4. Project Description

4.1 Project Title

Cressey-Gallo 115 kV Power Line Project
Pacific Gas and Electric Company (PG&E) Application No. A.11-11-020

4.2 Lead Agency Name and Address

California Public Utilities Commission
Energy Division
505 Van Ness Avenue, Fourth Floor
San Francisco, California 94102

4.3 Lead Agency Contact Person and Phone Number

Billie Blanchard, Project Manager
Energy Division
Phone: (415) 703-2068
E-mail: billie.blanchard@cpuc.ca.gov

4.4 Project Location

The project is located in the San Joaquin Valley in Merced County near the City of Livingston, California. The project route is oriented primarily east to-west between Cressey Substation and Gallo Substation, intersecting with State Route 99 (SR-99) south of the City of Livingston. The project would connect Cressey Substation (located at the southeast corner of West Lane and Meadow Drive approximately two miles east of the community of Cressey) to an expanded Gallo Substation (located on the property of the Gallo Winery facility at 18000 River Road approximately four miles west of the City of Livingston). The project area is defined as the area within one-quarter mile on either side of the project route.

4.5 Project Sponsor's Name and Address

Pacific Gas and Electric Company
77 Beale Street
San Francisco, California 94105

4.6 General Plan Designation

A majority of the project route is designated by the County of Merced General Plan as Agricultural land use, including the existing Cressey and Gallo Substations. Within a half-mile of the project route south-west of Cressey Substation, small areas are General Plan-designated as Agricultural Residential, Single-Family Residential, General Commercial, and General Manufacturing land uses.

Although the project route is not located within the City of Livingston, the southernmost portion of the City of Livingston would be within 0.5 miles. This small area of the City includes portions with county land use designations of High Density Residential, Medium Density Residential, Low Density Residential, Neighborhood Commercial, and Public Facility. Portions of the southern and eastern extents of the City's 2025 General Plan Sphere of Influence include or are adjacent to the project alignment on Magnolia Avenue between Washington Avenue and Arena Way, and Arena Way between Magnolia Avenue and a half block north of Liberty Way.

4.7 Zoning

The project route is zoned by Merced County as General Agricultural, including the existing Cressey and Gallo Substations. The following Merced County zoning districts are present within a half-mile of the power line route:

- **General Agricultural (A-1).** The purpose of the general agricultural zone is to provide for areas for more intensive farming operations dependent on higher quality soils, water availability and relatively flat topography, and agricultural commercial and/or industrial uses dependent on proximity to urban areas or location in sparsely populated low-traffic areas. Parcels smaller than 40 acres down to a minimum of 20 acres can be considered where agricultural productivity of the property will not be reduced.
- **Agricultural Residential (A-R).** The purpose of the agricultural residential zone is to provide areas for rural residential development and hobby farming and limited animal raising operations with less than a full range of urban services. It is intended that this zone typically serve as a transitional area between more dense urban communities and agricultural uses with the option of allowing either one unit or three units per acre.
- **Single-Family Residential (R-1).** The purpose of the single-family residential zone is to provide a full range of urban services and reserve appropriately located areas for family living at a range of low population densities consistent with sound standards of public health, welfare, and safety. It is the intent of this zone to protect the residential characteristics of an area and to promote a suitable environment for family life.
- **General Commercial (C-2).** The purpose of the general commercial zone is to provide areas for a wide variety of retail stores, entertainment establishments, offices and service businesses that serve unincorporated urban communities or regional markets. The C-2 districts are mainly located in the central business districts or along major transportation routes, such as arterial and major collector roads.
- **General Manufacturing (M-2).** The purpose of the general manufacturing zone is to provide for all types of manufacturing, distribution and storage uses. Uses within this zone tend to have moderate to high nuisance characteristics, such as noise, heat, glare, odor and vibration that may require separation from incompatible uses such as residential and office commercial. Typical uses in this zone include manufacturing of autos or trucks, asphaltic materials, glass, and paint products.

4.8 Surrounding Land Uses and Setting

Land use within the project area is primarily agricultural with intermittent rural residences and light industry. Agricultural uses include orchards, vineyards, field crops, pastures, and dairies. Open fields and landscaping are located along the project route. The Gallo Winery facility and some light industry are located adjacent to the project route.

The dominant geographic features that intersect with the project are SR-99 and active railroad lines. The Southern Pacific Railroad (SPRR) runs parallel and generally adjacent to SR-99, from the northwest to the southeast. The Burlington Northern Santa Fe (BNSF) Railway runs in the same direction as the SPRR, intersecting the project at Santa Fe Drive and Mercedes Avenue. The Merced River and the City of Livingston are located to the north of the project route. Merced Irrigation District and PG&E power and distribution lines are located near and within the project right-of-way (ROW).

4.9 Other Public Agencies Whose Approval is Required

The Applicant may be required to obtain the permits listed in Table 1-1 of the MND.

4.10 Description of the Project

PG&E is proposing to construct a new, approximately 14.4-mile-long, single-circuit power line to interconnect the Cressey and Gallo Substations. As part of the project, upgrades to the bus[1] configurations and replacement of the radial power line transition would be required at Cressey Substation within its current fence line. Additionally Gallo Substation would be expanded beyond the existing fenceline to add switchgear and upgrade the bus configurations to accommodate the new line.

4.10.1 Overview

Pacific Gas and Electric Company (PG&E) is proposing to construct the Cressey-Gallo 115 Kilovolt (kV) Power Line Project, a new, approximately 14.4-mile-long, single-circuit power line needed to improve transmission system reliability for customers in north-central Merced County, California.

The project consists of constructing a new 115 kV power line between Cressey and Gallo Substations to form a power line loop with two other area substations (Livingston and Atwater). The new transmission loop will allow power to flow from another direction when there is an outage on a line feeding the loop, avoiding customer service interruptions from single-line outages in this area. As proposed by PG&E, the project includes:

- Constructing a new, approximately 14.4-mile, single-circuit 115 kV power line interconnecting Cressey Substation and Gallo Substation.
- Upgrading the bus configurations at Cressey Substation and replacing the existing radial power line transition into the substation within the existing substation property.
- Expanding Gallo Substation to add switchgear and upgrade the bus configurations.

4.10.2 Project Objectives

PG&E's primary objective of the project is to improve transmission system reliability by creating a looped power line system between area substations, thereby greatly reducing the number and duration of power outages.

The more than 9,000 customers currently served from Cressey, Gallo and Livingston Substations (including Gallo Winery and Dole Foods) have experienced an average of approximately 2.4 outages per year since 2005, with each outage lasting an average of over 8 hours. The looped system would provide an alternate source of power for these customers, eliminating customer service interruptions resulting from single-line outages.

PG&E's Cressey, Livingston, and Gallo Substations are currently located on radial power lines (taps), with power flowing one direction from the Atwater-Merced 115 kV Power Line. At present, Cressey Substation serves the electrical needs of the greater area of Cressey; Livingston Substation serves the greater area of Livingston; and Gallo Substation serves the E. & J. Gallo Winery (Gallo Winery). When an outage occurs on one of the radial power lines, electrical service to everyone served by the line is interrupted. The Proposed Project would connect the Cressey and Gallo Substations to form a power line loop that includes Livingston Substation and another area substation, Atwater Substation. The new looped configuration would allow power to flow from another direction when there is an outage on part of the loop, thus avoiding customer service interruptions.

[1] A bus is a conductor that serves as a common connection for two or more circuits within a substation. Its main purpose is to conduct electricity.

4.10.3 Project Location

The Proposed Project is located in the San Joaquin Valley in Merced County near the City of Livingston, California. The project route would be oriented primarily east to-west between Cressey Substation and Gallo Substation, intersecting with SR-99 south of the City of Livingston. The project would connect Cressey Substation, located at the southeast corner of West Lane and Meadow Drive, approximately two miles east of the community of Cressey, to an expanded Gallo Substation, which is located on the property of the Gallo Winery facility at 18000 River Road, approximately four miles west of the City of Livingston. Figure 4-1 depicts a map of the project vicinity and Figure 4-2 illustrates the existing transmission system.

4.10.3.1 Project Alignment

PG&E has proposed to install the new 115 kV power line on private property starting at Gallo Substation. The proposed route would head south on the east side of the Gallo Winery vineyard access road, as a double-circuit line joining the existing Gallo Tap on new poles. The line would turn east and would become a single-circuit line along the north side of Magnolia Avenue for approximately 7.3 miles to Arena Way. At Arena Way, the route would turn north along the west side of Arena Way on private property to its crossing of the Union Pacific Railroad (UPRR) and SR-99. North of the UPRR and SR-99 crossings, the line would be placed in the road right-of-way (ROW) on the east side of Arena Way to Liberty Avenue, then continue on the east side on private property and along the alignment of Arena Way when crossing orchard property without a road. At Mercedes Avenue, the route would turn east along the south side of Mercedes Avenue, and then north along the east side alignment of Central Avenue through an orchard property (no road exists through the orchard). At West Palm Avenue, the line would turn east and would travel along the north side of the street to West Lane. The line would turn north on private property along the west side of West Lane and would terminate on the northern side of Cressey Substation.

To support the new power line, PG&E is planning to install approximately 230 wood and/or light duty steel poles and approximately 10-15 tubular steel poles (with concrete foundations). The project route is depicted on Figures 4-3a through 4-3h.

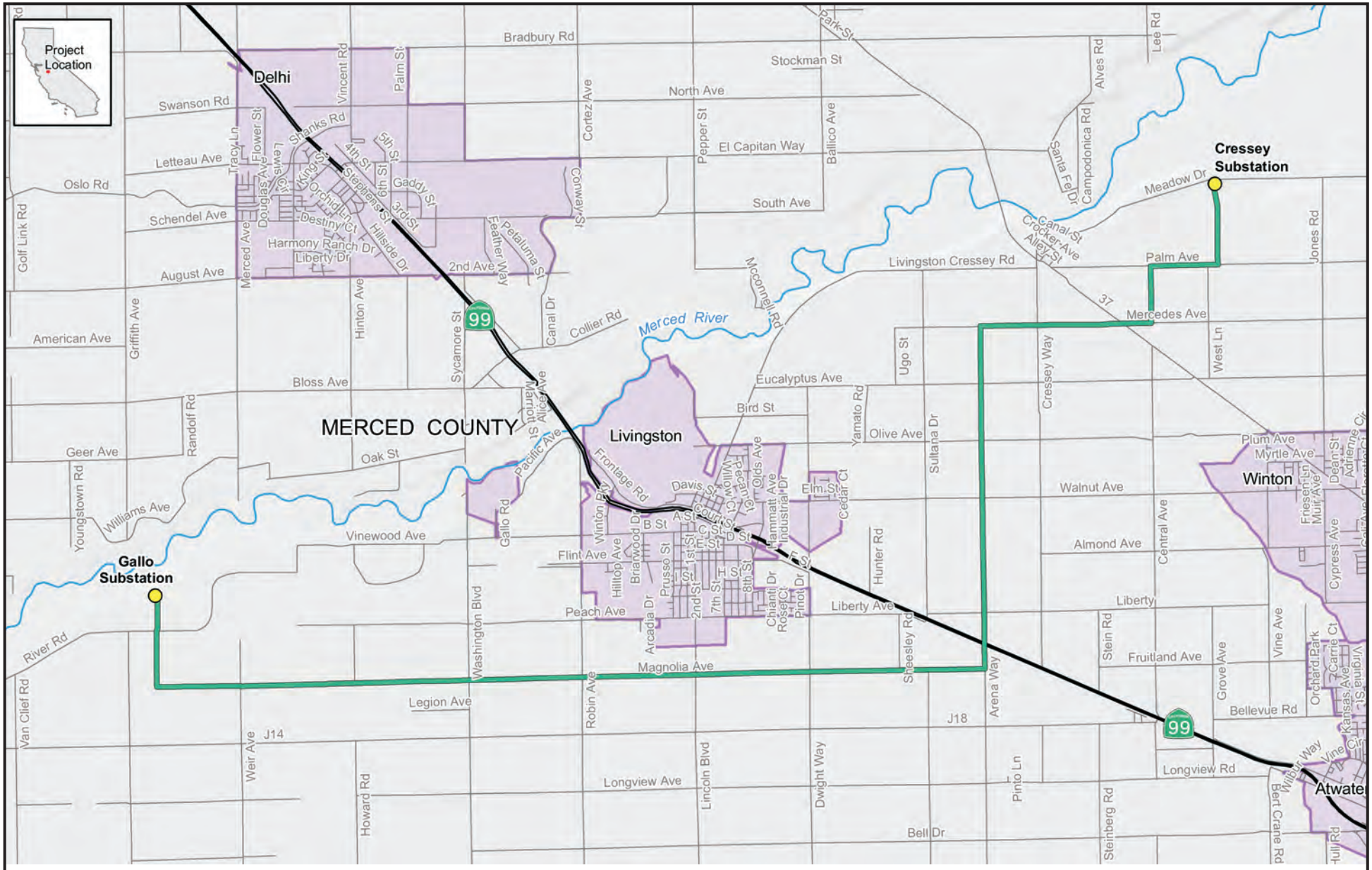
4.10.3.2 Right-of-Way Requirements

The new ROW for the Cressey-Gallo 115 kV power line would be approximately 40 feet wide when located on private property. The new poles would be located in the center of the ROW with approximately 20 feet on each side.

Where the power line would be located adjacent to county road franchise and ROW, PG&E's ROW would be approximately 22 to 25 feet wide; new poles would be located on private property within approximately two to five feet of the edge of the county road ROW. The power line would be located within franchise in county road to either side the SR-99 crossing along Arena Way.

The ROW line may be adjusted slightly within the project study area to support final pole locations. The ROW would be parallel to and contiguous with existing property and/or lot lines. The existing ROW for Gallo Tap power line would be increased from 40 feet to approximately 50 feet.

PG&E would purchase in fee or exclusive easement the existing Gallo Substation and the expanded portion of Gallo Substation from E. & J. Gallo Winery.



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Source: PG&E, 2011.

Figure 4-1
Project Location

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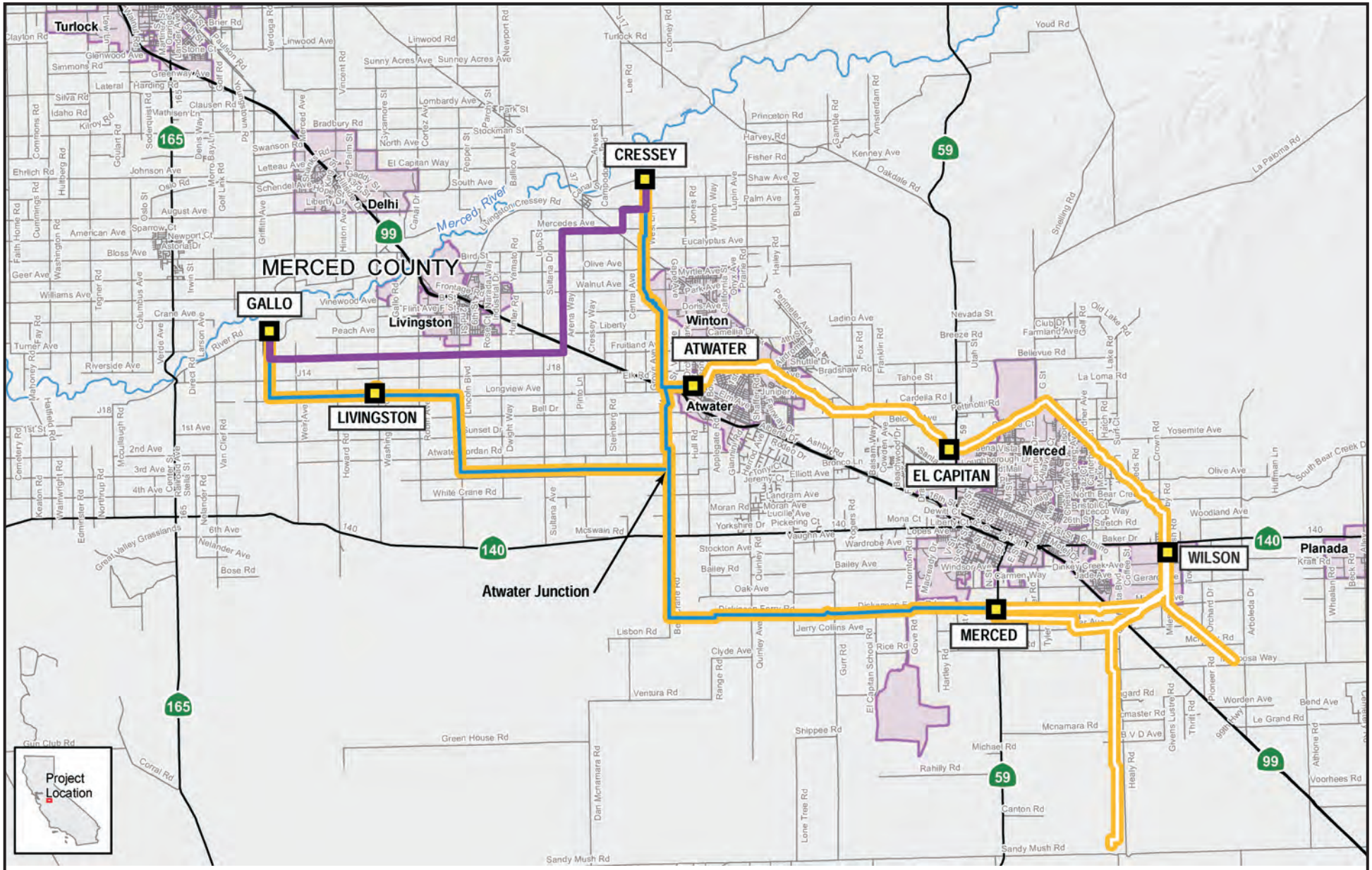

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Figure 4-2
Existing Transmission System

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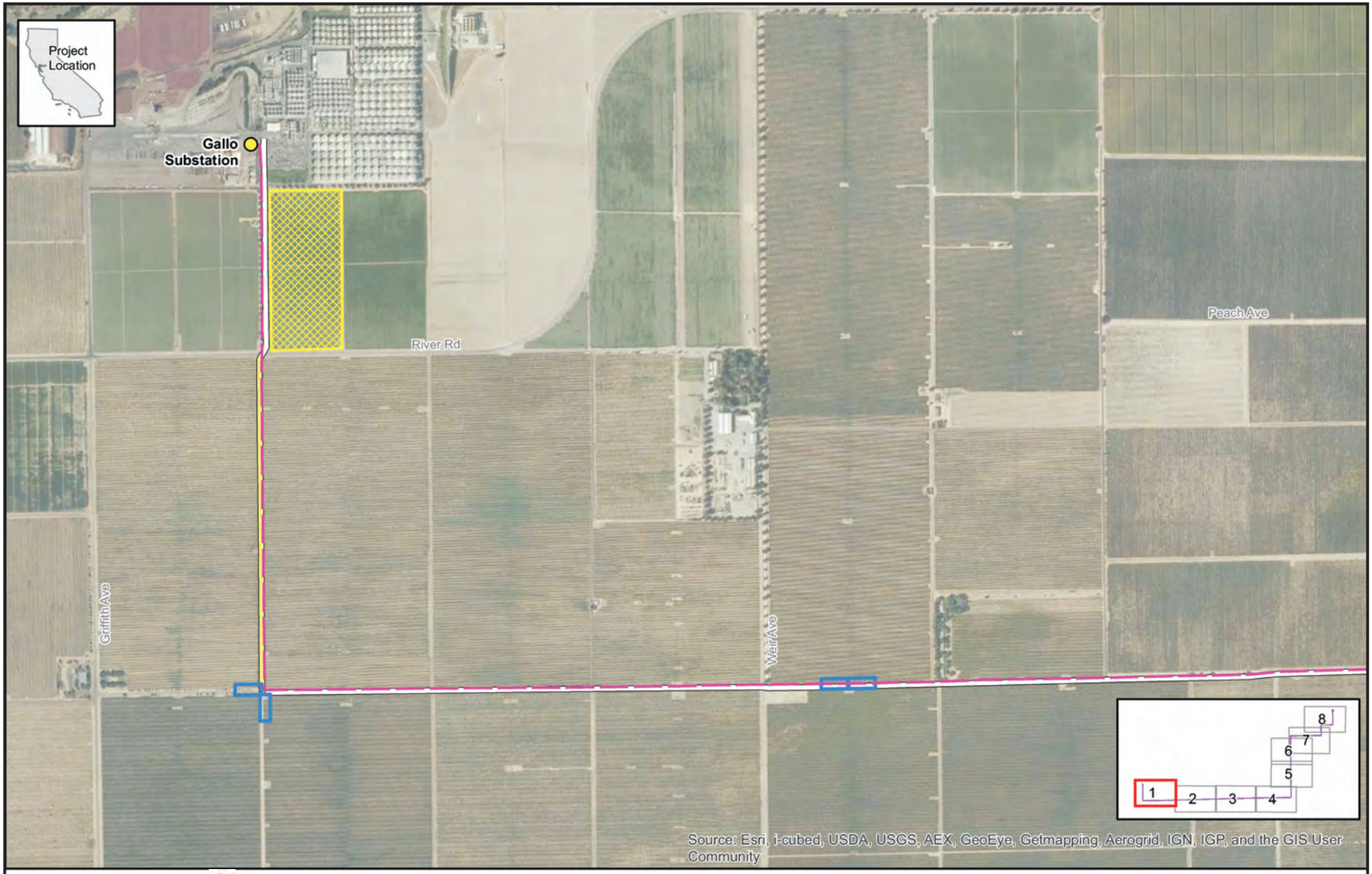

Source: PG&E, 2012.

N

0 500 1,000 Feet

Potential Staging Locations

Aspen Environmental Group

Cressey-Gallo Power Line Route

Preliminary Pull and Tension Sites (typically 40 x 100 feet; not to scale)

Existing Paved Access Road

Existing Dirt Access Road

New Orchard Dirt Access Road

Figure 4-3a
Project Components and Construction Elements
Map 1 of 8

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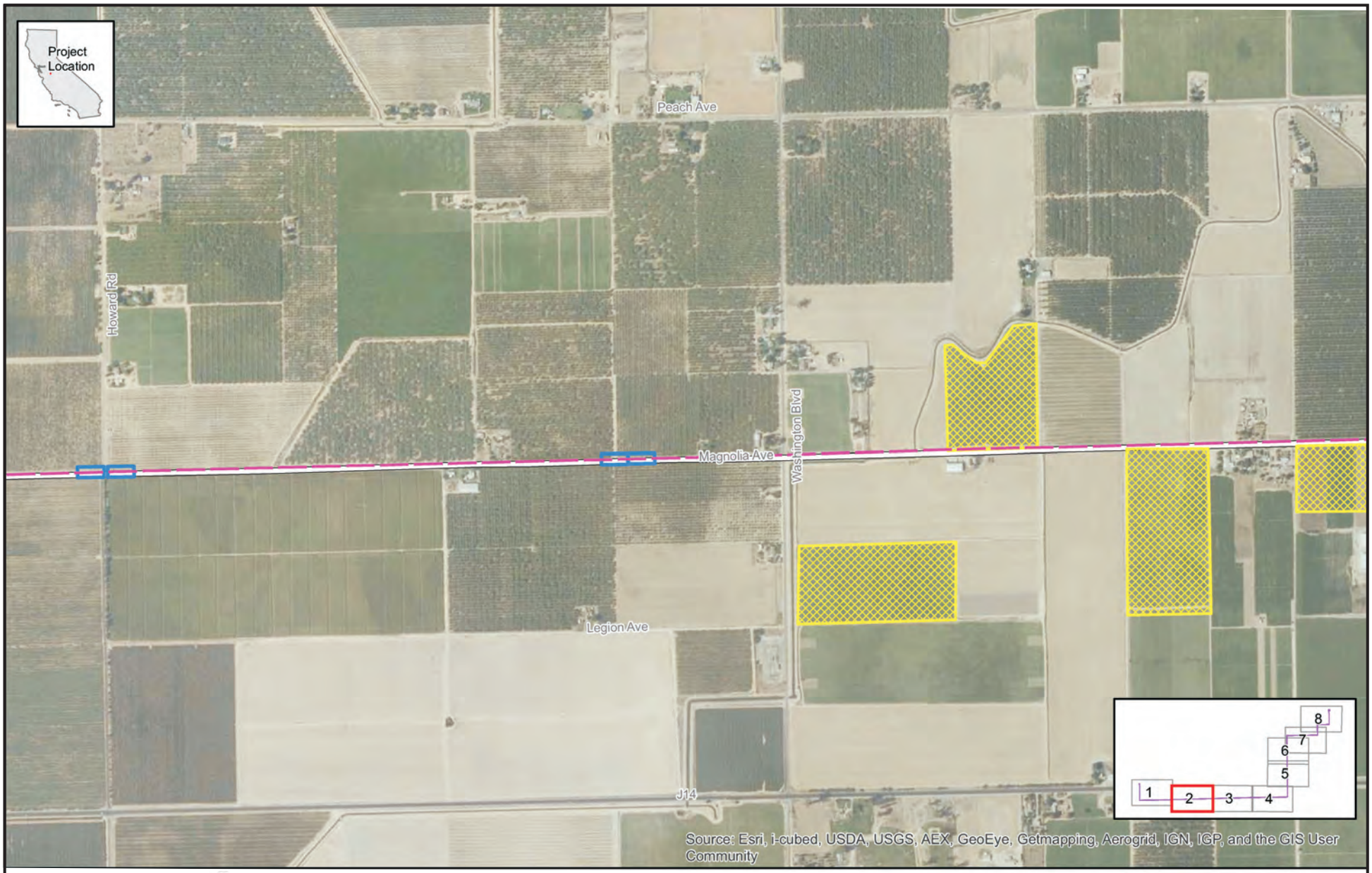

Source: PG&E, 2012.

N

0 500 1,000 Feet

Potential Staging Locations

Aspen Environmental Group

Cressey-Gallo Power Line Route

Preliminary Pull and Tension Sites (typically 40 x 100 feet; not to scale)

Existing Paved Access Road

Existing Dirt Access Road

New Orchard Dirt Access Road

Figure 4-3b
Project Components and Construction Elements
Map 2 of 8

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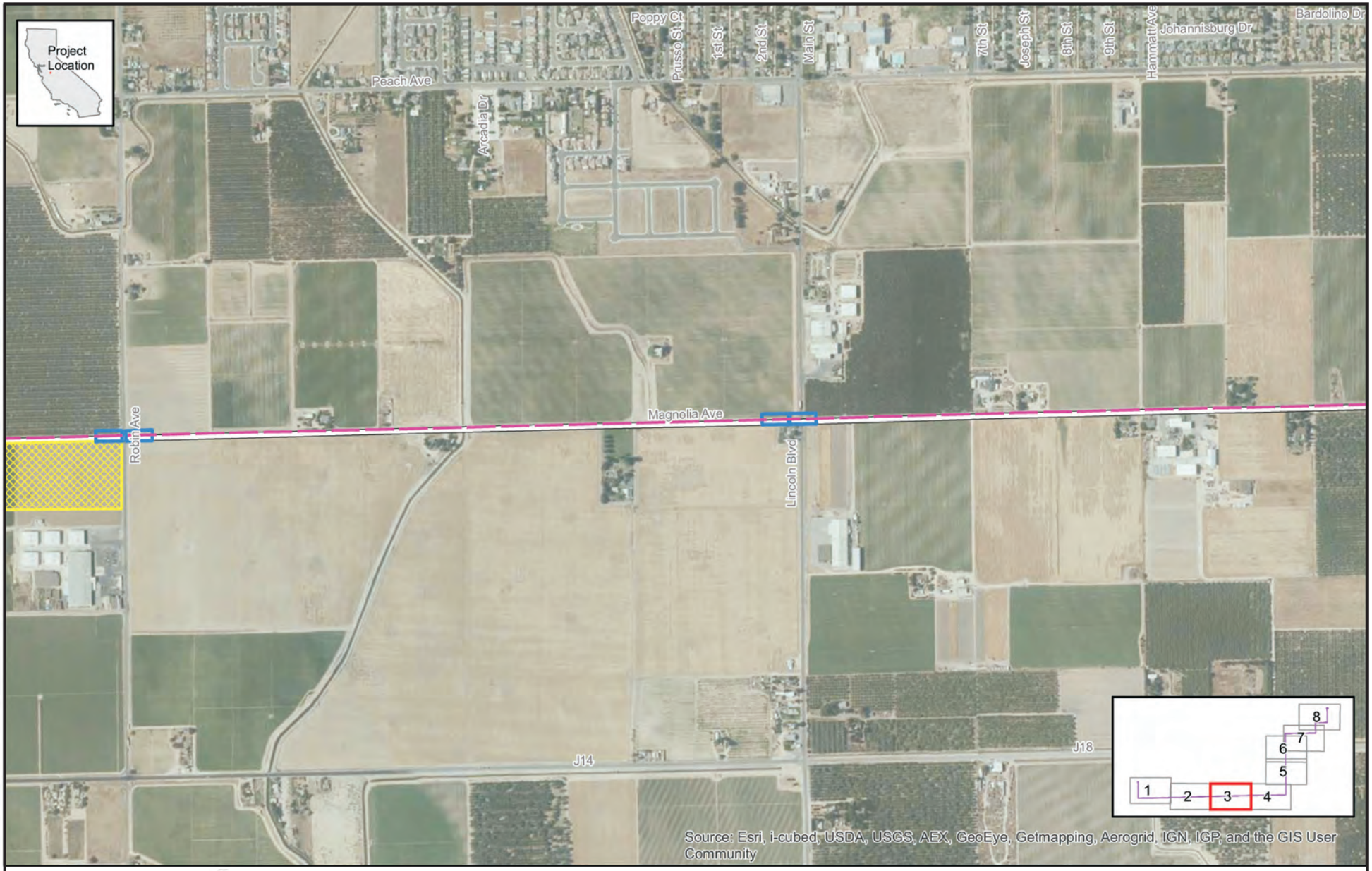

Source: PG&E, 2012.

N

0 500 1,000 Feet

Potential Staging Locations

Cressey-Gallo Power Line Route

Preliminary Pull and Tension Sites (typically 40 x 100 feet; not to scale)

Existing Paved Access Road

Existing Dirt Access Road

New Orchard Dirt Access Road

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Figure 4-3c
Project Components and Construction Elements
Map 3 of 8

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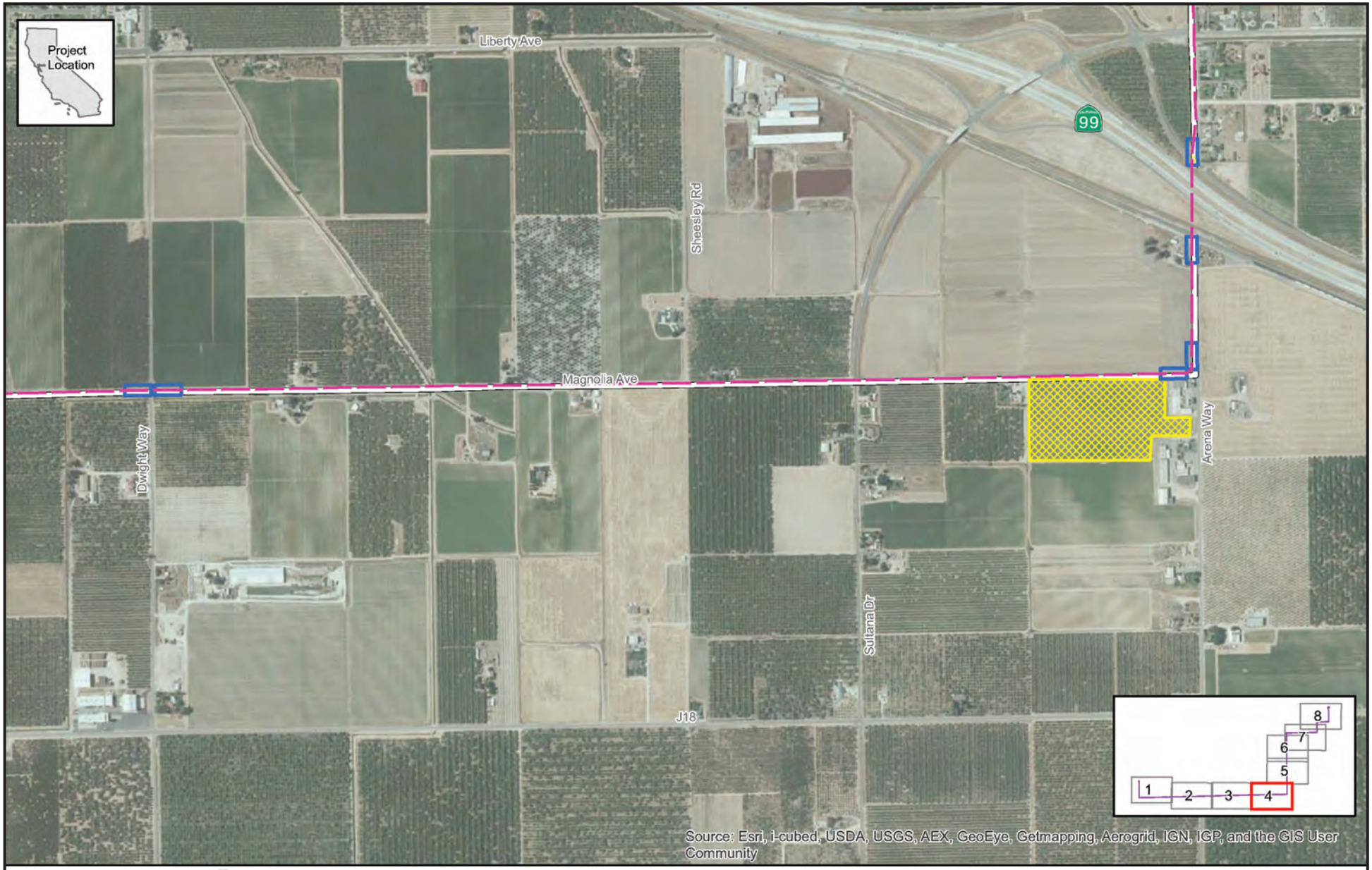

Source: PG&E, 2012.

N

0 500 1,000 Feet

Potential Staging Locations

Aspen Environmental Group

Cressey-Gallo Power Line Route

Preliminary Pull and Tension Sites (typically 40 x 100 feet; not to scale)

Existing Paved Access Road

Existing Dirt Access Road

New Orchard Dirt Access Road

Figure 4-3d
Project Components and Construction Elements
Map 4 of 8

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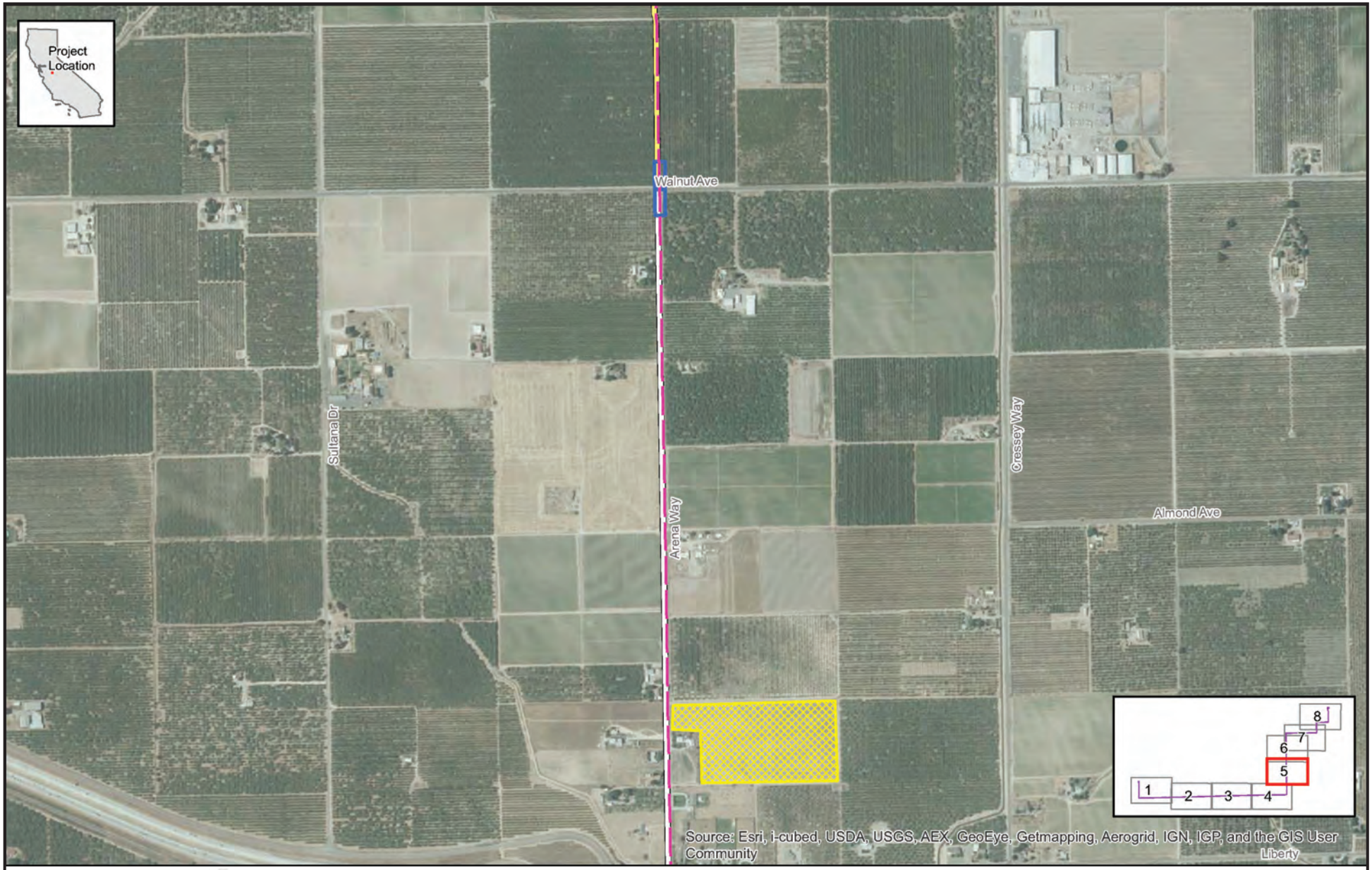

Source: PG&E, 2012.

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Figure 4-3e
Project Components and Construction Elements
Map 5 of 8

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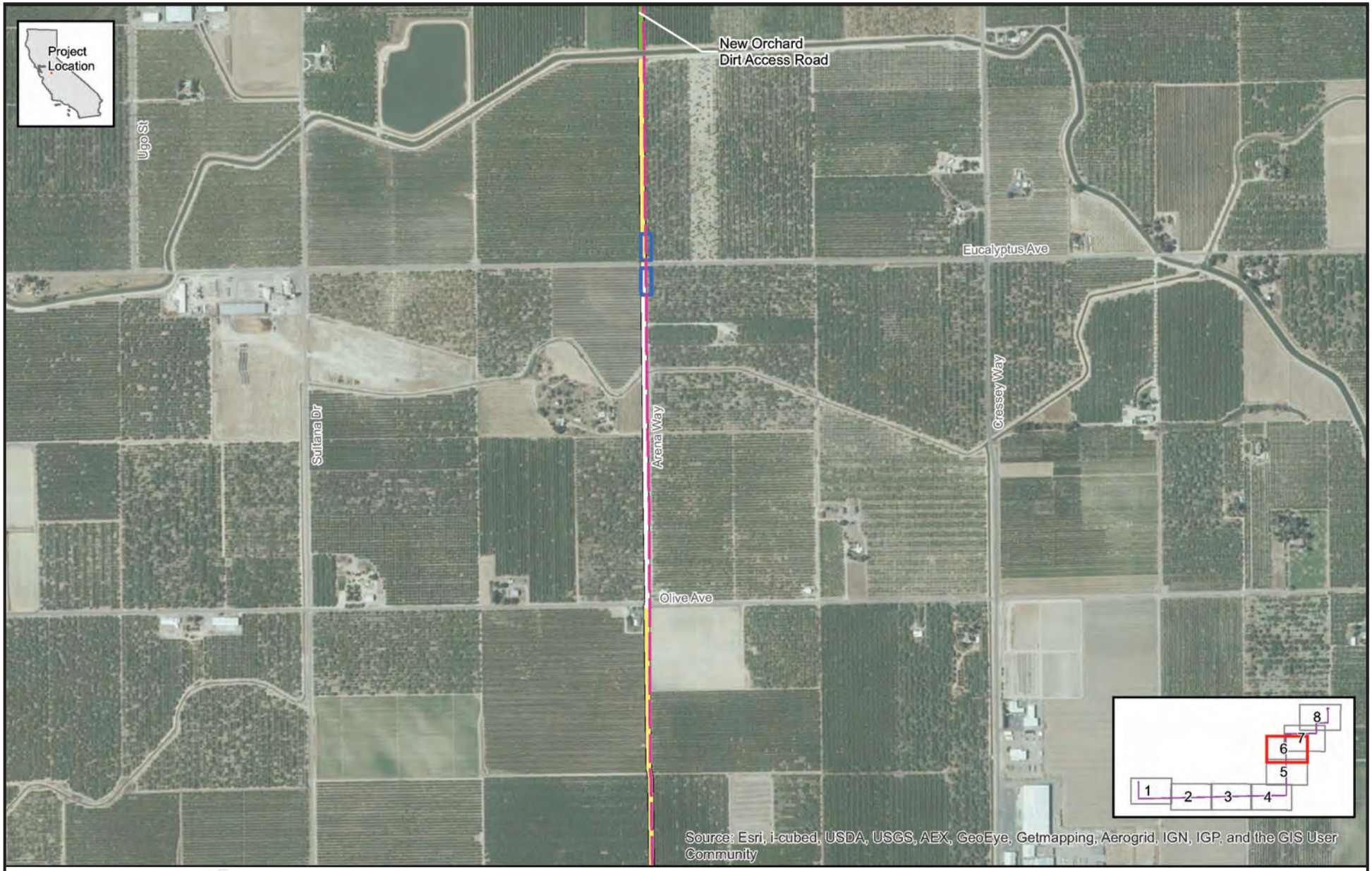

Source: PG&E, 2012.

N

0 500 1,000 Feet

Potential Staging Locations

Aspen Environmental Group

Cressey-Gallo Power Line Route

Preliminary Pull and Tension Sites (typically 40 x 100 feet; not to scale)

Existing Paved Access Road

Existing Dirt Access Road

New Orchard Dirt Access Road

Figure 4-3f
Project Components and Construction Elements
Map 6 of 8

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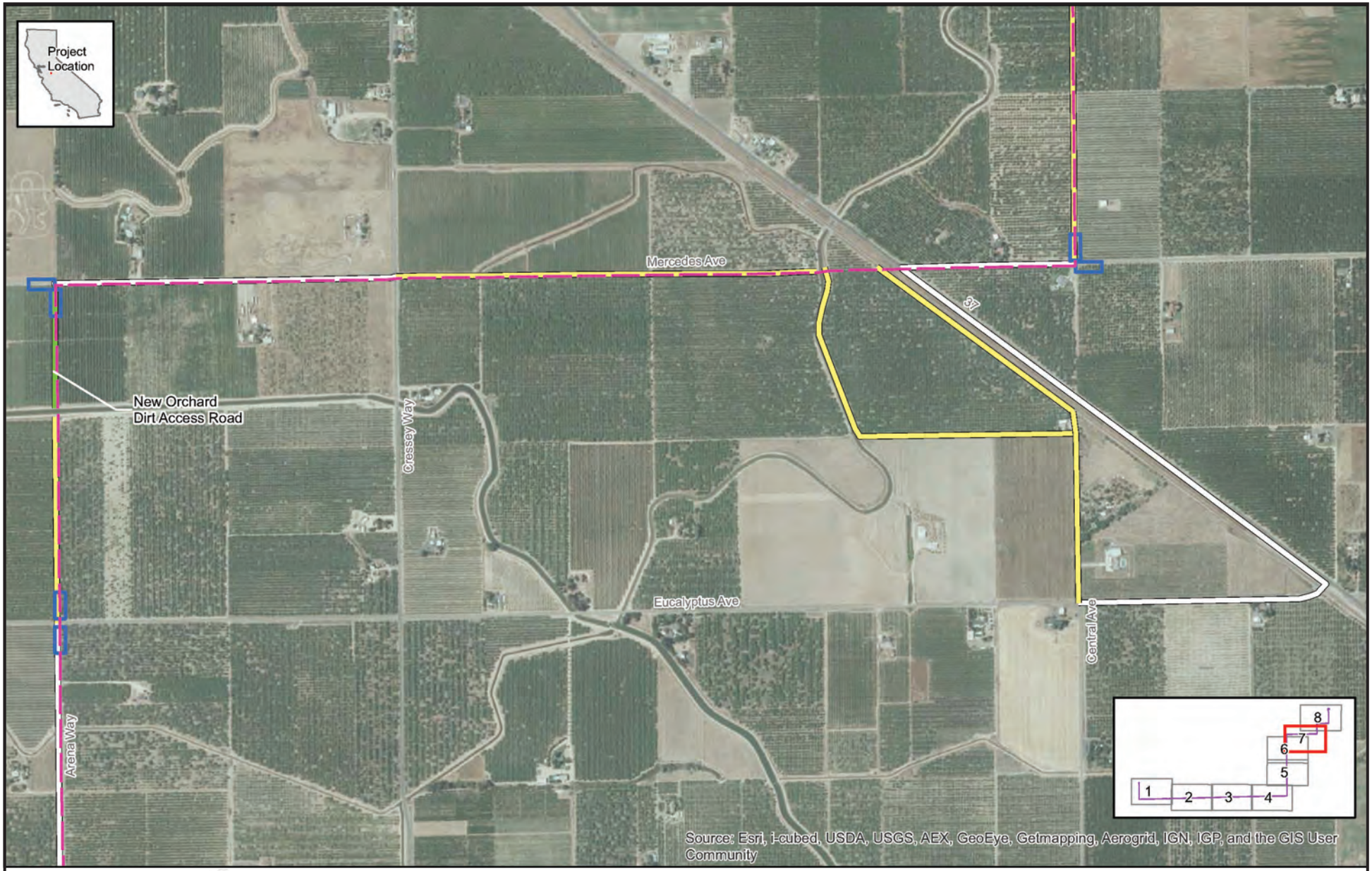

Source: PG&E, 2012.

N

0 500 1,000 Feet

Potential Staging Locations

Aspen Environmental Group

Cressey-Gallo Power Line Route

Preliminary Pull and Tension Sites (typically 40 x 100 feet; not to scale)

Existing Paved Access Road

Existing Dirt Access Road

New Orchard Dirt Access Road

Figure 4-3g
Project Components and Construction Elements
Map 7 of 8

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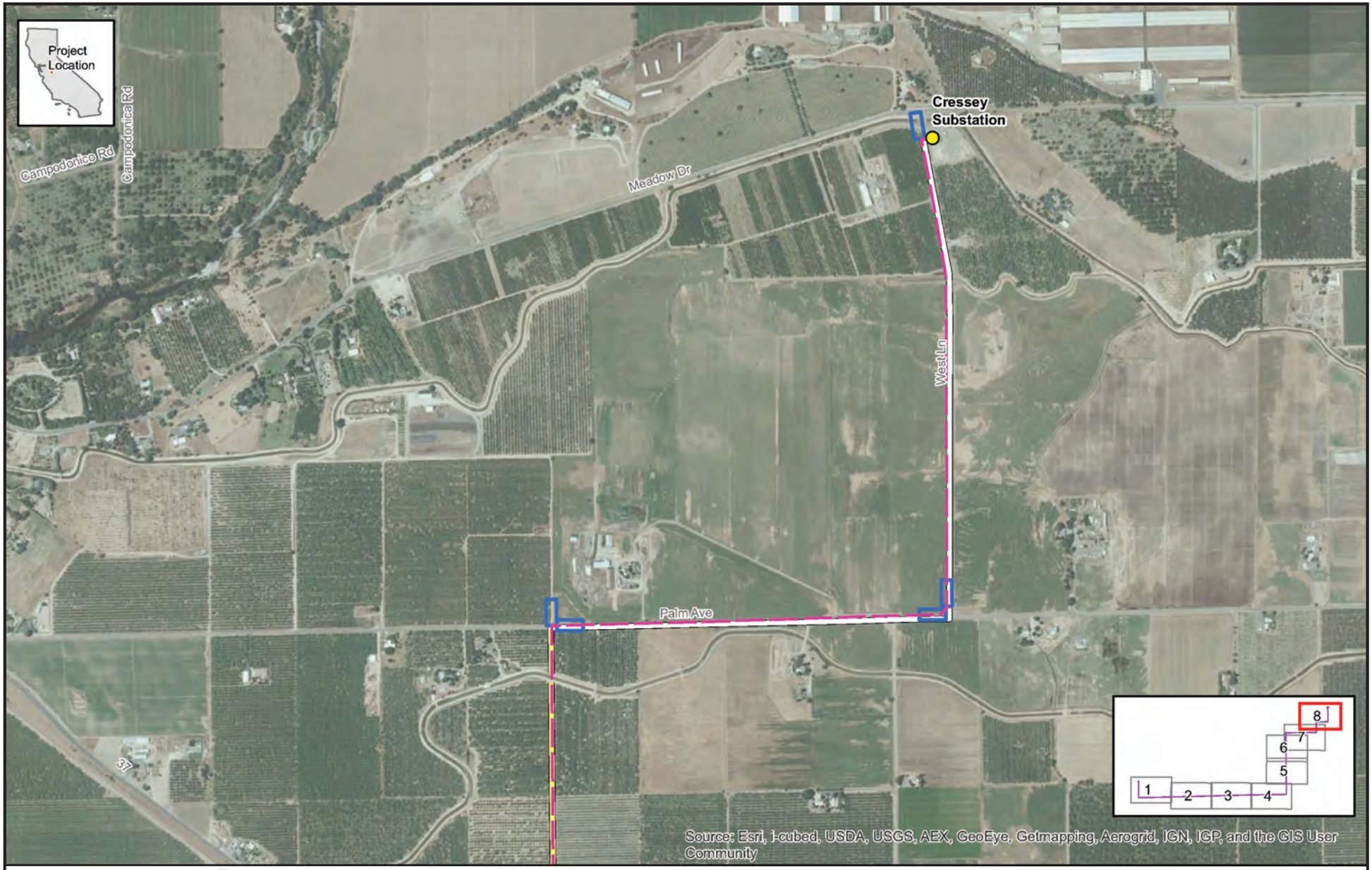

Source: PG&E, 2012.

N

0 500 1,000 Feet

Potential Staging Locations

Aspen Environmental Group

Cressey-Gallo Power Line Route

Preliminary Pull and Tension Sites (typically 40 x 100 feet; not to scale)

Existing Paved Access Road

Existing Dirt Access Road

New Orchard Dirt Access Road

Figure 4-3h
Project Components and Construction Elements
Map 8 of 8

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4.10.3.3 Surrounding Land Uses and Setting

Land use within the project route is primarily agricultural with intermittent rural residences. Agricultural uses include orchards, vineyards, field crops, pastures, and dairies. Open fields and landscaping are located along the project route. The Gallo Winery facility and some light industry are located adjacent to the project route.

The dominant geographic features that intersect with the project are SR-99 and active railroad lines. The Southern Pacific Railroad (SPRR) runs parallel and generally adjacent to SR-99, from the northwest to the southeast. The Burlington Northern Santa Fe (BNSF) Railway runs in the same direction as the SPRR, intersecting the project at Santa Fe Drive and Mercedes Avenue. The Merced River and the City of Livingston are located to the north of the project route. Merced Irrigation District and PG&E power and distribution lines are located near and within the Proposed Project ROW as well.

4.10.4 Project Components

4.10.4.1 Power Line

The proposed power line would be a 115 kV, single-circuit, approximately 14.4-mile power line. The power line would have three phases. Each phase would include new non specular[2] type 715 MCM AAC, 0.97-inch-diameter conductor. There would be at least 8.5 feet of separation between conductors. As described further in Section 4.10.4.2, the new poles would include wood, light-duty steel, and tubular steel poles.

The approximate distance from the ground to the lowest conductor would conform to the CPUC's General Order 95 (GO 95) requirements, including the following:

- Vehicular Thoroughfares and Highway Crossings (e.g., SR-99) — 30 feet minimum ground clearance
- Water crossing less than 20 acres — 27 feet minimum ground clearance

The new power line would be located on the opposite side of West Palm Avenue and West Lane from the existing Cressey Tap. The existing Cressey Tap wood pole that acts as a transition into Cressey Substation would be removed and replaced with two new tubular steel poles to connect to the new substation configuration. The power line would connect to Cressey Substation on the northern side of the substation (see Figure 4-3g).

In this northeast section of the project route, poles would be installed on private property along the west side of West Lane, the north side of West Palm Avenue, the east side of the alignment of Central Avenue through an orchard property (no road exists through the orchard), and the south side of Mercedes Avenue. In the central-eastern section of the project, poles would be installed on the east side of Arena Way and to follow the alignment of Arena Way when crossing orchard property without a road.

Proceeding south of Liberty Avenue to the SR-99 and SPRR crossing, poles would be installed on the east side of Arena Way within the county road (franchise) ROW. Poles south of SR-99 would be installed on the west side of Arena Way and then on private property on the north side of Magnolia Avenue.

In the southwest portion of the project route, the poles would be located on the east side of the Gallo Winery vineyard/winery access road, replacing the existing Gallo Tap poles. The existing Gallo Tap 115

[2] Non-specular indicates that the surface of the aluminum conductor would be either mechanically or chemically treated to reduce reflectivity.

kV line would be transferred to the new power poles, effectively creating a double circuit for the 0.75-mile line segment leading into Gallo Substation, and existing power poles would be removed.

Gallo Tap is an existing 115 kV power line between Livingston and Gallo Substations. In order to replace a portion of this line, it may be necessary to construct a temporary pole line (shoo-fly) along an approximately 0.8-mile portion of the existing line located along the Gallo Winery vineyard/winery access road between Magnolia Avenue and Gallo Substation. The shoo-fly, which would be located within approximately 100 feet of the existing line, would consist of approximately 22 temporary wood poles supporting approximately 0.8 miles of conductor to transfer the existing power and distribution load while the adjacent portion of Gallo Tap is reconstructed as a double-circuit power line with distribution underbuild. PG&E would coordinate with E. & J. Gallo Winery on clearances (outages) required to construct the shoo-fly, currently scheduled in ~~late spring of 2013~~2014. The shoo-fly would be removed when the new double-circuit power line is operational.

Merced Irrigation District and PG&E power and distribution lines are located near and within the Proposed Project ROW along much of the project route, and some existing PG&E distribution lines and equipment would be moved onto new power poles where reasonably feasible. In the following instances, PG&E distribution lines would be co-located on the new wood power poles and the existing distribution line wood poles would be removed after the lines are transferred:

- Where the existing PG&E distribution line is located on the same side of the road as the project route;
- Where four or more PG&E distribution poles are located on the opposite side of the road from the project route; and
- Where an existing PG&E distribution line crosses SR-99 within the project route.

Where three or fewer distribution poles are located on the opposite side of the road from the project route, the distribution line would *not* be co-located with the project.

Existing telephone company-owned pole lines would not be removed or co-located on the project poles; however, PG&E would contact communication service providers to offer room for their communication lines on the new power line as part of the underbuild activity. If the telephone lines are moved then the existing telephone poles would be removed.

4.10.4.2 Poles

The project would include wood poles, light-duty steel poles (see Figure 4-4), and, in specific and limited circumstances, tubular steel poles (see Figure 4-5). For public protection during wire installation, temporary guard structures would be installed on wood poles over obstacles such as railroads, roadways, existing power lines, and structures. These structures prevent ground wire, conductors, or other equipment from falling on an obstacle. The guard structures would be removed following wire stringing/installation.

New pole heights would accommodate conductor sway and insulator style, conform to applicable PG&E requirements, provide electric and magnetic field (EMF) minimization near residences, and meet GO 95 clearance requirements for the new conductor. Tangent poles would be used where the run of poles continues in a straight line. Dead-end poles with guying would be used at the end of each reel of conductor (approximately 4,500 feet), at angle changes, and at high strain locations.

PG&E would use existing standard raptor safe design for its poles, providing 8.5 feet distance between conductors with an occasional 12 kV underbuild. In areas of underbuild, triangular raptor perch deterrents would be installed per the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service (USFWS) Avian Protection Plan Guidelines (APLIC and USFWS, 2005).

Pole framing types for wood poles and light-duty steel poles are expected to include type T1 cross-arm construction, suspension (SS2 type) cross-arm construction, triangular post and dead-end (TPD) cross-arm construction, and vertical angle.

Wood Poles

Wood poles would be installed where distribution or grounded service to a customer exist (i.e., transformers, capacitor or other distribution hardware on the pole). Wood poles would be direct buried and would not have foundations.

The existing wood distribution poles are buried approximately six to eight feet in the ground, with a typical height of 39 to 57 feet above ground. The new wood poles would be buried approximately nine to 11 feet in the ground and would be approximately 65 to 80 feet above ground. The existing wood Gallo Tap poles are approximately seven to 10 feet in the ground, with a typical height of 48 to 60 feet above ground. The new wood poles supporting the double-circuit portion of the line to Gallo Substation would be approximately 20 feet taller than the existing Gallo Tap wood poles to allow sufficient separation between the conductors on the double-circuit portion of the line, for a maximum height of approximately 80 feet. A typical wood power pole with SS2 framing would be used for this double-circuit portion of the line.

Temporary guard structures, as illustrated in Figure 4-6, are wood poles that typically extend approximately 50 feet above ground level, are buried approximately seven feet in the ground, and have a diameter of approximately 16 to 24 inches at ground level. These poles would have at least a 25-foot clearance above ground.

Light-Duty Steel Poles

Light-duty steel poles would be installed where wood poles or tubular steel poles would not be required. New light-duty steel poles would have a surface treatment designed to render the appearance of natural weathering of a wood pole.

The poles have two sections and would be assembled during installation. Light-duty steel poles would be direct buried and would not have foundations. The poles would be between approximately 65 to 70 feet above ground (except for angle poles and orchard crossings as noted below) and have a typical depth of 11 to 14 feet below ground. A typical light-duty steel pole that would be installed for this project is shown in Figure 4-4. Along Palm Avenue the power poles would be approximately 50 feet above ground. Angle poles are expected to be between approximately 80 to 85 feet above ground with a setting depth of 11 to 14 feet. In areas where light-duty steel poles would be used to cross orchards, the pole heights would be approximately 65 to 70 feet above ground to provide adequate clearance for a mature orchard tree.

Tubular Steel Poles

Tubular steel poles (TSPs) would be installed where the power line crosses over SR-99, intersects with Gallo Tap, and enters Cressey Substation and Gallo Substation. Two TSPs would be installed on the south side of Cressey Substation, replacing the existing Cressey Tap wood transition pole. Based on current preliminary project design, a total of 10 to 15 TSPs would be installed as part of the Proposed Project.

The typical TSP height would be approximately 80 to 90 feet above ground. The TSP concrete footing depth would be approximately 15 to 30 feet. The average concrete footing diameter would be between 5 and 5.5 feet. A typical TSP design is shown in Figure 4-5.

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Source: PG&E, 2011.

Aspen Environmental Group

Figure 4-4
Typical Light-duty Steel Pole

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Source: PG&E, 2011.

Aspen Environmental Group

Figure 4-5
Typical Tubular Steel Pole

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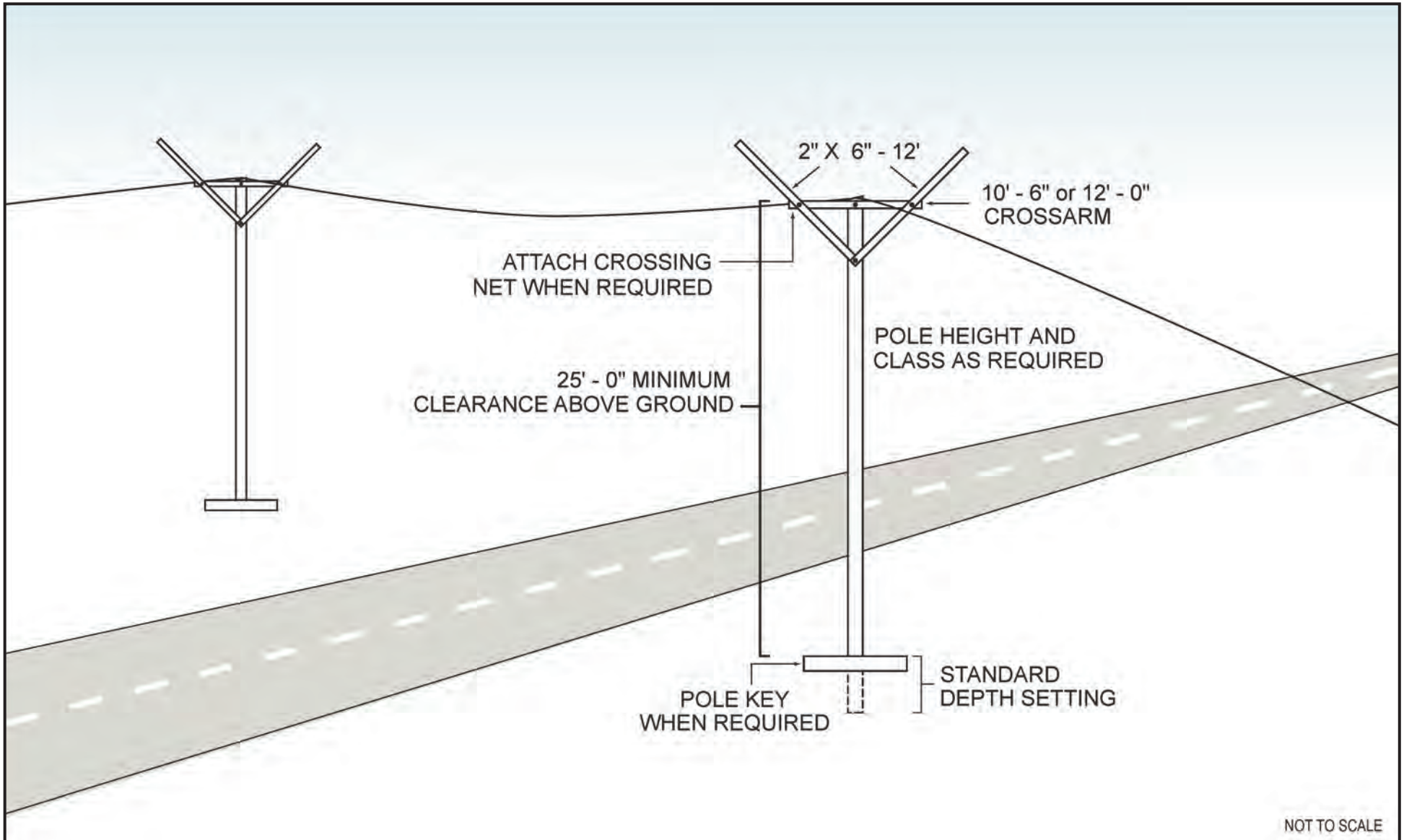

Source: PG&E, 2011.

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Figure 4-6

Typical Guard Structure

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The existing PG&E distribution line across SR-99 would be co-located with the new power line as underbuild on the same poles. The TSPs at this crossing would be approximately 80 feet above ground. The existing distribution wood poles are approximately 62 feet above ground. After moving the distribution line to the TSPs, the distribution poles would be removed.

Pole Locations

New poles typically would be located on private property within approximately five feet of the edge of the county road ROW. The new pole locations would be approximately four to seven feet from any existing distribution pole alignment if present. Distribution poles are typically located two feet inside the county road ROW. Where the project route is not parallel to a county road ROW, the new poles typically would be located on private property approximately 20 feet from the property line. Distances between poles (spans) are anticipated to range from approximately 300 to 350 feet.

The existing distribution poles on either side of SR-99 are located in county franchise. The new TSPs are expected to be placed in county franchise within approximately five feet of the existing distribution poles. At Arena Way south of Liberty Avenue, the current county road ROW is 20 feet on the west side and 60 feet on the east. In this area, the pole line would be on the east side of Arena Way within existing franchise south of Liberty (and not on private property).

The Cressey–Gallo power line transition pole would be located within the Cressey Substation footprint where a steel lattice tower is currently located (which would be removed as discussed further in Section 4.10.4.3). The new Cressey Tap tubular steel poles would be located on existing PG&E Cressey Substation property on the south side of the southern fence line. These two poles would be located near the corners of the southern fence line.

Where orchard roads are not sufficiently wide to allow PG&E operation and maintenance vehicles to access the poles, a limited number of trees are expected to be removed to allow access. When poles are located in an orchard, they would be located along and within a line of trees and placed between trees, outside of the orchard's current roads. PG&E would discuss any required tree removal with the respective property owners.

4.10.4.3 Modification and Expansion of Substations

To support the new power line, new equipment would be installed at Cressey Substation and Gallo Substation. The modifications at Cressey Substation would occur within the existing fence line. At Gallo Substation, the modifications would require the acquisition of additional property and the expansion of the existing fence line.

Water may be used to soften the dirt and control dust during substation surface blading activities. A water truck would be present for such use as needed during grading activities. Water use during construction would be dependent upon the activity, season and weather. The grading contractor is expected to seek water supplied from various sources, including local farmers or property owners with private wells, and sources linked to the community of Cressey and the City of Livingston water supplies.

Cressey Substation

PG&E would remove the existing 80-foot-tall lattice steel tower and telecommunications control building in the northeast corner of Cressey Substation because these facilities are no longer needed for the operation of the substation. The removed materials may contain asbestos. PG&E would submit a notification to the San Joaquin Valley Air Pollution Control District (SJVAPCD) a minimum of 10 working days prior to the removal of these facilities.

The surface of the substation where the new equipment would be installed would be bladed to achieve a level or final grade. The existing control building with batteries would not be removed. The new power line would enter the substation from West Lane and connect to approximately two new TSPs where the lattice steel tower (to be removed) is currently located inside the northeastern corner of the fence line. A new bay would be located on the east side of the existing bays. The existing Cressey Tap transition pole would be replaced with approximately two TSPs on the south side of the substation, south of the existing fence on PG&E property to accommodate the new bay. Approximately four new electrical grounding rods (up to approximately 150 feet deep) would be installed for the ground grid system.

Cressey Substation would be modified to include two new high-voltage circuit breakers (HVCBs), a new control and battery building, five coupling capacitor voltage transformers (CCVTs), and associated structures, switches, lighting, and busing, which transfers data between substation components. The new equipment would terminate the new incoming lines and provide superior electrical system protection and automation. Permanently installed equipment would include approximately three dead-end structures, eight 115 kV switches, two 115 kV breakers, 32 bus and CCVT support structures, and structure-mounted lighting to maintain general and operational lighting levels. Cressey Substation will use a Single Bus Single Breaker (SBSB) pattern for the new construction.

The new building would be mounted on a concrete foundation pad approximately three feet deep. The new bay would require limited excavations and augering for concrete structure foundations, and typically would extend to a depth of five to seven feet, with the dead-end structures extending to a depth of approximately 14 feet.

One existing 21 kV distribution breaker and its associated equipment at the Cressey Substation has been identified for replacement within the next few years. PG&E has indicated that the distribution might be timed to coincide with the Cressey Substation modifications associated with the Proposed Project. The two projects are unrelated but could take advantage of the same clearances providing efficiencies. All work on the distribution project would occur within the existing substation fence line.

Figures 4-7, 4-8 and 4-9 provide the existing aerial view, typical profile and the proposed expansion aerial view of Cressey Substation. Figure 4-9 does not show the existing substation equipment, telecommunication control buildings, lattice steel tower, and Cressey Tap poles that would be removed during construction.

The Approximate dimensions of the Cressey Substation modifications would follow PG&E design standards. The new control building would be approximately 11 feet high, 16 feet wide and 49 feet long. The three main dead-end structures would be approximately 36 feet high and 36 feet wide. The multiple bus supports, insulators and bus would be approximately 12 feet wide and 19 feet high. The three CCVT support structures would be approximately seven feet high by 21 feet wide.

Gallo Substation

To accommodate the modified bus configuration, the Gallo Substation footprint would be expanded southerly by approximately 4,500 square feet through acquisition of additional property. PG&E would make arrangements with the Gallo Winery to acquire the additional property. The southern fence at Gallo Substation would be removed and the fence line would be extended to enclose the entire expanded substation area. Existing asphalt within the area of expansion will be removed and the surface bladed to achieve a finish grade.

The existing Gallo Tap transition pole to Gallo Substation would be removed and replaced with new TSPs at the southeast corner of the expanded substation to facilitate the interconnections. The existing Gallo

Tap would reconnect to the southernmost circuit breaker in the expanded substation. This configuration would create an electrical loop through the substation, enabling PG&E to isolate the circuits if needed. The new equipment would be used to terminate the existing and new 115 kV lines and tie them into the existing station equipment, providing reliability, protection, control, operation, and automation. Approximately six electrical grounding rods (up to approximately 150 feet deep) would be installed for the ground grid system.

Figure 4-10 depicts an existing aerial view of the substation and Figure 4-11 shows an aerial view of the proposed expansion to Gallo Substation with the expansion plan diagram superimposed on the existing 115/12 kV equipment and control building that would be removed during construction ~~would remain~~. Figure 4-12 illustrates a typical substation profile. The expanded Gallo Substation would use an SBSB pattern. The substation would be modified to include permanent installation of two HVCBs, a new control and battery building, five CCVTs, and associated structures, switches, lighting, and busing. Permanently installed equipment would include four dead-end structures, six 115 kV switches, two 115 kV breakers, six bus and CCVT support structures, and structure-mounted lighting to maintain general and operational lighting levels.

The new control building would be approximately 11 feet tall, 16 feet wide, and 30 feet long. The nearby existing control building, approximately 12 feet wide by 16 feet long, ~~would remain~~would be removed during construction. The four main dead-end structures would be approximately 36 to 45 feet high and 20 to 32 feet wide. The three bus supports with insulators and bus would be approximately 20 feet high by 20 feet wide. The CCVT support structures are approximately seven feet high by 21 feet wide.

4.10.5 Project Construction Activities

4.10.5.1 Staging Areas

Approximately one or two temporary staging areas would be the main base of operations during project construction. Staging areas would be located within the project area, and would be the assembly point for project personnel, as well as the location for temporary, portable bathroom facilities, equipment storage during off work hours and weekends, materials storage, construction trailers, employee parking, and a meeting area as needed for project management.

Figures 4-3a through 4-3h identify 7 potential staging locations within the project area. Approximately one or two staging areas would be established within one or two of these potential staging locations during construction. The locations shown on the map are larger than what would actually be used for the staging area to allow flexibility in negotiations with the property owner(s) for the final location. Staging area size may vary depending on negotiations with third-party property owners for temporary construction easements or property owner agreements. For purposes of analysis, each staging area is expected to have a footprint of up to approximately 10 acres.

A secured, fenced location with access by an existing road is preferable. Preparation for site use is expected to include little or no grading at the staging areas aside from minor scraping to achieve an even grade or to remove any weeds that may be present. Gravel or rock may be temporarily added to the staging area as needed to address wet or muddy site conditions or reduce dust or track out from construction equipment. If there is no driveway into a site with a curb, temporary access may be placed (steel plates or cold patch over a culvert) to minimize potential damage to the curb. If there is no fence, a temporary fence will be erected by a contracted fencing supplier. Any temporary fencing would typically be chain link with gates secured by a PG&E lock. A typical PG&E security light would be installed on site in a downcast position. If existing distribution facilities allow for it, PG&E would run a temporary over-

head service drop to the staging area(s) to provide power. After project completion, temporary security, access and site stabilization installations would be removed unless the property owner requests that they remain in place.

If temporary staging areas are not available during construction, PG&E would use either Livingston Substation located north of Westside Boulevard and west of Washington Boulevard in Livingston, ~~or~~ its General Construction Headquarters, currently located at Wilson Substation, 1717 Tower Road, Merced, CA, the Merced Substation, or other existing PG&E facilities.

4.10.5.2 Work Areas

The following discussion is preliminary and based on typical construction practices. Although final design may require modification to proposed work areas described in this text, impacts are not expected to be different at other potential staging locations within the project area. The descriptions and analysis provided here are representative of the types of work areas and impacts that would occur at other potential locations.

Cressey Substation

Work at Cressey Substation would occur within the existing substation property. Some equipment may be parked along the adjacent road during work hours or equipment delivery. The work area within the fence line would be accessed through the northerly gate and the southerly gate along West Lane. The Cressey Tap pole replacement work areas would be accessed from West Lane. Site preparation, removal of some existing structures, and surface blading to achieve a level or final grade would be part of construction as described in Section 4.10.4.3. As such, the work area would not be restored because the grading would be part of the final design.

Gallo Substation

Work at Gallo Substation would occur within the expanded substation footprint. A narrow, temporary work area (physically constrained by an existing winery structure and landscaping) would be set up on the winery property directly outside the expanded substation fence line. This temporary work area would be used during the asphalt removal and finish grading, adjacent vegetation management, and new fence installation. Some equipment may be parked along the adjacent winery parking lot during work hours or equipment delivery. The work area would be accessed from River Road along the winery entrance driveway. Site preparation, removal of some existing structures, surface blading to achieve a final grade, and fence line relocation would be part of construction, as described in Section 4.10.4.3. As such, the work area would not be restored because the grading would be part of the final design. If adjacent winery landscaping is removed during construction, PG&E would coordinate its removal and/or replacement with the winery.

Power and Distribution Poles

Pole work would include: power pole assembly, power pole installation, installation of travelers (stringing blocks) to support the wire stringing, and distribution pole removal. Pole work areas are expected to be located approximately every 300 to 350 feet within the ROW at new pole locations. Where final design allows, power and distribution pole work areas would overlap. Final design would determine final power pole locations.

Work areas would typically include the adjacent county road ROW in addition to the width of the PG&E ROW (40 feet), and extend approximately 100 feet in length. For work areas accessed from an orchard

access road, the work areas may be located on the orchard road depending on pole placement. PG&E would coordinate with property owners when accessing such parcels during construction and when locating work areas on orchard roads. Construction vehicles and equipment would be staged or parked alongside the access road in the project ROW unless other arrangements have been made with the property owner.

Work areas would be accessed primarily from the adjacent dirt and paved roads. The orchard access road bordered by the Cressey Lateral irrigation ditch and the BNSF alignment along the Mercedes Avenue portion of the route alignment would be accessed from Central Avenue on the south side of the orchard.

Site preparation is not expected for the majority of the project's pole work areas. Some vegetation removal or tree trimming may be required for vehicle access and to minimize the risk of fire. Gravel or rock may be added to dirt roads as needed due to weather conditions or to reduce dust from construction equipment. Site restoration would not be necessary due to the limited nature of site disturbance, which is expected to re-vegetate naturally. The gravel or rock would be removed after project completion, or left in place at the request of the property owner.

Project plans include the partial or complete removal of one row of almond trees in an orchard between Eucalyptus Avenue and Mercedes Avenue. In general, orchard trees would be avoided where feasible; isolated tree trimming or removal would be coordinated with the property owner or operator. Removal of some orchard trees may be required in certain locations to locate poles and to provide access to the pole location for construction, operation and maintenance. PG&E would coordinate with orchard property owners prior to removing trees and locating poles.

Pull and Tension

Pull and tension activities would include guard structure installation, pull and tension equipment staging, temporary pole anchor installation, and pulling and tensioning of the conductor. Most pull and tension work areas are expected to be located within the ROW and may be located approximately 0.5 to 2 miles apart as required by the final design. Preliminary pull and tension site locations are shown on Figure 4-3a to 4-3h. It may be necessary to access areas in the ROW away from a pole work area to support pull and tension activities. Pull and tension site locations are preliminary and subject to change based on final engineering and other factors. If pulling is required through an angle, or at the start of a new direction of the route, the site may be located at an angle outside the ROW or off the end of a ROW corner.

A pull and tension site is typically located at a 1:3 ratio from a pole (pole height and distance from the pole — for example, the pull and/or tension site for a 50-foot-tall pole will be located approximately 150 feet from the pole location). Pull and tension work areas would typically be the width of the ROW (40 feet) and approximately 200 feet in length.

Guard structures (as described in Section 4.10.5.9.3) would be installed when the conductor is being pulled across a road. Guard structures are temporarily installed during construction. A work area of approximately 100 feet by 100 feet would be used to install the guard structures. Final design would determine guard structure work area locations.

Construction vehicles and equipment needed at the pull and tension sites would be staged or parked within the project ROW or alongside access roads, and pull and tension sites within orchards may be located on orchard roads; PG&E would coordinate with property owners when accessing parcels during construction and when locating pull and tension sites. Site preparation would not be needed for the

majority of the project's pull and tension sites. Some vegetation removal or tree trimming may be required for vehicle access and to minimize the risk of fire, but site restoration would not be necessary because the disturbance would be limited and it is expected to re-vegetate naturally.

4.10.5.3 Access Roads and/or Spur Roads

Pole work areas along the route would be parallel and adjacent to county, farm, orchard, or vineyard roads or orchard rows. As such, work areas are expected to be accessed from adjacent roads. Figures 4-3a to 4-3h identify access roads expected to be used during construction and operations and maintenance. Access may also include all existing paved and dirt roads located within project area. Access roads would be either paved or dirt, as described in Table 4-1. In some orchard locations, after PG&E consultation with the property owner, trees would be removed and trees adjacent to access roads may be trimmed to avoid damage from construction vehicles.

Table 4-1. Access Roads Area

Type of Road	Description	Distance
Existing Paved Road	Typically paved two-lane private or county road. No preparation required, although a few sections may need to have trees trimmed.	12.7 miles
Existing Dirt Road*	Typically double track existing orchard access roads, previously graded. A few sections may need to have vegetation cleared, or to have trees trimmed.	3.6 miles
New Orchard Dirt Road*	Typically the area previously occupied by a row of orchard trees. Minimal surfacing contouring may be required to level the dirt following tree removal. Adjacent orchard trees may be trimmed to avoid damage from construction vehicles.	0.2 miles

*Typical dirt road is 12 feet wide.
Source: PG&E, 2011.

Following tree removal, the access road area created may require minimal surface contouring to level the dirt. Water may be used during surface blading to soften the dirt and control dust. The amount of water used is expected to vary depending on the soil conditions at the time of grading. Road improvement work is not expected to be required, although rock and/or gravel or other similar foundation support may be added to facilitate use, reduce damage and control dust to existing dirt or gravel roads.

Excessive fugitive dust is not expected to be an issue during the use of unpaved access roads. Infrequent travel on unpaved access roads and vehicle speed control are expected to minimize potential dust. Travel on any one access road is expected to be limited given the limited duration of work at each pole site work area, the limited amount of vehicles to be used during construction (see Table 4-3), and the small size of each construction crew (approximately 5 individuals).

4.10.5.4 Construction Traffic and Circulation

Construction would require temporary lane closures along various public and private roads within the project area over the 9-month construction duration. PG&E would coordinate with the California Highway Patrol (CHP) to control traffic across SR-99 for brief durations during some construction activities, such as wire stringing and installation.

Temporary lane closures would be coordinated with local and state agencies. PG&E would obtain ministerial encroachment permits to conduct work in public ROWs in accordance with applicable State, county, and city requirements.

Aspen Environmental Group

Figure 4-7

Cressey Substation Existing Aerial View

Source: PG&E, 2011.

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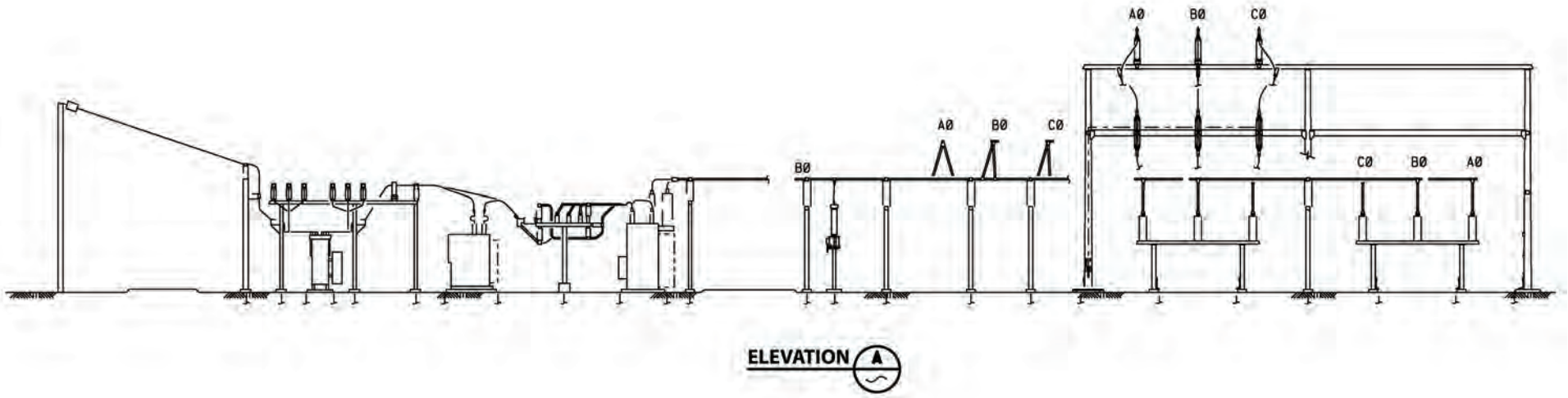

Aspen Environmental Group

Figure 4-8

Cressey Substation Modification Profile View

Source: PG&E, 2011.

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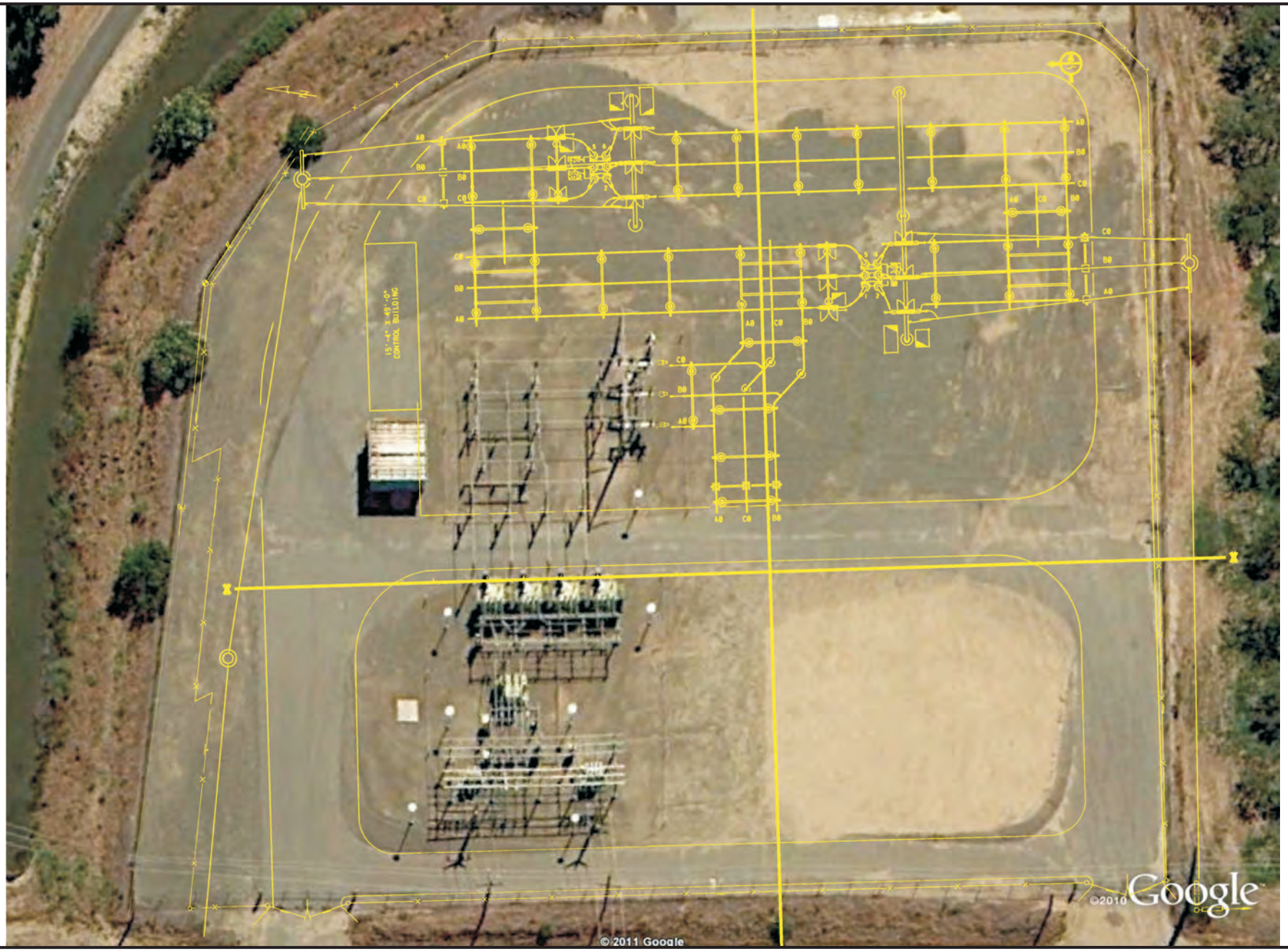

Aspen Environmental Group

Source: PG&E, 2011.

Figure 4-9

Cressey Substation Existing Aerial View with Proposed Modification Plan View

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Aspen Environmental Group

Source: PG&E, 2011.

Figure 4-10
Gallo Substation Existing Aerial View

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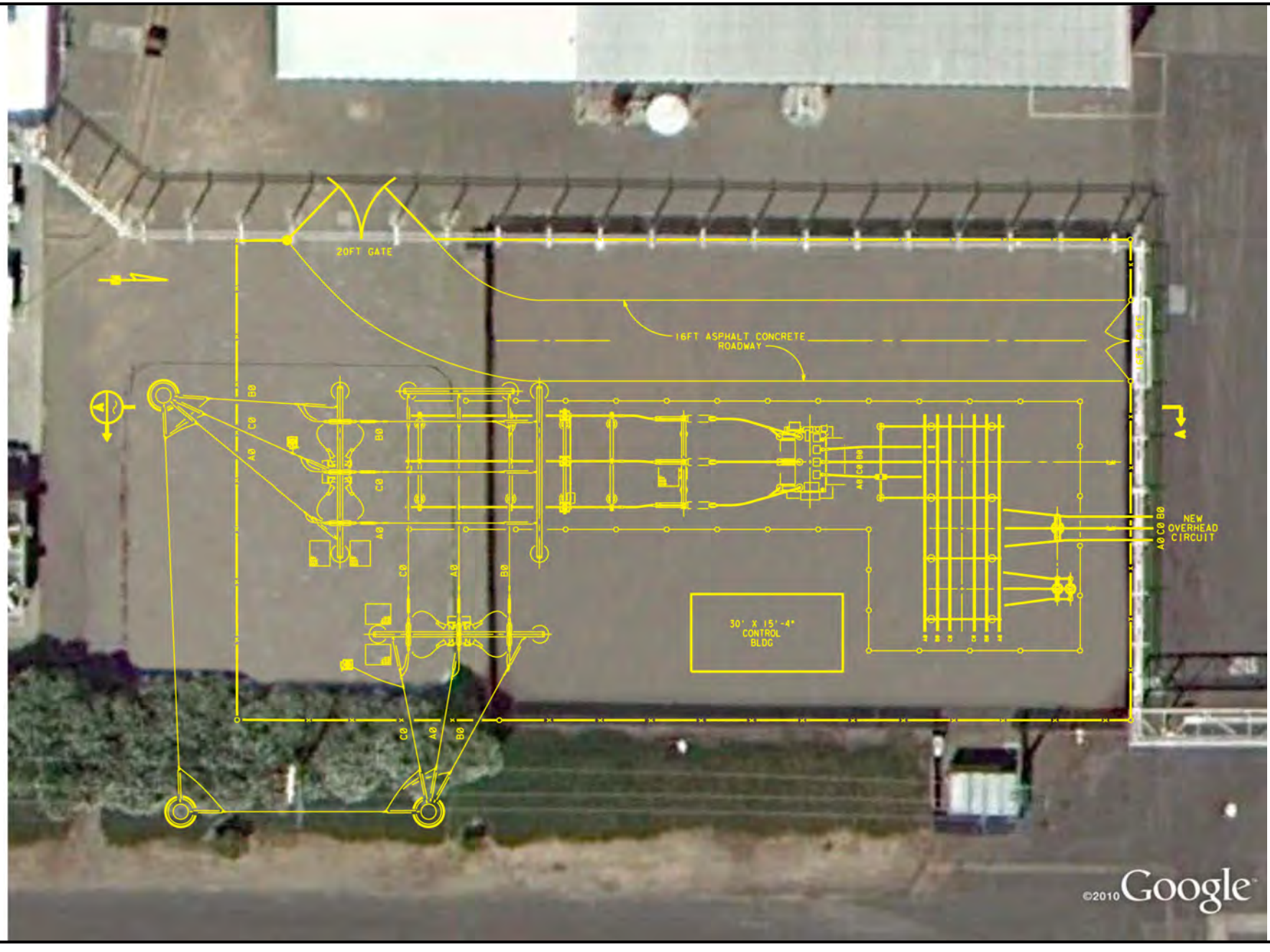

Source: PG&E, 2013.

Figure 4-11

Gallo Substation Existing Aerial View with Proposed Expansion Plan View

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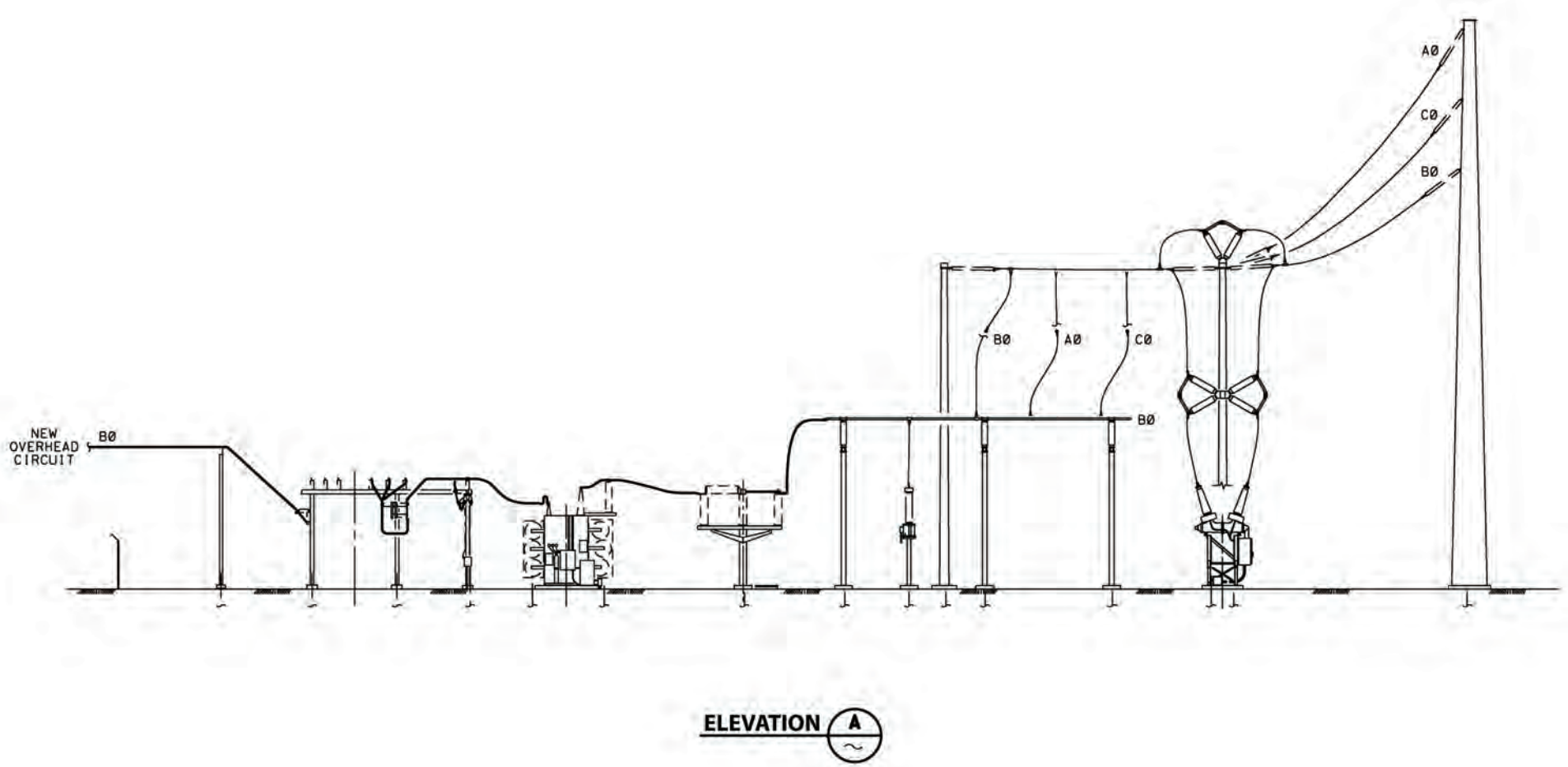

Source: PG&E, 2011.

Figure 4-12
Gallo Substation Expansion Profile View

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4.10.5.5 Vegetation Clearance

Some vegetation removal or tree trimming may be required for vehicle access and to minimize the risk of fire. Site restoration would not be expected due to the limited amount of vegetation removal that would be required. Tree removal and trimming would be conducted in accordance with CPUC GO 95 requirements. GO 95, Section III under Vegetation Management states that the minimum clearances between line conductors and vegetation under normal conditions are established in Table 1, Cases 13 and 14.

Along some access roads, trees would also be trimmed to provide clearance for vehicles. Some orchard trees would be removed for pole placement and/or access for construction and operations and maintenance activities. PG&E would coordinate with property owners when planning tree removal on private property. Tree trimming and removal will be avoided where feasible.

One vegetation management crew of typically two to three people would access work areas by truck as needed. Vegetation and trees would be trimmed or removed with equipment appropriate to the type of management. Vegetation management equipment would typically include manual clippers, chain saws, and shredders. Generally, removed vegetation would be shredded in place and spread nearby.

Two palm trees located on private property at the driveway entrance to 9261 West Palm Avenue would be relocated or replaced nearby on the property owner's property. PG&E would coordinate the relocation or replacement with the property owner.

The partial or complete removal of one row of almond trees in an orchard between Mercedes Avenue and the Livingston Canal to the south is expected. Orchard trees would be avoided where feasible; isolated trimming or removal would be coordinated with the property owner or operator.

Oleanders located near the existing Gallo Tap transition pole into Gallo Substation would be removed to allow installation of a new transition pole. PG&E would coordinate removal with the Gallo Winery and, if requested, would provide replacement landscaping.

4.10.5.6 Erosion and Sediment Control and Pollution Prevention

The approximately 0.2 miles of new orchard access roads would require surface blading/leveling, as discussed in Section 4.10.5.3. Grading at Cressey and Gallo Substations is discussed in Section 4.10.4.3. Applicant Proposed Measures (APMs) to minimize and avoid erosion and pollution and provide sediment control during construction are listed in Section 4.10.8 and are discussed in their respective resource subsections of Section 5.

A small, temporary stockpile of excavated dirt may be located near a pole hole excavation to be used for backfill for a nearby old distribution pole hole or temporary guard structure pole hole. Stockpiles would be located away from and/or down-gradient of waterways. Sediment control best management practices (BMPs) would be implemented to manage temporary stockpiles.

Construction debris would be transported to the staging area(s) or to an area Service Center as needed for recycling or disposal. Existing wood poles would be removed to an area Service Center or staging area collection bin for transport with other materials for disposal to a licensed Class I or Class II landfill or a composite lined portion of a solid waste landfill. PG&E would comply with all laws and regulations regarding the disposal of the existing wood poles.

If underground storage tanks (USTs) or aboveground storage tanks (ASTs) are found to be located along the project route and the route cannot be adjusted to avoid disturbance, the tanks would be removed

prior to project construction or segregated from the work area and not disturbed. If it is determined that removal of tanks is necessary, a separate work plan describing the proper decommissioning and removal of the tanks and removal of any associated impacted soil would be prepared prior to removal.

4.10.5.7 Cleanup and Post Construction Restoration

During construction, construction debris would be picked up daily from line work job site areas and hauled back to a staging area or an area Service Center for recycling or disposal. Construction debris would be picked up from substation construction areas and stored in approved containers on site, and would be hauled away for recycling or disposal periodically during construction. PG&E would conduct a final survey to document that clean-up activities have been successfully completed as required.

Existing access roads and new dirt roads would not be re-vegetated; they would continue to be used for operations and maintenance. Work areas where vegetation management, ruderal vegetation removal, and/or tree trimming occurred are expected to re-vegetate naturally due to the limited disturbance. Orchard trees removed for pole placement and access would not be restored.

4.10.5.8 Power Line Construction

The following power line construction sections describe activities associated with the new line construction including associated installation, relocation and/or removal of existing taps, distribution lines and the shoo-fly.

Pole Transportation

A line truck with trailer and a second transport vehicle (crew cab truck or half ton pickup) would be used to transport construction personnel to a pole work area. A line truck would haul new poles to the site on a trailer and haul away removed distribution poles on a trailer. A line truck with trailer would deliver approximately three wood or light-duty poles per trip. A line truck with a trailer likely would deliver one tubular steel pole per trip. Typically a second transport vehicle would accompany the delivery truck during pole staging. Multiple removed distribution poles would likely be transported from work areas per trip, when feasible.

Pole transportation methods depend on the timing of pole delivery to the PG&E from the vendor. There are three possible scenarios for pole delivery:

- *Scenario 1:* The vendor delivers the poles within 2 to 3 weeks of construction. Under this scenario, the vendor would meet a PG&E representative along the construction route and deliver the poles to individual pole work areas.
- *Scenario 2:* The vendor delivers the poles to PG&E 4 to 10 weeks prior to construction. Under this scenario, a staging area along the construction route, if available, would be utilized to take delivery of the poles. From this staging area, the poles would be transported to individual pole work areas by a PG&E line truck with a trailer.
- *Scenario 3:* The vendor delivers the poles to PG&E more than 10 weeks before construction or if scenario 1 or 2 cannot be implemented. Under this scenario, PG&E would direct the vendor to deliver the poles to the PG&E's area General Construction Headquarters, currently located at Wilson Substation, 1717 Tower Road, Merced, CA. The poles would be stored at the substation or other existing PG&E storage yard until needed for construction. When needed, the pole transport vendor would transport the poles from storage to pole work areas.

Distribution Pole Removal

After the new power poles are installed, old distribution poles would be removed. A mounted hydraulic jack may be used to loosen the old pole. If the pole is a joint pole with the communication company, the pole would be secured by the line truck's boom, and personnel using a chainsaw would remove the top portion of the pole. The communication company would be responsible for transferring its line to the new pole. If the communication company decides not to co-locate its facilities with the power line, then the topped pole would be left for that use. If the pole is solely owned by PG&E, the line truck would use the boom to lift the pole out of the ground and lay it down on the ground. The pole would be cut into segments for transport to the staging area or an area Service Center. Soil from nearby new power pole holes would be used to backfill old pole holes. Any unused soil would be feathered in around the new pole location. If additional soil is required to fill old pole holes, the amount needed would be minimal. Clean fill soil bags would be used if needed.

Planned Existing Electric Distribution Line Outages. During construction, some sections of electric distribution lines that would cross or would be co-located with the Proposed Project may be temporarily taken out of service. PG&E's Distribution System Operations group would coordinate taking the existing distribution lines out of service, called taking clearances. The Distribution System Operations group would assess how to accomplish the clearances, identify where and when clearances may occur, notify customers being served by the distribution line that power outages could occur, manage the clearances, and retain balance in the system by routing power to minimize customer outages.

The Distribution System Operations group would turn switches on and off at locations along the distribution lines being taken out of service or along other distribution lines that could be affected to manage the clearance and maintain balance in the service area. The switches may be thrown at a central location such as a substation, accessed remotely by Systems Operations, or may require the Systems Operations group to drive to the pole and throw a switch. Bucket trucks may be used to enable the troubleman to physically reach the switches. Turning a switch on or off would require minutes to complete.

Pole Installation

Expected metrics for wood poles, light-duty steel poles, and tubular steel poles are provided in Table 4-2. The line would likely be designed with approximately 16 poles per mile, or approximately 230 poles. Pole installation would occur during daylight hours. Typically, four to five truck trips would be required to set a new power pole and remove an old distribution pole from a work area.

Table 4-2. Summary of Approximate Pole Metrics

Structure Feature	Approximate Metrics
Wood Pole and Light-Duty Steel Pole	
Diameter	18.5 inches (average, wood size varies and pole height dependent)
Wood Pole Auger Hole Depth	9 to 11 feet (average, wood size varies)
Light-duty Steel Pole Auger Hole Depth	11 to 14 feet (average, pole height dependent)
Individual Permanent Footprint	1.9 square feet (average)
Approximate Number to be Installed	230
Average Work Area at Each Site	4,000 square feet
Total Permanent Footprint	Approximately 0.01 acres
Tubular Steel Pole	
Diameter	5.0 to 7.0 feet (average range, pole height dependent)

Table 4-2. Summary of Approximate Pole Metrics

Structure Feature	Approximate Metrics
Foundation Depth	15 to 30 feet (average range, pole height dependent)
Individual Permanent Footprint	20 to 24 square feet (average range)
Approximate Number to be Installed	10–15
Average Work Area at Each Site	4,000 square feet
Total Permanent Footprint	Approximately 0.006 acres

Source: PG&E, 2011.

Wood and Light-Duty Steel Poles. Wood poles and light-duty steel poles would be direct buried and would not require foundations. The poles would be placed directly into augered holes. A line truck with a truck-mounted auger would be used to create the holes. The line truck or a pick-up truck would be used to transport crew members to the work area. If the pole is not set immediately after the hole is dug, the holes would be covered with plywood or other temporary, solid, heavy covering until the new pole is installed. Soil removed from the new pole hole would be used to back-fill old pole holes and to secure the new pole in place. Soil may be temporarily stockpiled in accordance with applicable BMP measures until it is used as backfill. A water truck may be on-site to support dust suppression during ground disturbing work.

Light-duty steel poles would be manufactured in two pieces that are a matched set specific to a pole location. The pole pieces are closed at each end; there are no openings that wildlife may view as a potential burrow. The bottom piece of the pole assembly will be placed in the hole while the top piece has 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 section. Soil will be backfilled around the newly installed pole to fill any void remaining around the pole.

Tubular Steel Poles. Installation of TSPs would include the following steps for site preparation, foundation installation, and pole installation. To prepare the site, the pole location would be staked. The work area would be flagged, and required BMP measures installed. If required, a crane pad would be prepared, which may require surface blading to create a level surface. TSP foundation installation would include:

- Excavating the hole;
- Installing forms, rebar, and anchor bolts;
- Pouring concrete;
- Removing forms; and
- Placing gravel around and grooming the base area.

After the new TSP is installed, any distribution line would be moved to the new pole and the old wood distribution pole would be removed. Excess soil onsite would be feathered around the work area, and other construction materials will be transported to an area Service Center or other appropriate facility for disposal.

TSPs would have concrete pier foundations approximately five to seven feet in diameter. TSPs would be set approximately 15 to 30 feet below ground. A line truck would be used to haul foundation forms, anchor bolts, rebar, and pole structures to work areas. The line truck with a boom would be used to place foundation forms, anchor bolts, and rebar in place prior to pouring of concrete for the foundation, and to remove the forms following completion of the foundation.

A four-wheel drive concrete mixer truck capable of delivering eight yards of concrete would be used to deliver and pour concrete for the TSP foundations. Concrete trucks would not be washed out at pole locations, but rather would be rinsed using the portable stations established for concrete clean-up at project staging areas. A backhoe will be used to place gravel around the TSP after formwork has been removed and to groom the area surrounding the pole installations. A crane would be used to place TSP on the foundations.

Pull and Tension Work Areas

A line truck with trailer and a second transport vehicle (crew cab truck and/or half ton pickup) would be used to transport construction personnel to a pull and tension work area. A line truck would haul the conductor to the site with reel trailers and mounted reel stands. An 18-wheeled truck with trailer may be used to transport more than one reel to the work area. Pullers would be mounted on the line truck or trailer to install the conductor. Old distribution line would be removed from the sites on a line truck with trailer. Pole anchors may be installed to stabilize poles when pulling the conductor.

4.10.5.9 Distribution and Power Line Relocation and Conductor Installation

Distribution Line, Shoo-Fly, Gallo Tap, and Cressey Tap Relocation

Up to six crews (a total of approximately 30 personnel) would participate in distribution line and Gallo Tap power line relocation. If the existing line is on the same side of the street as the new power line, a line clearance would be obtained before the existing line is relocated to the new power poles, as described in Section 4.10.5.8. If the distribution line is being moved across the street, the new power line with distribution underbuild would be constructed without taking the distribution line out of service except to connect the distribution to the customer(s). Moving or removing old or pre-existing lines would be done after a clearance is obtained (while the lines are de-energized). Approximately 75 percent of the project is anticipated to include underbuilt distribution lines. PG&E would notify the telephone company(ies) of the new construction in accordance with the Northern California Joint Pole Association guidelines for new construction (PG&E, 2011).

During this time, PG&E would make every effort to minimize power outages to customers. The anticipated average length of a line clearance is 8 hours for this project. The maximum length of a line clearance is expected to be 12 hours. If following construction outage notification, a customer informs PG&E regarding a particular sensitivity to power outages (for example, a medical condition), PG&E would provide a temporary backup gasoline generator with a 5- to 7-horsepower motor. Businesses in the area would be contacted and PG&E would accommodate normal business hours of operation whenever possible.

Conductor Installation

Typically the following seven steps would be taken to install a new conductor (wire stringing):

1. Travelers (pulleys) would be installed on the ends of insulators on each pole frame. A line truck with a bucket would be required to install the pulleys. Installation of pulleys may be phased to correspond with the specific section of wire stringing.
2. A truck, an all-terrain vehicle (ATV), or a person would pull a light rope (sock line) in line with the route and lace it through the travelers. A line truck with a bucket would be used or a person may climb the structure.

3. When the sock line is laced through the travelers for the length of the pull, the sock line would be connected to a hard line (steel cable). The hard line would be on a reel that would be on a tensioner. Typically the reel and tensioner would be located on a line truck or semi-truck trailer.
4. The sock line would be pulled back with a truck, an ATV or a person pulling the hard line into place. The sock line would be removed from its connection to the hard line.
5. That same end of the hard line would be connected to conductor. A trailer-mounted tensioner would then pull the hard line, pulling the conductor in the reverse direction.
6. The conductor would be sagged into place using the tensioner.
7. The conductor would be clipped into the insulators and the travelers will be removed by using the line truck with a bucket or a person may climb the structure.

Guard Structures

Prior to stringing conductors, temporary guard structures would be installed at irrigation canals, road crossings, and other locations where the new conductors may otherwise come into contact with electrical, communication, or rail facilities, waterways, or vehicular traffic during installation. Guard structures would be positioned and configured to catch and support the weight of the conductor if it unexpectedly drops or sags excessively during the tensioning process. These structures would be placed on one side or on each side of the road or other location being crossed. For example, the temporary structures are expected to be installed across SR-99, Merced Irrigation District transmission lines, and the BNSF and UPRR railroad crossings.

Each temporary structure would typically consist of a wood pole with a frame at the top that resembles a “Y” or “H”. Figure 4-6 provides examples of temporary clearance structures. Foundations and grading would not be required. Methods for installation and removal of clearance structures would be similar to those described for light-duty steel poles; however, the wood poles would be installed approximately 6 to 10 feet deep. Netting would be installed between the two Y-frame or H-frame structures as needed to avoid contact between the new conductor and an existing facility. Where necessary, traffic control would be provided during installation and removal of these temporary guard structures, and as specified in Caltrans and Merced County encroachment permits.

4.10.5.10 Substation Construction

Cressey Substation

During construction at Cressey Substation, approximately four electrical grounding rods (which may be up to 150 feet in depth) would be required for the ground grid system. A drilling rig would be used to install them. The substation modification would include installation of approximately 52 structure footings and one building excavation and foundation. Excavated material would be used elsewhere on site or removed from the project site. If removal is necessary, transportation and disposal would be arranged after testing of the debris.

The existing fence would not change with the Cressey Substation modifications, and new landscaping is not proposed. Approximately half of the existing Cressey Substation yard would be bladed to create a finish grade using a motor grader. The grader would be transported to the substation work area on a semi-truck trailer. A water truck would be on-site to support dust suppression during ground disturbing work. Soil would not be removed from the work area.

Gallo Substation

During construction at Gallo Substation, approximately six electrical grounding rods (which may be up to approximately 150 feet in depth) will be required for the ground grid system. A drilling rig will be used to install them. Construction at Gallo Substation would include installing approximately 18 structure footings and excavating one building foundation. If there is excess material from excavation, the material would be tested for contamination before removal from the project site. If removal is necessary, transportation and disposal would be arranged after testing of the debris.

Gallo Substation is located on private property and is not visible from public views. The yard with the expanded Gallo Substation would be fenced with material that matches the existing substation fencing (chain link with slats and barbed wire). The surrounding existing vegetation along the private road and parking lot would continue to be maintained at the discretion of E. & J. Gallo Winery. At the expanded Gallo Substation, the existing asphalt would be removed, the surface bladed to achieve a finish grade, and drain rock would be installed. A motor grader would be transported to the substation work area on a semi-truck trailer. A water truck would be available to support dust suppression during ground disturbing work. Removed asphalt would be hauled away and disposed of by an appropriately licensed transporter. Licensed transportation and disposal would be arranged. Soil is not expected to be removed from the work area.

4.10.5.11 Construction Workforce and Equipment

Line Work. The typical work force for line construction would be approximately two crews consisting of five individuals on each crew. These crews would frame and set the poles in preparation of installing the conductor. On the days that the conductor is installed and sagged, the crew compliment could be as large as four crews consisting of five individuals per crew for a total of 20. This activity is anticipated to occur approximately four days a month for the duration of the project (PG&E, 2012a). During line work, crews would typically be working at adjacent poles. During wire stringing activities, two crews would be working at different work areas but typically no more than two miles apart.

Substation Work. The substation work would be performed by six to eight individuals on a daily basis to (install the civil and steel structures and perform testing). Separate construction crews may be working at each substation at the same time. This work would be conducted over an approximately four month period (PG&E, 2012).

Table 4-3 lists the expected equipment and personnel by construction activity. Not all equipment and personnel may be used during all portions of the activity. This is a preliminary equipment list, and other equipment may be identified when project design is finalized or during construction if unexpected conditions require additional equipment. Designated fueling areas would be identified as part of the final design when project staging areas are identified.

Table 4-3. Anticipated Personnel and Equipment Required for Project Construction (based on typical estimates)

Activity	People	Quantity of Equipment
Survey	2 to 3	1 Pickup truck
Substation Yard Grading	2 to 3	1 Motor grader 1 Pickup truck 1 Semi truck with trailer to haul grader 1 Water truck

Table 4-3. Anticipated Personnel and Equipment Required for Project Construction (based on typical estimates)

Activity	People	Quantity of Equipment
Auger Holes	3	1 Water truck 1 Pickup truck 1 Line truck with auger attachment
Material Haul	3	1 Line truck with trailer
Install Tubular Steel Poles	6 per crew	1 Line truck with boom and crane 2 Crew-cab pick-up truck 1 Light-duty pick-up truck 1 Hole digger 3 Cement truck 1 Backhoe
Pole Delivery	2	1 Pole delivery truck 1 Pickup or light SUV
Wood and Light-Duty Steel Pole Installation and Distribution Pole Removal (Ground access, per crew; construction will include 2 crews)	6 per crew	2 Crew cab truck 1 Line truck with bucket and trailer (transports boom and auger)
Conductor Installation (includes moving distribution to new pole, up to 4 crews may be present during wire stringing activities)	6 per crew	1 Line truck or semi-truck with wire reel 2 Pickup trucks 2 Line truck with bucket/crane 1 Line truck with wire puller 1 Line truck with wire tensioner
Cressey Substation Modification and Gallo Substation Expansion (equipment expected is for each substation)	5 to 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

Table 4-4 describes the anticipated use of the equipment listed in Table 4-3.

Table 4-4. Equipment Expected to be Used During Construction

Equipment	Use
Aerial Lift	Lifts crew members to make line connections
Auger (truck mounted highway digger 15- to 18-foot depth capability)	Drill holes for pole installation
Bore/drill rig	Installation of holes for new conduits
Cement and mortar mixer	Backfill of conduits
Concrete/industrial saw	Asphalt/concrete cutting associated with substation modification/expansion
Crane	Lifting of heavy equipment
Crew-cab truck or pickup truck	Transport personnel
Drill rig	Install electrical wells
Dumper/tender	Earth movement associated with substation modification/expansion; miscellaneous trash removal
Generator set	Power generation for operation of tools
Line truck (with auger, puller, worker-lift bucket, crane/boom, etc.)	Install and remove holes, poles, conductor
Mechanics service trucks	Service/repair vehicles
Motor grader	Create a finish grade at substation or orchard access road
Reel trailers with reel stands (semi-trailer or truck mounted type)	Haul conductor
Paver and paving equipment	Asphalt installation
Plate compactor	Grading
Puller/Tensioner/Reel (line truck or trailer-mounted)	Install conductor
Pump	Dewatering if groundwater is encountered, and watering for dirt suppression, if necessary
Roller	Asphalt installation
Rough Terrain Forklift	Activities associated with substation modification/expansion, including transport of poles
Semi truck (with trailer)	Haul motor grader, wire reel, or tubular steel pole
Surfacing Equipment	Asphalt surfacing
Sweeper/Scrubber	Road cleaning, if necessary
Tensioner (line truck-mounted)	Install conductor
Tractor/loader/backhoe	Grading and foundation removal; backfilling of holes
Trencher	Installation of conduits and grounds at substations
Water truck	Dust suppression
Welder	Welds associated with substation modification/expansion
Worker-lift (truck mounted)	Lift workers to perform work on structures

4.10.5.12 Construction Schedule

Construction ~~is~~ was targeted to start in April 2013 and was estimated to be complete in January 2014, an estimated 10 months. This schedule is no longer accurate and PG&E has stated that the revised schedule is unknown at this time but that construction activities would likely begin in 2014. Substation work would occur for approximately four to six months ~~within this period~~. Power pole installation, wire stringing, and distribution pole removal would be performed over a~~the~~ seven-month period ~~from May 2013 through January 2014, with the majority of these activities occurring during the summer months~~.

Wire stringing could begin along sections of the line when new poles have been installed for approximately one mile (the length of a new conductor reel).

Gallo Tap could not be removed from service during the grape crushing season (typically late summer and early fall). The anticipated average length of a line clearance (i.e., the time period when a line is taken out of service) would be 8 hours for this part of the project. The maximum length of a line would be 12 hours. Clearances would take place day-to-day during daylight hours. Night-time clearances are not planned for the project, but may occur due to safety, engineering or clearance requirements.

4.10.6 Operations and Maintenance

A typical Supervisory Control and Data Acquisition (SCADA) system would continue to be used to monitor equipment and control breakers at Cressey and Gallo Substations.

Maintenance of the area substation and power line facilities would continue to be performed as follows:

- Inspections of the power line would be performed annually by existing local staff.
- Inspections of the substations will be performed monthly by existing local staff.
- A detailed inspection would be performed by existing local staff every two years, with an air patrol inspection being performed in between, as outlined in PG&E's Electric Transmission Preventative Maintenance Manual (PG&E, 2011).
- A single inspector (existing local staff) would patrol the line as part of the Merced 115 kV transmission system detailed inspection and aerial patrols. Normal inspection and patrols would typically be completed in a 4-x-4 pickup and/or an off-road utility vehicle. While not expected, if walking is required, the inspector would complete portions of the inspection on foot.

Once the new Cressey-Gallo 115 kV Power Line is built and energized, PG&E's existing local maintenance and operations group would assume inspection, patrol, and maintenance duties as needed. No additional staff would be required after substation work is completed. Existing operation and maintenance crews would operate and maintain the new substation equipment as part of their current substation operation and maintenance activities.

4.10.7 Required Approvals

PG&E would obtain permits for the project, as needed, from federal, State and local agencies. Table 4-5 lists permits and approvals that may be required for project construction.

Table 4-5. Permits and Approvals Necessary for the Proposed Project

Permit, Approval, or Exemption	Purpose	Regulation Agency
Federal		
Section 404 Nationwide Permit	Work in "Waters of the United States," including wetlands.	U.S. Army Corps of Engineers (USACE)
Section 7 consultation (through federal review process)	Potential impacts to federally listed species or critical habitat.	U.S. Fish and Wildlife Service (USFWS); National Oceanic and Atmospheric Administration (NOAA) Fisheries
State		
Permit to Construct (General Order No. 131-D)	Construction, modification, or alteration of power line facilities.	California Public Utilities Commission (CPUC)

Table 4-5. Permits and Approvals Necessary for the Proposed Project

Permit, Approval, or Exemption	Purpose	Regulation Agency
Section 401 Water Quality Certification	Consistency with state water quality standards.	Central Valley Regional Water Quality Control Board, Region V (RWQCB)
1600 Streambed Alteration Agreement	Work that affects the bed or bank of a stream or lake.	California Department of Fish and Wildlife (CDFW)
Standard Encroachment Permit	For use of California State highways for other than normal transportation purposes, including construction activities completed within the ROW.	California Department of Transportation (Caltrans)
National Pollution Discharge Elimination System (NPDES) Storm Water Permit	Construction activities disturbing 1 acre or more of soil must submit a Notice of Intent to comply with the terms of the general permit.	State Water Resources Control Board
Local		
Air Pollution Control District Permit	For conducting activities which may result in air pollution.	San Joaquin Valley Air Pollution Control District (SJVAPCD)
Encroachment Permit	For the use of local roads for purposes other than normal transportation.	County of Merced
~~Tree Removal Permit~~	~~For the removal of trees.~~	~~County of Merced~~

4.10.8 Applicant Proposed Measures

PG&E proposes to implement measures to ensure the Proposed Project would occur with minimal environmental impacts in a manner consistent with applicable rules and regulations. PG&E proposes to implement these measures during the design, construction, and operation of the Proposed Project in order to avoid or minimize potential environmental impacts.

Applicant Proposed Measures (APMs) listed in Table 4-6 are considered part of the Proposed Project in the evaluation of environmental impacts (see Section 5, Environmental Analysis and Mitigation). CPUC approval would be based upon PG&E adhering to the Proposed Project as described in this document, including this project description and the APMs, as well as any adopted mitigation measures identified by this Initial Study.

Table 4-6 details each APM by environmental issue area. In some cases, mitigation measures presented in Section 6 are identified for adoption to ensure that impacts of the Proposed Project would be less than significant. The additional mitigation measures either supplement, or supersede the APMs presented in Table 4-6. PG&E has agreed to implement all of the additional recommended mitigation measures as part of the Proposed Project.

Table 4-6. Applicant Proposed Measures (APMs)

APM Number	Issue Area
	Aesthetics
APM AE-1	Construction Activities. Construction activities will be kept as clean and inconspicuous as practical.
APM AE-2	Non-reflective Finish on Permanent Equipment. A galvanized finish that weathers to a dull, non-reflective patina will be used for substation components, chain link fencing, and power structures to reduce the potential for new sources of glare.

Table 4-6. Applicant Proposed Measures (APMs)

APM AE-3	Nighttime Substation Lighting to Minimize Potential Visual Impacts. Design and layout for new lighting at the two existing substations will incorporate measures such as use of non-glare fixtures and directional lighting to reduce spillover into areas outside the substation site and minimize the visibility of lighting from off-site locations.
APM AE-4	Distribution Line Co-location. Where the project power line and existing distribution lines are present along the same roadway corridor, distribution lines will be co-located on project poles where feasible, and existing distribution line poles will be removed in order to reduce the number and overall visibility of power poles in the project area. For portions of the power line route, where an existing PG&E distribution line is located on the same side of the road as the project route, the distribution line will be co-located on the new power poles and the distribution line's wood poles will be removed. Where three or more distribution spans are located on the opposite side of the project route, the distribution line will be co-located on project poles and the existing distribution poles will be removed.
	Air Quality
APM AQ-1	Minimize Fugitive Dust. PG&E will minimize fugitive dust during construction by implementing the following measures. According to SJVAPCD, implementation of the following measures minimizes fugitive dust emissions to a less-than-significant level (SJVAPCD, 2002a). ▪ Visible dust emissions (VDE) will not exceed 20 percent opacity during times when soil is disturbed. ▪ All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, will be effectively stabilized to control dust emissions using water, chemical stabilizer/suppressants, or covering soils with a tarp or other suitable cover or vegetative ground cover. ▪ All onsite unpaved roads and offsite unpaved access roads will be effectively stabilized against dust emissions using water or chemical stabilizer/suppressant. ▪ All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled to prevent fugitive dust emissions by application of water or presoaking. ▪ When materials are transported offsite, all material will be covered, or effectively wetted to limit VDE, and at least 6 inches of freeboard space from the top of the container shall be maintained. ▪ All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday.* ▪ Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized to control fugitive dust emissions by application of water or chemical stabilizer/suppressant. ▪ Within urban areas, track-out will be immediately removed when it extends 50 or more feet from the site and at the end of each workday. ▪ Vehicle speeds will be limited to 15 miles per hour on unpaved roads.

Table 4-6. Applicant Proposed Measures (APMs)

APM AQ-2	Minimize Construction Exhaust Emissions – Criteria Pollutants and GHGs. The following measures will be implemented during construction to further minimize the less-than-significant construction emissions: ▪ Construction equipment will be properly maintained. All offroad construction diesel engines not registered under the CARB Statewide Portable Equipment Registration Program will meet at a minimum the Tier 1 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations (CCR) Title 13, Chapter 9, Sec. 2423(b)(1). ▪ Idling times will be minimized either by shutting equipment or commercial motor vehicles off when not in use or reducing the maximum idling time to 5 minutes (as required by CCR Title 13, Chapter 9, Section 2449 and Chapter 10, Section 2485). The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm up times following start up that limit their availability for use following startup. Where such diesel powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a "common sense" approach to vehicle use; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will provide briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use. ▪ Minimize welding and cutting by using compression or mechanical applications where practical and within standards. ▪ Encourage use of natural gas powered vehicles for passenger cars and light duty trucks where feasible and available. ▪ Encourage the recycling of construction waste where feasible. *Per SJVAPCD Rule 8041, the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the VDE. The use of blower devices is expressly forbidden.
APM AQ-3	Avoid and Minimize Potential Sulfur Hexafluoride (SF6) Emissions. PG&E will continue to include the project substations in PG&E's system-wide SF6 emission reduction program, which includes inventorying and monitoring system-wide SF6 leakage rates and employing X-ray technology to inspect internal circuit breaker components to eliminate dismantling of breakers and reduce accidental releases. New project breakers will have a manufacturer's guaranteed SF6 leakage rate of 0.5 percent per year or less and will be maintained in accordance with PG&E's maintenance guidelines.

Table 4-6. Applicant Proposed Measures (APMs)

	Biological Resources
APM BIO-1	General Avoidance of Biological Resources Impacts. This APM consists of the following components: ▪ Environmental awareness training. Environmental awareness training will be conducted for on-site construction personnel prior to the start of construction activities. The training will explain measures to prevent impacts on nesting birds and special-status species with moderate or high potential to occur in the project area. The training will also include a description of these special-status species and their habitat needs, and an explanation of the status of these species and their protection under the federal ESA, CESA, and other statutes. A brochure will be provided with color photos of sensitive species as well as a discussion of project measures. A copy of the training and brochure will be provided to the CPUC at least 30 days prior to the start of construction. Training logs and sign-in sheets will be provided to CPUC staff. As needed, in-field training will be provided to new on-site construction personnel by a qualified biological monitor who will be identified by the PG&E's biologist, or initial training will be recorded and replayed for new personnel. ▪ Biological monitoring to avoid impacts near or in potentially sensitive habitat. A qualified biological monitor will be onsite during ground-disturbing construction activities near and in sensitive habitat or resources as defined in the project's Biological Resources Technical Report and will monitor implementation and compliance with APMs relating to the sensitive habitat. The monitor will have the authority to stop work or implement alternative work practices as determined by PG&E's biologist in consultation with agencies and construction personnel, as appropriate, if construction activities are likely to impact sensitive biological resources. ▪ Marking of sensitive habitat or resource areas. Sensitive habitat or resources identified during the reconnaissance-level field surveys or pre-construction surveys that are in or adjacent to project work areas, such as occupied burrowing owls burrows, occupied migratory bird nests, elderberry shrubs, and seasonal ponded areas, will be either clearly marked or the limits of an adjacent worked will be clearly marked. Project resource maps may be updated to reflect active nest buffers or changes to the resources adjacent to work areas based on pre-construction survey findings. Such areas will be avoided during construction and additional measures (described below) will be implemented to further avoid impacts. ▪ Litter and trash management. All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in closed trash containers. Trash containers will be removed from the project area at the end of each working day. ▪ Parking. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed or developed areas or work areas as identified in this document. Off-road parking will only be permitted in previously identified and designated work areas. ▪ Route and work area limitations. Vehicles will be confined to established roadways and pre-approved access roads, overland routes and access areas. Access routes and construction work areas will be limited to the minimum necessary to achieve the project goals. ▪ Maintenance and refueling. All equipment will be maintained such that there will be no leaks of automotive fluids such as fuels, solvents, or oils. All refueling and maintenance of vehicles and other construction equipment will be restricted to designated staging areas located at least 100 feet from any down gradient aquatic habitat unless otherwise isolated from habitat (please see APM WQ-1 in Section 3.8.4.2). Proper spill prevention and cleanup equipment will be maintained in all refueling areas. ▪ Pets and firearms. No pets or firearms will be permitted at the project site.
APM BIO-2	Pre-construction Nesting Surveys. If construction is to occur during the avian nesting season (February 1 through August 31), a pre-construction migratory bird and raptor nesting survey will be performed by a qualified biologist in accordance with CDFW survey guidelines. No additional measures will be implemented if active nests are more than the following distances from the nearest work site: (a) 300 ft for raptors, or (b) 75 feet for passerine birds (or as otherwise agreed to by USFWS and CDFW). If active nests are closer than those distances to the nearest work site, then an appropriate nest protection zone will be established by a qualified biologist and the active nest(s) will be monitored for signs of disturbance. Factors to be considered include intervening topography, roads, development, type of work, visual screening from the nest, nearby noise sources, etc. Buffers will not apply to construction related traffic using existing roads that are not limited to project-specific use (i.e., county roads, highways, farm roads, etc.). Consideration will also include timing of nesting (i.e., if the bird nests in the project area during actual construction). If the biologist determines that a disturbance is occurring and/or if nesting raptors are identified in areas susceptible to disturbance from construction activities, PG&E will consult with the USFWS and CDFW to determine the specific buffer zone to be maintained for that nest.

Table 4-6. Applicant Proposed Measures (APMs)

APM BIO-3	Swainson's Hawk Surveys. Swainson's hawk surveys will be conducted according to Swainson's Hawk Technical Advisory Committee (2000) suggested protocol. To meet CDFWs recommendations for avoidance and protection of Swainson's hawks, surveys will be conducted for a 0.5-mile radius around all project activities where access is available (e.g., on public land, along public roads, etc.). If active nesting is identified in an area susceptible to disturbance from active construction activities, PG&E will discuss the occurrence with CDFW. Surveys will be completed during at least two of the survey periods identified in the protocol (January through March 20, March 20 through April 5, April 5 through April 20, and/or June 10 through July 30) immediately prior to the project's initiation. Surveys will not be conducted between April 21 and June 10 because this is during the nesting phase when nests are difficult to locate, and CDFW does not typically consider this a valid survey period.
APM BIO-5	Trenches and Excavations Design and Inspection. All excavations in excess of 2 feet deep will be sloped, have escape ramps installed that are suitable for the escape of the Blainville's horned lizard and other wildlife or be thoroughly covered at the end of the day. All trenches and excavations will be inspected for wildlife at the beginning of the work day and prior to backfilling. If a special-status species is discovered in a trench or excavation, work in the area will be redirected, and the special-status species will be allowed to leave the trench and the area of its own accord. In the event any special-status species is trapped in a trench or an excavation and unable to leave on its own accord, the USFWS and the CDFW will be contacted by the PG&E biologist unless the PG&E biologist identifies an individual with appropriate permits (for example, a CDFW collecting permit) to relocate the special-status species.
APM BIO-6	Open-ended Pipe Covers and Inspection. Open-ended project-related pipes 4 inches or greater in diameter will be capped if left overnight or inspected for wildlife prior to being moved. If a special-status species is discovered in a pipe, the animal will be left undisturbed, and the pipe will not be moved until the special-status species has left the pipe and the area of its own accord. In the event any special-status species is trapped in an open pipe and unable to leave on its own accord, the USFWS and the CDFW will be contacted by the PG&E biologist unless the PG&E biologist identifies an individual with appropriate permits (for example, a CDFW collecting permit) to relocate the special-status species.
APM BIO-7	Valley Elderberry Longhorn Beetle (VELB) Habitat Protection and Avoidance. The project is designed to avoid elderberry plants during construction. When activities are conducted in an area of potential VELB habitat, a qualified individual, as determined by the PG&E biologist, will use project documented elderberry shrub data and review the presence of elderberry plants within a minimum of 25 feet from the worksite. Potential impacts to elderberry plants with one or more stems measuring 1 inch or more in diameter at ground level will be avoided by the qualified individual flagging the plant or the limits of the nearby work area. No work will occur within the flagged buffer zone. During operations and maintenance, if impacts (pruning/trimming, removal, ground disturbance, or damage) are unavoidable or occur, then additional measures identified in the PG&E VELB conservation plan in Appendix D of the PG&E San Joaquin Valley Operations & Maintenance HCP (Jones and Stokes, 2006b), and compliance brochure will be implemented. The VELB compliance brochure must be carried in all operation and maintenance vehicles performing activities within the potential range of VELB.
	Cultural and Paleontological Resources
APM CU-1	Pre-construction Worker Environmental Awareness Program. PG&E will design and implement a worker environmental awareness program that will be provided to project personnel who might encounter or alter historical resources or important/unique archaeological properties, including construction supervisors and field personnel. No construction worker will be involved in field operations without having participated in the worker environmental awareness program. The worker environmental awareness program will include a kick-off tailgate session to present site avoidance requirements and procedures to be followed if unanticipated cultural resources are discovered during project implementation, and a discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and PG&E policies. All project workers involved with ground-disturbing activities will receive a pamphlet listing how to identify cultural resources and what to do if an unanticipated discovery is made during construction. The worker environmental awareness program may be conducted in concert with other environmental or safety awareness and education programs for the project, and may be recorded for use in subsequent training sessions.

Table 4-6. Applicant Proposed Measures (APMs)

APM CU-2	Management of Unanticipated Discoveries. In the unlikely event that previously unidentified cultural resources are uncovered during project implementation, all work within 100 feet of the discovery will be halted and redirected to another location. The find will be secured, and PG&E's cultural resources specialist or designated representative will be contacted immediately. The specialist will inspect the discovery and determine whether further investigation is required. If additional impacts to the discovery can be avoided, the resource will be documented on California Department of Parks and Recreation (DPR) cultural resource records (Form DPR 523) and filed at the CHRIS; no further effort will be required. If additional disturbance to the resource cannot be avoided, PG&E will evaluate the significance and CRHR eligibility of the resource and (if warranted) implement data recovery excavation or other appropriate treatment measures. The methods and results of evaluation or data recovery work at an archaeological find will be documented in a professional level technical report to be filed with the CCIC.
APM CU-3	Treatment of Human Remains. In the unlikely event that human remains or suspected human remains are uncovered during pre-construction testing or during construction, all work within 100 feet of the discovery will be halted and redirected to another location. The find will be secured, and PG&E's cultural resources specialist or designated representative will be contacted immediately to inspect the find and determine whether the remains are human. If the remains are not human, the cultural resources specialist will determine whether the find is an archaeological deposit and whether APM CU-2 applies. If the remains are human, the cultural resources specialist will immediately implement the provisions in PRC Sections 5097.9 through 5097.996, beginning with the immediate notification to the County coroner. The coroner has two working days to examine human remains after being notified. If the Coroner determines that the remains are Native American, he or she must contact the NAHC within 24 hours. The NAHC, as required by the PRC Section 5097.98, determines and notifies the Most Likely Descendant (MLD).
APM PR-1	Worker Environmental Awareness Program Paleontological Resources Module. The project's worker environmental awareness program, which all workers will complete prior to beginning work on the project site, will include a module on paleontological resources (fossils). The module will discuss the laws protecting paleontological resources, recognition in the field and types of paleontological resources that could be encountered on the project, and the procedures to be followed if a paleontological resource is discovered. A copy of the project's worker environmental awareness training will be provided to the CPUC for recordkeeping prior to the start of construction.
APM PR-2	Paleontological Resource Monitoring. If paleontological resources are observed during construction activities, a qualified paleontologist will be notified to review the need for paleontological monitoring during subsequent ground-disturbing activities with the potential to affect paleontologically sensitive sediments at that location. The qualified paleontologist will be responsible for the reassessment of paleontological sensitivity upon the receipt of additional information from ongoing excavations, which may result in reducing, or increasing, the amount of monitoring required. The current project description identifies one location, Cressey Substation, where ground-disturbing activities have potential to affect sediments with high paleontological sensitivity. The ground anode installations at Cressey Substation are expected to reach a depth below~~of~~ 100 feet, which is the approximate depth at which the Corcoran Clay is expected to begin at this location. A paleontological monitor will be present during this drilling when a depth of approximately 80 feet or greater is reached to monitor for paleontological resources that may be encountered in the Corcoran Clay layer. The paleontological monitor will be able to: (1) recognize fossils and paleontological deposits, and deposits that may be paleontologically sensitive; (2) take accurate and detailed field notes, photographs, and locality coordinates; and (3) document project-related ground-disturbing activities, their locations, and other relevant information, including a photographic record.

Table 4-6. Applicant Proposed Measures (APMs)

APM PR-3	Unanticipated Paleontological Resource Discovery. If fossils are observed during excavation, work in the immediate vicinity of a paleontological find will be halted or redirected to avoid additional impact to the specimen(s), and to allow the qualified paleontologist to assess the scientific importance of the find and determine appropriate treatment. If the discovery is significant, but can be avoided and no further impacts will occur, the resource will be documented in the appropriate paleontological resource records and no further effort will be required. If the resource is significant, but cannot be avoided and may be subject to further impact, the paleontologist will evaluate the significance of the resource and implement data recovery excavation, if appropriate, to scientifically recover the specimen as well as its stratigraphic and other pertinent contextual information, or other appropriate treatment measures as approved by the landowner. Any such discoveries on private land are the property of the landowner. If a scientifically controlled recovery occurs, the fossil materials will be prepared so that they can be properly identified and used in research, and curated into an appropriate museum repository. A report will be prepared to accompany the finds that will include descriptions of the geological and stratigraphic context of the find, attendant analyses such as radiocarbon dating and specimen identification, a narrative summary including preliminary interpretations, and a catalog of specimens.
	Geology, Soils and Mineral Resources
APM GM-1	Appropriate Design Measures Implementation. Based on available references, sands and loamy sands are the primary soil types expected to be encountered in the graded and excavated areas as project construction proceeds. Potentially problematic subsurface conditions may include soft or loose soils. Where soft or loose soils are encountered during design studies or construction, appropriate measures will be implemented to avoid, accommodate, replace, or improve soft or loose soils encountered during construction. Such measures may include the following: ▪ Locating construction facilities and operation away from areas of soft and loose soil. ▪ Over excavating soft or loose soils and replacing them with non-expansive engineered fill. ▪ Increasing the density and strength of soft or loose soils through mechanical vibration and/or compaction. ▪ Treating soft or loose soils in place with binding or cementing agents. ▪ Construction activities in areas where soft or loose soils are encountered may be scheduled for the dry season, as necessary, to allow safe and reliable equipment access.

Table 4-6. Applicant Proposed Measures (APMs)

	Hazards and Hazardous Materials
APM HM-1	Hazardous Substance Control and Emergency Response. PG&E will implement its hazardous substance control and emergency response procedures as needed. The procedures identify methods and techniques to minimize the exposure of the public and site workers to potentially hazardous materials during all phases of project construction through operation. They address worker training appropriate to the site worker's role in hazardous substance control and emergency response. The procedures also require implementing appropriate control methods and approved containment and spill-control practices for construction and materials stored on site. If it is necessary to store chemicals on site, they will be managed in accordance with all applicable regulations. Material safety data sheets will be maintained and kept available on site, as applicable. Project construction will involve soil surface blading/leveling, excavation of up to several feet, and augering to a maximum depth of 20 feet in some areas. No known soil contamination was identified within the project site. In the event that soils suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during site grading activities or excavation activities, the excavated soil will be tested, and if contaminated above hazardous waste levels, will be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil will require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations. All hazardous materials and hazardous wastes will be handled, stored, and disposed of in accordance with all applicable regulations, by personnel qualified to handle hazardous materials. The hazardous substance control and emergency response procedures include, but are not limited to, the following: ▪ Proper disposal of potentially contaminated soils. ▪ Establishing site-specific buffers for construction vehicles and equipment located near sensitive resources. ▪ Emergency response and reporting procedures to address hazardous material spills. ▪ Stopping work at that location and contacting the County Fire Department Hazardous Materials Unit immediately if visual contamination or chemical odors are detected. Work will be resumed at this location after any necessary consultation and approval by the Hazardous Materials Unit. PG&E will complete its Emergency Action Plan Form as part of project tailboard meetings. The purpose of the form is to gather emergency contact numbers, first aid location, work site location, and tailboard information.
	Hydrology and Water Quality
APM WQ-1	SWPPP or Erosion Control Plan Development and Implementation. Following project approval, PG&E will prepare and implement a SWPPP, if required by state law, or erosion control plan to minimize construction impacts on surface water and groundwater quality. Implementation of the SWPPP or erosion control plan will help stabilize graded areas and reduce erosion and sedimentation. The plan will designate BMPs that will be adhered to during construction activities. Erosion and sediment control measures, such as straw wattles, covers, and silt fences, will be installed before the onset of winter rains or any anticipated storm events. Suitable stabilization measures will be used to protect exposed areas during construction activities, as necessary. During construction activities, measures will be in place to prevent contaminant discharge. The project SWPPP or erosion control plan will include erosion control and sediment transport BMPs to be used during construction. BMPs, where applicable, will be designed by using specific criteria from recognized BMP design guidance manuals. Erosion-minimizing efforts may include measures such as the following: ▪ Defining ingress and egress within the project site ▪ Implementing a dust control program during construction ▪ Properly containing stockpiled soils Erosion control measures identified will be installed in an area before construction begins during the wet season and before the onset of winter rains or any anticipated storm events. Temporary measures such as silt fences or wattles, intended to minimize sediment transport from temporarily disturbed areas, will remain in place until disturbed areas have stabilized. A copy of the SWPPP or erosion control plan will be provided to the CPUC prior to construction for record-keeping. The plan will be updated during construction as required by the SWRCB.

Table 4-6. Applicant Proposed Measures (APMs)

APM WQ-2	Worker Environmental Awareness Program Development and Implementation. The project's worker environmental awareness program will communicate environmental issues and appropriate work practices specific to this project. This awareness will include spill prevention and response measures, and proper BMP implementation. The training will emphasize site specific physical conditions to improve hazard prevention (such as identification of flow paths to nearest water bodies) and will include a review of all site specific water quality requirements, including applicable portions of erosion control and sediment transport BMPs, health and safety plan, and hazardous substance control and emergency response plan. A copy of the project's worker environmental awareness training will be provided to the CPUC for recordkeeping prior to the start of construction.
	Land Use and Planning
APM LU-1	Agriculture Impacts Avoidance and Compensation. To avoid or minimize potential less-than-significant impacts to agriculture, PG&E will work with farmers and ranchers to schedule project work, to the extent feasible, around their harvest and planting periods. Access across active fields will be negotiated with the farmer and/or landowner in advance of any construction activities. In areas containing permanent crops (i.e., grape vines, orchard crops, etc.) that must be removed to gain access to pole sites for construction purposes, PG&E will provide compensation to the farmer and/or landowner in accordance with its Project Damage Assessment and Resolution Program.
	Noise
APM NO-1	Noise Minimization with Portable Barriers. Compressors and other small stationary equipment used during construction will be shielded with portable barriers if located near a residence.
APM NO-2	Noise Minimization with Quiet Equipment. Quiet equipment (for example, equipment that incorporates noise control elements into the design; compressors can be quiet models) will be used during construction whenever possible.
APM NO-3	Noise Minimization through Direction of Exhaust. Equipment exhaust stacks and vents will be directed away from buildings.
APM NO-4	Noise Minimization through Truck Traffic Routing. Truck traffic will be routed away from noise sensitive areas where feasible.
APM NO-5	Noise Disruption Minimization through Residential Notification. In the event that nighttime construction is necessary because of clearance restrictions, affected residents will be notified in advance by mail, personal visit, or door-hanger and informed of the expected work schedule.
	Transportation and Traffic
APM TT-1	Traffic Management Implementation. PG&E will follow its standard safety practices, including installing appropriate barriers between work zones and transportation facilities, posting adequate signs, and using proper construction techniques. PG&E will coordinate construction traffic access at Gallo Substation with Gallo Winery during the E. & J. Gallo Winery Eastside Expansion Project construction. PG&E is a member of the California Joint Utility Traffic Control Committee, which published the *California Joint Utility Traffic Control Manual* (2010). PG&E will follow the recommendations in this manual regarding basic standards for the safe movement of traffic on highways and streets in accordance with Section 21400 of the CVC. PG&E will comply with all notification requirements as prescribed by County of Merced and Caltrans encroachment permits.

4.10.9 Electric and Magnetic Fields Summary

4.10.9.1 Electric and Magnetic Fields

Recognizing that there is a great deal of public interest and concern regarding potential health effects from exposure to electric and magnetic fields (EMF) from power lines, this document provides information regarding EMF associated with electric utility facilities and the potential effects of the Proposed Project related to public health and safety. Potential health effects from exposure to electric fields from power lines (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) are typically not of concern 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 (invisible fields created by

moving charges) from power lines. However, this Initial Study does not consider magnetic fields in the context of CEQA and determination of environmental impact. This is because (a) there is no agreement among scientists that EMF does create a potential health risk, and therefore, (b) there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented for the benefit of the public and decisionmakers.

After several decades of study regarding potential public health risks from exposure to power line EMF, 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 EMF causes cancer. The International Agency for Research on Cancer (IARC), an agency of the World Health Organization (WHO), and the California Department of Health Services (DHS) both classified EMF as a *possible* carcinogen (WHO, 2001; DHS, 2002).

In addition, the 2007 WHO [Environmental Health Criteria (EHC) 238] report concluded that:

- Evidence for a link between Extremely Low Frequency (50–60 Hz) magnetic fields and health risks is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia. However, "…virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status….the evidence is not strong enough to be considered causal but sufficiently strong to remain a concern."
- "For other diseases, there is inadequate or no evidence of health effects at low exposure levels."

Currently, there are no applicable regulations related to EMF levels from power lines or substations. However, following a decision from 1993 (D.93-11-013) that was reaffirmed on January 27, 2006 (D.06-01-042), the CPUC requires utilities to incorporate "low-cost" or "no-cost" measures to mitigate EMF from new or upgraded electrical utility facilities up to approximately 4 percent of total project cost. To comply, PG&E has incorporated such measures to reduce magnetic field levels in the vicinity of the proposed substation and subtransmission lines.

4.10.9.2 EMF and the Cressey-Gallo Project

In accordance with Section X(A) of GO 131-D, CPUC Decision No. D.06-01-042 and PG&E's EMF Design Guidelines prepared in accordance with the EMF Decision, PG&E will incorporate "no cost" and "low cost" magnetic field reduction steps in the design of the proposed power line and substations modification and expansion. The design guidelines include the following measures that may be available to reduce the magnetic field strength levels from electric power facilities:

- Raising the height of 80 poles in the rural residential land use area by 10 feet taller than required for meeting General Order 95.

Further information regarding EMF and the Cressey-Gallo 115 kV Power Line Project can be found in Appendix B of the Proponent's Environmental Assessment, Electric and Magnetic Fields, and in Exhibit E, Preliminary Transmission Magnetic Field Management Plan, Cressey-Gallo 115 kV Power Line Project, which was submitted to the CPUC as part of PG&E's application (A.11-11-020). PG&E's application (A.11-11-020) and Proponent's Environmental Assessment are available for public review at the CPUC Energy Division CEQA Unit and on the project website at:

http://www.cpuc.ca.gov/Environment/info/aspen/cresseygallo/cresseygallo.htm

4.10.10 Alternatives

The purpose of an alternatives analysis pursuant to CEQA is to identify options that would feasibly attain the project's objectives while reducing the significant environmental impacts resulting from the Proposed Project. CEQA does not require the inclusion of an alternatives analysis in MNDs because the Initial Study concludes that, with incorporation of mitigation measures, there would be no significant adverse impacts resulting from the Proposed Project (CEQA Guidelines Sections 15063(d) and 15071). Therefore, no alternatives analysis needs to be provided in the Initial Study.

However, pursuant to Section IX.B.1(c) of CPUC General Order 131-D, PG&E's application did consider three system alternatives, which would address the need to eliminate power line–related outages to Cressey, Gallo, and Livingston Substations. Additionally, once PG&E identified the power line between the existing Cressey and Gallo Substations, it considered a 75-square-mile area for its routing and constraints analysis attempting to minimize effects to environmentally sensitive areas; provide access to utility facilities for construction and maintenance; minimize impacts to private property by following existing roads or property lines; reduce the number of poles by collating with existing facilities; and reduce the overall number. The application generally discussed advantages and disadvantages of different options, and includes brief description of the criteria for choosing the proposed route in the Proponent's Environmental Assessment. Although the proposed route was the longest route considered, it was selected by PG&E for the following reasons: it would not have any crossings of the Merced River; it would avoid the more densely populated areas of the City of Livingston; it would be located completely in agricultural areas; it would provide PG&E the best opportunity to reduce poles by co-locating the new power line with existing electric lines; it would have the best all-weather access to the facilities; it would require only two crossing of Merced Irrigation District's single-circuit electric power lines; and it would avoid potentially problematic design issues associated with the entrance point to Gallo Substation (PG&E, 2011).

PG&E's application (A.11-11-020) and Proponent's Environmental Assessment are available for public review at the CPUC Energy Division CEQA Unit and at the following website:

http://www.cpuc.ca.gov/Environment/info/aspen/cresseygallo/cresseygallo.htm

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