APPENDIX 2-D.1 DETAILED PROJECT DESCRIPTION

2.1 Introduction

The High-Speed Rail (HSR) system, overseen by the California High-Speed Rail Authority (Authority), would connect the major cities in California through a rail line with a nominal end-to-end length of 800 miles and trains travelling at speeds up to 220 miles per hour (mph). Electrification of the Initial Operating HSR System, which is scheduled for 2022[1], would require installation of a 50 kilovolt (kV) alternating current (ac) power supply to power the electric trains.

The power supply system is comprised of two potential electrical infrastructure categories: 1) interconnection facilities proposed to be designed and constructed by the Authority that would connect the HSR to the statewide electrical grid; and 2) network facilities owned by Pacific Gas and Electric Company (PG&E) that would require upgrades to existing facilities to ensure the availability of reliable electric service to meet the HSR system electrical demand. They are specifically designed to accommodate the existing and planned electrical load growth produced by the HSR Project.

2.1.1 Interconnection Facilities

To provide adequate capacity for train operations, the proposed power supply system would interconnect into utility networks at 115 kV or 230 kV, with approximately 30-mile intervals between the traction power substations (TPSSs). This would result in 12 TPSSs for the 345-mile portion of the train corridor located in PG&E's service territory. Other electrical infrastrucure required to facilitate the interconnection of power from PG&E to the high-speed rail includes switching and paralleling stations connected to TPSSs. These components would be designed, permitted, and constructed by the Authority and were disclosed and analyzed within the *Merced to Fresno Section Project Environmental Impact Report (EIR)/Environmental Impact Statement (EIS)* (Merced to Fresno Section Project EIR/EIS). However, since publication there has been further study of the Central Valley Wye portion of the Merced to Fresno Section necessitating further study of interconnection facilities.

For the Central Valley Wye Section, there would be two TPSSs that would require interconnection to PG&E's network, each of which would occupy a site of approximately 2 acres. These sites have been designated as Site 6 and Site 7.

For Site 6 – El Nido, the interconnection facilties (i.e., TPSS, tie-line, switching station) are included within the footprint of the alignments analyzed within the *Merced to Fresno Section: Central Valley Wye Draft Supplemental Environmental Impact Report/Environmental Impact Statement* (Draft Supplemental EIR/EIS). For Site 7, there are two TPSS location options, selection of which will be dictated by the preferred Central Valley Wye alignment (Site 7 – Wilson and Site 7 – Le Grand Junction/Sandy Mush Road). For Site 7 – Wilson, the interconnection facilties would include a TPSS, an approximately 2.5 mile double-circuit 230 kV tie-line and the reconfigured Wilson Substation, within the existing fenceline. The TPSS and portion of the tie-line were analyzed wtihin the Merced to Fresno Section Project EIR/EIS. For Site 7 – Le Grand Junction/Sandy Mush Road, the interconnection facilties would include a TPSS, within the footprint of the alignments analyzed within the Draft Supplemental EIR/EIS, an approximately 2.5 mile single-circuit 115 kV tie-line and a new Dutchman Switching Station.

2.1.2 Network Upgrades

A 2016 Transmission System Study completed by PG&E determined what upgrades would be required to existing infrastructure to meet the projected power demands of the HSR system within the 345-mile portion of the train corridor located within PG&E's service territory.[2] While these types of network upgrades were anticipated in the project-level EIR/EIS, the location of such

[1] Subject to change based on the California High-Speed Rail Authority 2016 Business Plan.

[2] Pacific Gas and Electric (PG&E). May 14, 2016. California High Speed Train Project – Technical Study Report, Evaluation of Proposed Traction Power Substation Interconnections for Sites 6 – 13. Note, the results of the Technical Study Report are being reviewed by the Authority and its technical consultant to assure recommendations are necessary to support the HSR and that no benefit to PG&E would occur; therefore, what is presented here is conservative in nature.

network upgrade could not be evaluated since the PG&E Technical Study Report had not been completed. All PG&E upgrades would be implemented pursuant to California Public Utilties Commission (CPUC) General Order (GO) 131-D, where applicable.

For Site 6 – El Nido, PG&E would need to reinforce the electric power system by replacing existing power line (reconductoring) and existing wood poles on approximatley 13.3 miles of existing 70 kV and 16.9 miles of exsting 115 kV power lines. For Site 7 – Le Grand Junction/Sandy Mush Road PG&E would need to reinforce the electric transmission and power system by replacing existing power line (reconductoring) and existing self-supporting steel towers and wood poles on approximatley 38.38 miles of existing 230 kV transmission and 11.34 miles of exsting 115 kV power lines. No network upgrades would be required to support Site 7 – Wilson.

2.2 Background

2.2.1 EIR/EIS

The Merced to Fresno Section Project EIR/EIS describe the power components of the HSR system and establish assumptions regarding the placement of these facilities, as summarized below. The Site 7 – Wilson, TPSS and a portion of the 230 kV Tie-Line were analyzed wtihin the Merced to Fresno Section Project EIR/EIS.

The Merced to Fresno Section Project EIR/EIS assumed that the HSR system would connect to existing PG&E substations, which could require upgrade of the substations, upgrade of existing transmission lines, or construction of new overhead lines. Effects on existing electrical infrastructure from these modifications were determined to be negligible under the National Environmental Policy Act (NEPA) and less-than-significant under the California Environmental Quality Act (CEQA) because the upgrades would be conducted in accordance with applicable regulations. The effects of the upgrades on other resources were not fully analyzed because the details of the upgrades or locations were not known.

2.2.1.1 Traction Power Distribution

The TPSS would be used to power the high-speed trains. The high-speed trains would draw power from a 2-by-25-kV overhead catenary system. The catenary system would be connected to the TPSSs, described below, through extension of power lines.

2.2.1.2 Traction Power Supply Substations

The TPSSs, which would be located approximately every 30 miles along the route, are needed to moderate the power feed to the HSR system. Each TPSS would require a 2-acre parcel and would have a 20-foot-wide access road (or easement) from the street access point to a protective fenced perimeter. Based on the HSR system's estimated power needs, each TPSS would have a footprint of approximately 32,000 square feet (200 feet by 160 feet), including an approximately 450-square-foot control room. Each TPSS would have two 115/50 kV, or 230/50 kV, single-phase transformers, both of which would be rated at 60 megavolt amperes (MVA). The autotransformer feed (ATF) system would step down the transmission voltage to 50 kV (phase-to-phase), with 25 kV (phase-to-ground) to power the traction system. Screening of the TPSS could include a wall or fence.

2.2.1.3 Switching and Paralleling Stations

Switching and paralleling stations would work together to balance the electrical load between tracks, and to switch power off or on to either track in the event of an emergency. Switching stations would be required at approximately 15-mile intervals, midway between the TPSSs. These stations would each occupy approximately 9,600 square feet (120 feet by 80 feet). Paralleling stations would be required at approximately 5-mile intervals between the switching stations and the TPSSs. The paralleling stations would each occupy approximately 8,000 square feet (100 feet by 80 feet). Each station would include an approximately 450-square-foot (18 feet by 25 feet) control room.

2.2.1.4 Interconnections

As described above, each TPSS would have two 115/50 kV, or 230/50 kV, single-phase transformers. These transformers would be connected to an existing PG&E substation or new

Authority built switching stations via short sections of transmission or power lines. Per Authority requirements, the proposed interconnection points would need redundant transmission from the point of interconnection (at 115 kV or 230 kV), with each interconnection connected only to two phases of the transmission source. Figure 2-1, Simplified Interconnection Diagram, illustrates the proposed interconnection at each TPSS location.

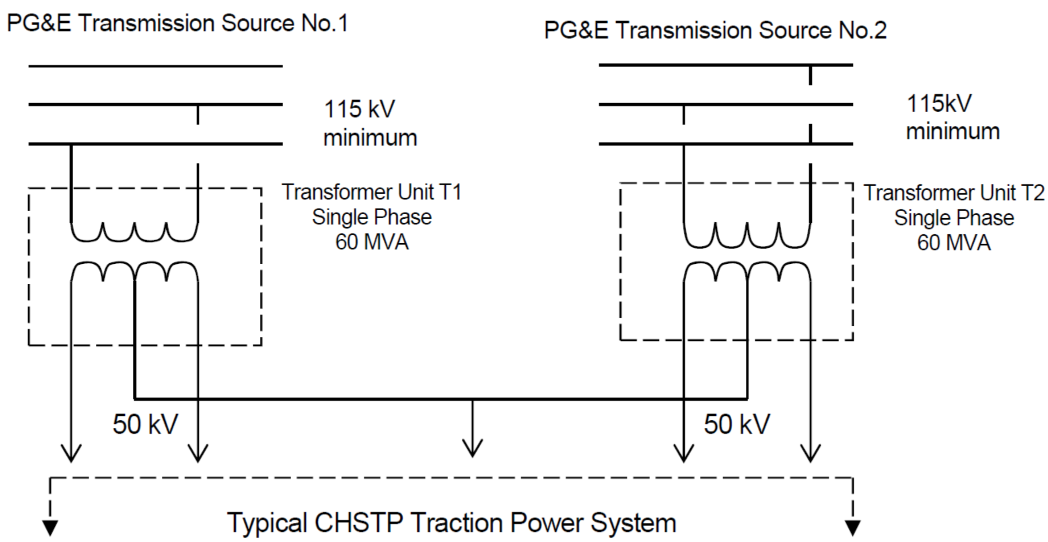


Figure 1 Simplified Interconnection Diagram

2.2.1.5 PG&E Transmission System Study

Following publication of the Merced to Fresno Section Project EIS/EIR, PG&E conducted an analysis of its power network to determine if upgrades to the existing infrastructure would be necessary to meet the projected power demands of the HSR within the 345-mile portion of the train corridor located in PG&E's service territory. Using fifteen minute loading data (Table 2-1), which assumed maximum load during commerical operation at each TPSS location, PG&E modeled future operations assuming normal system operation with all substations and transformers in its service area (PG&E 2016).

Table 2-1 Revised Power Demands at Autotransformer Feed Sites 6 through 13

Site	Location	Transformer Unit	Normal Operation: 15 Minutes (Root Mean Square)	Normal Operation: 1 Hour (Root Mean Square)
Site 6	El Nido	T1	3.1	2.9
		T2	13.4	11.6
Site 7	Wilson	T1	12.5	9.2
		T2	22.6	19
	Le Grand Junction/Sandy Mush Road	T1	12.5	9.2
		T2	22.6	19

Source: PG&E 2016

This study evaluated the system loading impacts of interconnection of Sites 6 through 13. Loads at Sites 6 and 7 were modeled to ensure that system reinforcements (i.e., physical upgrades) around Sites 8 to 13 would also address any future issues when Sites 6 and 7 interconnect into the transmission system.

Transmission System Study Methodology

Steady-state power flow analysis was conducted for each site, consistent with the general utility practice of evaluating potential heating effects on utility equipment. The power flow analyses reflected system conditions expected in 2024 as modeled in the 2014 series PG&E Transmission Reliability Assessment cases. The study cases included area transmission reinforcement projects expected to be in service by 2024, as well as certain other approved projects (i.e., future projects) in the study areas. The following four system model powerflow cases were used:

- San Joaquin Valley summer peak case
- Central Kern summer peak case
- Outlying Kern summer peak case
- System off-peak case

The California Independent System Operator (Cal-ISO) Controlled Grid Reliability Criteria, which incorporates the Western Electricity Coordinating Council (WECC) and North American Electric Reliability Corporation (NERC) planning criteria, was used to evaluate the impact of the HSR on PG&E's transmission system during normal operating conditions (Cal-ISO Category "A"), and with all single (Cal-ISO Category "B") and selected multiple (Cal-ISO Category "C") element contingencies (i.e., with one or several components of the system out of service). Exceeding the reliability criteria for any of the categories would result in unacceptable operating conditions.

Below is a summary of the criteria that was used to evaluate the impact of the HSR on the PG&E transmission system.

Steady State Study Criteria – Normal Overloads

Normal overloads are those that exceed 100 percent of normal ratings. The Cal-ISO Controlled Grid Reliability Criteria requires the loading of all transmission system facilities be within their normal summer ratings.

Steady State Study Criteria – Emergency Overloads

Emergency overloads are those that exceed 100 percent of emergency ratings. The emergency overloads refer to overloads that occur during single and multiple element contingencies.

Summary of Results

To accommodate the connections to the TPSSs and HSR load, new switching stations and substation upgrades/expansions would be required, as detailed below in Table 2-2, Summary of Study Results, Interconnection Facility/Upgrades column. The need for these facilities was disclosed and impacts analyzed within their respective HSR segment documents.The results of the study, summarized below in Table 2-2, identified transmission line problems, transformer overloads, and low-voltage issues as a result of the increased load from the HSR, excluding any minimal or pre-project changes, as well as the upgrades required to address those problems for Sites 6 and 7. Details for all compoments associated with each site are detailed below in Section 2.3.

Table 2-2 Summary of Study Results

Site	Location	Interconnection Facility/ Upgrades	Network Upgrades				
			Reliability Criteria Exceeded	Future Project	Component Affected	Proposed Upgrade	Exceedance Eliminated
6	El Nido	Red Top Switching Station	Category C	Panoche – Oro Loma 115 kV Reconductoring Project (2021)[3]	Oro Loma – Panoche Junction 115 kV Power Line	Reconductor with a higher capacity conductor	Yes
			Category C	n/a	Los Banos – Oro Loma – Canal 70 kV Power Line	Reconductor with a higher capacity conductor	Yes
			Category C	n/a	El Nido Substation	El Nido Substation Expansion	Yes
7	Wilson	Reconfigure the Wilson 230 kV substation to a 4-Bay breaker-and-a-half (BAAH)	n/a	n/a	n/a	n/a	n/a
	Le Grand Junction/ Sandy Mush Road	Dutchman Switching Station	Category C	n/a	Warnerville – Wilson 230 kV Transmission Line	Reconductor with a higher capacity conductor	Yes
			Category C	n/a	Wilson – Dairyland (idle) 115 kV Power Line	Reconductor with a higher capacity conductor	Yes

Source: PG&E 2016

2.3 Proposed Interconnections and Network Upgrades

2.3.1 Site 6 – El Nido

Interconnection

The Site 6 – El Nido would interconnect to the Wilson – Oro Loma 115 kV Power Line via a new 115 kV switching station (Red Top Switching Station) via two new, approximately 1,000-foot-long, 115 kV power lines. These interconnection facilities are included within the footprint of all Central Valley Wye Alternatives and are not discussed further.

Network Upgrade

The network upgrades would be common to all HSR alternatives.

[3] Project proposed as part of its 2015 Annual Assessment process and is pending approval by the California Independent Service Operators (CAISO). Approval of this future project is speculative because of the uncertainty of future operations of the electrical grid in light of the increased generation and transmission of renewable energy.

Los Banos – Oro Loma – Canal 70 kV Power Line

The reconductoring of approximately 13.3 miles of the existing single-circuit Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line, which intermittently supports distribution underbuild, would start at the existing Mercy Springs Switching Station and terminate at the existing Oro Loma Substation.

The exiting single-circuit alignment, which supports three conductors (i.e., 0.73-inch diameter non-specular 397.5 AAC) starts at the Mercy Springs Switching Station and traverses on the west side of 1st Lift Canal for approximately 0.81 mile before heading 0.54 mile in a southeasterly direction. The alignment then continues east for approximately 6.70 miles either along existing farm roads or cross country through agricultural lands, before traversing southeast for approximately 0.23 mile. It then traverses an unnamed dirt road in a southwesterly direction for approximately 1.0 mile, dog legs east on the north side of Main Street for 0.14 mile, then continues south for approximately 1.7 miles on the east side of West Cambria Avenue. The alignment continues due east for approximately 2.0 miles generally south of West Althea Avenue. Then it traverses the east side of North Russell Avenue for approximately 0.16 mile before entering the Oro Loma Substation. See Figures 2-2 through 2-8.

The existing alignment crosses a number of unnamed farm road, Althea Avenue, Key Avenue and Woo Road. The alignment also crosses the Delta-Mendota Canal, twice, 28 unnamed canals/ditches and 5 artificial paths.

The existing single-circuit Site 6 – El Nido, Los Banos – Oro Loma – Canal 70 kV Power Line would be reconductored with approximately 0.85-inch diameter non-specular 477 ACSS conductor.

The existing, single-circuit line is supported by 229 structures with an average span distance of approximately 676 feet. There are approximately 227 60- to 90-foot-tall wood poles. Existing wood poles would be replaced with a combination of 75- to 100-foot-tall wood poles or LDS. Two existing TSP would not be replaced. Existing distribution lines would be moved to the replacement structures.

Oro Loma – Panoche Junction 115 kV Power Line

The reconductoring of approximately 16.9 miles of the existing single-circuit Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line would start at the existing Oro Loma Substation and terminate at Panoche Junction, located along South Brannon Avenue approximately 2 miles north of the intersection of West Panoche Road in Fresno County.

The existing single-circuit alignment, which supports three conductors (i.e., 0.73-inch diameter non-specular 397.5 all aluminum conductor (AAC)) traverses cross-country in a southeasterly direction for approximately 2.1 miles. It then traverses south along the west side of an unnamed dirt road for approximately 1.3 miles continuing cross-country in a southeasterly direction for approximately 1.1 miles. From this point, for approximately 12 miles from the intersection of West Nees Avenue, the alignment, which also supports distribution underbuild, traverses west of Brannon Avenue and unnamed roads to Panoche Junction. See Figures 2-9 through 2-20.

The existing alignment crosses West North Avenue, West Jensen Avenue, West California, West Herndon Avenue, West Brannon Avenue, West Shaw Avenue, West Belmont Avenue, West Olive Avenue, West McKinley Avenue, West Gettysburg Avenue, West Shields Avenue, West Ashlan Avenue, West Bullard Avenue, West Nees Avenue, and North Russel Avenue. The alignment crosses California Aqueduct, 33 unnamed canals/ditches as well as one riverine wetland.

The existing single-circuit Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line would be reconductored with approximately 0.85-inch diameter non-specular 477 ACSS conductor.

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061a

0 500 1,000 Feet
0 150 300 Meters

Access Routes
Existing Paved Road
Existing Dirt/Gravel Road

Figure 2 Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line

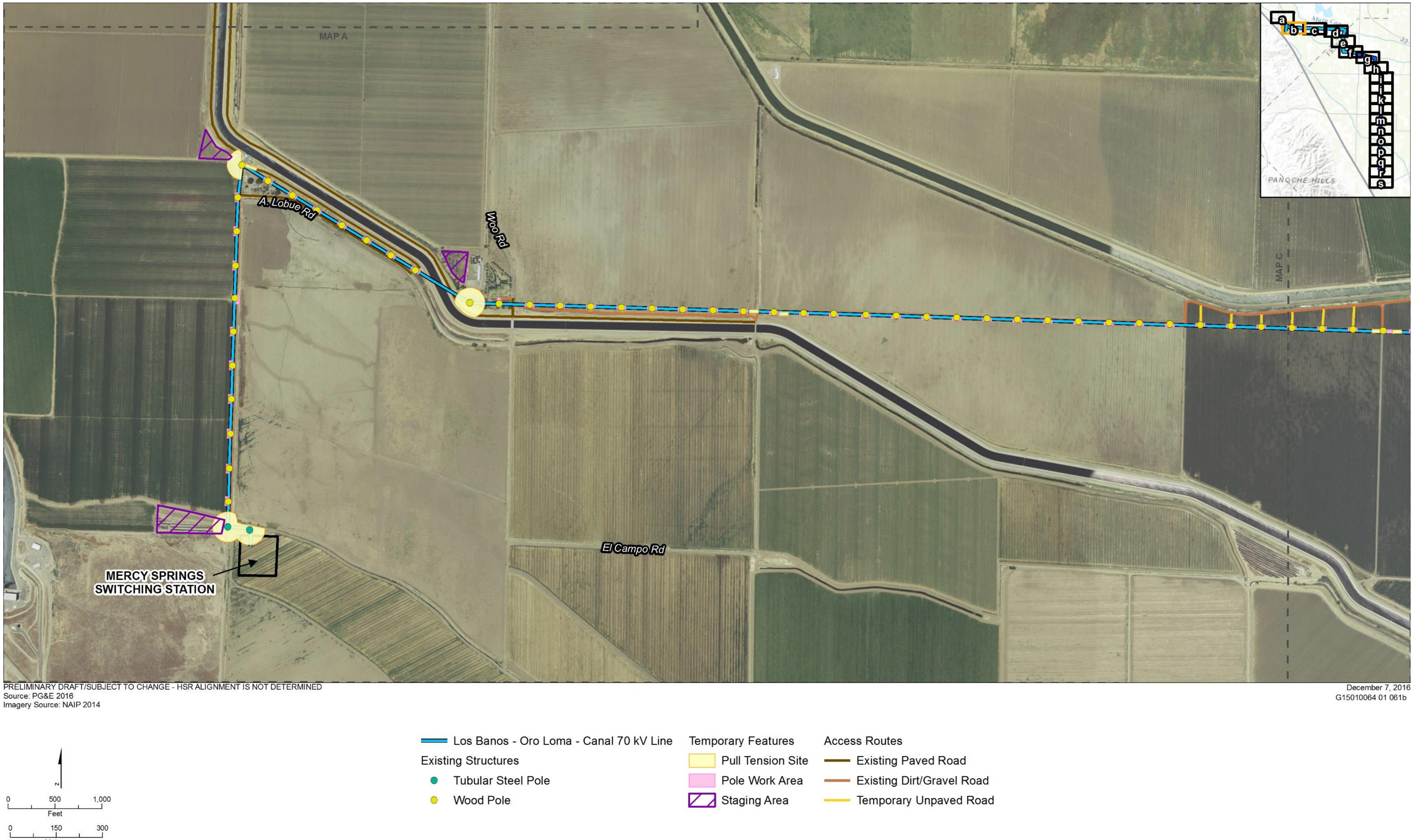


Figure 3 Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line

Figure 4 Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line

Figure 5 Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line

Figure 6 Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line

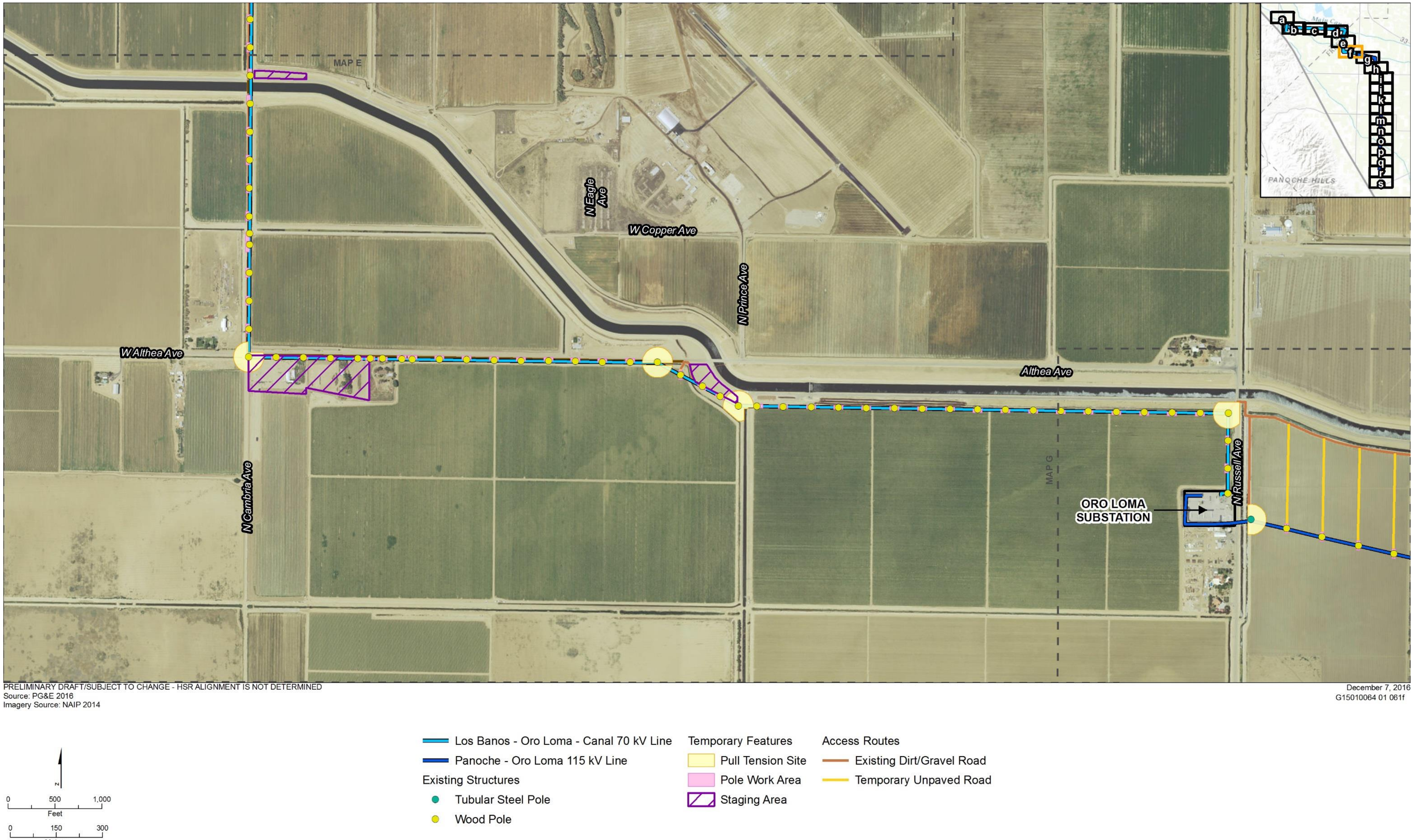


Figure 7 Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line

Figure 8 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061h

Panoche - Oro Loma 115 kV Line

Existing Structures
- Wood Pole

Temporary Features
- Pull Tension Site
- Pole Work Area

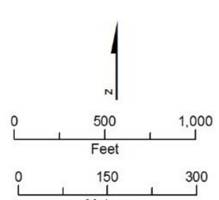
Access Routes
- Existing Dirt/Gravel Road
- Temporary Unpaved Road

0 500 1,000 Feet
0 150 300 Meters

Figure 9 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

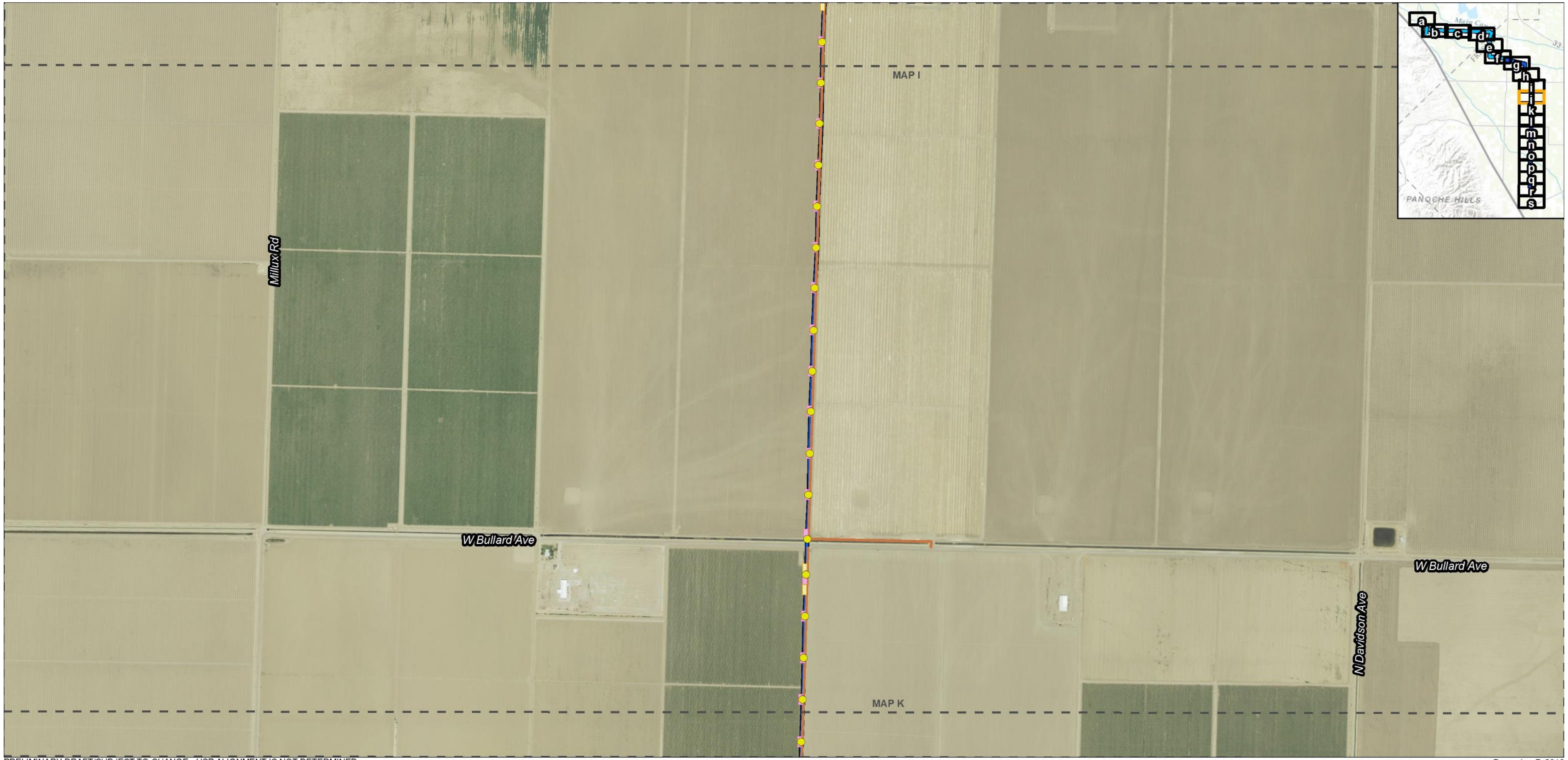
PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061i



Panoche - Oro Loma 115 kV Line
Existing Structures
Stub Pole
Wood Pole
Temporary Features
Pull Tension Site
Pole Work Area
Access Routes
Existing Dirt/Gravel Road
Temporary Unpaved Road

Figure 10 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061j

Panoche - Oro Loma 115 kV Line
Existing Structures
Wood Pole
Temporary Features
Pull Tension Site
Pole Work Area
Access Routes
Existing Dirt/Gravel Road

N
0 500 1,000 Feet
0 150 300 Meters

Figure 11 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

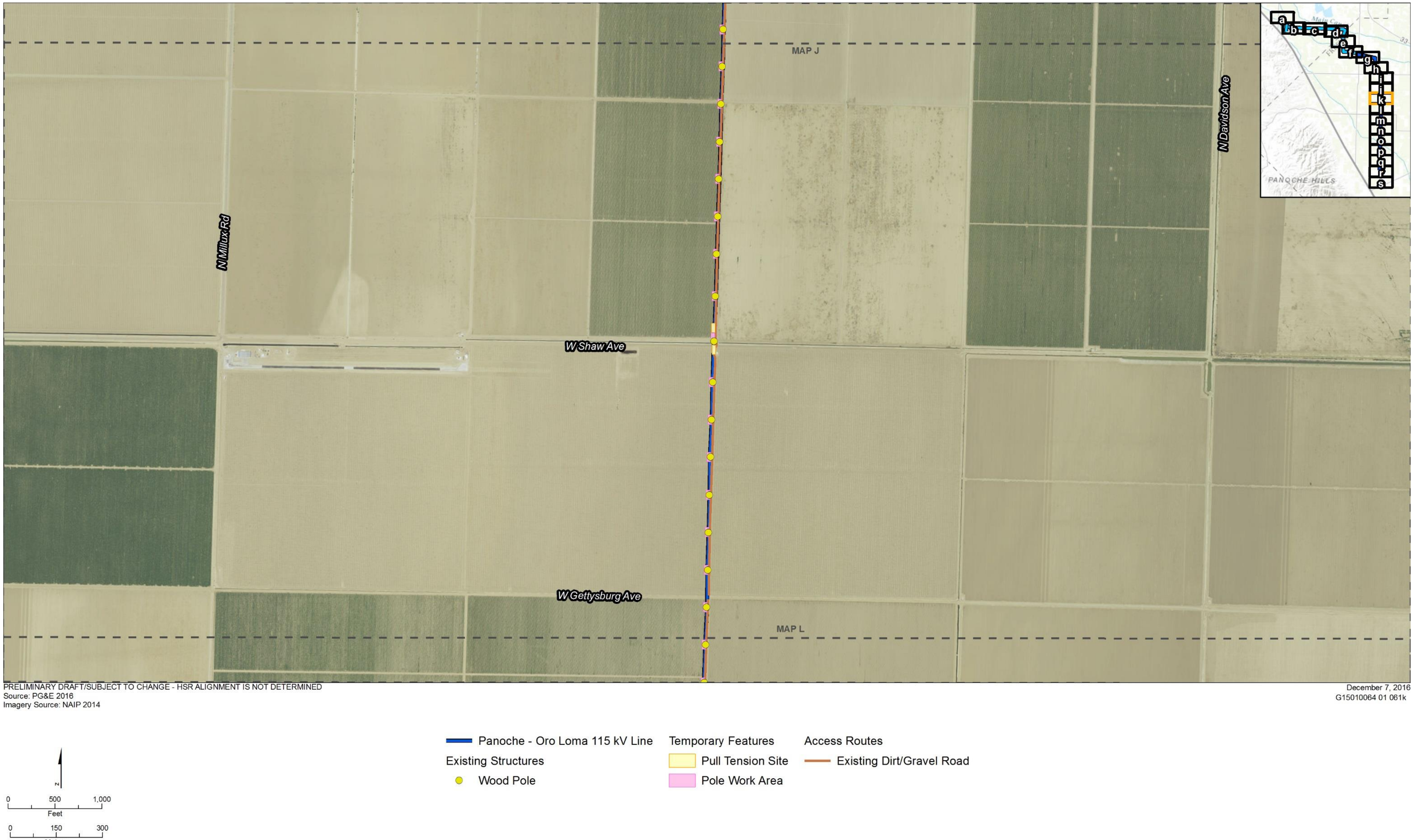
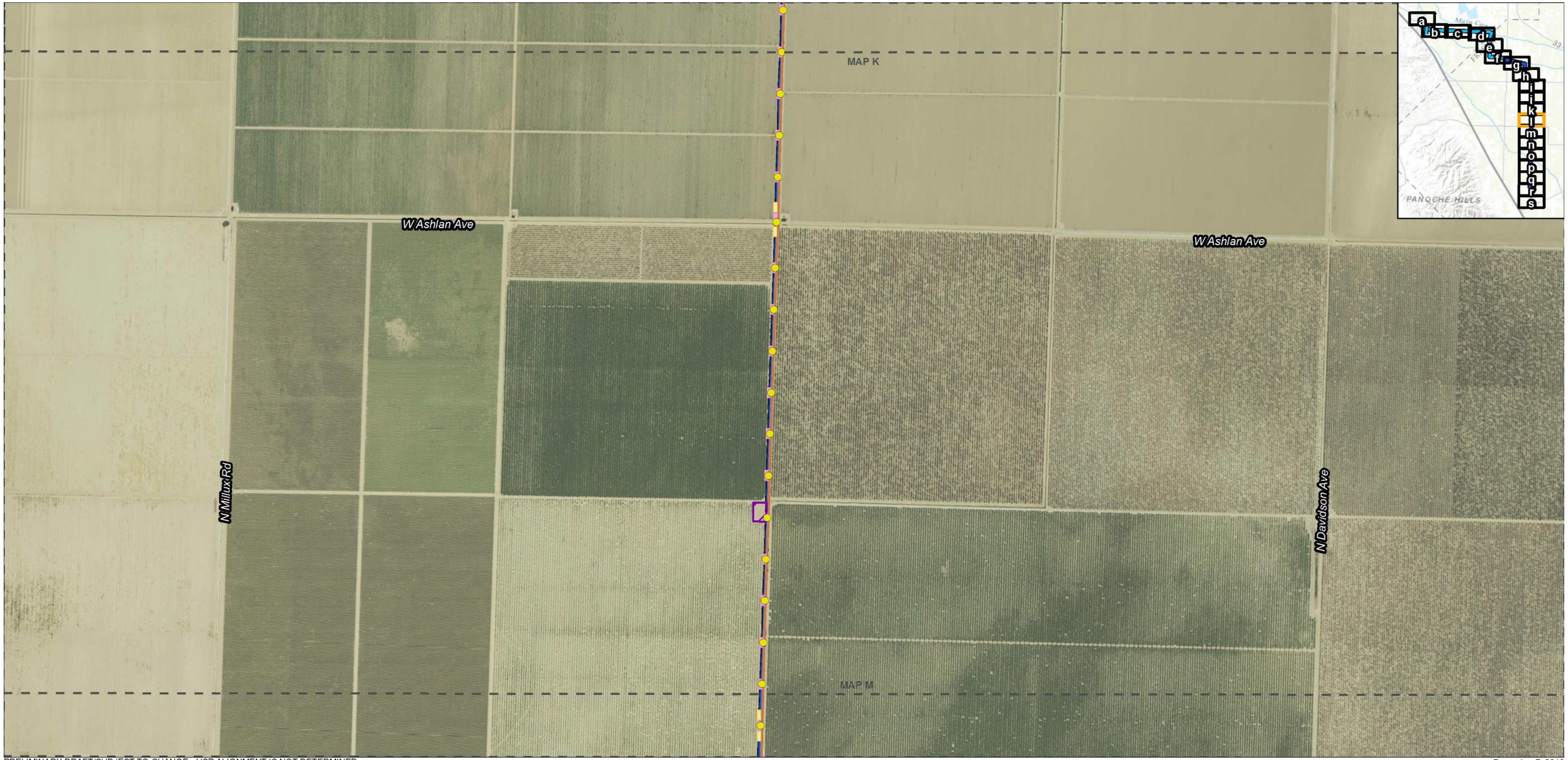
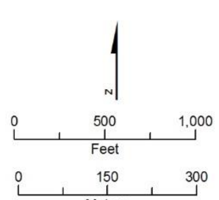


Figure 12 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061I



Panoche - Oro Loma 115 kV Line

Existing Structures

Wood Pole

Temporary Features

Pull Tension Site

Pole Work Area

Staging Area

Access Routes

Existing Dirt/Gravel Road

Figure 13 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

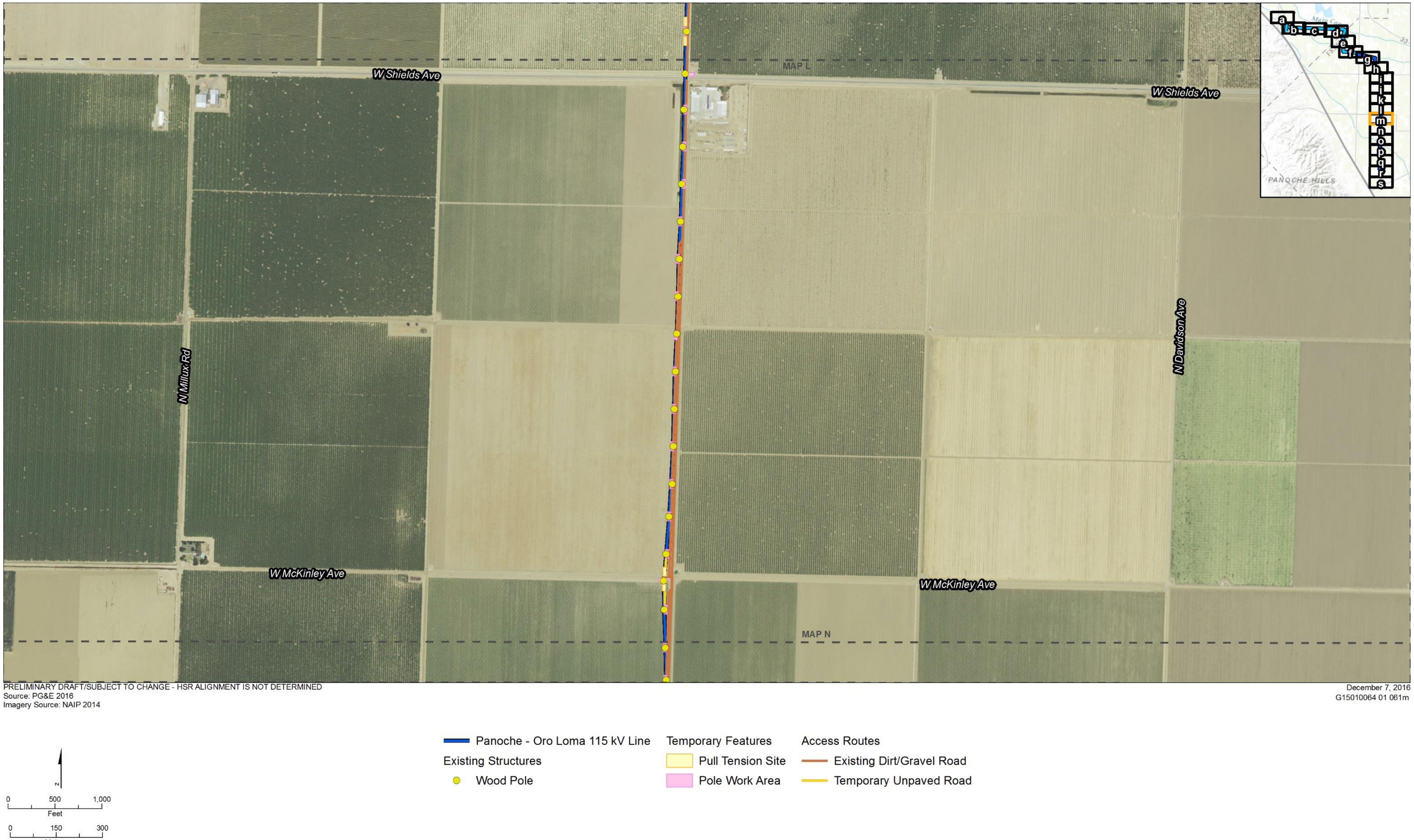


Figure 14 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

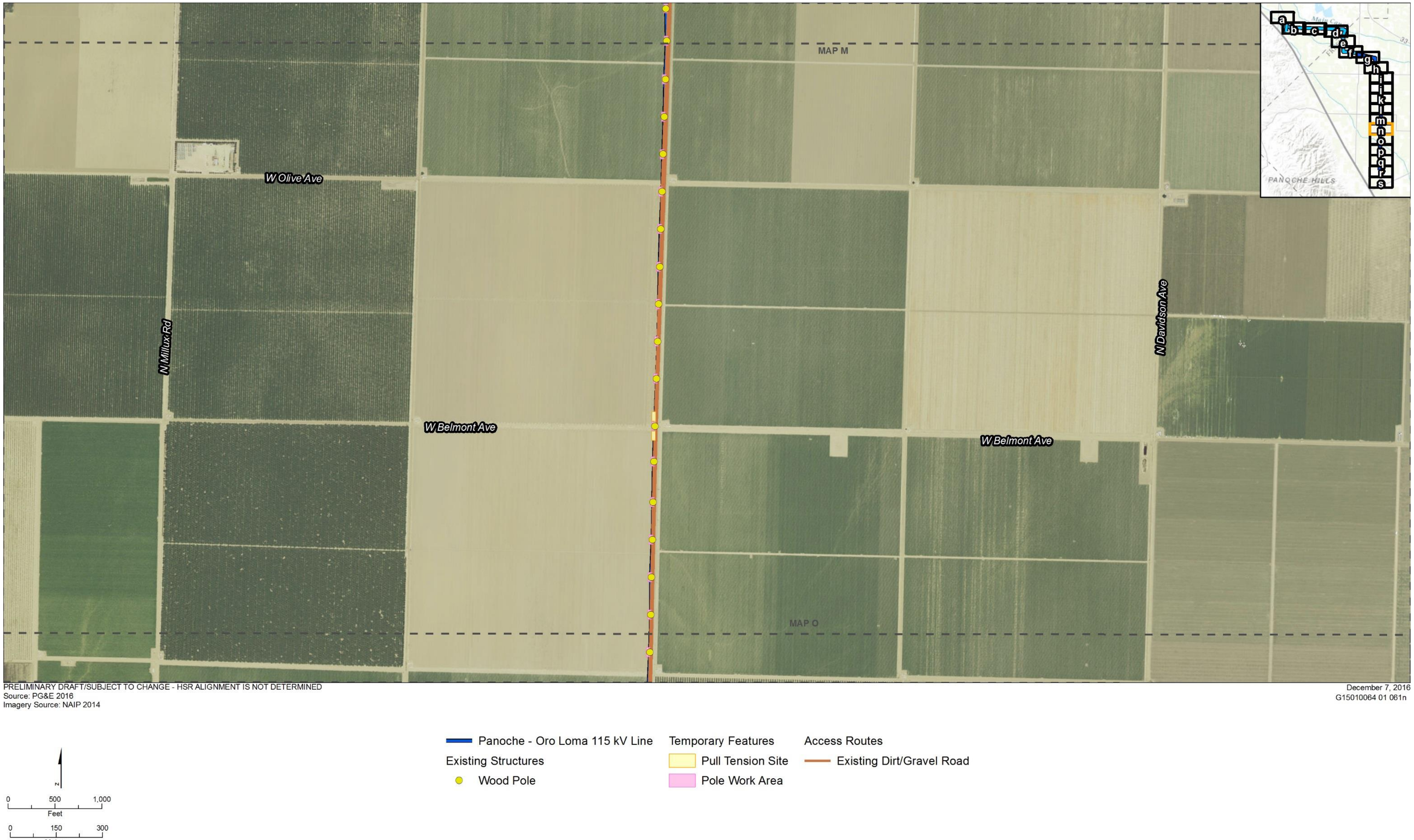


Figure 15 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061o

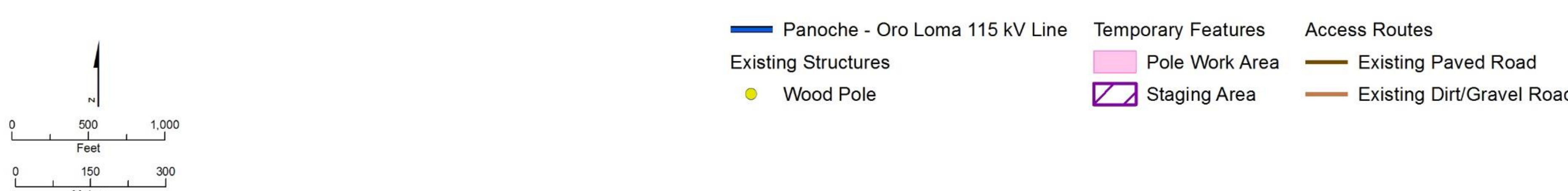


Figure 16 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061p

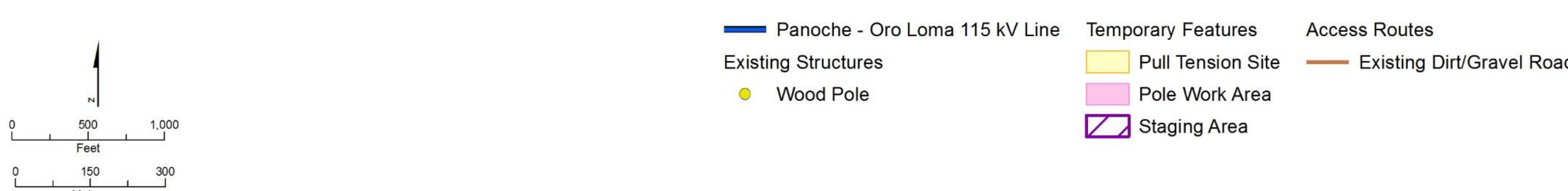
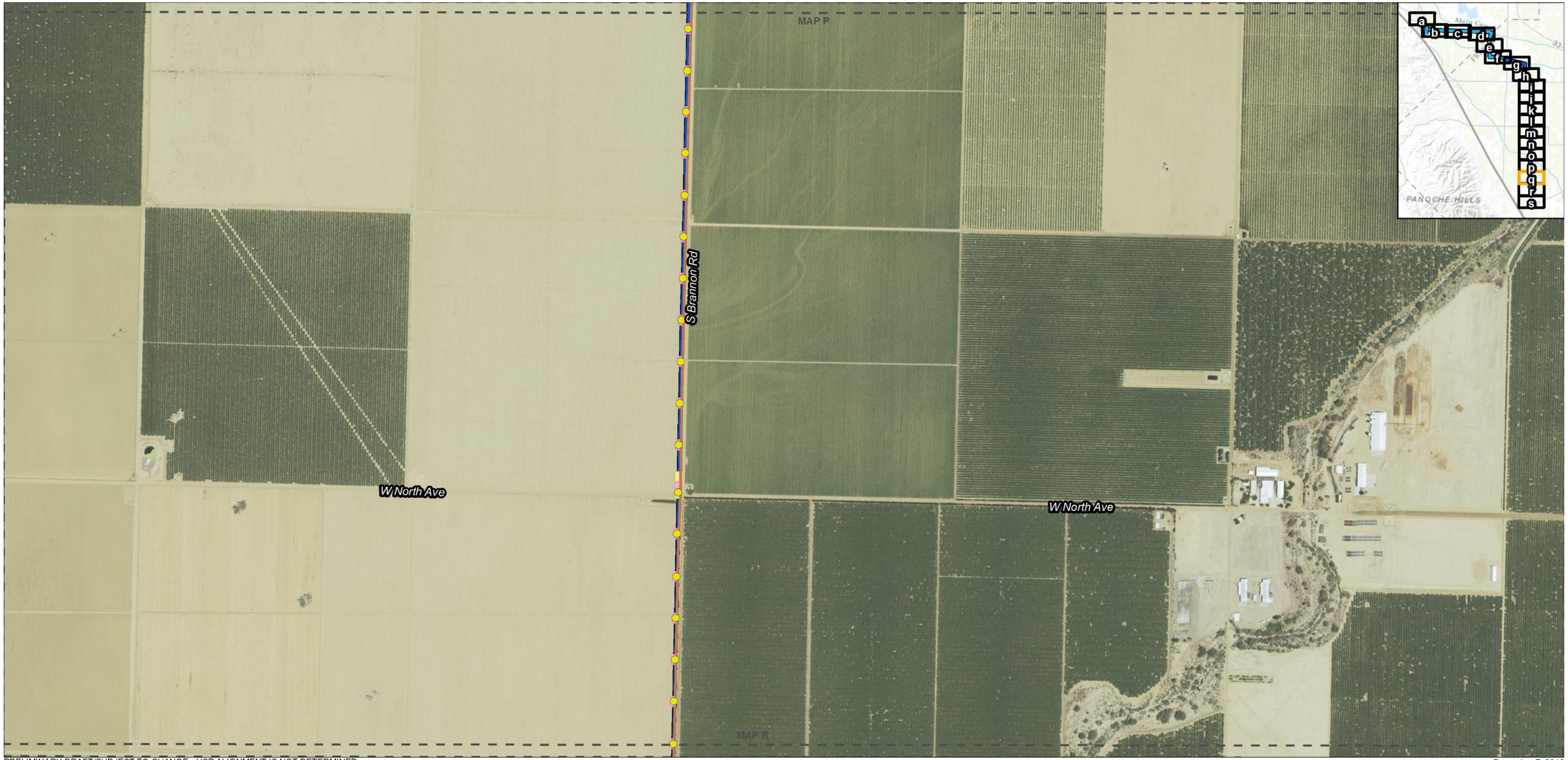


Figure 17 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061q

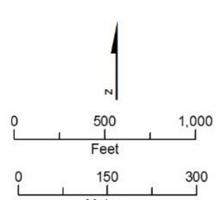
Panoche - Oro Loma 115 kV Line
Existing Structures
Wood Pole
Temporary Features
Pull Tension Site
Pole Work Area
Access Routes
Existing Dirt/Gravel Road

0 500 1,000 Feet
0 150 300 Meters

Figure 18 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 7, 2016
G15010064 01 061r



Panoche - Oro Loma 115 kV Line
Existing Structures
Wood Pole
Temporary Features
Pull Tension Site
Pole Work Area
Staging Area
Access Routes
Existing Dirt/Gravel Road

Figure 19 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

Figure 20 Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line

The existing, single-circuit line is supported by approximately 222 structures with an average span distance of approximately 400 feet. There are 220 50- to 90-foot-tall wood and light-duty steel (LDS) poles. On approximately 106 poles, the cross-arms would need to be reframed to support the new conductor. There is one existing tubular steel pole (TSP) and one existing stub pole that would not be replaced. Existing distribution lines would be moved to the replacement structures.

Oro Loma Substation

Within the fenceline of the existing Oro Loma Substation, a 115/70 kV Transformer Bank would be replaced with a three-phase 200/220 MVA bank with Load Tap Changing (LTC) as well as upgrade the existing 70 kV bus to match the transformer bank rating.

El Nido Substation

The existing El Nido Substation is supplied by tap connections into the Wilson – Le Grand 115 kV Power Lines that run on the northern side of the substation. Due to the proximity of the new Red Top Switching Station (Site 6 – El Nido), coordination between relays at Red Top Switching Station and the El Nido Substation would not be able to protect the El Nido bus. Upgrading the protection would require the reconfiguration of El Nido Substation. See Figure 2-21.

Existing

The existing El Nido Substation is a 115 kV 2-terminal transmission line tapped load serving substation with 2 load-serving transformers and no switchyard. The substation consists of two 115 kV bus structures, a dead-end structure, a circuit switcher, and one control building covering an area approximately 25 feet by 25 feet, There is also a 12 kV switch and bus structure, two 115 kV/12 kV transformers, and a line trap support. The maximum height for the equipment within the substation is approximately 45 feet.

Expanded

The existing El Nido Substation would be expanded to include an unmanned, 115 kV two-bay (3-bay ultimate) ring bus, built as a BAAH substation, requiring an expansion of approximately 3 acres. The substation would consist of electrical equipment needed to operate the substation, including 4 power circuit breakers with sulfur hexafluoride (SF_6) gas type insulated switchgear, manual and motor operated disconnect switches, a wave tap, tuner, conductor, surge arrestors, structural steel supports, ground conductors and rods, underground conduit and cabling, and communication equipment including a lattice steel microwave telecommunication tower. There would be electrical lines into and out of the substation, a new lattice steel telecommunication microwave tower, a metering protection and communication control building, battery building, and stormwater retention basin improvements. Circuit breakers, switches, and bus work would be approximately 50 to 60 feet tall. Generally, the maximum height for the majority of equipment within the substation would be approximately 60 feet. However, the dead-end structures supporting the 115 kV power line interconnection and a new lattice steel telecommunication microwave tower, if required, would be approximately 100 and 120 feet tall, respectively.

An 8-foot-high, chain-link security fence topped with 1 foot of barbed wire would surround the substation equipment and access in and out of the substation would be provided via existing gates located on East Grant Road. Approximately 1,000 linear feet of fence line would be installed to accommodate the expansion. Security lighting would consist of non-glare light emitting diode (LED) lamps with all exterior lighting located and designed to minimize spillage of light and/or glare to off-site locations. Lights would be mounted on lighting standards approximately 10-foot-tall galvanized steel light poles, transfer bus structures, control building landings, and around the control building perimeter. The lights would be controlled by a photocell that automatically turns the lights off during the day and on at night.

The expanded substation would be connected to the single-circuit El Nido-Red Top 115 kV power line and Dutchman-El Nido 115 kV power line west and north of the substation site, respectively.

Within the expansion area, approximately four TSPs would be installed to accommodate the power lines into and out of the expanded El Nido Substation.

Figure 21 Site 6 – El Nido, El Nido Substation

2.3.2 Site 7

Site 7 – Wilson

The Site 7 – Wilson, TPSS was evaluated in the Merced to Fresno Section Project EIR/EIS as part of the Union Pacific Railroad (UPRR)/State Route (SR) 99 Alternative in combination with the Ave 21 Wye. That analysis assumes that the TPSS would connect to the existing Le Grand Substation on Porters Road near South Minturn Road via an existing power line. The analysis assumed the power line would be upgraded to a 115 kV for approximately 3.2 miles between the Site 7 – Wilson, TPSS and the Le Grand Substation.

Since publication of the EIR/EIS, further analysis has been conducted for the Central Valley Wye, necessitating an additional Site 7 interconnection option to support alternative Central Valley Wye alignments.

Site 7 – Le Grand Junction/Sandy Mush Road

The Site 7 – Le Grand Junction/Sandy Mush Road Option would support the SR 152 (North) to Road 19 Wye Alternative. Site 7 - Le Grand Junction/Sandy Mush Road Option would interconnect to the Wilson – Oro Loma, Wilson – Le Grand and Wilson – Dairyland (idle) 115 kV power lines via a new 115 kV switching station (Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station) proposed to be located at the corner of East Sandy Mush Road and South Bliss Road approximately 2.6 miles west of the Site 7 - Le Grand Junction/Sandy Mush Road, TPSS. The location of the Site 7 - Le Grand Junction/Sandy Mush Road, TPSS and a portion of the 115 kV double circuit power line adjacent to East Sandy Mush Road are within the footprint of the SR 152 (North) to Road 19 Wye Alternative and are not discussed further.

2.3.2.1 Interconnection

Site 7 – Wilson

The Site 7 – Wilson would interconnect an upgraded Wilson Substation via an approximately 2.3 mile-long, double-circuit 230 kV transmission line collocated with an optical ground wire. The Site 7 – Wilson, TPSS and approximately 0.5 mile of the double-circuit 230 kV transmission line were previously analyzed within the Merced to Fresno Section Project EIS/EIR; however, a lattice steel telecommunication microwave tower, approximately 100 and 120 feet tall, at the TPSS as well as an optical ground wire collocated on the double-circuit 230 kV transmission line would be required. Therefore, this analysis will only include the additional lattice steel telecommunication microwave tower at the TPSS, an additional 2 miles of double-circuit 230 kV power line, a collocated optical ground wire and the upgrade of the existing Wilson 230 kV Substation to a 4-Bay BAAH within the fenceline of the existing substation. See Figure 2-22 and 2-23.

Wilson Substation

Existing

The existing 115/230 kV Wilson Substation, with a ring bus configuration, consist of a 2-terminal transmission line tapped load serving substation with 2 load-serving transformers and no switchyard. The 230 kV portion is located on the southeast side of the existing substation site. It consists of two 230 kV bus structures, a dead-end structure, a circuit switcher, and one control building covering an area approximately 50 feet by 25 feet, There is also a 12 kV switch and bus structure, two 230 kV/12 kV transformers, and a line trap support. The maximum height for the equipment within the substation is approximately 45 feet.

The 230 kV portion of the Wilson Substation is supplied by four 230 kV transmission lines, the Warnerville – Wilson, the Wilson – North Merced, the Wilson – Gregg and the Wilson – Borden 230 kV lines. The 115 kV portion is connected to five 115 kV power lines, the El Capitan – Wilson, the Wilson – Atwater No. 2, the Wilson – Merced No.1 and No. 2, the Wilson – Oro Loma, and the Wilson – Le Grand 115 kV lines.

Reconfigure 230 kV Wilson Substation

The 230 kV system at Wilson Substation would be rebuilt into an unmanned, 230 kV four-bay BAAH bus configuration within the existing substation footprint, requiring no substation expansion. The conversion would require the installation of two new bays, circuit breakers with sulfur hexafluoride (SF_6) gas type insulated switchgear, manual and motor operated disconnect and bypass switches, conductor, four structural steel supports, ground conductors and rods, underground conduit and cabling, communication equipment including a lattice steel telecommunication microwave tower and storm water retention basin improvements, if necessary. Generally, the maximum height of the new 230 kV substation equipment would be approximately 50 to 60 feet; however, a lattice steel microwave tower could be approximately 100 to 120 feet tall. The existing Wilson 230/115 kV transformer bank would be replaced, remote end protection equipment and 115 kV lattice steel towers would be modified, and old substation equipment including an approximate 50-foot tower and 40-foot structural steel supports would be removed.

Security lighting would consist of non-glare LED lamps with all exterior lighting located and designed to minimize spillage of light and/or glare to off-site locations. Lights would be mounted on lighting standards approximately 10-foot-tall galvanized steel light poles, transfer bus structures, control-building landings, and around the control-building perimeter. The lights would be controlled by a photocell that automatically turns the lights off during the day and on at night.

To provide the new double-circuit 230 kV connections into Site 7 – Wilson, TPSS from the Wilson Substation, and to avoid numerous line crossings, the 230 kV system at the Wilson Substation would need to be reconfigured. Approximately ten TSPs would be installed and one TSP removed to accommodate the new and reconfigured 230 kV lines. To keep the Wilson Substation energized during construction, utility shoofly lines would be required, generally within the existing substation area.

Site 7 – Le Grand Junction/Sandy Mush Road

The Site 7 - Le Grand Junction/Sandy Mush Road, TPSS would interconnect to the Wilson – Oro Loma, Wilson – Le Grand and Wilson – Dairyland (idle) 115 kV power lines via a new 115 kV switching station (Dutchman Switching Station) and an approximately 2.5 mile-long, double-circuit 115 kV power line. See Figure 2-24.

Dutchman Switching Station

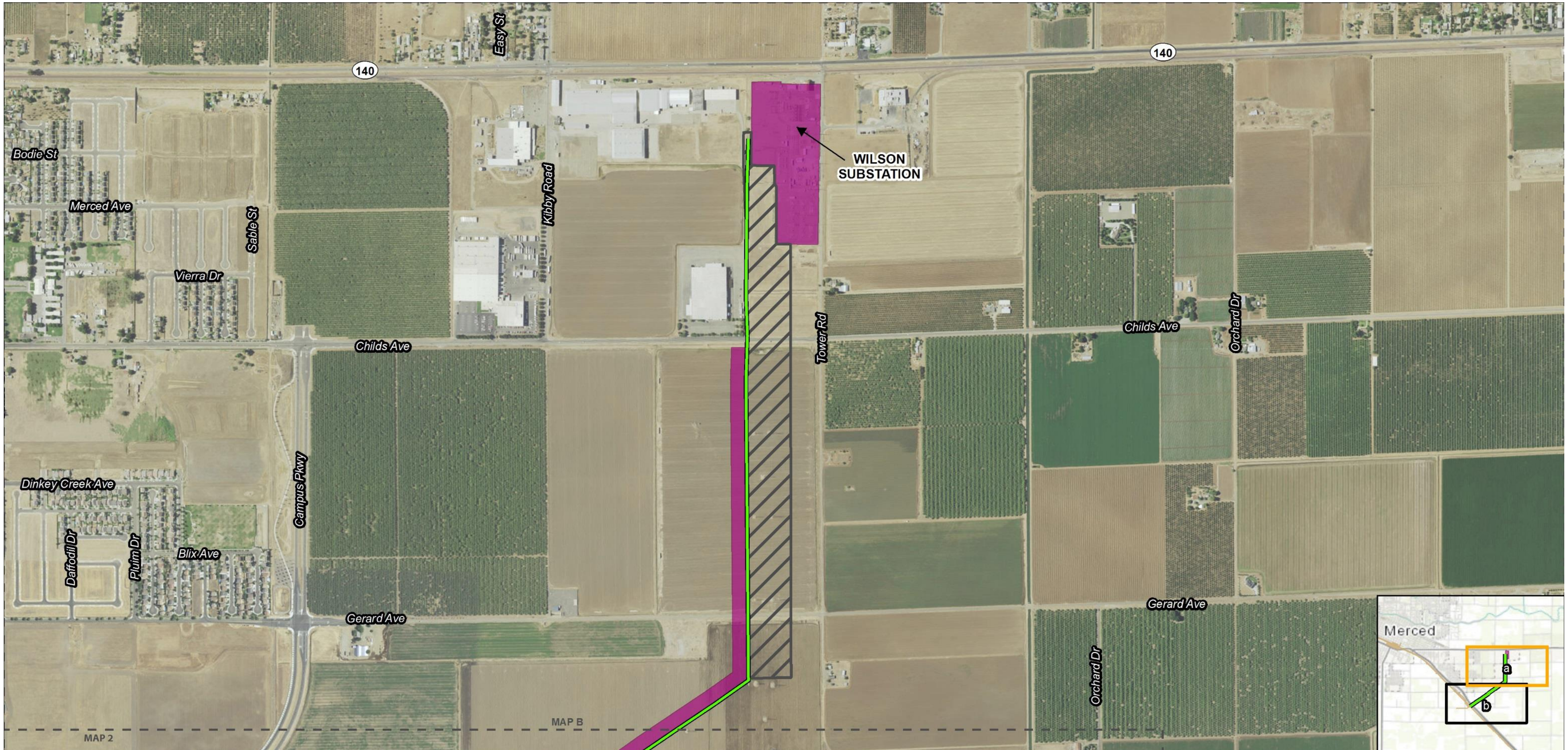
The unmanned switching station, located at the southeast of the intersection of South Bliss Road and East Sandy Mush Road, would consist of the following electrical equipment: dead-end structures, transformers, manual and motor operated disconnect switches, bus structures, circuit breakers with SF_6 gas type insulated switchgear, structural steel supports, ground conductors and rods, underground conduit and cabling. There would be electrical lines into and out of the switching station, telemetering equipment, communication equipment (i.e., a lattice steel telecommunication microwave tower, or telephone line), a metering protection and communication control building, battery building, and storm water retention basin improvements. The majority of the switching station components would be 22 feet in height or lower; however, dead-end structures would be approximately 36 feet in height, and the lattice steel microwave telecommunication tower could be approximately 100 to 120 feet tall.

An 8-foot-high, chain-link security fence with 1 foot of barbed wire would surround the switching station equipment and two 8-foot-tall swing gates (locked) would provide access in and out of the switching station. An access road (16-foot-wide asphalt driveway) would be constructed to the switching station. Security lighting would consist of sodium vapor lamps with all exterior lighting using non-glare light bulbs, designed and positioned to minimize spillage of light and/or glare to off-site locations. Lights would be mounted on approximately 8-foot-tall galvanized steel light posts erected on bus structures. The lights would be controlled by a photocell that automatically turns the lights off during the day and on at night.

2.3.2.2 Network Upgrade

Site 7 – Wilson

No network upgrades would be required to serve Site 7 - Wilson.



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 8, 2016
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230 kV Tie-Line
Permanent Impact
Additional Study Area

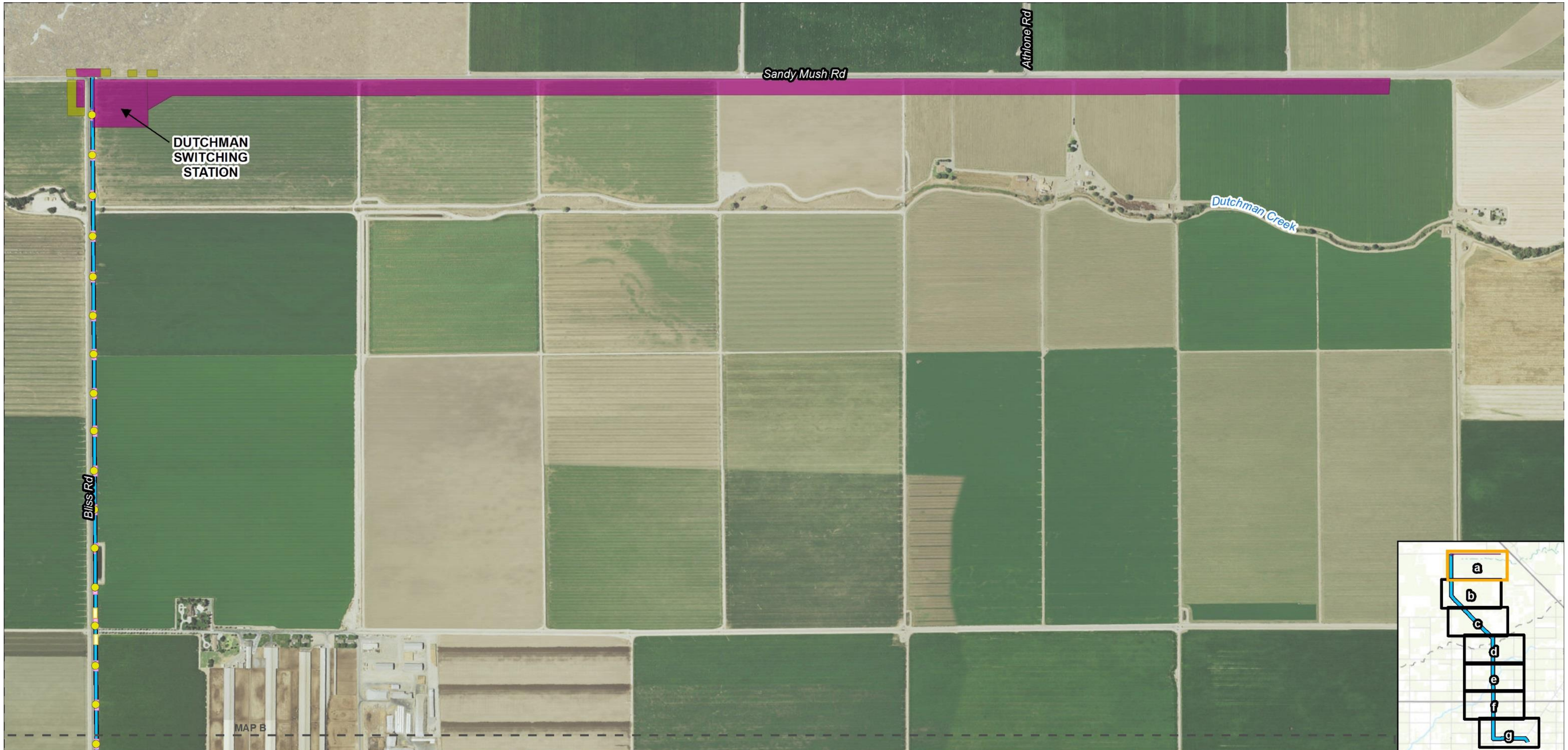
0 500 1,000 Feet
0 150 300 Meters

Figure 22 Site 7 – Wilson, Wilson Substation and 230 kV Tie-Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 8, 2016
G15010064 01 063b

Figure 23 Site 7 – Wilson, 230 kV Tie-Line



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

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Wilson - Dairyland (idle) 115 kV Power Line
Existing Structures
Wood Pole

Tie-Line and Dutchman Switching Station
Permanent
Temporary

Wilson - Dairyland Temporary Features
Pull Tension Site
Pole Work Area

0 500 1,000 Feet
0 150 300 Meters

Figure 24 Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station, 115 kV Tie-Line and Wilson – Dairyland (idle) 115 kV Power Line

Site 7 – Le Grand Junction/Sandy Mush Road

Wilson – Dairyland (idle) 115 kV Power Line

The existing Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line is currently energized at 12 kV. To support the HSR, the existing line would be reconductored and operated at 115 kV. To serve the current distribution load at the Dairyland Substation, a new 12 kV distribution line would be installed as underbuild on approximately 11.3 miles of the existing single-circuit Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line from the Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station to the existing Dairyland Substation.

Exiting the Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station, the existing single-circuit alignment, which supports three conductors (i.e., three wires), traverses south on the east side of South Bliss Road for approximately 2.0 miles and then continues cross-country in a southeasterly direction for approximately 2.8 miles. It then continues south for approximately 4.8 miles on the east side of Road 11 before heading due east for approximately 1.5 miles south of an unnamed dirt road. The alignment then continues overland in a southeasterly direction for approximately 0.2 mile before terminating at the Dairyland Substation. See Figures 2-25 through 2-30.

The existing alignment crosses 21 1/2 Avenue, 22 Avenue, 22 1/2 Avenue, 23 1/2 Avenue, 25 Avenue, 25 1/2 Avenue, Highway 152, Robertson Boulevard, Sandy Mush Rd, and Avenue 26. The alignment also crosses the Bethel Canal, Dutchman Creek, Justin Canal, 6 unnamed canals/ditches, 2 unnamed streams/rivers and 1 riverine feature.

The existing single-circuit Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line would be reconductored with approximately 1.2-inch diameter specular 1113 kcmil AAC.

The existing, single-circuit line is supported by 154 wood poles with an average span distance of approximately 386 feet. The approximately 60- to 90-foot-tall existing wood poles would be replaced with 75- to 100-foot-tall wood poles or LDS.

Warnerville – Wilson 230 kV Transmission Line

The 38.4-mile alignment of the single-circuit Site 7 – Le Grand Junction, Warnerville – Wilson 230 kV Transmission Line begins at the Warnerville Substation located southeast of the City of Oakdale on Warnerville Road in Stanislaus County. The majority of the alignment traverses cross-country through agricultural fields interspersed with rural residents. Approximately 3.0 miles of the alignment traverses areas interspersed with residential subdivisions on the outskirts of the City of Merced. The alignment terminates at the Wilson Substation located east of the City of Merced near the intersection of Highway 140 (Central Yosemite Highway) and Kibby Road in Merced County. See Figures 2-31 through 2-54.

The existing alignment crosses Alvarado Road, Bond Road, Bubba Lori Street, Canal Bank Road, Claribel Road, E Keyes Road, El Pomar Avenue, Ellenwood Road, Kathy Street, Lake Road, Old Tim Bell Road, Stoddard Road, Tim Bell Road, Warnerville Road, Yosemite Blvd, Highway 140, Hwy 59, Bellevue Road, Buhach Road, Cardella Road, Countryside Avenue, Dunn Road, East Avenue, Fisher Road, G Street, Gardner Avenue, Hatch Road, Kibby Road, Looney Road, Montage Drive, Monte Vista Avenue, Oakdale Road, Olive Road, Perch Lane, Portico Drive, Princeton Road, Seal Court, South Bear Creek Drive, Turlock Road, Yosemite Avenue, and Youd Road. The alignment also crosses Bear Creek, Cottonwood Creek, Dry Creek, Fahrens Creek, Henderson Lateral, the Tuolumne River, Turlock Main Canal, Waterford Lower Main Canal, Yosemite Lateral, twenty-three unnamed Canal/Ditches, twenty unnamed Stream/Rivers, five artificial paths, one unnamed pipeline, five freshwater emergent wetlands, three freshwater forested/shrub wetlands, four riverine features and two other wetland features.

The single-circuit Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line (i.e., three conductors[4]) would be reconductored with an aluminum stranded conductor of approximately 1.2-inch diameter.

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4 Most of the line length (~38 miles) is conductored with 500 HOLO copper conductor with the two ends of the line being conductored with 954 ACSR conductor (at Warnerville Substation) and 1113 AAC conductor (at Wilson Substation).

The existing double-circuit transmission lines are supported by 247 structures with an average span of approximately 817 feet. There are approximately six 90-foot-tall TSPs and two-hundred-forty-one 77- to 86-foot-tall, self-supporting lattice steel towers (i.e., four footings and no guy wires/rods). The self-supporting lattice steel towers (i.e., four footings and no guy wires/rods) would be raised or replaced with new self-supporting lattice steel towers resulting in an approximately 25-foot taller structure. The existing TSPs would not need to be replaced to accommodate the new conductor. As part of the project, the single-circuit Warnerville – Wilson 230 kV Transmission Line would be transferred to the new structures.

Wilson Substation

Within the fenceline of the existing Site 7 – Wilson, Wilson Substation, a 230/115 kV transformer bank would be replaced with a three - phase 316/390/420/462 MVA transformer bank with LTC.

2.4 Construction

2.4.1 Pre-Construction Activities

2.4.1.1 Flagging of Environmental Sensitive Areas/Surveys

Cultural Resources

The boundaries of all known cultural resources that lie within 100 feet of a designated work area would be marked with flagging tape, safety fencing, and/or a sign designating it as an “environmentally sensitive area” to ensure that PG&E construction crews and heavy equipment would not intrude on these resources during construction. For those eligible or potentially eligible sites that contain an existing access road within their site boundary, the road would be used as-is (i.e., no grading, widening, or other substantial improvements), and signs or safety fencing would be established on either side of the road within the site’s boundary to avoid impacts caused by construction vehicles. If it were infeasible or impractical to use an access road as-is, and grading, widening or other substantial improvement is necessary, PG&E would implement mitigation or treatment measures specific to the resource potentially affected by the work. Examples of such measures would include preservation in place, and evaluation, collection, recordation, and analysis of any significant cultural materials.

2.4.1.2 Hazardous Substance Control and Emergency Response Plan

PG&E would implement a Hazardous Substance Control and Emergency Response Plan, which would identify methods and techniques to minimize exposure of the public and construction workers to potentially hazardous materials during all phases of project implementation. The Hazardous Substance Control and Emergency Response Plan would be submitted to the Authority prior to the start of construction activities. The procedures would require PG&E to provide worker training in hazardous-substance control and emergency response that is appropriate to the workers’ roles. The procedures would also require implementation of appropriate control methods (i.e., establishment of project area-specific buffers for construction vehicles and equipment located near sensitive resources) and approved containment and spill-control practices for construction and materials stored in the project area. For instance, construction may require blading/leveling of the soil surface and excavation or auguring to a depth of approximately 24 feet. However, if soils suspected of contamination (based on visual, olfactory, or other evidence) are removed during grading or excavation/auguring activities, the excavated soil would be tested. If they are contaminated above hazardous-waste levels, those soils would be contained and disposed of at a licensed waste facility. Any known or suspected contaminated soil would undergo testing and investigation procedures, supervised by a qualified person as appropriate, to meet the requirements of State and federal regulations. If it is necessary to store chemicals, the chemicals would be managed in accordance with all applicable regulations. Material safety data sheets would be maintained and kept available in the project area, as applicable.

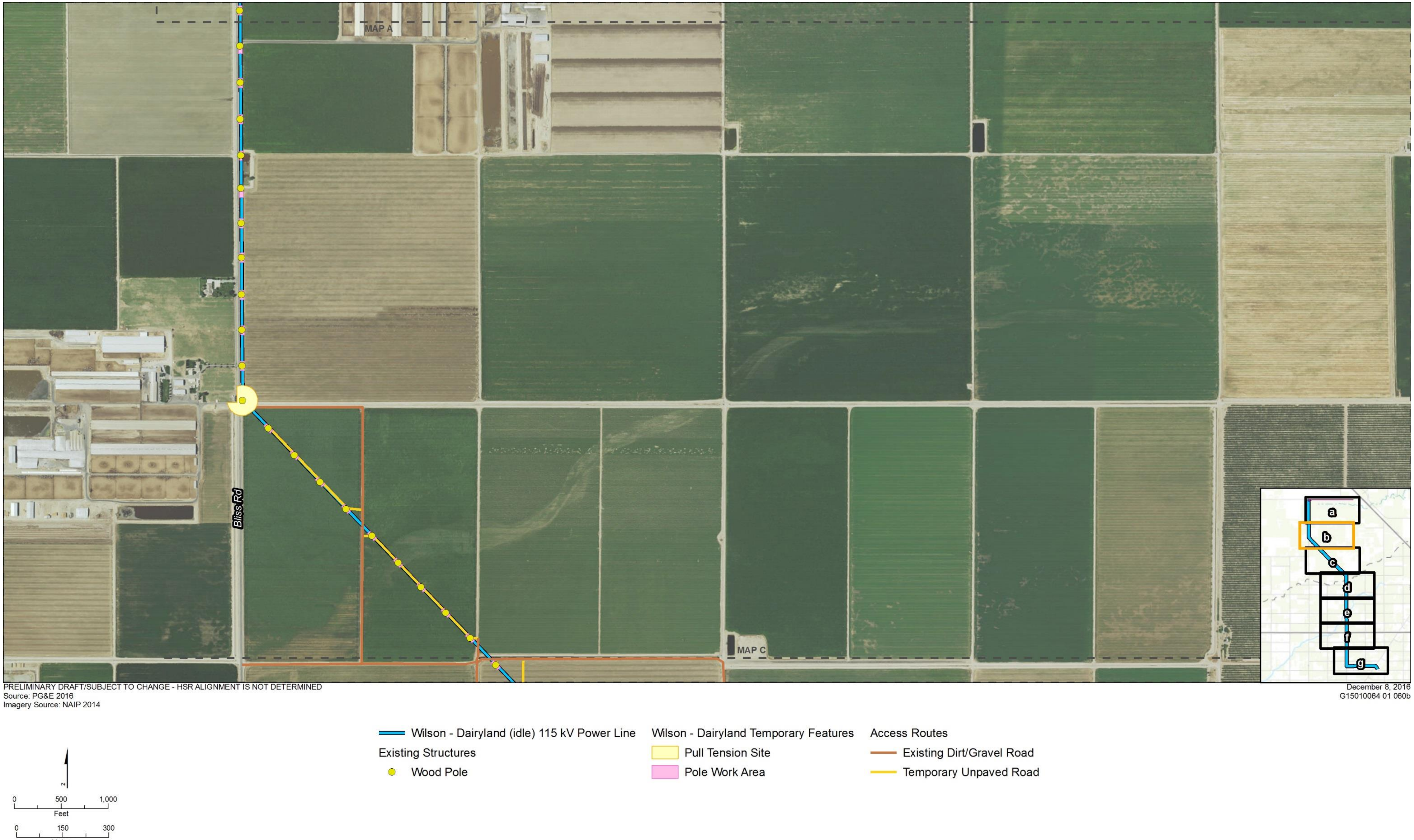
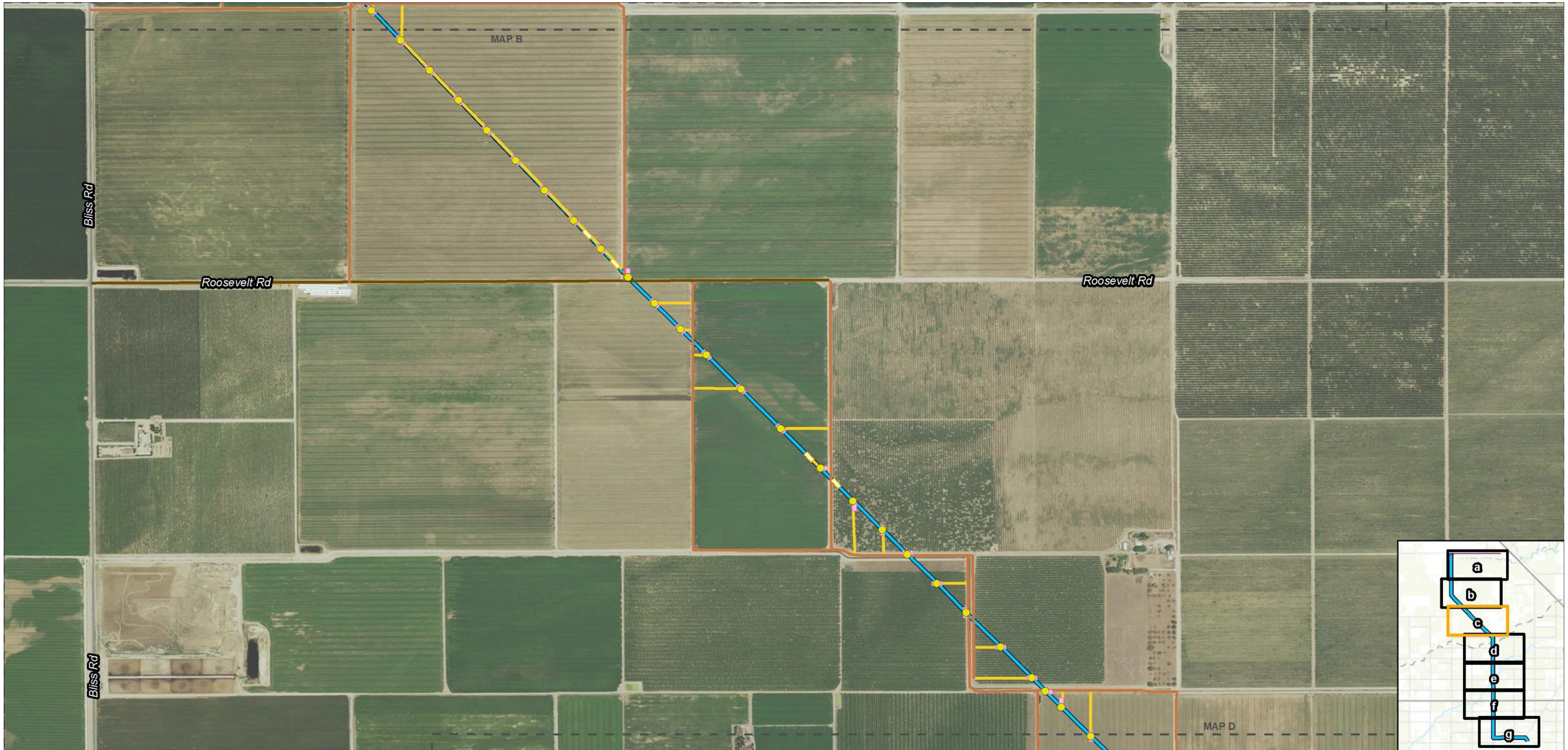


Figure 25 Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 8, 2016
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Wilson - Dairyland (idle) 115 kV Power Line
Existing Structures
Wood Pole

Wilson - Dairyland Temporary Features
Pull Tension Site
Pole Work Area

Access Routes
Existing Paved Road
Existing Dirt/Gravel Road
Temporary Unpaved Road

0 500 1,000 Feet
0 150 300 Meters

Figure 26 Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line

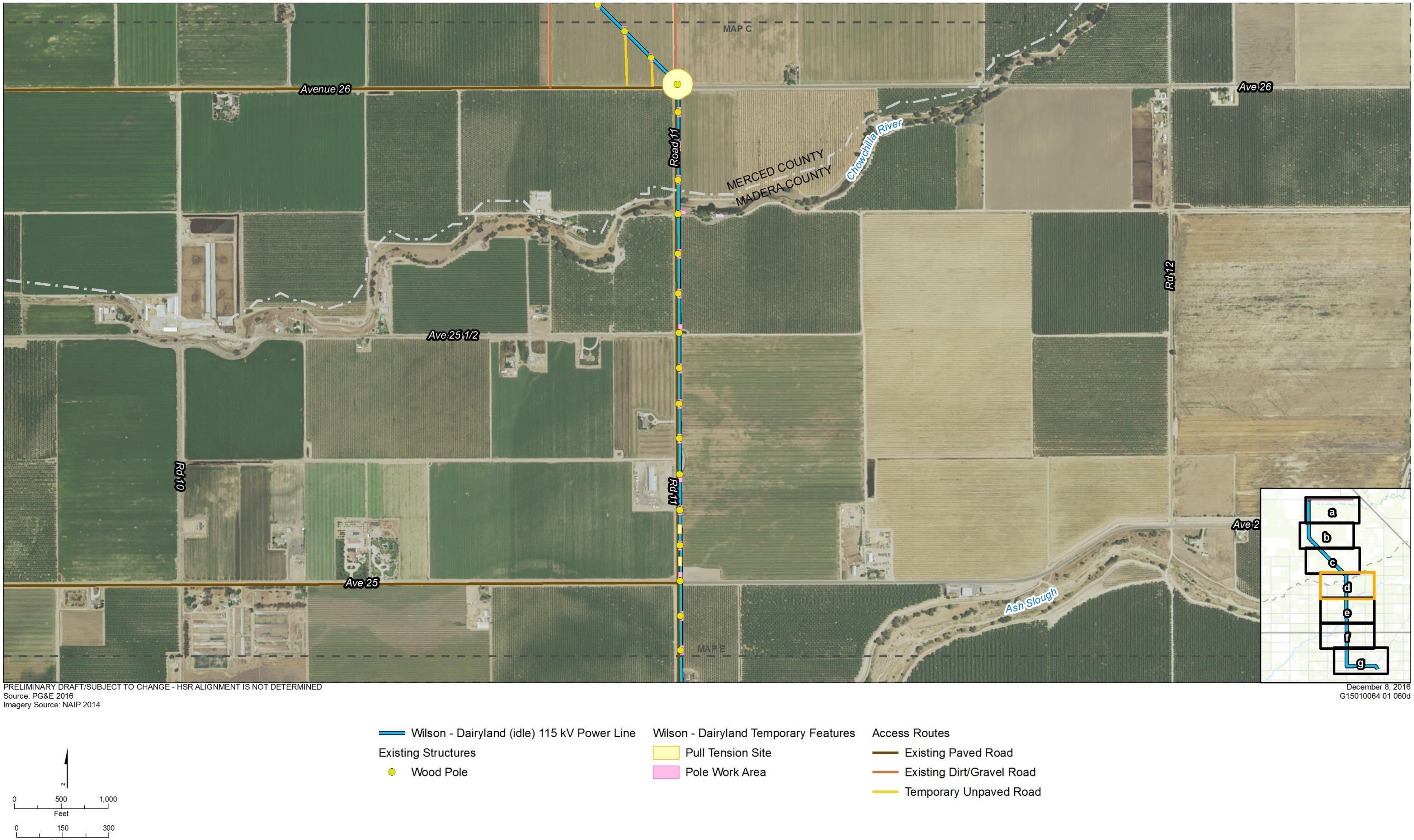

Figure 27 Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

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Wilson - Dairyland (idle) 115 kV Power Line
Existing Structures
Wood Pole

Wilson - Dairyland Temporary Features
Pull Tension Site
Pole Work Area

Access Routes
Existing Paved Road
Existing Dirt/Gravel Road
Temporary Unpaved Road

0 500 1,000
Feet
0 150 300
Meters

Figure 28 Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

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Wilson - Dairyland (idle) 115 kV Power Line
Existing Structures
Wood Pole

Wilson - Dairyland Temporary Features
Pull Tension Site
Pole Work Area

Access Routes
Existing Paved Road
Existing Dirt/Gravel Road
Temporary Unpaved Road

0 500 1,000 Feet
0 150 300 Meters

Figure 29 Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 8, 2016
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Wilson - Dairyland (idle) 115 kV Power Line
Existing Structures
Wood Pole

Wilson - Dairyland Temporary Features
Pull Tension Site
Pole Work Area
Staging Area

Access Routes
Existing Paved Road
Existing Dirt/Gravel Road
Temporary Unpaved Road

N
0 500 1,000 Feet
0 150 300 Meters

Figure 30 Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line

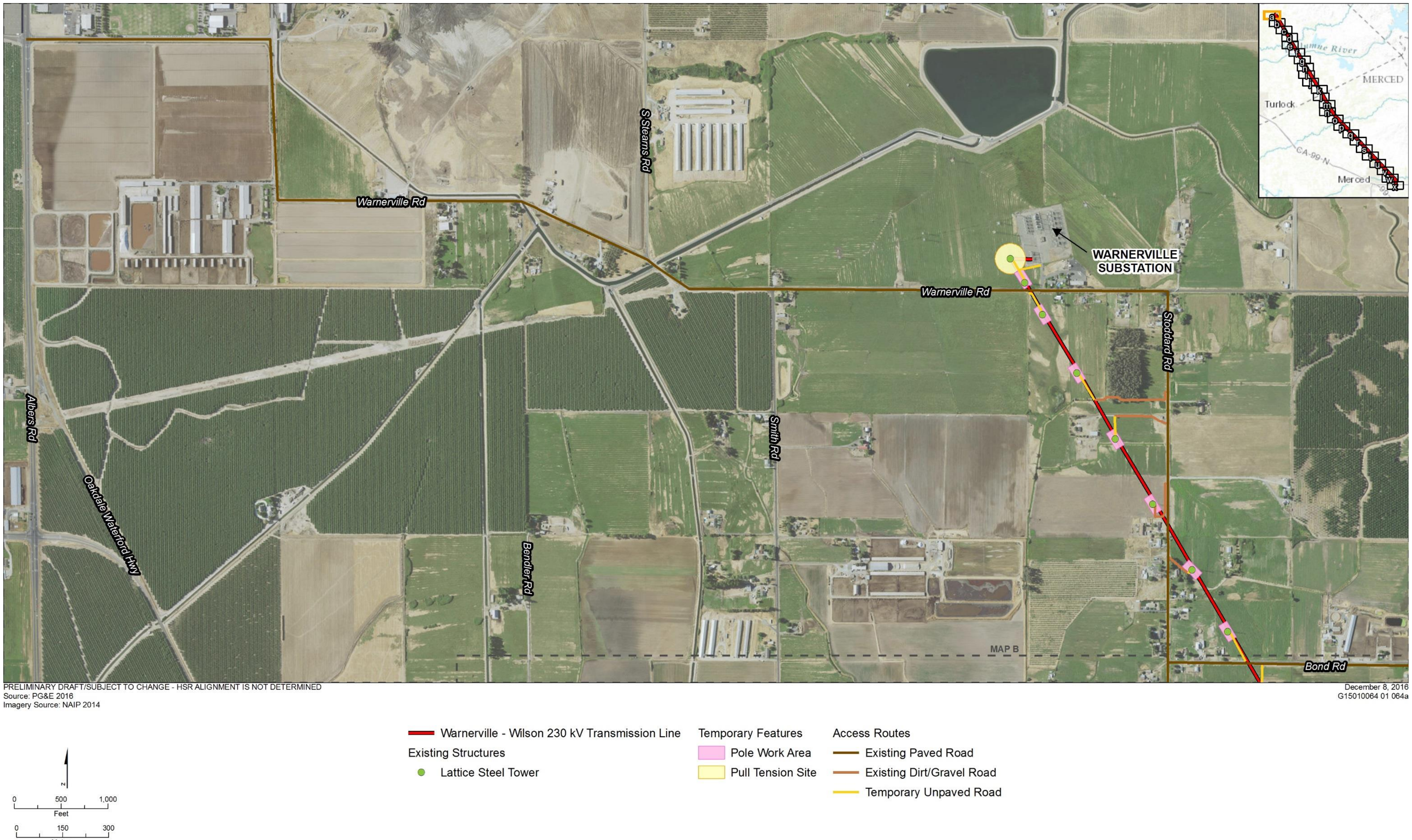

Figure 31 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

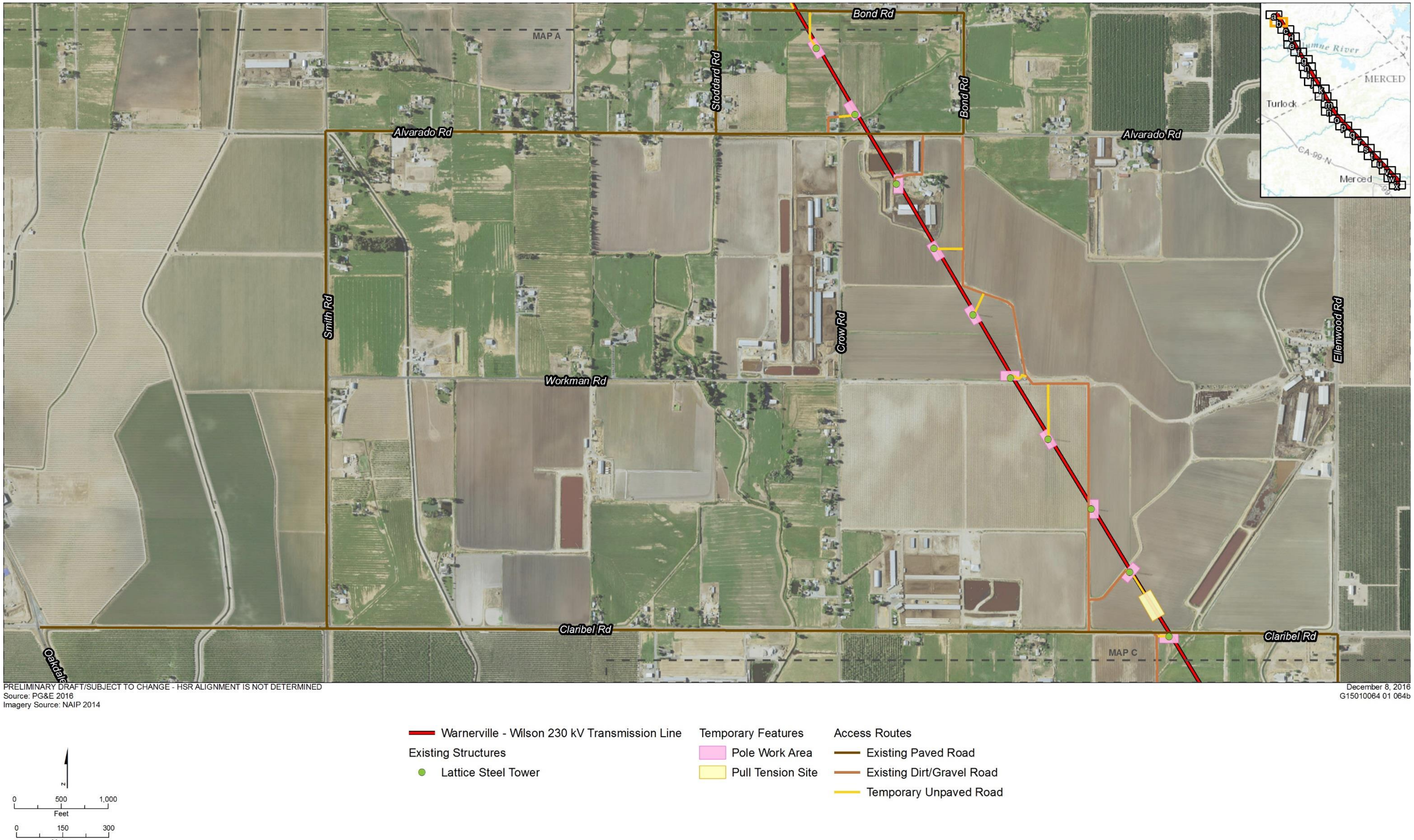

Figure 32 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

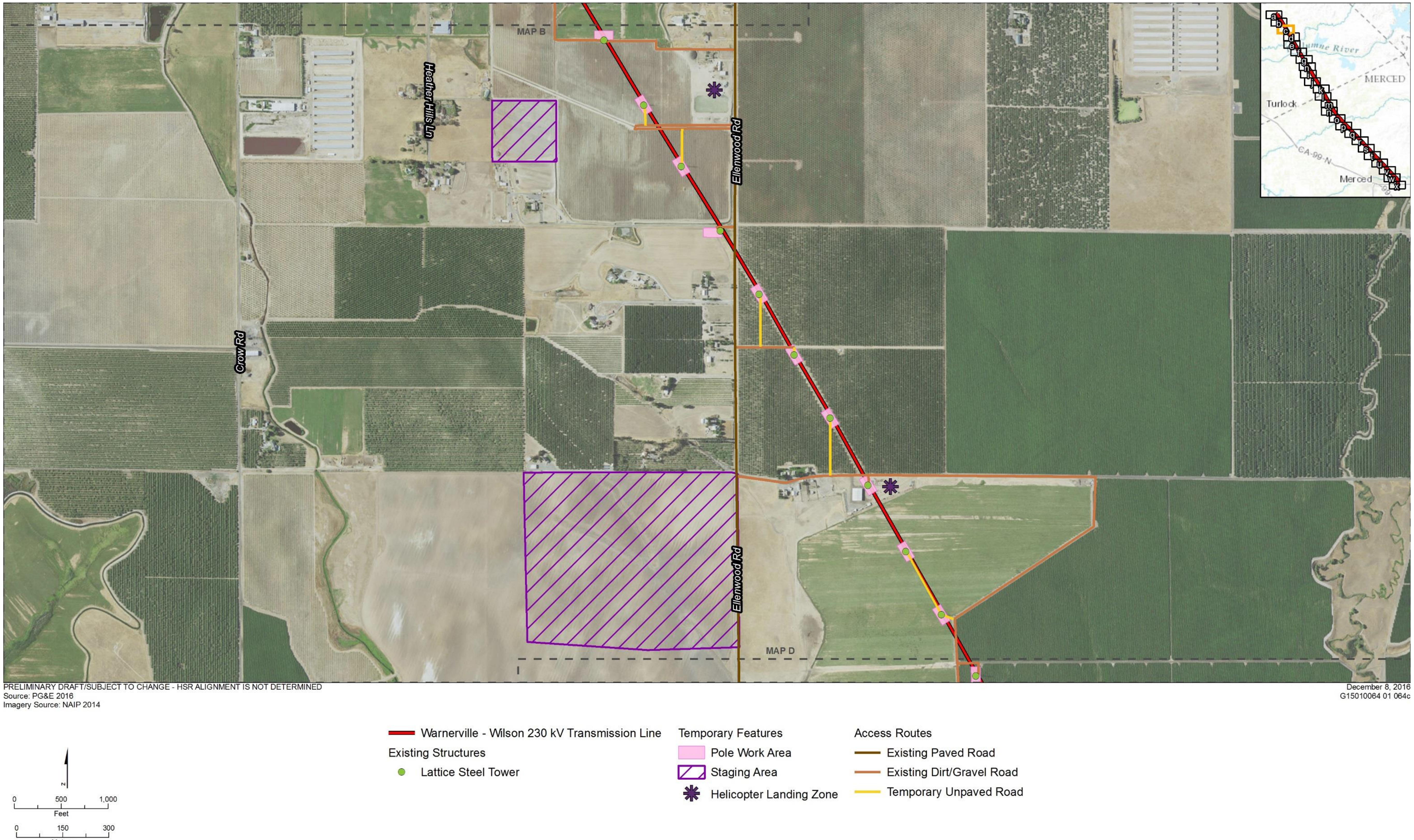

Figure 33 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

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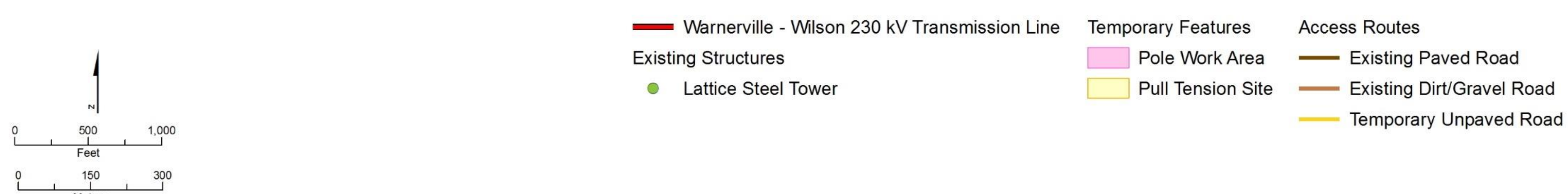

Figure 34 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

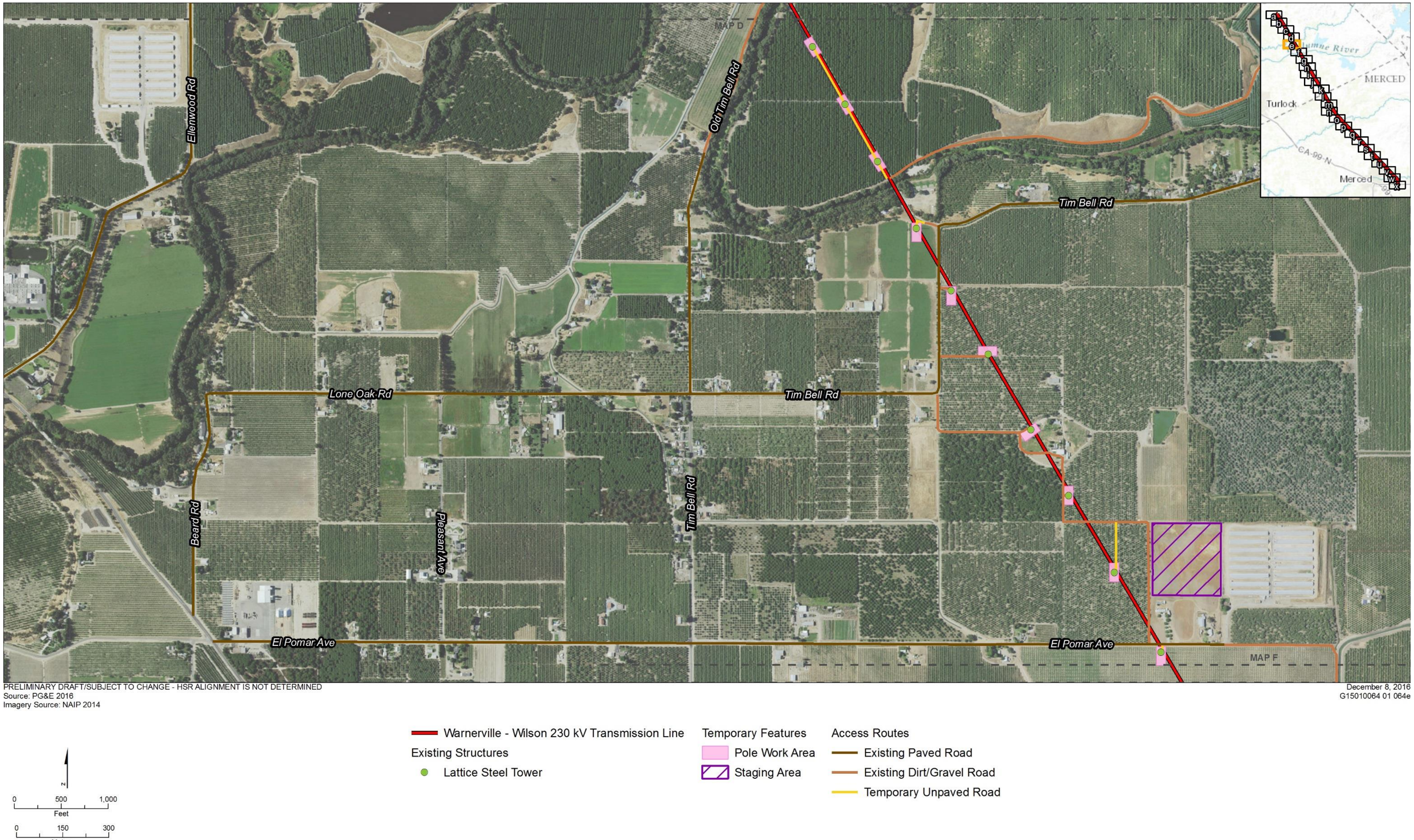

Figure 35 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

Warnerville - Wilson 230 kV Transmission Line

Existing Structures

- Lattice Steel Tower

Temporary Features

- Pole Work Area
- Pull Tension Site

Access Routes

- Existing Dirt/Gravel Road
- Temporary Unpaved Road

N

0 500 1,000 Feet

0 150 300 Meters

Figure 36 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

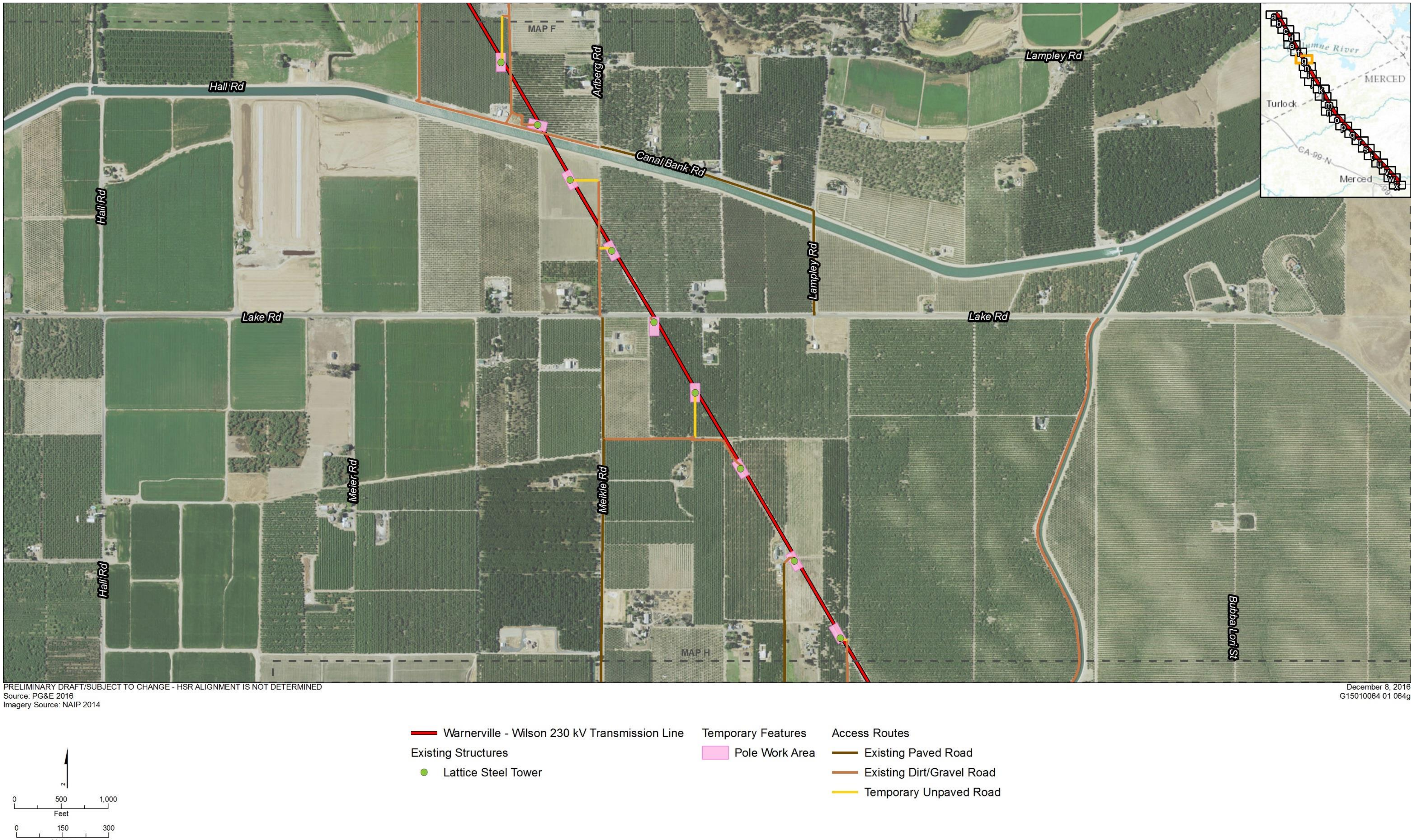

Figure 37 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

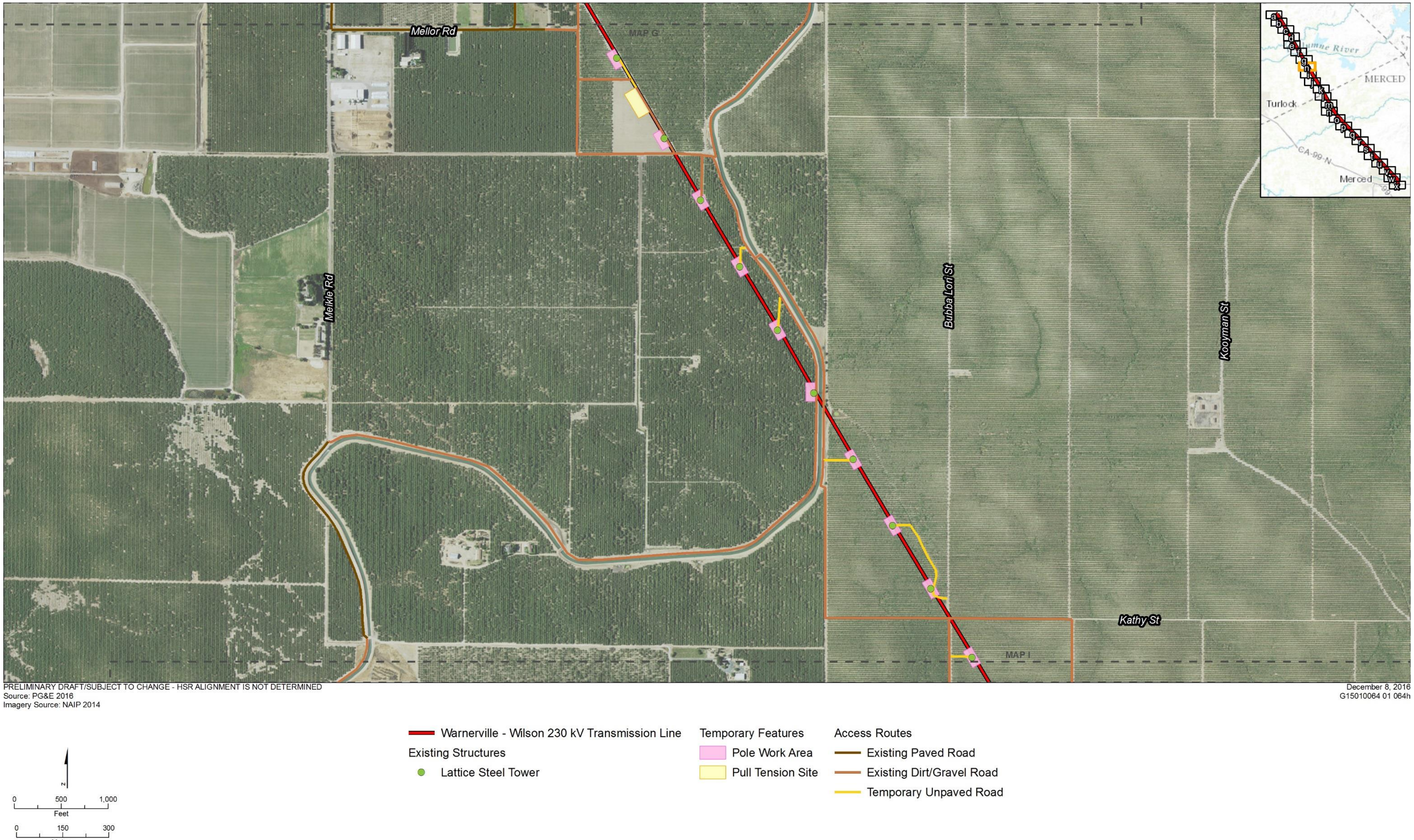

Figure 38 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

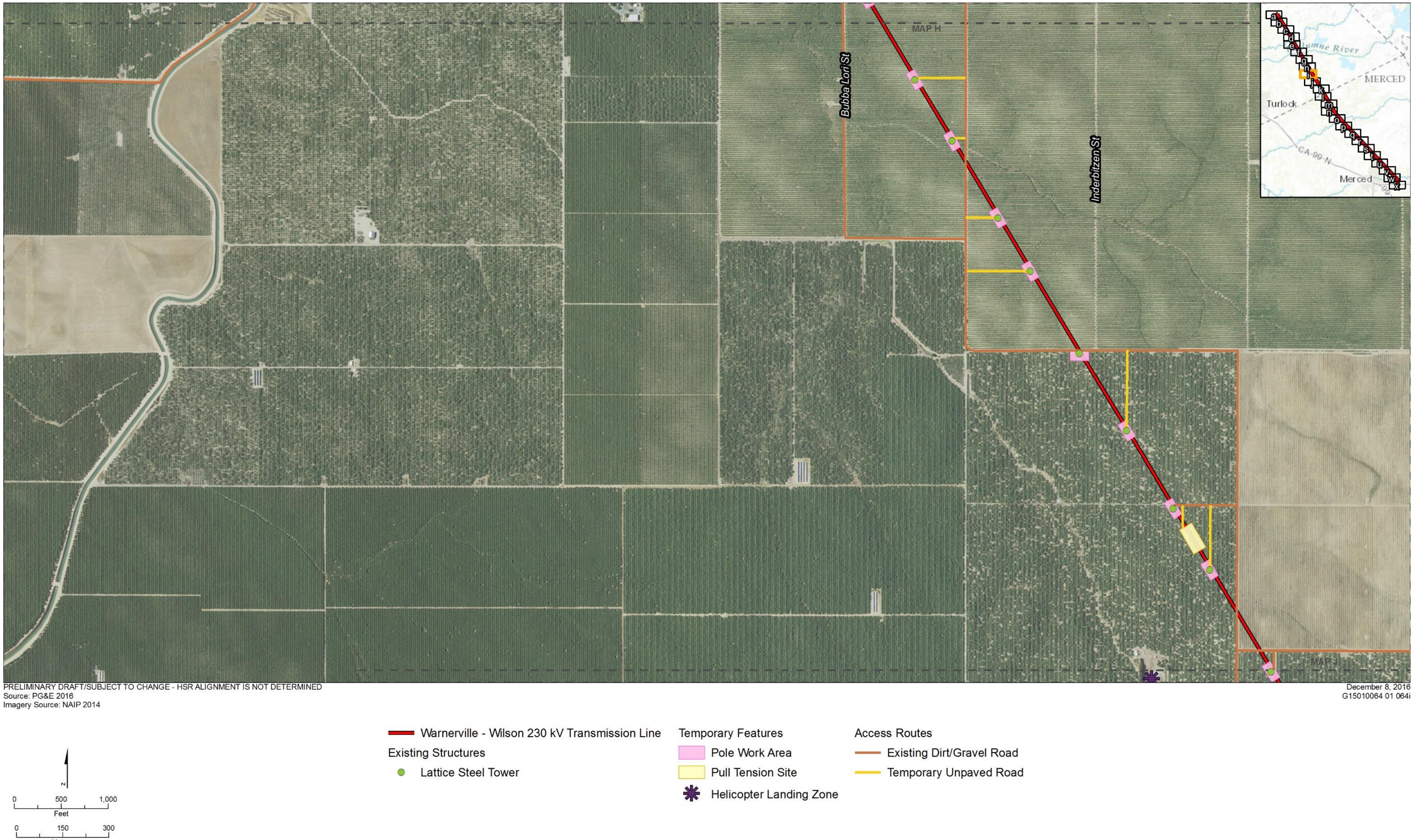

Figure 39 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

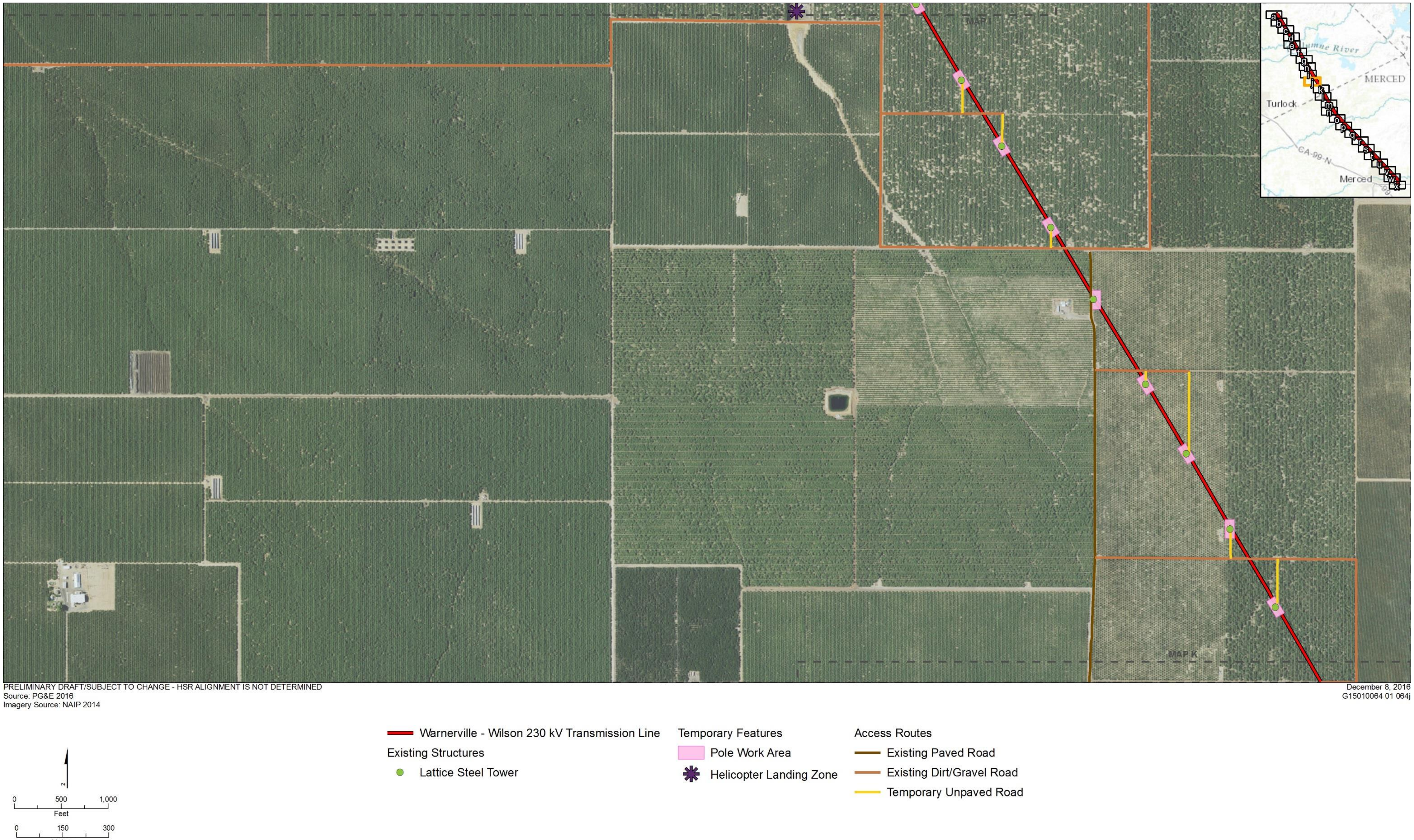

Figure 40 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

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Source: PG&E 2016
Imagery Source: NAIP 2014

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Warnerville - Wilson 230 kV Transmission Line
Existing Structures
Lattice Steel Tower
Temporary Features
Pole Work Area
Pull Tension Site
Access Routes
Existing Paved Road
Existing Dirt/Gravel Road
Temporary Unpaved Road

0 500 1,000 Feet
0 150 300 Meters

Figure 41 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

Figure 42 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

Figure 43 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

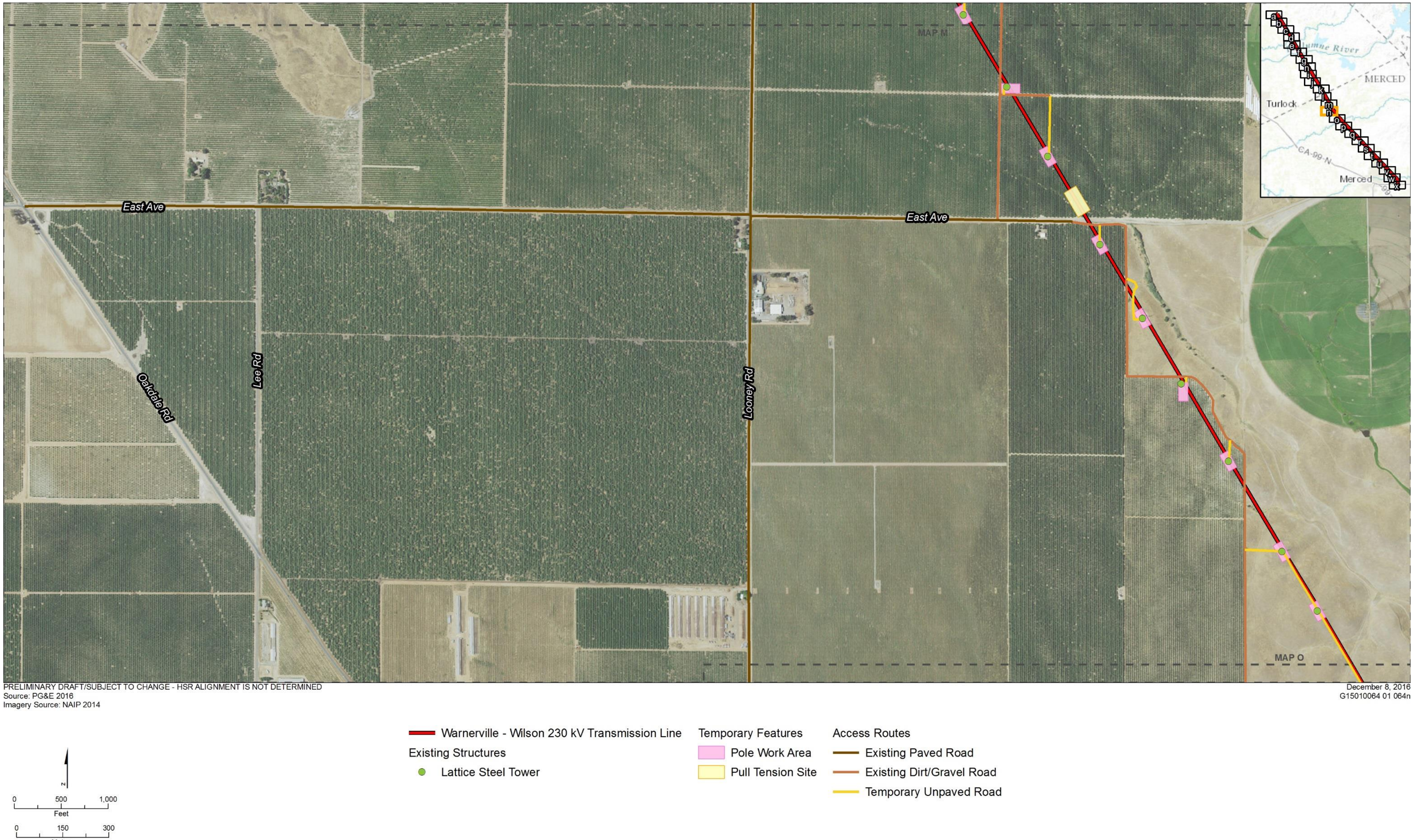

Figure 44 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 8, 2016
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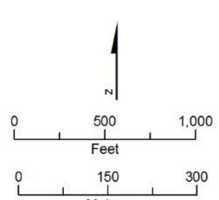


Warnerville - Wilson 230 kV Transmission Line
Existing Structures
Lattice Steel Tower

Temporary Features
Pole Work Area
Pull Tension Site
Helicopter Landing Zone

Access Routes
Existing Paved Road
Existing Dirt/Gravel Road
Temporary Unpaved Road

Figure 45 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

Figure 46 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

Figure 47 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

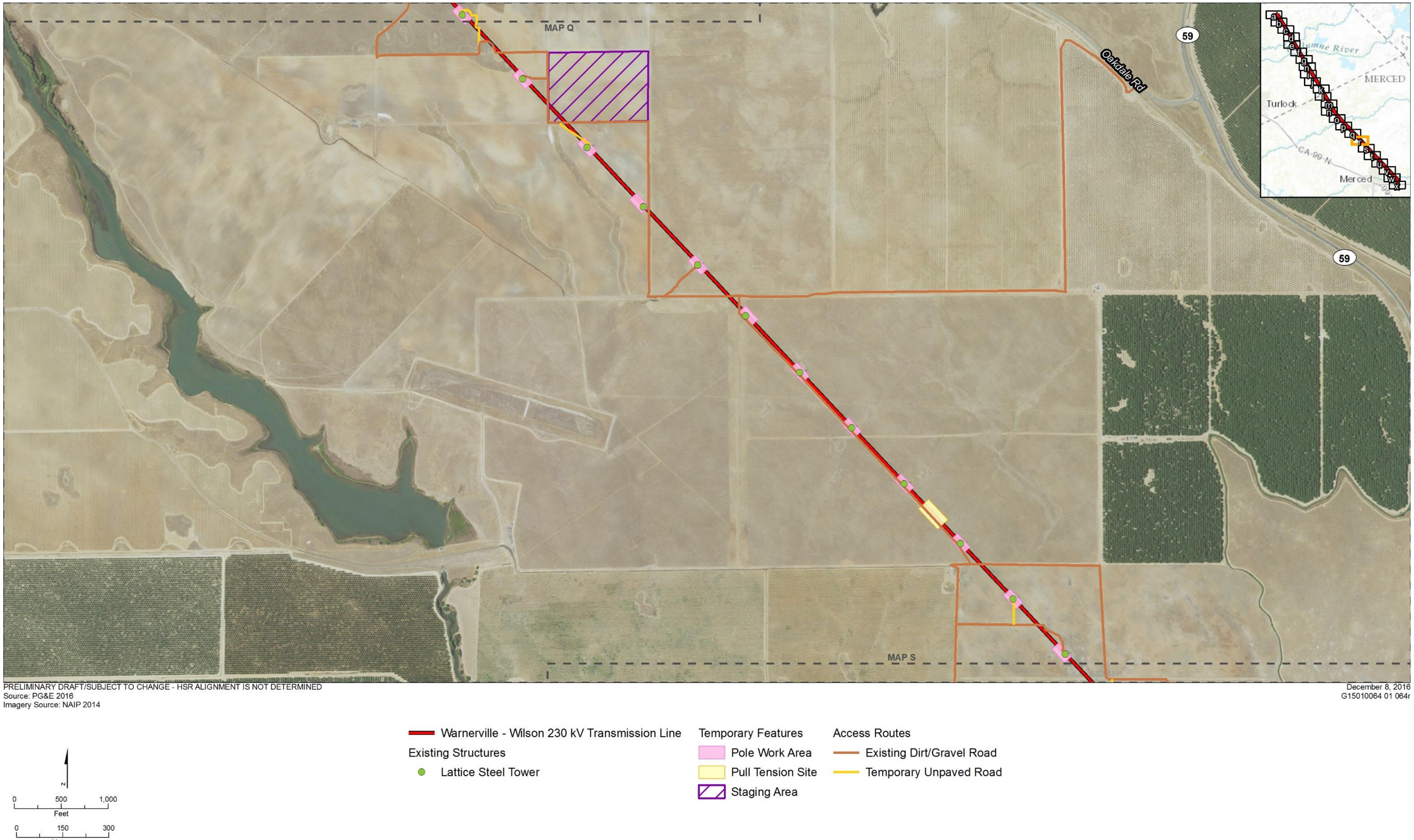


Figure 48 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

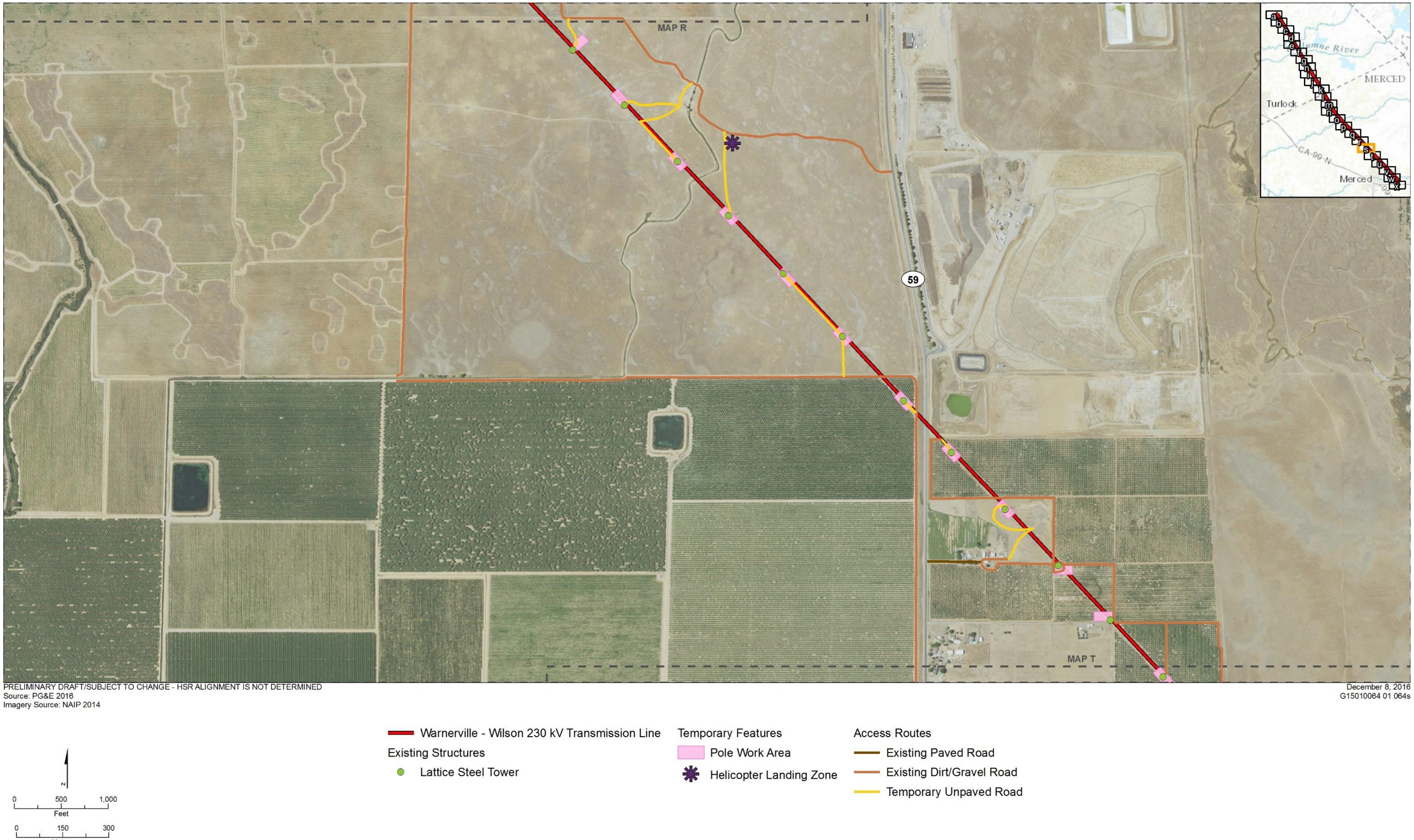


Figure 49 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

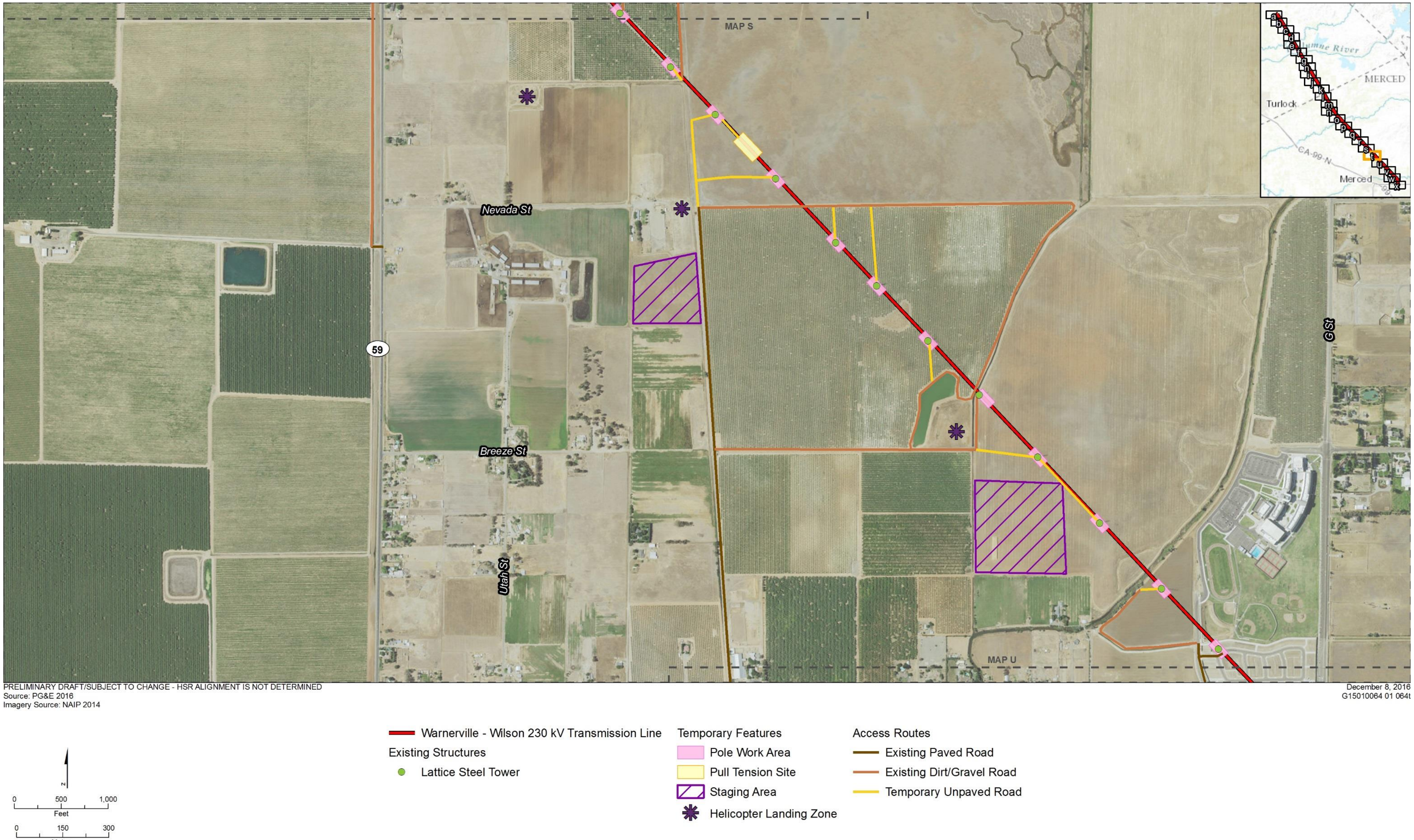
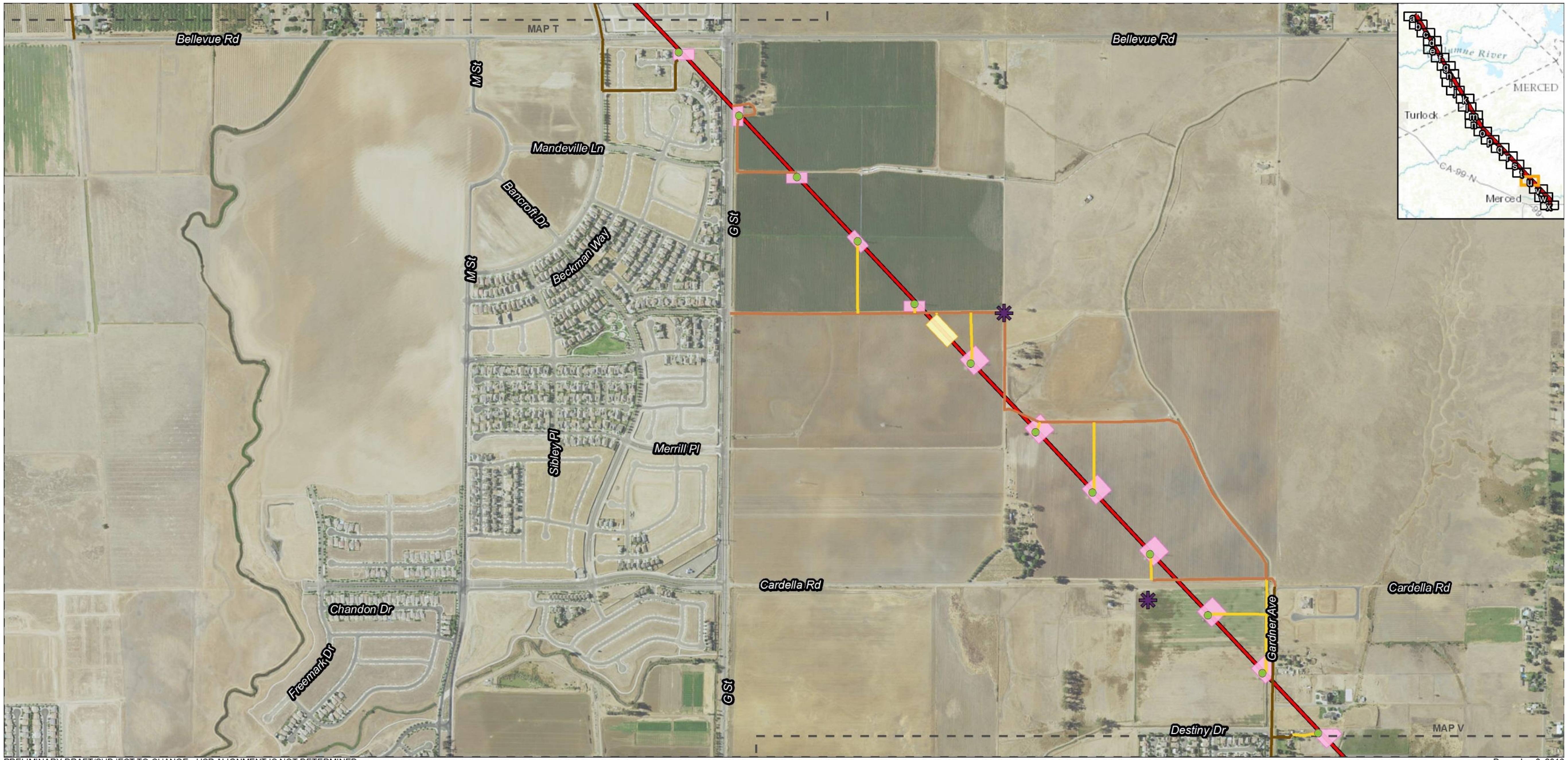


Figure 50 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: PG&E 2016
Imagery Source: NAIP 2014

December 8, 2016
G15010064 01 064u

Warnerville - Wilson 230 kV Transmission Line
Existing Structures
Lattice Steel Tower

Temporary Features
Pole Work Area
Pull Tension Site
Helicopter Landing Zone

Access Routes
Existing Paved Road
Existing Dirt/Gravel Road
Temporary Unpaved Road

0 500 1,000
Feet
0 150 300
Meters

Figure 51 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

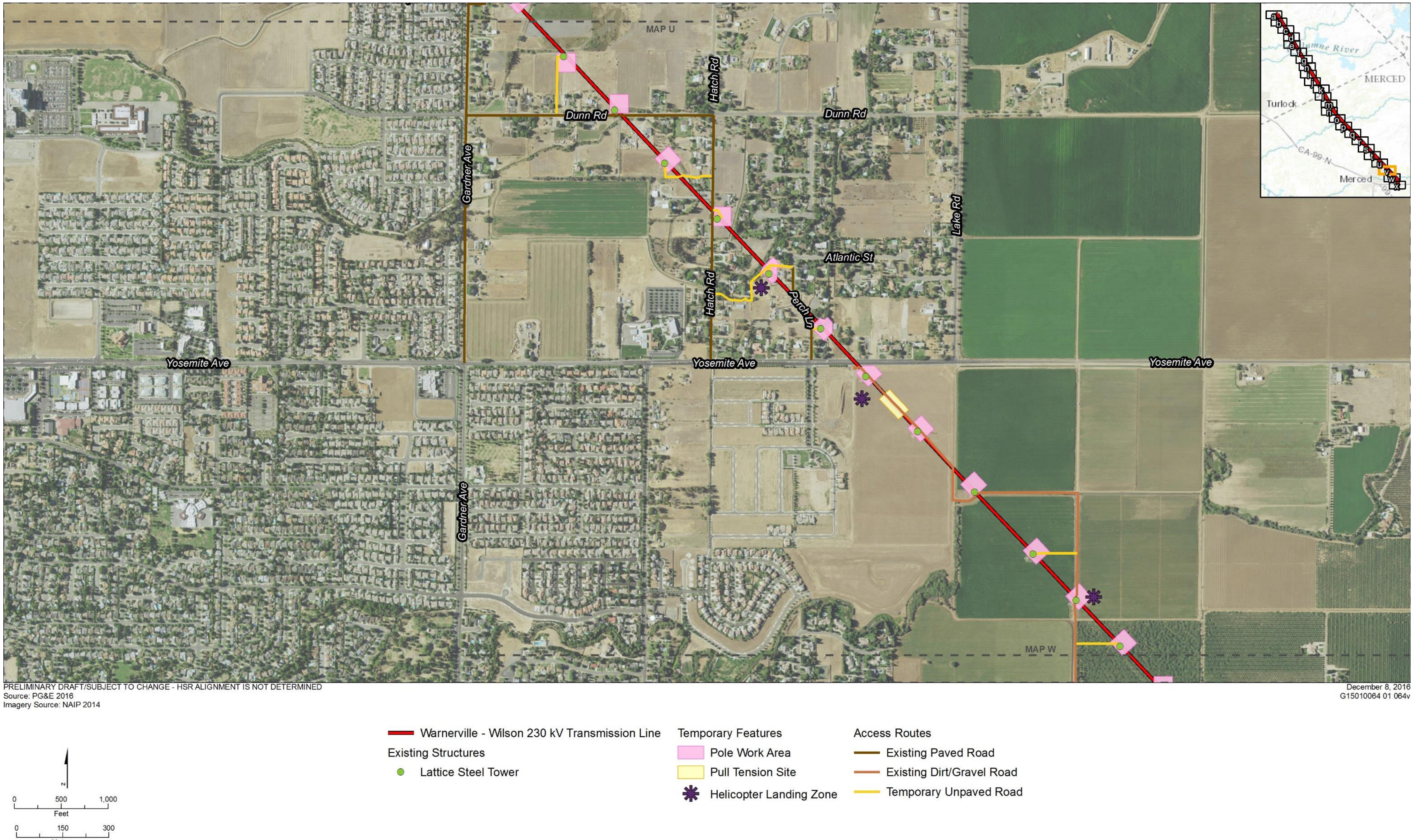


Figure 52 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

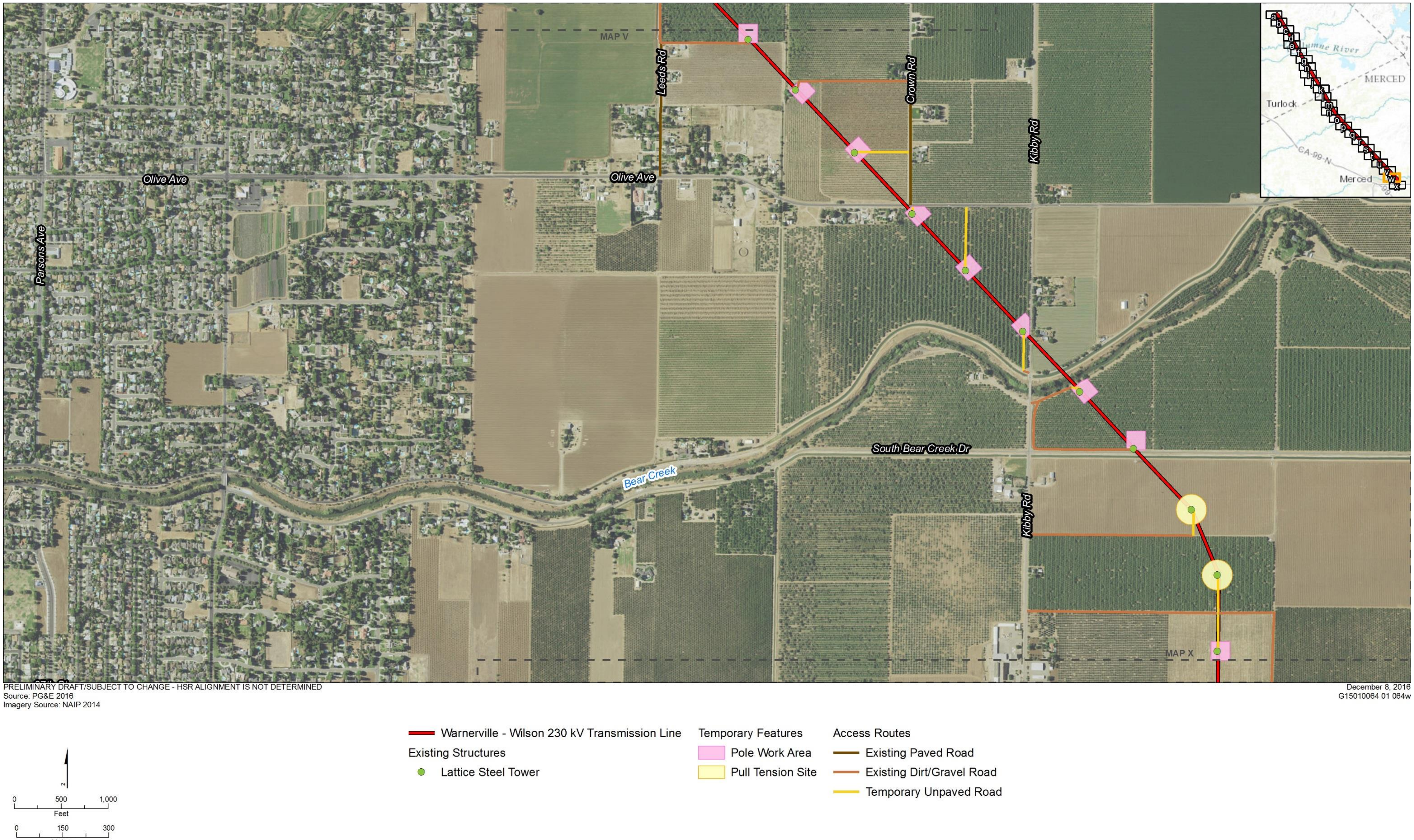


Figure 53 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

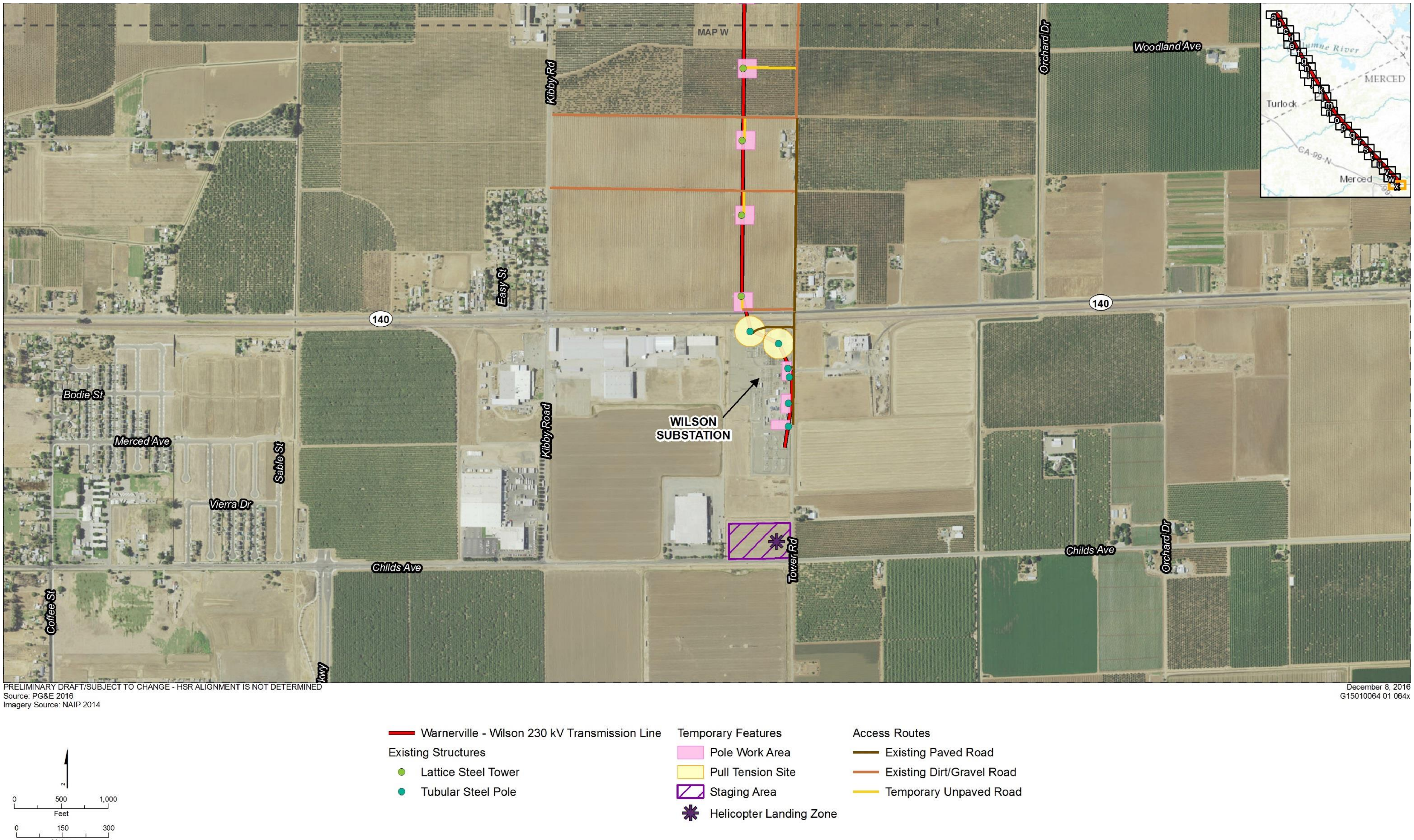


Figure 54 Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line

2.4.2 Easement Requirements

Table 2-3. Easement Requirements, details the existing easement for each line that would require reconductoring.

Table 2-3 Existing Easements

Alignment	Existing Easement/Per Line (feet)
Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line	65 foot (25 foot westerly / 40 foot easterly)
Site 6 – El Nido, Los Banos – Oro Loma – Canal 70 kV Power Line	22 foot to 40 foot (20 foot from centerline)
Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line	75 foot
Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line	20 foot and franchise

Source: PG&E 2016

Temporary lane closures along streets as required for construction activities would be coordinated with local jurisdictions. PG&E is a member of the California Joint Utility Traffic Control Committee, which in 2014 published the Work Area Protection and Traffic Control Manual. The traffic control plans and associated text depicted in this manual conform to the guidelines established by the Federal and State Departments of Transportation. PG&E would follow the recommendations in this manual regarding basic standards for the safe movement of traffic upon highways and streets in accordance with Section 21400 of the California Vehicle Code. These recommendations include provisions for safe access of police, fire, and other rescue vehicles. In addition, PG&E would obtain roadway encroachment permits from the local jurisdictions, if required.

2.4.3 Major Construction Activities

This section describes the construction methods that would be used to complete the various components of the project, including replacing existing conductor (reconductoring), replacing existing poles, modifying existing lattice steel towers as well as substation expansions.

2.4.3.1 Power Line Reconductoring

Power line reconductoring would require:

- staging areas/helicopter landing zones/pull and tension sites;
- access roads;
- removal of existing wood poles;
- tower modifications;
- new structure installation;
- substation modifications;
- vegetation clearance and removal;
- erosion and sediment control and pollution prevention;
- best management practices (BMPs); and
- site cleanup and waste disposal.

Transmission and power lines will be designed to be bird and raptor-safe in accordance with the applicable recommendations presented in Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006) and Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012).

Staging Areas/Work Areas/Helicopter Landing Zone/Pull Sites

Staging Areas

Construction of the project would require temporary staging and storage areas to store materials and equipment during the construction process. Materials and equipment typically staged at these areas would include:

- construction materials (e.g., tower steel bundles, tubular poles, anchor bolts, rebar, conductor, insulators and hardware);
- construction vehicles and facilities (e.g., heavy equipment, light trucks, construction trailers with electrical and communications connections, and portable sanitation facilities);
- crew vehicles;
- material that would be removed from the existing transmission/power lines (e.g., conductor, steel, concrete, and other debris), which would be temporarily stored in staging areas as the material awaits salvage, recycling, or disposal; and
- portable stations for concrete clean-up. The establishment of such stations at staging areas throughout the project area would minimize time between the concrete pour and truck cleanout. The locations of all such stations would be approved by an environmental monitor. Each cleaning station would include dike walls and tarping to allow washed materials to be contained properly for disposal.

For Site 6 – El Nido and Site 7 – Le Grand Junction/Sandy Mush Road options for staging areas associated with the lines to be reconductored, have been identified. It is anticipated that each staging area would be 5 acres or less in size, although the entire identified area is assessed from an impacts perspective. It is anticipated that staging would occur within the fenceline of the Site 7 – Wilson, Wilson Substation; as well as the permanent impact area associated with the Site 6 – El Nido, El Nido Substation and Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station. Various existing PG&E industrial facilities or private parcels in the general project area may be used as temporary staging areas to facilitate project activities throughout the duration of construction. The footprints would vary depending on the area available for use at the time of construction and project needs. No substantial site preparation would be necessary.

Towers and Poles Work Areas

Modifications to towers, removal of existing poles, and assembly and installation of new poles would require a maximum 0.3-acre work area at each structure site. Site preparation is not expected to be necessary for the majority of the tower and pole staging areas; however, for purposes of this environmental analysis, surface blading, grading, and filling with dirt/gravel to create a stable and level work pad may occur on an as-needed basis. Vegetation/crop removal, tree trimming, and matting or plating of drainage crossings may be required for vehicle access.

Construction materials would be delivered using line trucks and staged near existing structures. Construction vehicles would access staging areas using existing paved, dirt, and gravel roads and overland travel routes. For remote or environmentally sensitive areas, helicopter access may be required.

Pull Sites

For Site 6 – El Nido, up to 49 pull sites would be required for reconductoring activities. For Site 7 – Le Grand Junction/Sandy Mush Road up to 37 pull sites would be required for reconductoring activities[5]. For Site 7 – Wilson up to 3 pull sites would be required. The average distance between pull sites for the wood poles and TSP/lattice steel tower/lattice steel poles would be 1 to 2 miles and 2 to 3 miles, respectively. These pull sites would be used during construction to stage conductor-pulling trucks and conductor reel trucks to install the new conductors onto the self-supporting lattice steel towers, lattice steel towers, and TSPs. Pull sites would average approximately 1 acre (300 feet in length by 150 feet in width).

[5] For the pull tension site located adjacent to Robertson Tree Boulevard associate with Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line, PG&E will locate construction activities such that they will not disturb, remove, or in any way affect, the protected resources associated with Robertson Boulevard Tree Row.

The pull sites would be located within the larger potential pull site areas evaluated in this document, and would not require the use of the entire area. The exact locations and footprints of the sites would depend on conditions on the ground and would not be determined until just prior to construction. Site preparation is not expected to be necessary for most of the pull sites; however, some limited surface blading, grading, and filling to create a stable and level staging area would occur as needed. Vegetation/crop removal, tree trimming, and matting or plating of drainage crossings may be required for vehicle access to pull sites. Construction vehicles and equipment needed at the pull sites would be parked or staged within the project right-of-way or alongside access roads. Transport vehicles (e.g., crew-cab trucks and half-ton pickups) would be used to transport personnel to pull sites. To haul the conductor to the site, reel trailers with reel stands would be mounted on a line truck. On the line truck, pullers would be mounted to install the conductor. The old conductor would be removed from the sites on a line truck.

Access

The project would be accessed via existing paved roads, existing dirt/gravel roads and temporary unpaved access roads to be constructed. For purposes of analysis, any overland access routes are assumed to be temporary unpaved access roads. No new permanent access roads would be required for reconductoring. Table 2-4 presents estimated miles of each type of access road required for the project. Planned access routes may change depending on construction needs and site conditions at the time of construction. As shown, for Site 6 – El Nido, 6.27 miles of existing paved roads that would be used for the project would not require any substantial upgrades prior to project construction. Approximately 37.28 miles of existing dirt/gravel roads may require minor repair and maintenance, and approximately 7.41 miles of temporary roads would be constructed. For Site 7 – Le Grand Junction/Sandy Mush Road, 52.10 miles of existing paved roads that would be used for the project would not require any substantial upgrades prior to project construction. Approximately 73.87 miles of existing dirt/gravel roads may require minor repair and maintenance, and approximately 17.03 miles of temporary roads would be constructed. For Site 7 – Wilson, temporary access roads could be necessary and are accounted for within the study area. Upgrades would occur within the existing access road corridor and would include vegetation removal, grading, filling, or other repair and maintenance. Portions of some unpaved access roads may need to be reestablished and maintained through tree trimming, vegetation clearing, the addition of substrate, and some minor grading/blading. Temporary roads may require the removal of crops such as row crops, orchards, and/or grape vines. PG&E coordinates with landowners and compensates them for the temporary loss of revenue and reestablishment of the crop required to be removed to accommodate

Table 2-4 Types of Access Roads

Type of Access	Description	Potential Improvements Required	Approximate Distance (miles)		
			Site 6 – El Nido	Site 7 – Wilson	Site 7 – Le Grand Junction/Sandy Mush Road
Existing paved roads	Typically a highway or two-lane county road	None	6.27	0.00	52.10
Existing dirt/gravel roads	Typically a previously graded road with a dirt or gravel base	Minor road repair and maintenance, as needed	37.28	0.00	73.87
Temporary unpaved road	Typically a 12- to 18-foot-wide road located in areas with problematic access to establish a temporary road to facilitate construction	Vegetation removal, grading, and/or fill, as needed to establish road	7.41	0.00	17.03

Expanded substation/new switching station roads not included since they are included within the footprint impacts of the feature itself.

Typical equipment required for the construction of unpaved roads includes a grader, bulldozer, compactor, and haul trucks. Along access routes, existing gates may be repaired or replaced and new gates may be installed on an as-needed basis in coordination with relevant landowners. Overland travel would occur on relatively flat, grassy areas to reach various work sites. These overland routes are not expected to require grading, or filling; however, mowing of vegetation may be required.

Table 2-5 details existing access routes anticipated to be used by construction crews to access project components.

Table 2-5 Existing Access Routes

Project Component	Existing Access Routes
Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line	Brannon Avenue, Brannon Road, Herndon Avenue, and Millux Road
Site 6 – El Nido, Los Banos - Oro Loma - Canal 70 kV Power Line	A Lobue Road, Althea Avenue, Cambria Avenue, Cotton Gin Road, Main Street, Outside Canal, and Spillway Canal
Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line	Alvarado Road, Barclay Way, Beard Road, Bond Road, Bubba Lori Street, Buhach Road, Canal Bank Road, Claribel Road, Crown Road, Dunn Road, Durant Way, East Avenue, El Pomar Avenue, Ellenwood Road, Fisher Road, Gardner Avenue, Hall Road, Hatch Road, Holly Road, Lampley Road, Leeds Road, Lone Oak Road, Looney Road, Meikle Road, Mellor Road, Monte Vista Avenue, Old Tim Bell Road, Perch Lane, Portico Drive, Princeton Road, Shaffer Road, Smith Road, Stoddard Road, Tim Bell Road, Warnerville Road, and Webber Court
Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Power Line	Avenue 21 ½, Avenue 23 ½, Avenue 24, Avenue 26, Road 11 and Roosevelt Road

Pole Removal

Project construction would include replacement and modification of existing structures including wood poles, LDS poles, and lattice steel towers plus installation of new TSPs and potentially lattice steel towers.

Wood Poles

A hydraulic jack mounted on a line truck would be used to loosen wood poles and replacement or temporary wood poles installed to accommodate construction. Common among preservative wood treatments in the United States for utility poles are the chemicals pentachlorophenol, copper chromated arsenate (CCA), and creosote. In addition, anytime a pole is set deeper than usual, a 24” wide “wrap” is installed around the base of the pole at ground-line. This wrap has copper naphthenate acting as a preservative. Several of the wood poles that would be removed and replaced as part of the project consist of treated wood and may be wrapped around the base with copper naphthenate paper. Per PG&E protocols for the management and disposal of treated wood, removed poles would be placed in bins and transported to an appropriate disposal facility in accordance with applicable regulations. If the copper naphthenate paper is in poor condition and there is the possibility that it will tear off during transport, the paper will be safely removed in the field before transporting and treated as hazardous waste. If the poles need to be cut prior to transport, plastic sheeting would be placed under the saw equipment area to gather all shavings. Shavings would also be placed in bins for transport to the appropriate disposal facility. Poles would be cut into segments and then removed using a truck and trailer. Once the poles are removed, the soil removed while auguring the new pole hole would be used to backfill the remaining void. Any unused soil would be feathered in around the new pole site.

Lattice Steel Tower

Prior to removing the existing towers and poles, PG&E would install temporary utility shoofly's, as required, to temporarily support the lines, allowing them to remain in service during the reconfiguration process. The shoofly structures typically consist of wood poles, fitted with appropriate insulators, installed adjacent to the existing towers. The conductors would be transferred to the shoofly wood poles from the existing towers. Once the conductors are clear of the existing towers, workers would unbolt the tower sections and remove the towers so they could be lifted by a crane and placed on an adjacent work area for dismantling. After all tower sections are removed, the concrete foundations would be removed to about 6 feet below ground and the balance abandoned in place. This would be performed with a backhoe or air compressor-powered hand tools. The remaining hole would be backfilled to grade with the excavated material, supplemented as necessary.

Reinforcement

The reinforcement of lattice steel towers would be accomplished with crew trucks, pickups, and boom trucks. Some structures may be accessed on foot where only light modifications are needed. Structures with cellular equipment mounted at the top of the structure would require substantial reinforcement of the structure body. The cellular equipment that may interfere with work would be removed prior to modification of the structure. The reinforcement would be accomplished using pickups trucks and boom trucks. Once structure modifications are completed, any cellular equipment removed would be reinstalled on the structure.

Raise

Vertical structure raises would utilize a lifter to install the extension. The equipment would be positioned beneath the structure and lift the structure to facilitate installation of the new extension steel.

Helicopter Landing Zone, Staging, and Use

As described above, construction activities may require use of up to two helicopter at one time to facilitate access to the tower/pole work areas. To accommodate use of helicopters, helicopter landing zones may be collocated with staging areas. Approximately 16 potential landing zone sites, with a temporary footprint of not more than 1 acre have been identified for the Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line; however, the exact location and footprint along other alignments would depend on conditions on the ground and would not be determined until just prior to construction. The helicopter landing zone would be used to support helicopter operations (e.g., transport materials to and from pole/tower sites), as well as facilitate other activities, including staging and storing construction materials and equipment, refueling, and assembling construction materials. Ground access to the helicopter landing zone could be by overland access routes or existing roads. Some limited surface blading, grading, and filling to create a stable and level area may occur as needed. Vegetation/crop removal, tree trimming, and matting or plating of drainage crossings may be required for vehicle access.

The helicopter flight path from the designated day-use landing zones would generally follow the existing alignment and avoid flying over residences when transporting material and crews. The helicopter would generally be stationed overnight at a public or private use airport located within approximately 5 miles of the proposed tower/pole modification.

The helicopter type would depend on availability at the time of construction; however, the actual helicopter to be used would not be larger than a Bell L3 (long ranger) with a load capacity of approximately 1,200 pounds. The total hours of operation for each helicopter would be an estimated 20 hours (five days of operation, four hours of operation per day, and two landings/take-offs per day), with a maximum of up to 30 hours (five days of operation, six hours of operation per day, and four landings/take-offs per day). It is not anticipated that residents would be required to temporarily vacate their homes; however, in the unlikely event that final construction plans require otherwise, all Federal Aviation Administration (FAA) requirements would be met and PG&E would coordinate with potentially affected residents (providing a minimum of 30 days advance notice) to minimize the necessary work duration and any resultant inconvenience.

Structure Installation

Temporary Structures

To facilitate safe conductor installation, temporary guard structures, snub poles, and line poles would be installed prior to reconductoring.

Guard Structures

Guard structures would be installed alongside roadways or at utility crossings to prevent conductor from sagging or falling into traveled lanes or into contact with other utility lines if the conductor loses tension during reconductoring activities. Guard structures would be installed at crossing locations before conductor pulling activities begin. The structures typically consist of paired, single-Y configured pole structures or paired wood poles with cross bracing designed to catch falling conductor; a network of cables and netting may also be tied onto these poles. A staging area up to 40 feet by 40 feet in size would be used to install the guard structures. The structures would be temporary direct-bury wood poles that typically extend up to 50 feet aboveground and 12 feet belowground. These poles would have a minimum of 25 feet of aboveground clearance. Final design would determine guard structure staging area locations. Guard structures would be installed from paved roads whenever possible, and would be located along roadsides in disturbed areas, causing relatively limited disturbance. Where this is not feasible, guard structure sites would be accessed by existing dirt roads and structures would be installed in a way that minimizes soil disturbance. As an alternative to the installation of guard structures, line or bucket trucks may be staged at crossings to minimize ground disturbance or to accommodate other construction-related needs.

The installation of guard structures may require temporary lane closures at the crossings along Highway 99, 132, 152, and 140, as required by the California Department of Transportation (Caltrans) for safety. Necessary city, county, or state encroachment permits would be obtained. Following reconductoring activities, guard structures would be removed, the holes would be backfilled, and the disturbed areas would be recontoured and reseeded as needed.

Snub Poles

Snub poles are single wood poles that would be used to facilitate pulling operations. Up to two poles would be installed at pull sites where the conductor cannot be directly attached to the structure because of structure design. Snub poles typically extend 70 feet aboveground and 10 feet belowground.

Snub poles are directly buried and may be guyed for stability. A line truck would be used to auger and set the wood poles. Following reconductoring activities, snub poles would be removed, the holes would be backfilled, and the disturbed areas would be recontoured and reseeded as needed.

Temporary Line Poles

Temporary lines may be required as part of the project to accommodate required line outages during construction. Based on current engineering, it is not anticipated that temporary poles would be necessary to support the temporary lines required for reconductoring activities. If required, the temporary lines would be supported by wood poles and three-pole wood structures that would be guyed for stability and range in height from approximately 40 to 90 feet.

Permanent Structures

Typical dimensions for transmission and power line structures are provided in Table 2-6. Structure modification/installation would typically require four to five truck trips to each structure location to install a new structure and remove an existing structure. New structures would have non-reflective finishes.

Table 2-6 Summary of Typical Structure Dimensions

Structure Feature	Structure Type	Approximate Metrics	
Pole Diameter	TSP	3 to 4 feet	
	Wood and LDS Pole	1 to 2 feet	
	Temporary Wood Pole	1 to 2 feet	
	Self-Supporting Lattice Steel Tower	4 feet per footing	
Auger Hole Depth	TSP	19 to 24 feet	
	Wood and LDS Pole	6.5 to 16 feet	
	Temporary Wood Pole	6.5 to 16 feet	
	Self-Supporting Lattice Steel Tower	6 to 12 feet	
Footprint	TSP	2 to 13 square feet (permanent)	
	Wood and LDS Pole	1 to 3 square feet (permanent)	
	Temporary Wood Pole	1 to 3 square feet (temporary)	
	Self-Supporting Lattice Steel Tower	600 to 800 square feet (permanent)	
Number of Poles/Towers		Existing	New
	TSP	0	12
	Wood Pole	601	601
	Self-Supporting Lattice Steel Tower	241	241
Average Pole/Tower Work Area	TSP	0.30 acre	
	Wood and LDS Pole	0.05 acre	
	Temporary Wood Pole	0.06 acre	
	Self-Supporting Lattice Steel Tower	0.30 acre	
Approximate Total New Permanent Footprint		0.00 acre	

Source: PG&E, 2016
Existing structures not proposed to be replaced are not included in this table.

Tubular Steel Poles

Each new TSP would be delivered and staged at a new TSP site or next to a TSP that it would be replacing. A crane would be used to assemble the TSP. Installation of TSPs typically would include the following steps for site preparation, foundation installation, and TSP installation. To prepare the site, required best management practices would be implemented. A work area would be prepared by surface blading or minor grading to create a level surface at TSP locations on an as-needed basis. Once TSP work areas are prepared, a line truck or boom truck with a small crane mounted on a flatbed would be used to haul foundation forms, anchor bolts, rebar, and pole structures to the TSP locations. The truck would also be used to place foundation forms, anchor bolts, and rebar prior to pouring the concrete for the foundations. A local concrete truck (i.e., a four wheel-drive mixer capable of delivering 10 yards of concrete) would then deliver and pour concrete for the TSP foundations. Depending on site-specific conditions, one of two construction methods—concrete-pier or micropile foundation—would be employed to construct the TSP foundation.

Concrete-Pier Foundations

Concrete-pier foundations would be 5 to 8 feet in diameter and 18 to 23 feet in depth. They generally are constructed using the following steps:

- Auger new hole using drill rig (track or wheel mounted)
- Install foundation forms, rebar, and anchor bolts
- Pour concrete foundation
- Remove forms and place gravel around and groom the base area

Micropile Foundations

Micropile foundations consist of up to 12 composite piles constructed in a 5-to-6-foot-diameter array. Individual composite piles consist of up to a 9-inch-high strength steel casing, high-strength all-thread rebar, and grout. Composite piles would be embedded up to 30 feet below ground. Micropile foundations are generally constructed using the following steps:

- Drill multiple batter shafts 6 to 8 inches in diameter with platform-mounted drill rig
- Install anchor bolts in batter shafts, grout/slurry backfill on shafts
- Install steel/concrete cap on micropiles

Following the installation of concrete-pier and micropile foundations, a line or boom truck would be used to remove the form. The new TSP would then be installed using a crane to place the TSP on the foundation. The existing conductor would then be transferred to the new TSP using a line truck or by hand using ropes and the new conductor would be pulled while existing conductor is removed. Once the conductor has been replaced, the existing poles would be removed by crane and the remaining void would be backfilled. Excess soil on site would be feathered around the work area or placed consistent with applicable requirements and in consultation with the landowner. A backhoe would be used to place gravel around the TSP foundation after the formwork has been removed and to groom the area surrounding the TSP installations.

Portable washing stations would be established at various locations throughout the project alignment to minimize time between the concrete pour and truck clean out. These stations would include dike walls and tarping. Equipment would be washed and contained in accordance with local encroachment permits. Excess construction materials would be transported to an area service center or other appropriate facility for disposal in accordance with applicable laws. Washed materials are typically allowed to dry before transport and disposal.

Self-Supporting Lattice Steel Towers

Placement of each lattice steel tower would require four foundations, one for each structure leg. For drilled pier foundations, each hole would be about 4 feet in diameter and 11 to 15 feet deep. Workers would place reinforcing steel in each hole along with stub angles, which become part of the tower leg itself. Concrete forms that reach up to 2 or 3 feet above natural ground level would be placed over each hole, and concrete would be placed around the reinforcing steel and stub angles up to the top of the form. The diameter of the concrete forms above ground (tower footings) would be approximately 2.5 feet, dependent on localized soil parameters and final structure design requirements.

Steel tower components, packaged in bundles by tower type, would be dispatched to the staging areas or to the tower site itself. Individual towers that are assembled immediately adjacent to the tower foundations would be raised into place using a large crane. A smaller crane would also be used to assemble tower sections and to lift heavy steel members into place during assembly.

Individual towers that are assembled at staging areas would be transported to the tower locations by helicopter. PG&E could install towers by helicopter at certain locations to lessen impacts to sensitive habitat or where access is difficult. A typical tower would require two to three “lifts” or trips by helicopter to each lattice tower location. The first lift would transport the lower portion of the tower and subsequent lifts would transport the upper portion(s) of the tower. After the structure is set on the foundation, crews would tighten all bolts, attach insulators to the cross arms, and prepare the towers for the conductor stringing operation.

Wood and Light-Duty Steel Poles

The first step to install wood and LDS poles, including temporary and permanent poles, would be to excavate a pole hole using an auger. Depending on the pole size, the hole dimensions would be 3 to 4 feet in diameter and 7 to 16 feet in depth. Following excavation, the poles, insulators, and hardware would be delivered to the pole work area and assembled. The poles would then be placed in the hole using line trucks or cranes, the remaining void would be backfilled, and the surrounding area would be compacted. Poles would be direct buried (no foundation or footing) and may be guyed for stability. Once the pole is embedded and the surrounding area is compacted, additional hardware would be installed using a bucket truck. LDS poles would be manufactured in pieces that are engineered specific to a pole location. The pole pieces are closed at each end. The bottom piece of the pole would be placed in the hole; the top piece would have the hardware assembled to it on the ground. The poles would be assembled by having a truck-mounted crane lift the top piece and lower it onto the lower pole section. Soil would be backfilled around the newly installed pole to fill any remaining void.

Reconductoring

Reconductoring Activities

During reconductoring activities, when existing conductor is replaced with new conductor, the existing power line and any distribution lines that cross or are collocated on the line could be taken out of service (known as “taking a clearance”). To avoid potential safety concerns, a road closure or a rolling stop would be arranged for any locations where lines cross over roads before conductor installation begins. Any road closures that must occur on private and county roads typically would not exceed a few minutes in duration and would be coordinated with the county or landowner. Alternatively, guard structures may be installed at road crossings, as described above, in lieu of road closures.

To replace conductor, the existing conductor first would be detached from its support structure and temporarily lifted. Rollers then would be installed at the conductor’s attachment point, and the conductor would be placed onto the rollers. The rollers would allow the conductor to be pulled through each structure until the conductor is ready to be pulled up to the final tension position. Installing rollers and detaching the existing conductor typically would require one bucket truck. Crews would access each tower or pole staging area by pick-up truck or bucket truck using existing access roads, when possible. For each line proposed to be reconductored, one dump truck would be required to remove materials. Crews may also need to access mid-span locations to structurally reinforce splices (joints where conductor is connected) along the existing conductor to avoid conductor breakage during pulling operations. These locations may be accessed by truck, helicopter, or foot, depending on site conditions at the time of construction. It is not anticipated that reconductoring work would require closure of Highway 99, 132, 152, and 140 or use of a helicopter at any of the crossing locations. As indicated above, temporary lane closures may be required during the installation of guard structures.

Once the rollers are in place for an entire section of conductor, the existing conductor would be pulled out of place. A cable would be attached between the old conductor and new conductor, which would be on a reel attached to a line truck at a pull site. A line truck with a drum puller and empty conductor reel would pull the old conductor onto the reel, where it would be collected for salvage. Reel stands mounted on a line truck at the pull site would feed new conductor along the rollers that were previously installed at each structure, while also maintaining tension in the line so that it does not sag to the ground. After the conductor is pulled into place, conductor sags would be adjusted to required tensions. The conductor would then be clamped to the end of each insulator as the rollers are removed. The final step in the conductor installation would be to install vibration dampers and other accessories as necessary. Old conductor would be removed from sites on a line truck.

Packing crates, spare bolts, and construction debris would be picked up and hauled away for recycling or disposal during construction. PG&E would conduct a final inspection to confirm that cleanup activities have been successfully completed.

Distribution Switching Operations

As part of ongoing operation and maintenance of the distribution system, PG&E’s Distribution System Operations group would manage distribution clearances and balance the system by routing power to different lines. This normally involves turning existing distribution switches on and off, and installing additional switches if needed. Distribution switches may be located along the distribution lines that are being taken out of service or along other distribution lines that may be affected by taking a line out of service. Some switches are operated at a central location, such as a substation, or are controlled remotely. Other switches are operated manually in the field by operations personnel, using a bucket truck or similar equipment. The location where switching activities would be required would vary depending on daily and seasonal power demand scenarios and generally is not possible to determine in advance. PG&E crews would perform this work as needed to comply with safety procedures, limit customer outages, and manage the operational needs of the system.

2.4.3.2 Substation Expansion/New Switching Stations

During construction, PG&E would comply with the *PG&E Code of Safe Practices* and its internal safety standards, which address topics such as the use of personal safety equipment (e.g., use of hard hats and eye and ear protection), the use of vehicular safety equipment (e.g., back-up warning beepers on construction equipment), and attendance at regular safety briefings. Construction power would be provided by existing adjacent distribution lines. A temporary overhead construction service tap and meter set would be installed typically inside the substation property.

Site preparation would begin with removal of existing asphalt paving and concrete foundation remnants from previous buildings, where necessary. The sites would be cleared of existing vegetation, and be graded to accommodate new facilities. After grading, excavation for the foundations would occur. Table 2-7 details the approximate total volume of materials to be imported or exported from the sites, as well as the truck trips required to handle these volumes. Approximately 800 cubic yards of materials would be imported or exported resulting in 2 to 3 truck trips per day over 33 days of the project implementation period.

Table 2-7 Volumes of Material Imported and Exported from the Project Sites and Required Truck Trips

Site	Material Removed (cubic yards)	Material Imported (cubic yards)	Total Material (cubic yards)	Truck Trips
Dutchman Switching Station	6,100	19,800	25,900	75
El Nido Substation Expansion	6,100	19,800	25,900	75
Wilson Substation Expansion (within fenceline)	6,100	19,800	25,900	75

Source: PG&E, 2016

Construction of the subsurface ground grid would follow grading and excavation. The grid is used to ground all above grade structures to mitigate any shock hazard. At the same time, fencing, and paved interior road would be installed, and aggregate would be placed throughout the remainder of the enclosed site. With the site secured, excavation for subsurface footings for all the aboveground structures would begin. Reinforced concrete footings and slabs would be poured for structure and equipment support. After the concrete is cured, the aboveground steel structures, circuit breakers, transformers, switchgears, buses, dead ends, and other electrical equipment, including associated control system hardware, would be installed. Approximately 3 acres of the expanded Site 6 – El Nido, El Nido Substation and approximately 5.5 acres of the Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station would be impervious upon completion of the construction. No additional impervious surface would result from the Site 7 – Wilson, Wilson Substation.

Structures would be erected to support buses, switches, overhead conductors, instrument transformers, and other electrical equipment, as well as to terminate incoming circuits. Supports for the aluminum bus structures would be fabricated from low profile tubular steel components. Structures within the substation would be grounded to the station-grounding grid. Equipment would be bolted or welded securely to slabs and footings to exceed Uniform Building Code seismic requirements. Additional equipment that would be installed includes a Modular Protection Automation and Control (MPAC) building, battery building, and metering, relaying, and communication equipment.

Temporary electrical lines would be installed within, or immediately adjacent to, the boundaries of the Site 7 – Wilson, Wilson and Site 6 – El Nido, El Nido Substations as these facilities must remain energized throughout construction. To support the final configurations of the substation expansions existing lines into and out of the substations may be reconfigured.

Access

Table 2-8 details existing access routes anticipated to be used by construction crews to access project components.

Table 2-8 Existing Access Routes

Project Component	Existing Access Routes
Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station	East Sandy Mush Road and South Bliss Road
Site 6 – El Nido, El Nido Substation	East Grant Road
Site 7 – Wilson, Wilson Substation (within fenceline)	Highway 140, North Tower Road

2.4.3.3 Water Usage

Water usage would generally be limited to dust suppression associated with construction activities. Water usage at each substation/switching station site is assumed to be approximately 3,000 gallons a day, per work area acre, totaling approximately 27,000 gallons, is assumed to support dust suppression. Note, during wet periods and depending on condition of soil moisture, dust suppression may not be necessary. Water would be obtained from the existing supplies of a local irrigation district or if the project location is near an agricultural operation, an agricultural operation may be contacted to arrange to access its water source, which could be a private groundwater well agricultural user. Potable water for construction personnel would be transported to the constructions site via construction vehicles.

Wastewater services would be provided to the construction workers by portable toilets. Waste would be disposed of at appropriately licensed off-site facilities.

2.4.3.4 Disturbance

Land Disturbance

The project is anticipated to require land disturbance distributed throughout the entire project area. Activities requiring soil disturbance include recontouring (e.g., minor grading, blading) of some existing access roads, temporary access roads, pull sites, work areas to accommodate construction vehicles and equipment, and grading associated with the expanded substation. Updates to previously analyzed components would also increase land disturbance. Based on current engineering, it is not anticipated that crops currently growing under the transmission and power lines would need to be permanently removed.

The approximate volume of soil that would be excavated for installation of structures required to support the reconductoring of the Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line an Los Banos – Oro Loma – Canal 70 kV Power Line, Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line and Wilson – Dairyland (idle) 115 kV Power Line would be approximately 409, 422, 5,389, and 286 cubic yards, respectively, which would be used to backfill the holes from the structures proposed to be replaced.

Table 2-9 details anticipated land disturbance in acres by project components.

Table 2-9 Anticipated Land Disturbance

Component	Temporary	Permanent
Site 6 – El Nido		
El Nido Substation	0.00	2.97
Oro Loma – Panoche Junction 115 kV Power Line	46.68	0
Los Banos - Oro Loma - Canal 70 kV Power Line	78.6	0
Site 7 – Wilson		
230 kV Tie-Line	0	83.05[1]
Wilson Substation	0	19.12[2]
Site 7 – Le Grand Junction/Sandy Mush Road		
115 kV Tie-Line	1.42	43.31[3]
Dutchman Switching Station	0	5.52
Warnerville – Wilson 230 kV Transmission Line	400.60	0
Wilson – Dairyland (idle) 115 kV Power Line	25.42	0
Site 6 – El Nido + Site 7 – Wilson	**125.28**	**105.14**
Site 6 – El Nido + Site 7 – Le Grand Junction/Sandy Mush Road	**552.72**	**51.80**

Source: PG&E 2016
1 Totals includes a 40 plus acre study area because the route of the alignment and reconfiguration needs to the Wilson Substation are unknown.
2 Reconfiguration occurs within the fence line of the existing substation; therefore, there is no new permanent impact.
3 Total includes the entire ROW although impacts would be substantially less (i.e., only where new structures are installed; no new roads anticipated)

Erosion and Sediment Control and Pollution Prevention during Construction

Construction activities include ground-disturbing activities such as grading and vegetation removal. Small, temporary stockpiles of excavated dirt may be located near the excavations for the new TSP foundations, self-supporting lattice steel towers, temporary wood or LDS poles. These materials would be used to backfill the holes left by removal of the existing structures/foundations. Stockpiles would be located away from or downgradient from waterways, and other sediment control BMPs would be implemented to manage temporary stockpiles. Construction debris, including removed structures/foundations, would be taken on a line truck with a trailer to an area service center for recycling or disposal.

Because these activities would result in disturbance in excess of 1 acre, coverage under the California State Water Resources Control Board (SWRCB) General Permit for Storm Water Discharges Associated with Construction Activity Order Number 2009-0009-DWQ (General Permit) would be required. To obtain coverage under the permit, Permit Registration Documents (including a Notice of Intent, a Stormwater Pollution Prevention Plan (SWPPP), a risk assessment, a site map, certification, and an annual fee) would be developed and submit to the SWRCB prior to initiating construction activities. In conjunction with the SWPPP, appropriate BMPs would be developed for each activity that has the potential to degrade surrounding water quality through erosion, sediment run-off, and other pollutants. These BMPs would then be implemented and monitored throughout construction by a qualified SWPPP practitioner.

Best Management Practices

Construction crews working on PG&E projects routinely use relevant BMPs to ensure crew and public safety and to avoid and minimize impacts on resources. At a minimum, the following BMPs would be implemented during construction of the project:

- **Litter and Trash Management**. All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area would be deposited in closed trash containers.
- **Parking Requirements**. Vehicles and equipment would be parked on pavement, existing roads, and previously disturbed or developed areas or work areas, as identified in this document. Off-road parking would only be permitted in previously identified and designated work areas.
- **Route and Speed Limitations**. Vehicles would be confined to established roadways and preapproved access roads, overland routes, and access areas. Access routes and temporary work areas would be limited to the minimum necessary to achieve the project goals. Routes and boundaries of work areas, including access roads, would be clearly mapped prior to initiating project construction. Vehicular speeds would be kept to 15 mph on unpaved roads with no posted speed limit.
- **Maintenance and Refueling Requirements**. All equipment would be properly maintained for the duration of construction. All refueling and maintenance of vehicles and other construction equipment would be restricted to designated work areas and located at least 100 feet from any downgradient aquatic habitat, unless otherwise isolated from habitat. Proper spill prevention and cleanup equipment would be maintained in all refueling areas.
- **Nighttime Lighting**. If temporary lighting is required for nighttime construction, it would be focused on work areas and directed on-site to minimize potential effects with respect to nearby sensitive receptors, particularly residences.
- **Prohibited Activities**. Trash dumping, firearms, open fires (such as barbecues), hunting, and pets would be prohibited at work sites.
- **Erosion Control Materials**. Only tightly woven netting or similar material would be used for erosion control materials, such as coir rolls and geo-textiles, within or adjacent to suitable habitat for sensitive species. No plastic monofilament matting would be used.

Cleanup and Post-Construction Restoration

During construction, construction debris would be picked up from work areas and stored in approved containers on site, and would be hauled to an area service center or other appropriate facility for recycling or disposal periodically during construction. PG&E would conduct a final inspection to ensure that cleanup activities have been successfully completed. Restoration activities would be conducted as needed and in coordination with landowners.

2.4.3.5 Construction Workforce and Equipment

On a typical work day, 15 to 20 construction workers would be at any one component of the project; however, because of the variety of work activities that may be completed concurrently, up to 45 workers may be distributed throughout the project site at any time. During line work, crews typically would be working at adjacent poles with activities not anticipated to last longer than one week as each structure. Table 2-10 provides the typical number of construction workers and equipment generally required for each construction activity and Table 2-11 details the equipment that is planned for use. Not all equipment or workers may be used during all stages of the activity. This table represents a preliminary equipment list; additional equipment and/or workers may be identified once project design is finalized or during construction if unexpected conditions are encountered.

As described below in Table 2-10, 45 workers per day would be required to construct the project at its peak. Construction would be performed by either PG&E construction crews or contractors, depending on the availability of PG&E construction personnel at the time of construction.

Contractor construction personnel would likely be from within the counties where the work is occurring or from adjacent areas and would be managed by PG&E construction management personnel. Construction efforts would occur in accordance with accepted construction industry standards. Construction activities would generally be scheduled during daylight hours (7:00 a.m. to 6:00 p.m.), Monday through Saturday. Nighttime construction would likely occur at the Site 7 – Wilson, Wilson Substation and Site 6 – El Nido, El Nido Substation and could occur on the lines proposed to be reconductored depending on clearance constraints. If a local noise ordinance limits construction to different hours; PG&E would either request a variance or comply with the ordinance if an exemption was not applicable.

Construction vehicles and equipment would be staged or parked within the project area rights-of-way, approved temporary construction easements, or alongside access roads. Although vehicles and equipment are anticipated to park primarily outside of travel lanes on public roadways, if road closures become necessary, they would be temporary and short-term and coordinated with the California Department of Transportation and/or local jurisdictions.

Table 2-10 Typical Construction Workers and Equipment

Activity	Number of Construction Workers	Equipment Quantity and Type
Reconductoring		
Site Preparation	5	1 backhoe 1 small bulldozer 1 truck with trailer 1 500-gallon water truck 1 light-duty pickup truck
Auger Holes	3	1 water truck 1 pickup truck 1 line truck with auger attachment
Haul Material	3	1 line truck with trailer
Tubular Steel Pole Installation	6 per crew	1 line truck with boom and crane 2 crew-cab pickup trucks 1 light-duty pickup truck 1 hole digger 3 cement trucks 1 backhoe
Tubular Steel Pole Delivery	2	1 pole delivery truck 1 pickup truck
Wood and LDS Pole Installation	20	3 pickup trucks 1 35-ton crane 3 line trucks 3 bucket trucks 3 light-duty pickup trucks 2 tractors 3 backhoes 8 small line/bucket trucks 1 dump truck 3 water trucks
Wood Pole Removal	6 per crew	2 crew-cab trucks 1 line truck with bucket and trailer
Tower/Pole Modification	6	1 200-ton crane
Conductor Installation	6 per crew	1 line truck or semi-truck with conductor reel 2 pickup trucks 1 line truck with bucket/crane 1 line truck with conductor puller 1 line truck with conductor tensioner

Activity	Number of Construction Workers	Equipment Quantity and Type
Substation Expansion/Switching Station Installation		
Survey	3	1 pickup truck
Substation Yard Grading	3	1 motor grader 1 pickup truck 1 semi truck with trailer to haul grader 1 Water truck 1 500-gallon water truck 1 light-duty pickup truck
Equipment Installation	6	1 aerial lift 1 bore/drill rig 1 cement and mortar mixer 1 concrete/industrial saw 1 crane 1 dumper/tender 1 forklift/bobcat 1 generator set 1 paver 1 paving equipment 1 plate compactor 1 pump 1 roller 1 rough terrain forklift 1 surfacing equipment 1 sweeper/scrubber 3 tractor/loader/backhoe 1 trencher 1 welder 1 water truck

Source: PG&E 2016

Table 2-11 Anticipated Construction Equipment

Equipment	Use
Aerial Lift	Lift crew members to make line connections
Auger	Drill holes for pole installation
Bore/drill rig	Installation of holes for new conduits
Cement and mortar mixer	Backfill of conduits
Crane	Lift heavy equipment and materials
Crew-cab truck or pickup truck	Transport workers
Dump truck	Earth movement associated with substation modification/expansion; trash removal
Excavator	Install mats, trenching
Fork lifts	Install mats
Gas crew truck (26,000 lbs.) with trailer	Transport equipment and materials
Generator set	Generate power for operation of tools
Hand-digging equipment	Use for air or hydrologic-operated tooling
Helicopter	Transport personnel workers and equipment
Line truck (with auger, puller, worker-lift bucket, and crane/boom)	Install and remove holes, poles, and conductor

Equipment	Use
Mechanics service trucks	Service and repair vehicles
Motor grader	Grade work areas and access roads
Paver and paving equipment	Asphalt installation
Pickup truck (1 ton)	Transport equipment and materials
Plate compactor	Grading
Puller/Tensioner/Reel (line truck or trailer-mounted)	Install conductor
Pump	Dewater if groundwater is encountered; water for dirt suppression, if necessary
Reel trailers with reel stands (semi-trailer or truck-mounted type)	Haul conductor
Roller	Asphalt installation
Rough Terrain Forklift	Activities associated with substation modification/expansion, including transport of poles
Saw-cutting equipment	Cut pavement for distribution placement underground
Semi-truck (with trailer)	Haul motor grader, conductor reel, or tubular steel pole
Surfacing Equipment	Asphalt surfacing
Sweeper/Scrubber	Clean roads, if necessary
Tensioner (line truck-mounted)	Install conductor
Tractor/loader/backhoe	Grade and remove foundation; backfill holes
Trencher	Excavate for placing distribution line underground
Vacuum trailer	Clean up potential concrete washout during foundation installation
V-groove puller	Install conductor
Water truck	Suppress dust
Welder	Welds associated with substation/switching station equipment installation
Worker-lift (truck-mounted)	Lift workers to perform work on structures

Source: PG&E 2016

2.4.3.6 Construction Schedule

Construction of the interconnection components and Site 6 – El Nido, El Nido Substation are assumed to begin in 2021 and completed within a two-year timeframe. The future operational load required for the HSR System, which is determined by ridership, would drive the implementation of the network upgrades. Based on currently available information, construction of the lines proposed to be reconductored would begin in 2031 and completed within a two- to three-year timeframe. Note, due to line outage restrictions, reconductoring of the two lines associated with Site 6 – El Nido (i.e., Oro Loma – Panoche Junction 115 kV Power Line and Los Banos – Oro Loma – Canal 70 kV Power Line) and the two lines associated with Site 7 – Le Grand Junction/Sandy Mush Road (i.e., Warnerville – Wilson 230 kV Transmission Line and Wilson – Dairyland (idle) 115 kV Power Line) would not occur concurrently. The proposed construction timetable for reconductoring and substation modifications is provided below in Table 2-12. The schedule is preliminary and subject to change.

Table 2-12 Proposed Construction Timetable

Project Component	Length (miles)	Duration (months)
Reconductoring		
Site 6 – El Nido, Oro Loma – Panoche Junction 115 kV Power Line	16.9	12
Site 6 – El Nido, Los Banos – Oro Loma – Canal 70 kV Power Line	13.3	12
Site 7 – Le Grand Junction/Sandy Mush Road, Warnerville – Wilson 230 kV Transmission Line	38.4	24
Site 7 – Le Grand Junction/Sandy Mush Road, Wilson – Dairyland (idle) 115 kV Line	11.3	12
Substations/Switching Station		
Site 7 – Le Grand Junction/Sandy Mush Road, Dutchman Switching Station	n/a	18
Site 6 – El Nido, El Nido Substation	n/a	12
Site 7 – Wilson, Wilson Substation	n/a	12

Source: PG&E 2016

2.5 Operations and Maintenance Activities

2.5.1 Reconductored Lines

No changes to existing operation and maintenance activities associated with the proposed reconductored lines are anticipated with project implementation. The existing power lines are inspected yearly, or as needed when driven by an event or incident, such as an emergency. A detailed ground inspection is required every other year, with a subsequent aerial patrol in between those years. The routine annual inspections, detailed ground inspections, and aerial patrols would not change from existing conditions with project implementation. Any existing access roads that are established during project implementation would be restored to pre-construction conditions, or left in a condition as agreed to by the landowner (i.e., landowners would be compensated for crop removal and would replant at their own expense). As maintenance needs arise, repairs and preventative maintenance would continue to be fulfilled by the PG&E transmission line crew (approximately five trained employees).

2.5.2 Substations/Switching Stations

No changes to existing operation and maintenance activities associated with the expanded substations or new switching stations are anticipated with project implementation. No additional staff would be required as existing operation and maintenance crews would operate and maintain the expanded substations and new switching stations as part of their current territory operation and maintenance activities.

2.5.2.1 SF_6 Program

PG&E would incorporate the new circuit breakers at the expanded Site 7 – Wilson, Wilson Substation and Site 6 – El Nido, El Nido Substation into their system-wide SF_6 emission reduction program. The California Air Resources Board (CARB) has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, Title 17, California Code of Regulations, which requires that company-wide SF_6 emission rate not exceed 1 percent by 2020. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF_6 inputs, and inventory and monitor system-wide SF_6 leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF_6 issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF_6 handling and accidental releases. As an active member of Environmental Protection Agency's SF_6 Emission Reduction Partnership for Electrical Power Systems, PG&E has focused on reducing SF_6 emissions from its transmission and distribution operations and has reduced the SF_6 leak rate by 89 percent and absolute SF_6 emissions by 83 percent. PG&E would comply with CARB Early Action Measures as these policies become effective.

2.5.3 Right-of-Way Acquisition for Construction, Operation, and Maintenance of Electrical Infrastructure

To support Sites 6 and 7, the following acreage of land would need to be acquired.

Table 2-13 Land Acquisition

Project Component	Acreage
Site 6 – El Nido	
El Nido Substation	2.97
Site 7 – Le Grand Junction/Sandy Mush Road	
Dutchman Switching Station	5.52

2.6 Electric and Magnetic Fields Summary

2.6.1 Electric and Magnetic Fields

This environmental document does not consider electric and magnetic fields (EMFs) in the context of the CEQA analysis of potential environmental impacts because (1) there is no agreement among scientists that EMF creates a potential health risk, and (2) there are no defined or adopted CEQA standards for defining health risk from EMF. However, recognizing that there is a great deal of public interest and concern regarding potential health effects from human exposure to EMF from transmission lines, this document does provide information regarding EMF associated with electric utility facilities and human health and safety.

Exposure to *electric fields* from transmission lines (i.e., the effect produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that surrounds it) typically does not present a human health risk since electric fields are effectively shielded by materials such as trees, walls, etc. Therefore, the majority of the following information related to EMF focuses primarily on exposure to *magnetic fields* (i.e., the invisible fields created by moving charges) from transmission lines.

After several decades of study regarding potential public health risks from exposure to power line EMFs, research results remains inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMFs cause cancer. Most recently the International Agency for Research on Cancer and the California Department of Health Services both classified EMFs as a possible carcinogen.

Presently, there are no applicable federal, State or local regulations related to EMF levels from power lines or related facilities, such as substations. However, the CPUC has implemented a decision (D.06-01-042) requiring utilities to incorporate "low-cost" or "no-cost" measures for managing EMFs from power lines up to approximately four percent of total project cost. Using the four percent benchmark, PG&E will incorporated low-cost and no-cost measures to reduce magnetic field levels along the transmission and power line corridors.

2.6.2 EMF and the Project

In compliance with CPUC Decision No. D.06-01-042, the project would implement "no-cost and low-cost" magnetic field reduction measures. These field reduction measures would be submitted to the CPUC with the Notice of Construction (NOC) and/or Permit to construct.

2.7 Permits

The Authority is the lead state agency as the project sponsor for the HSR. Table 2-14 provides the potential permits and approvals that may be required for project implementation.

Table 2-14 Permits and Approvals that may be Required

Permit/Authorization	Agency	Purpose
Federal		
Section 7 Consultation (Biological Opinion)	U.S. Fish and Wildlife Service	Potential impacts to federally listed species
Section 106 Consultation (National Historic Preservation Act) (consultation)	State Historic Preservation Officer	Potential impacts to cultural resources
State		
NOC (ministerial)	California Public Utilities Commission	Issuance of a NOC and/or Permit to Construct for PG&E facilities.
Section 2081 Incidental Take Permit /California Endangered Species Act	California Department of Fish and Wildlife	Potential impacts to state listed species
National Pollutant Discharge Elimination System – General Construction Storm Water Permit (ministerial)	State Water Resources Control Board	Stormwater discharges associated with construction activities disturbing more than 1 acre of land
Encroachment Permit (ministerial)	California Department of Transportation	Activities related to the placement of encroachments within, under, or over State highway rights-of-way
Local		
Utility Encroachment Permit (ministerial)	Stanislaus, Merced, Madera, and Fresno County	Work within county roads/road ROW or property
Grading Permit (ministerial)	Stanislaus, Merced, Madera, and Fresno County	Grading activities within counties

2.8 Preparers

This Project Description was prepared Ascent Environmental in consultation with Pacific Gas & Electric in regards to PG&E facilities.

Table 2-15 Preparers

Project Role	Name, Credential	Qualifications
Ascent Environmental		
Project Manager/Senior Director	Jennifer Johnson, JD	15 years' experience J.D., Environmental Law, Vermont Law School B.S., Environmental Policy, Juniata College
Pacific Gas and Electric		
Senior Land Planner	Stephen Ruiz	11 years' experience B.S., Environmental Studies, San Jose State University

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