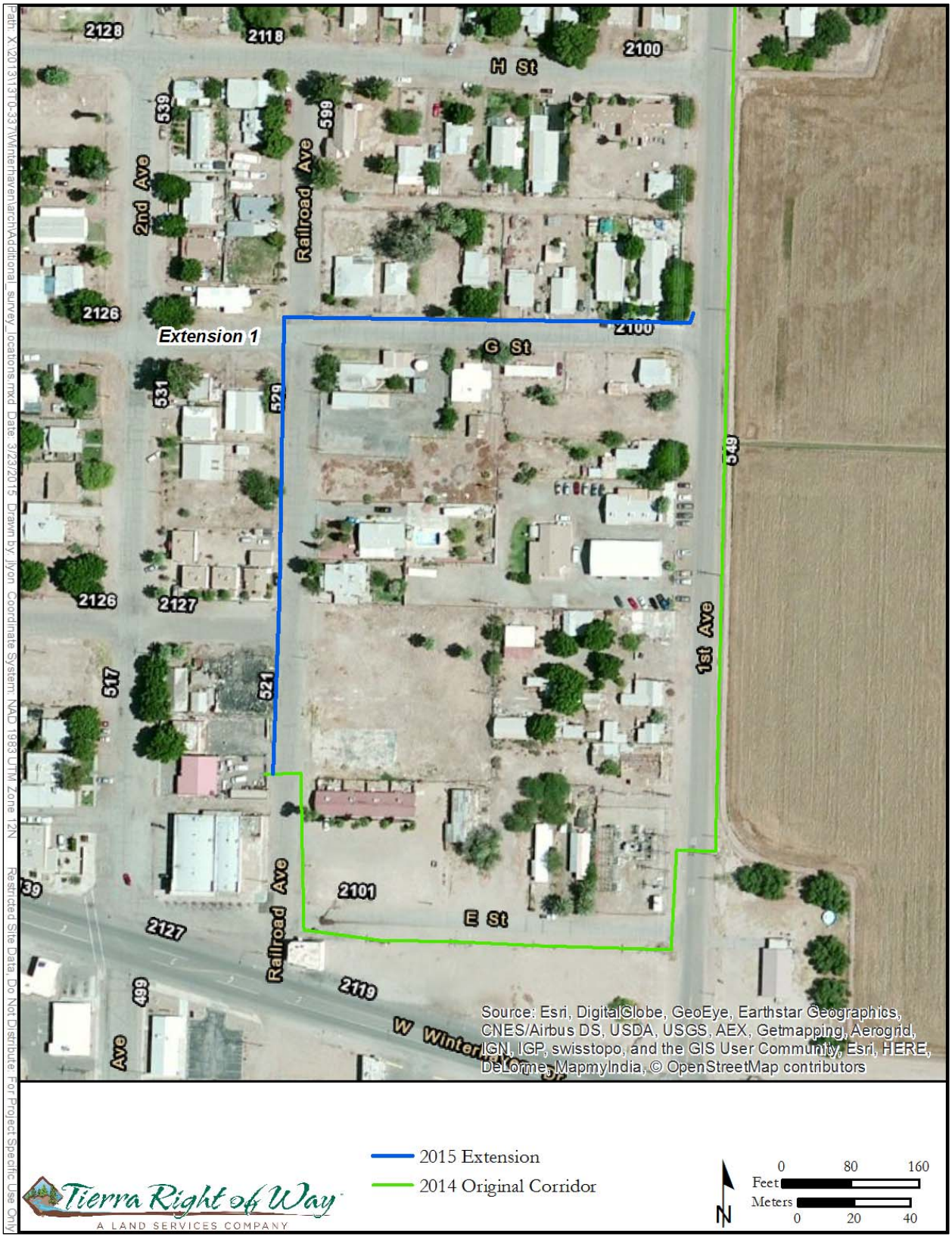



**Figure G.5. Aerial view of Extension No. 1.**



**Photo G.1. Extension No. 1, from TDS building. View is to the north.**



**Photo G.2. Extension No. 1, from 1st Avenue. View is to the west.**




**Figure G.6. Aerial view of Extension No. 2.**




**Photo G.3. Extension No. 2, looking south along Foster Road from Arnold Road.**



**Photo G.4. Extension No. 3, looking west from Picacho Road.**

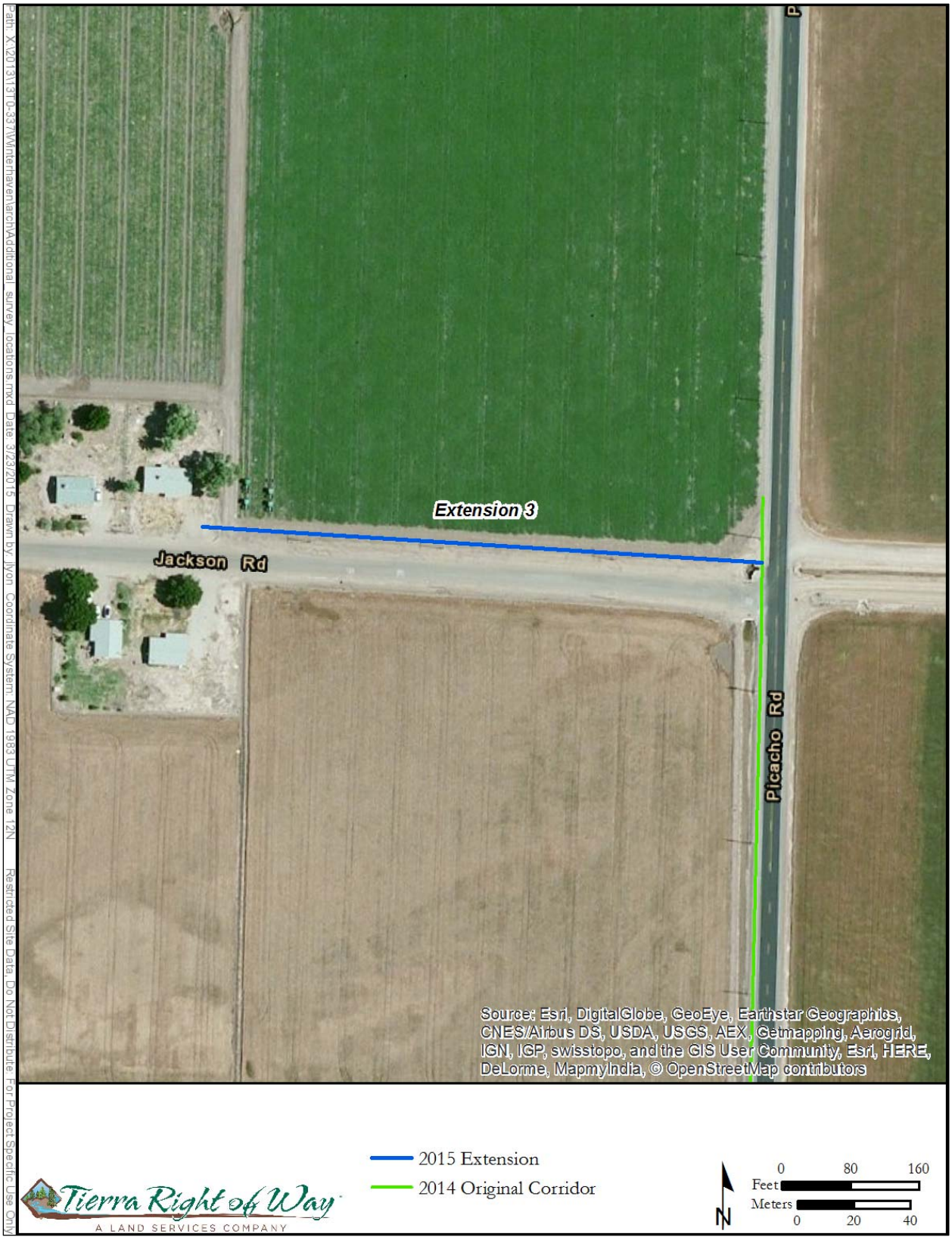



**Figure G.7. Aerial view of Extension No. 3.**




**Figure G.8. Aerial view of Extension No. 4.**



**Photo G.5. Extension No. 4, along Haughtelin Road. View is to the east.**



**Photo G.6. Extension No. 4, along Baseline Road. View is to the south.**

At the intersection, the extension crosses the Pima Canal (Photo G.7), which parallels the south side of Haughtelin Road and crosses beneath Baseline Road via a culvert. It crosses the canal as it turns along Baseline Road. In addition, along Haughtelin Road, the extension ends near another, apparently unnamed, canal that parallels the road on its north edge (Photo G.8).

Apart from the Pima Canal, no cultural resources were located within Extension No. 4. The Pima Canal is a lateral of the Reservation Main/Cocopah Canal (CA-IMP-6832) (Photos G.9 and G.10). It is expected that the installation of the fiber-optic line will avoid the canal by subsurface directional boring. Additional remarks on the Pima Canal will be made under the description of the relocated fiber-optic line segment along Cocopah Road, below.

### *Extension No. 5*

Extension No. 5 extends south along Levee Road from the intersection at Ross Road (Figure G.9). It runs along the eastern shoulder of Levee Road (Photo G.11), then turns west across the road at a point adjacent to a warehouse. There is also a segment that extends from near the line's northern end, across Levee Road, then turns a few feet northward to match up with an existing utility box (Photos G.12 and G.13). The total length of Extension No. 5 is 315 feet (96 m).



**Photo G.7. Footprint of Extension No. 4, where it crosses the Pima Canal. View is to the east.**



**Photo G.8. Unnamed canal along north side of Haughtelin Road. View is to the east.**




**Photo G.9. Pima Canal, east side of Baseline Road. View is to the east.**




**Photo G.10. Pima Canal, west side of Baseline Road. View is to the west.**



**Photo G.11. Extension No. 5, along Levee Road. View is to the south.**

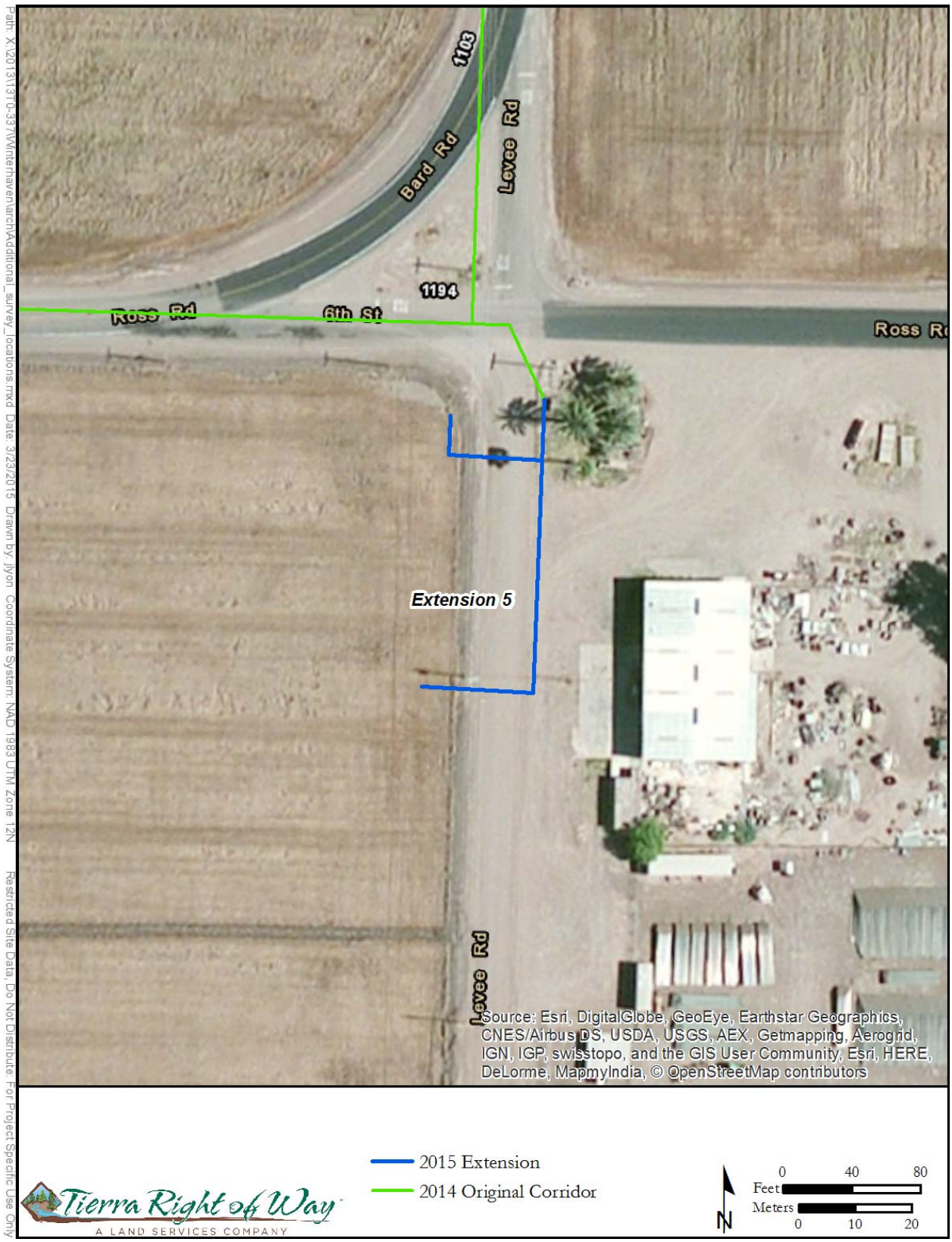



**Figure G.9. Aerial view of Extension No. 5.**



**Photo G.12. Footprint of Extension No. 5, at utility box. View is to the south.**




**Photo G.13. Extension No. 5, across Levee Road, from utility box. View is to the east.**

### *Segment Relocation*

A segment of the proposed fiber-optic line paralleling Cocopah Road between Arnold Road and Haughtelin Road was relocated from the east side of the Reservation Main/Cocopah Canal to the west side of the canal (Figure G.10; Photo G.14). The relocated line runs along the western edge of a berm that parallels the canal and totals 1.82 km (1.13 miles) in length.

The relocated line crosses three linear cultural resources. Two of these are laterals of the Reservation Main/Cocopah Canal. Specifically, the laterals are the Pima Canal (also crossed further to the west by Extension No. 4) and the Pueblo Canal (Photos G.15–G.18). As stated in the Previous Research section of the report, it could not be determined which of the many laterals in the vicinity of the Fort Yuma Indian Reservation were associated with which main canal. However, the current survey demonstrated the Pima and Pueblo Canals are fed (at least today) by the Reservation Main/Cocopah Canal, which has the previous site designation CA-IMP-6832. As discussed in the main body of the report, as laterals of the Reservation Main/Cocopah Canal, the Pima and Pueblo Canals are considered to be components of the overall canal system. As such, they share the site designation of CA-IMP-6832. Both canals cross under the berm via culverts. Both are in active use, and it is expected that the installation of the fiber-optic line will avoid them by subsurface directional boring.

The third linear site that the line crosses is the historic Pilot Knob-Tap Drop 4 161kV Transmission Line (CA-IMP-7158) (Photo G.19; see Figure D.1 in Appendix D). The originally proposed line also crossed this linear utility site, only slightly farther to the east. For additional information on this site, see the Previous Research section in the main body of the report.

No other cultural resources were encountered along the relocated line.

## CONCLUSION AND RECOMMENDATIONS

The additional Class III survey for the extensions and partial relocation of the proposed TDS telecommunication fiber-optic line recorded no new cultural resources. The alterations cross three previously recorded properties: the Pilot Knob-Tap Drop 4 161kV Transmission Line (CA-IMP-7158) and the Pima and Pueblo Canals; both canals are components of CA-IMP-6832, the Reservation Main/Cocopah Canal. The transmission line and the canals are currently in use and form aspects of the modern infrastructure of Imperial County. It is not expected that the proposed undertaking will adversely impact these historic properties.

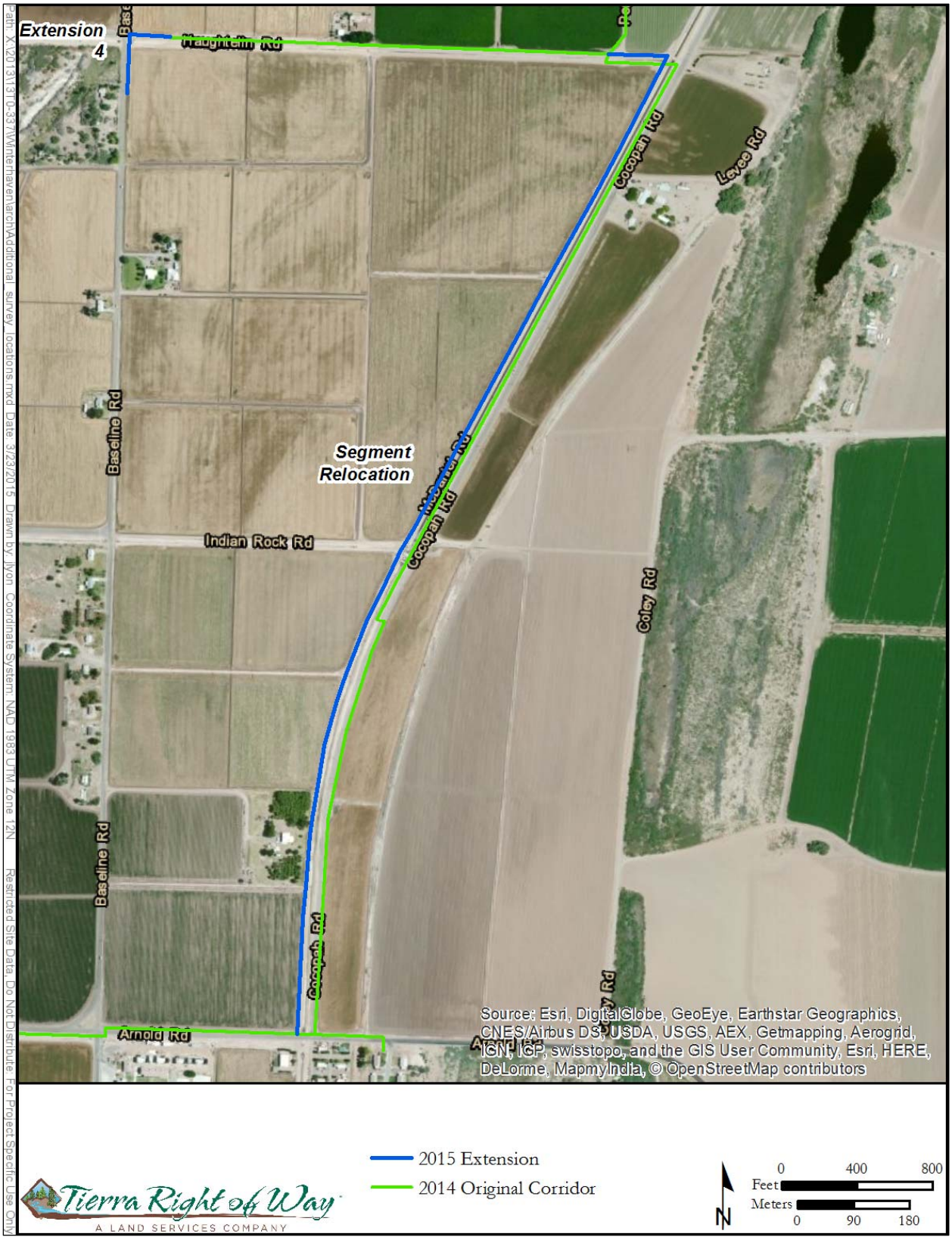



**Figure G.10. Aerial view of relocated segment.**



**Photo G.14. Reservation Main/Cocopah Canal, near Arnold Road. View is to the north.**




**Photo G.15. Pueblo Canal Headgate on Reservation Main/Cocopah Canal. View is to the east.**



**Photo G.16. Pueblo Canal. View is to the west.**



**Photo G.17. Pima Canal Headgate on Reservation Main/Cocopah Canal. View is to the east.**



**Photo G.18. Pima Canal. View is to the west.**



**Photo G.19. Pilot Knob-Tap Drop 4 161kV Transmission Line. View is to the east.**

**OFFICE OF HISTORIC PRESERVATION**
**DEPARTMENT OF PARKS AND RECREATION**
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

February 19, 2015 Reply in Reference To: BIA_2015_0120_001
(BIA# 2014-316)

Catherine Wilson
Acting Deputy Regional Director
Bureau of Indian Affairs, Western Regional Office
2600 North Central Avenue
Phoenix, Arizona 85004-3008

RE: Fort Yuma Quechan Indian Reservation Fiber-Optic Line Project; Imperial County, California.

Dear Ms. Wilson:

Thank you for seeking my consultation regarding the above noted undertaking. Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA), the Bureau of Indian Affairs (BIA) is seeking my comments regarding the effects that the above named project will have on historic properties.

TDS Telecommunication Corporation (TDS) proposes to install new fiber-optic cable and ten nodes to provide internet service to the communities of Winterhaven, Bard, and the Fort Yuma-Quechan Indian Reservation (Reservation) requiring an easement across Reservation land. This will involve the installation of 8.68 miles of fiber-optic line on Reservation land and 7.75 miles of line within unincorporated Imperial County.

The Area of Potential Effects (APE) consists of a 98-foot wide corridor incorporating all segments of the fiber-optic installation. Trenching to install the fiber optic line will be approximately one to two feet in width to a depth of approximately four feet; therefore the vertical APE for the project will extend to four feet.

In addition to your letter received January 20, 2015, you have submitted *A Class III Cultural Resources Survey for a Proposed Buried Telecommunications Fiber-Optic Line near Winterhaven, in Imperial County, California* (Howell, December 22, 2014) as evidence of your efforts to identify and evaluate historic properties in the project APE.

Archival research included a record search at the South Coastal Information Center in May and June 2014, and the Arizona State Museum's AZSITE online database on April 15, 2014. Five previously recorded sites were determined to lie within the APE for the project:

| | Resource Designation | Resource Description | NRHP Eligibility | Project Effect |
|---|---|---|---|---|
| 1 | CA-IMP-3424 | Southern Pacific Railroad | Eligible; Criteria A | No Adverse Effect |
| 2 | CA-IMP-6824 | Reservation Main Drain Canal | Eligible; Criteria A | No Adverse Effect |
| 3 | CA-IMP-6830 | Yuma Main Canal | Eligible; Criteria A | No Adverse Effect |
| 4 | CA-IMP-6832 | Cocopah Canal | Eligible; Criteria A | No Adverse Effect |
| 5 | CA-IMP-7158 | Pilot Knob Tap Drop 4 16 kV Line | Eligible; Criteria A | No Adverse Effect |

Native American consultation included contact with the Tribal Historic Preservation Officer, Arlene Kingery, on May 16, 2014 regarding knowledge of sites of religious or cultural significance to the tribe in the project area. No such properties were identified through consultation efforts.

A pedestrian surface survey was conducted of the APE utilizing transects spaced fifteen meters apart on July 15 and 16, 2014. One built resource was identified and recorded:

| | Resource Designation | Resource Description | NRHP Eligibility | Project Effect |
|---|---|---|---|---|
| 6 | P-13-014813 | Walapai Canal | Eligible; | No Adverse Effect |

Ten isolated finds were also observed within the APE. Six of these isolates are lithic fragments that could only be tentatively identified as flaked stone. All were found in disturbed contexts. Three isolates were possible historic glass; one of which was associated with a fragment of white earthenware. One isolated occurrence was a roadside memorial shrine recorded with the intent to document its location for avoidance.

The BIA has recommended the six resources listed in the tables above as eligible to the NRHP. The ten isolated finds do not qualify as historic properties under Section 106 of the NHPA. Pursuant to 36 CFR §800.5(b) the BIA has determined a *Finding of No Adverse Effect* to historical properties by the proposed project.

I agree the ten isolated finds described do not meet the qualifications as historic properties. Because formal evaluations were not provided for the above listed built environment resources, I cannot make a determination of eligibility to the NRHP. I suggest the resources be assumed eligible to the NRHP for purposes of this project only. Because the project will have no adverse effect to these resources I then concur with the *Finding of No Adverse Effect* for the project. After clarification of information obtained through phone contact, I also concur identification efforts are sufficient and I also have no objections to the delineation of the APE, as depicted in the supporting documentation. For future reference I wish to clarify that canals are considered built resources and not archaeological resources.

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the BIA may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact Associate State Archaeologist, Kim Tanksley at (916) 445-7035 or by email at kim.tanksley@parks.ca.gov. Any questions concerning the built environment should be directed to State Historian, Kathleen Forrest at (916)445-7022 or by email at kathleen.forest@parks.ca.gov.

Sincerely,

Carol Roland-Nawi, Ph.D.

Carol Roland-Nawi, PhD
State Historic Preservation Officer

# APPENDIX F. ALLANDS DATA AND RESEARCH, INC., REPORT

Allands

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Historical Title and Environmental Research

# REGULATORY DATABASE (ASTM) SEARCH

YOUR FILE NO:

ALLANDS FILE NO: 2015-04-012D

DATE OF REPORT: April 12, 2015

ALLANDS hereby reports the search results of Federal and State Databases according to ASTM standards for Phase I Environmental Site Assessments E 1527-13. Allands is not responsible for errors in the available records. The total liability is limited to the fee paid for this report. This is a confidential, privileged and protected document for the use of Tierra Right of Way Services.

1. The land referred to in this report is located in Imperial County, California, described as follows:

1/10th of a mile Corridor Study along power line corridor and existing DSA and proposed nodes along Streets and Avenues located on the Fort Yuma - Quechan Indian Reservation and in the vicinity of the towns of Bard and Winterhaven, California, being in Sections 13, 14, 21 to 24, inclusive, 26 & 27, Township 16 South, Range 22East; Sections 32 & 33, Township 15 South, Range 23 East; and in Sections 4 to 9, inclusive and 16 to 19, inclusive, Township 16 South, Range 23 East, San Bernardino Meridian and Base Line.

# REGULATORY DATABASE SEARCH SUMMARY

| Database | Date of Database | Approximate Minimum Search Distance (miles) | Reported Facilities |
|---|---|---|---|
| **Standard Federal ASTM Environmental Record Sources** | | | |
| NPL (National Priorities List) / Proposed NPL / DOD (Department of Defense Sites) | 04/15 | Within corridor boundaries | 0 |
| Delisted National Priorities List | 04/15 | Within corridor boundaries | 0 |
| CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System)/No Further Remedial Action Planned (NFRAP) | 11/13 | Within corridor boundaries | 0 |
| RCRA (Resource Conservation and Recovery Act) Large and Small Quantity Generators | 04/15 | Within corridor boundaries | 0 |
| RCRA – CORRACTS TSDFs (Corrective Action Treatment, Storage, and Disposal Facilities) | 04/15 | Within corridor boundaries | 0 |
| RCRA – Non-CORRACTS TSDFs | 04/15 | Within corridor boundaries | 0 |
| ERNS (Emergency Response Notification System) | 04/15 | Within corridor boundaries | 0 |
| **Standard State ASTM Environmental Record Sources** | | | |
| State Priority List | 04/15 | Within corridor boundaries | 0 |
| California Hazardous Materials Incident System (CHMIRS) | 02/05 | Within corridor boundaries | 0 |
| Solid Waste Facilities/Landfill Sites | 04/15 | Within corridor boundaries | 0 |
| CalSites / Envirostor | 04/15 | Within corridor boundaries | 0 |
| Registered USTs (Underground Storage Tanks)<br>LUSTs (Leaking Underground Storage Tanks) Incident Reports (includes Tribal Records) | 04/15 | Within corridor boundaries | 3 |
| **Additional Environmental Record Sources** | | | |
| RCRA Compliance Facilities | 04/15 | Within corridor boundaries | 0 |
| Topographical / Aerial Maps | See text | Within corridor boundaries | 2 |

## Standard Federal ASTM Environmental Record Sources

## SUPERFUND NATIONAL PRIORITIES LIST (NPL)

Under Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act the Environmental Protection Agency established a National Priorities List (NPL) of Superfund sites. In addition, Proposed NPL and DOD (Department of Defense) Sites are researched in the section. These databases are provided by the EPA, dated April, 2015, and searched to identify all NPL/Proposed NPL/ DOD sites within corridor boundaries.

No National Priorities List (NPL) / Proposed NPL / DOD Sites were found located within corridor boundaries.

## DELISTED NATIONAL PRIORITIES LIST

Site may be delisted from the National Priorities List where no further response is appropriate. This database is provided by the Environmental Protection Agency, dated April, 2015, and searched to identify all Delisted NPL Sites within corridor boundaries.

No Delisted National Priorities List (NPL) Sites were found located within corridor boundaries.

## FEDERAL CERCLIS / NFRAP LIST

The CERCLIS list contains sites which are either proposed to or on the NPL and sites which are in the screening and assessment phase for possible inclusion on the NPL. Those sites on the NFRAP list have no further remedial action planned. This database is provided by EPA, dated November, 2013, and searched for facilities within corridor boundaries.

No CERCLIS / NFRAP facilities were found located within corridor boundaries.

## RESOURCE CONSERVATION AND RECOVERY ACT FACILITIES (RCRA)

Under RCRA the Environmental Protection Agency compiles a database of facilities that are involved in the generation of hazardous materials. This database is from the EPA, dated April, 2015 and checked for Federal RCRA facilities located within corridor boundaries.

No Federal RCRA handlers were found located within corridor boundaries.

## CORRACTS FACILITIES

Under RCRA the Environmental Protection Agency compiles a database of Corrective Action Sites, sites with known contamination. Also known as the RCRA CORRACTS List, this is a list maintained by the EPA of RCRA sites at which contamination has been discovered and where some level of corrective clean-up activity has been undertaken. For example, a site may have been on the RCRA TSD or the RCRA Generators site list, and was placed on the CORRACTS list once contamination was discovered and remediation was underway. This database is dated April, 2015, and checked for facilities which occurred within corridor boundaries.

No Facilities were found which occurred within corridor boundaries.

## TSD FACILITIES

Under RCRA the Environmental Protection Agency compiles a database of facilities that are involved in the transportation, treatment, storage, or disposal of hazardous materials. This database is from the EPA, dated April, 2015, and checked for Facilities which occurred within corridor boundaries.

No TSD Facilities were found which occurred within corridor boundaries.

## FEDERAL EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) LIST

The ERNS list is a national database used to collect information on reported releases of oil and hazardous substances. This database is provided by the National Response Center and the EPA through the Right of Know Net by OMB Watch and Unison Institute from 1983 to April, 2015, and checked for incidents located within corridor boundaries.

No incidents were found located within corridor boundaries.

## Standard State ASTM Environmental Record Sources

## STATE PRIORITY LIST

The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The database, referred to as "CalSites," is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. This list includes CALSITE Active Workplan (AWP); Sites that are not AWP (Annual workplan) are not actively being remediated, but are stilled being tracked on the State Equivalent CERCLIS List (SCL)

No Sites were found located within corridor boundaries.

## CALIFORNIA HAZARDOUS MATERIAL INCIDENT REPORT SYSTEM (CHMIRS)

The California Office of Emergency Services documents spills and incidents involving hazardous materials that are reported to the unit prior to the state of California adopting the National Incident Management System. This database is dated February, 2005 and checked for hazardous material incidents which occurred within corridor boundaries.

Property within corridor boundaries was not found on this list.

# SOLID WASTE INFORMATION SYSTEM (SWIS)

The Solid Waste Information System (SWIS) database contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

For each facility, the database contains information about location, owner, operator, facility type, regulatory and operational status, authorized waste types, local enforcement agency and inspection and enforcement records.

The data in the facility database is continuously updated and reviewed April, 2015 for facilities located within corridor boundaries.

No facilities were found located within corridor boundaries.

## SITE MITIGATION AND BROWNFIELDS REUSE PROGRAM DATABASE (CALSITES) / DEPARTMENT OF TOXIC SUBSTANCES CONTROL (ENVIROSTOR)

The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances.. The Site Mitigation and Brownfields Reuse Program Database was known as CalSites. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program. DTSC recently replaced the “CalSites” database with a new database of hazardous substance release sites, known as the “EnviroStor” database. This database was reviewed April 2015, for facilities located within corridor boundaries.

No facilities were found located within corridor boundaries.

## UNDERGROUND STORAGE TANKS
## (UST, AST & LUST)

Owners of USTs are required to report any and all releases of tank contents for which an ongoing file documenting the nature of contamination and the status of each such incident is maintained. This database is maintained by the State Water Resources Control Board and individual cities, dated April, 2015 and searched for facilities located within corridor boundaries.

| FACILITY | ID | ADDRESS | STATUS |
|---|---|---|---|
| U S A Supersave / Salvador Huerta | T0602500185 | 2115 Winterhaven Drive | Open - Inactive as of 8/27/2014 |
| Ross Corner Store | T0602592922 | 1460 West Ross Road | Completed - Case Closed as of 8/5/2013 |
| Bard / Winterhaven Road Yard | T0602500186 | 1477 Ross Road | Completed - Case Closed as of 2-13-2008 |

**For more information replace "xxx" below with ID from table above**
**http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=xxx**

## Additional Environmental Record Sources

## RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) COMPLIANCE FACILITIES

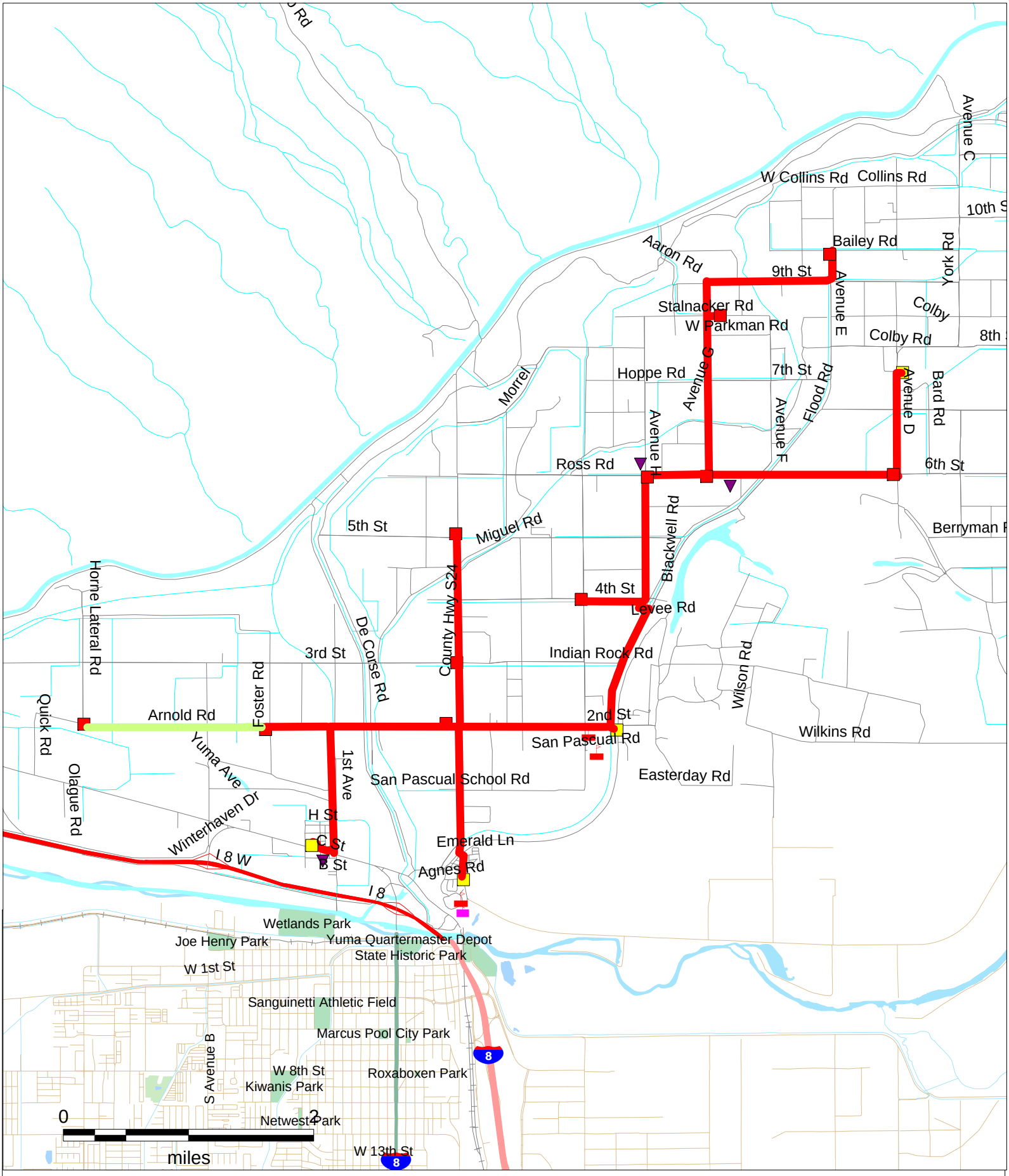
The RCRA Compliance Log lists facilities that have been or presently are under investigation for non-compliance with RCRA regulations. Inclusion of any facility on this list indicates a history of compliance problems and RCRA regulatory violation. This database is from the EPA, dated April, 2015, and searched for compliance facilities within corridor boundaries.

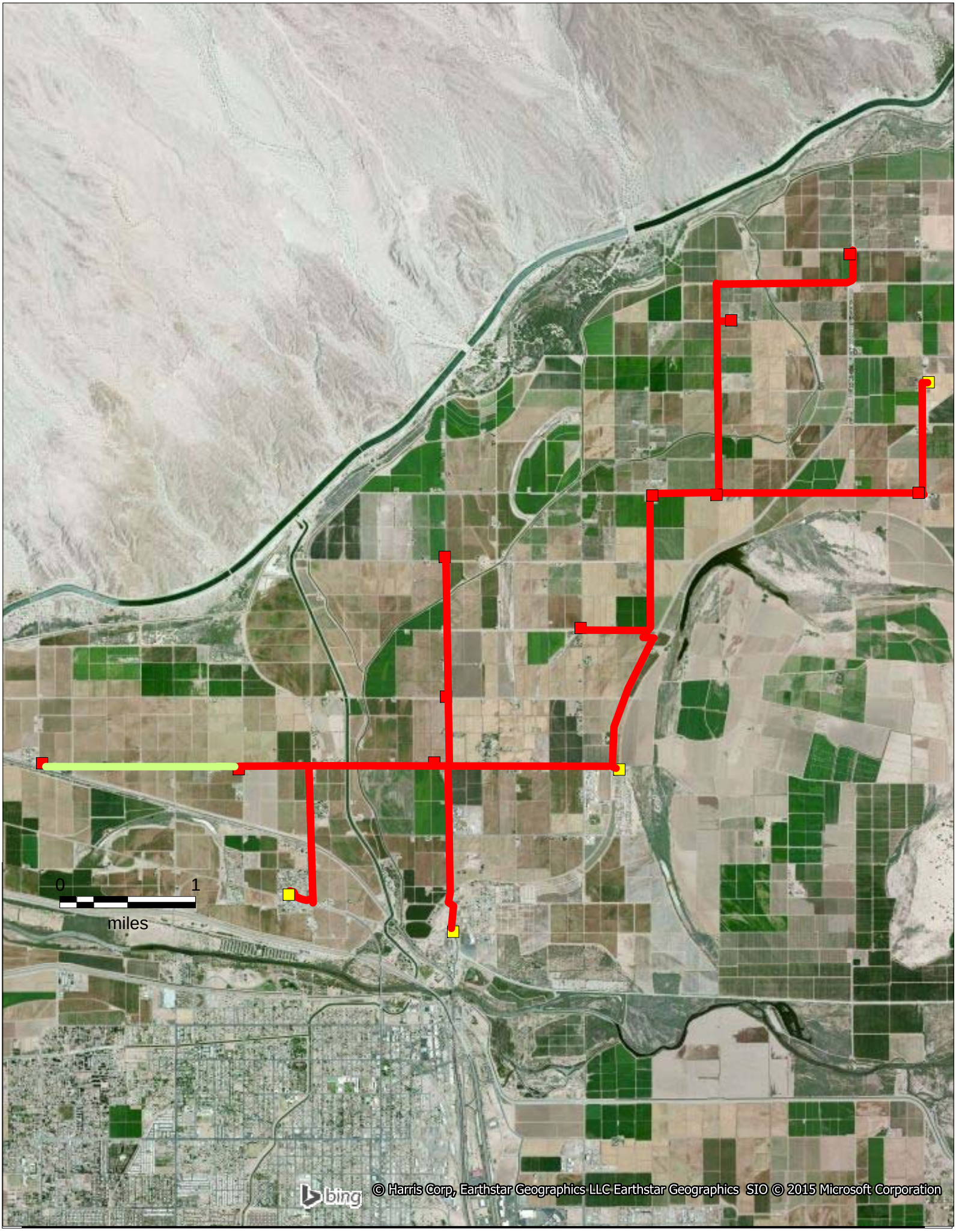
No compliance facilities were found located within corridor boundaries.

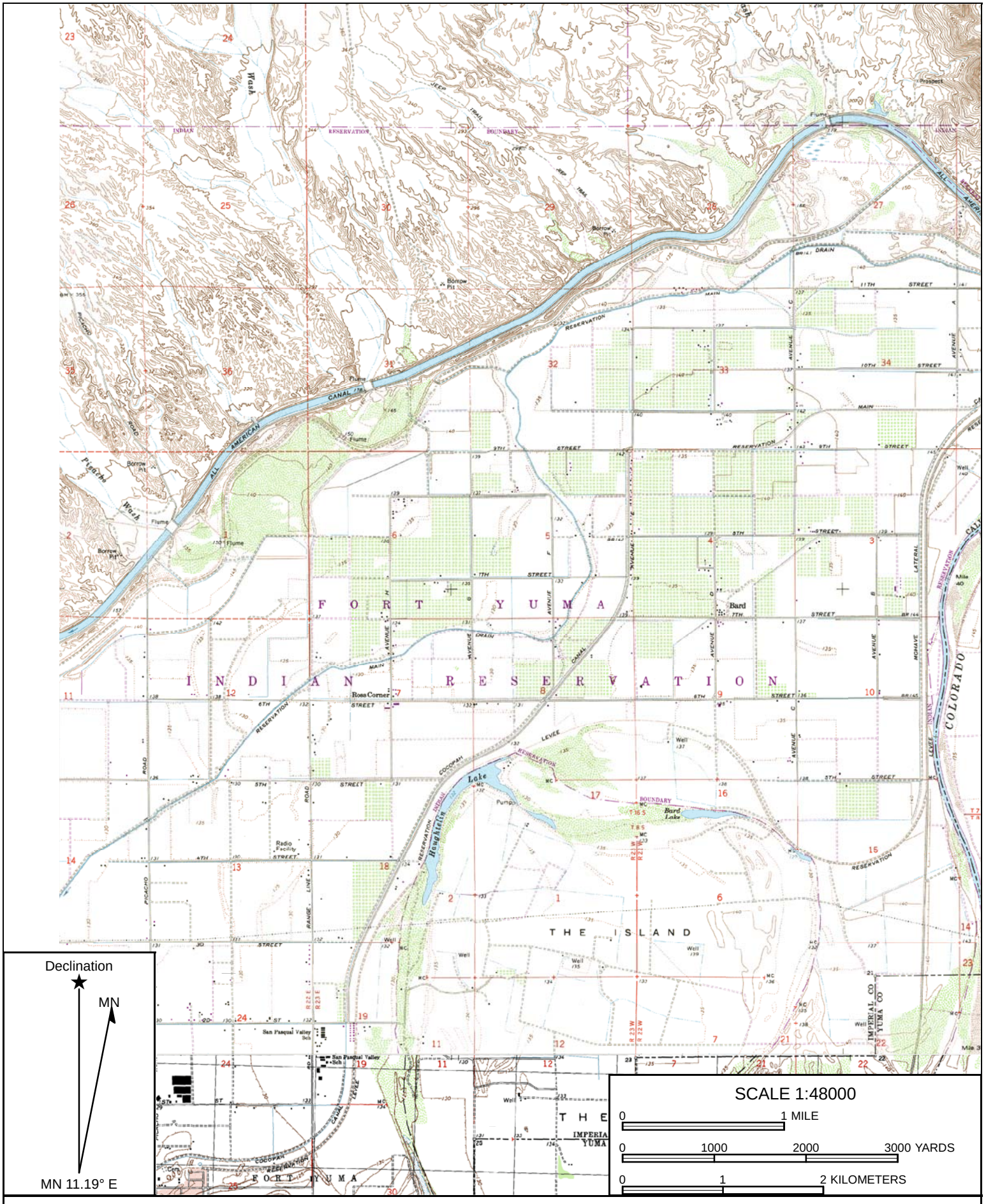
## USGS 7.5 MINUTE TOPOGRAPHICAL MAPS AERIAL PHOTOS

The United States Geological Survey Topographic maps and Aerial Photos are derived from Terrain Navigator Software from Maptech, Inc. (www.maptech.com) and are for informational purposes only.

| NAME | TYPE | DATE |
|---|---|---|
| Bard | Topo | 1965 revised 1979 |
| Bing Aerial | Aerial | 2015 |


W Collins Rd
Collins Rd
Avenue C
10th S
Bailey Rd
York Rd
Aaron Rd
9th St
Avenue E
Stalnacker Rd
W Parkman Rd
Colby
Colby Rd
8th
Hoppe Rd
7th St
Avenue G
Avenue F
Flood Rd
Avenue D
Bard Rd
Morrel
Avenue H
Ross Rd
6th St
5th St
Miguel Rd
Blackwell Rd
Berryman
4th St
Levee Rd
Horne Lateral Rd
De Corse Rd
County Hwy S24
3rd St
Indian Rock Rd
Wilson Rd
Quick Rd
Arnold Rd
Foster Rd
2nd St
Wilkins Rd
San Pascual Rd
Yuma Ave
1st Ave
Easterday Rd
Olague Rd
San Pascual School Rd
Winterhaven Dr
H St
C St
B St
Emerald Ln
Agnes Rd
I 8 W
I 8
Wetlands Park
Joe Henry Park
Yuma Quartermaster Depot
State Historic Park
W 1st St
Sanguinetti Athletic Field
Marcus Pool City Park
S Avenue B
W 8th St
Kiwanis Park
Roxaboxen Park
Netwest Park
W 13th St
0
2
miles
LEGEND
SITE
USTs
LUSTs
CERCLA / NFRAP
LANDFILLS
RCRA (Generators, TSD & CORRACTS TSD)
RCRA COMPLIANCE
SCHOOL


0
1
miles
bing
© Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO © 2015 Microsoft Corporation




Name: BARD
Date: 04/12/15
Scale: 1 inch = 4,000 ft.

Location: 032° 47' 26.5228" N, 114° 34' 44.2079" W
2015-04-012.north

Copyright (C) 2009 MyTopo

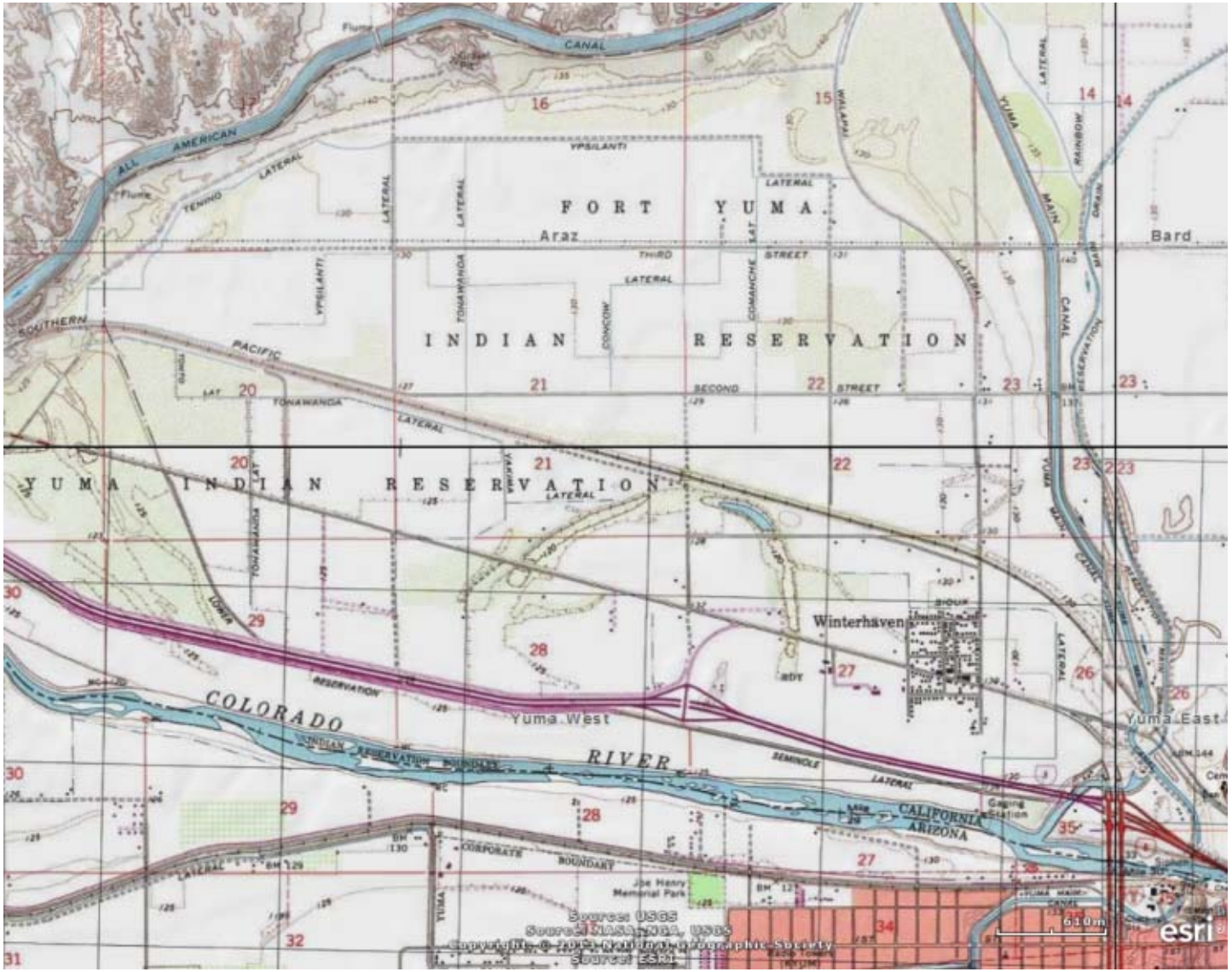



Name: BARD
Date: 04/12/15
Scale: 1 inch = 4,000 ft.

Location: 032° 45' 21.0674" N, 114° 34' 36.0000" W
2015-04-012

Copyright (C) 2009 MyTopo

## Topo West


FORT YUMA
INDIAN RESERVATION
YUMA INDIAN RESERVATION
Araz
Bard
Winterhaven
Yuma West
Yuma East
COLORADO RIVER
CALIFORNIA
ARIZONA
SOUTHERN PACIFIC
ALL AMERICAN CANAL
YPSILANTI
TONAWANDA
COMANCHE
SECOND STREET
THIRD STREET
MAIN CANAL
RAINBOW MAIN CANAL
LATERAL
RESERVATION BOUNDARY
CORPORATE BOUNDARY
Joe Henry Memorial Park
Source: USGS
Source: NASA, USDA
Source: ESRI
esri

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Historical Title and Environmental Research

# TITLE AND JUDICIAL RECORDS FOR ENVIRONMENTAL LIENS AND ACTIVITY AND USE LIMITATIONS; VOLUNTARY ENVIRONMENTAL MITIGATION USE RESTRICTIONS BY OWNERS (VEMUR) AND DECLARATION OF ENVIRONMENTAL USE RESTRICTIONS (DEUR)

YOUR FILE NO:

ALLANDS FILE NO: 2015-04-012E

Date of Report: April 12, 2015
Title Plant Date***: April 8, 2015
***The Title Plant Date reflects the most current data made available by the information sources used at the time the research was performed.

ALLANDS hereby presents an Environmental Search Report to the land described below The total liability is limited to the fee paid for this report.. Allands is not responsible for errors in the available records. The total liability is limited to the fee paid for this report. This is a confidential, privileged and protected document for the use of Tierra Right of Way Services.

1. The land referred to in this report is located in Imperial County, California.

2. 1/10th of a mile Corridor Study along power line corridor and existing DSA and proposed nodes along Streets and Avenues located on the Fort Yuma - Quechan Indian Reservation and in the vicinity of the towns of Bard and Winterhaven, California, being in Sections 13, 14, 21 to 24, inclusive, 26 & 27, Township 16 South, Range 22East; Sections 32 & 33, Township 15 South, Range 23 East; and in Sections 4 to 9, inclusive and 16 to 19, inclusive, Township 16 South, Range 23 East, San Bernardino Meridian and Base Line.

3. No VEMUR'S, DEUR'S; Environmental Liens, Brownfields, institutional controls, engineering controls, or activity and use limitations, if any, were found currently recorded against the property as searched at the subject county recorder's office.