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4.4 Geologic Resources and Hazards

4.4.1 Introduction

This section evaluates the effect of geologic hazards and resources that might be encountered during construction and operation of PRP. The objective of this analysis is to evaluate the potential for project impacts from construction or during the operation of the project.

4.4.2 Laws, Ordinances, Regulations, and Standards

The LORS applicable to geologic resources and hazards are summarized in Table 4.4-1.

Table 4.4-1. Laws, Ordinances, Regulations, and Standards
Small Power Plant Exemption Application for the Pomona Repower Project

Jurisdiction	Authority	Administering Agency	Compliance
Local	CBC, 2013.	City of Pomona (City) Engineering Department	Acceptable design criteria for structures with respect to seismic design and load-bearing capacity.

4.4.3 Environmental Setting

The project is located on Mt. Vernon Avenue in the City of Pomona, Los Angeles County, California. The site is located in the Pomona Valley, south of the San Jose Hills and San Gabriel Mountains, and north of the Puente Hills (Figure 4.4-1). The site is situated on an area consisting of a broad alluvial fan that slopes southwesterly towards the base of the Puente Hills. Ultimately, the site drains into the Santa Ana River at Prado Dam southeast of the site.

The San Jose Hills are approximately 1 mile north of the site. The base of the San Gabriel Mountains is approximately 5 miles north of the site. The Puente Hills are approximately 1 mile south of the site. As shown on Figure 4.4-2, all of these geomorphic features are bound by faults associated with the regional tectonics ongoing in southern California, which has resulted in the uplift of these features.

4.4.3.1 Regional Geology

The site is situated within the northwest-southeast-trending Peninsular Ranges geomorphic province, near the transition zone with the east-west-trending Transverse Ranges province to the north. Geologically, the southern California vicinity is a region divided into four structural blocks that include uplifted zones and synclinal depressions (Norris and Webb, 1990). The structural blocks are generally bounded by north-northwest-trending faults with both strike-slip and reverse motions. Many of the principal faults in the area have recent Holocene activity. The project site is situated within the Northeastern block, which is bounded on the north by the Raymond Hill and the Cucamonga Faults (at the base of the San Gabriel Mountains), on the west and south by the Whittier Fault, and the San Andreas fault to the east. This block is a deep synclinal basin that contains mostly marine Cenozoic sedimentary rocks but includes some Miocene volcanic rocks in the east (Norris and Webb, 1990).

4.4.3.2 Local Geology

The Geologic Map of the San Bernardino Quadrangle, shows the area at the site as Quaternary (Holocene) younger alluvial fan deposits (Qyf) (Figure 4.4-1). These deposits are characterized as “Fan deposits of sand and gravel; continuous or intermittent deposition (incipient soil development with thin A horizon).” The west-to-northeast trending San Jose Fault is the closest fault to the site, and is mapped roughly

two-thirds of a mile north of the site near the base of the San Jose Hills (California Division of Mines and Geology [CDMG], 1998a).

4.4.3.3 Faulting and Seismicity

The USGS estimates that within the next 30 years there is a 60 percent probability that an earthquake measuring greater than magnitude 6.7 on the Richter scale will occur in southern California (City of Pomona, 2014). The City of Pomona lies in a seismically active region and the project site could be subject to significant seismic shaking over the life of the project. Seismic shaking could result from an earthquake along one of the regional faults, such as the San Andreas, Sierra Madre, and Whittier-Elsinore fault zones. In addition, there are several local faults mapped within the City that are considered potentially active. These local faults include the San Jose, Indian Hill, Chino, and Central Avenue faults. Of the local faults, the probability of earthquake activity is considered the highest along the San Jose Fault, with ground rupture possible (City of Pomona, 2014). According to the California Geological Survey (CGS), this fault exhibits late Quaternary fault displacement (within last 700,000 years) (CGS, 2010). These local faults are not included in an Alquist-Priolo Earthquake Fault Zone (AP EFZ) (CGS, 2007), and their activity is unknown.

No known faults transect the project site. Faults in the project vicinity are shown on Figure 4.4-2.

4.4.4 Impacts

Potential impacts to geologic resources and hazards are described below.

4.4.4.1 CEQA Environmental Checklist

The checklist in Table 4.4-2 assesses the significance of potential geological impacts.

Table 4.4-2. CEQA Checklist to Assess Potential Impacts
Small Power Plant Exemption Application for the Pomona Repower Project

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant	No Impact
Geology—Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the following:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.				**X**
ii) Strong seismic ground shaking.		**X**		
iii) Seismic-related ground failure, including liquefaction.			**X**	
iv) Landslides.				**X**
b) Result in substantial soil erosion or the loss of topsoil?				**X**

Table 4.4-2. CEQA Checklist to Assess Potential Impacts
Small Power Plant Exemption Application for the Pomona Repower Project

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?			**X**	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				**X**
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				**X**
Mineral Resources—Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				**X**
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				**X**

4.4.4.2 Discussion of Impacts

No active faults cross the project site, and the vicinity of the site is not within the AP EFZ (CGS, 2007). No known faults transect the project site and the risk of fault-induced ground rupture at the site is considered low.

The most likely geologic hazard at the project site is ground shaking from a seismic event.

Because the site is located in the seismically-active greater southern California region, there is a high potential for strong seismic ground shaking.

Since the project site is relatively flat, the potential for slope instability (landslides) and substantial soil erosion is considered minimal. The site is not situated in an earthquake-induced landslide hazard zone of required investigation (CDMG, 1999).

The lithologic types typically present in the area include sand and gravel. Groundwater is estimated to be greater than 50 feet below grade (Chino, 2006). The historically highest groundwater level at the site is roughly 70 feet below the ground surface (CDMG, 1998b). The project site is not located in an area that is susceptible to liquefaction (City of Pomona, 2014; and CDMG, 1999) and the liquefaction risk at the site is considered low

No mineral resources of significant commercial value were noted to be present at the project site according to City of Pomona General Plan (City of Pomona, 2014).

4.4.5 Cumulative Effects

A cumulative impact refers to a project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the

incremental effect of the proposed project (Cal. Pub. Res. Code Section 21083; Cal. Code Regs. Sections 15064(h), 15065(c), 15130, and 15355).

Because structures will be designed to meet seismic requirements of the 2013 CBC (or subsequent code in effect at the time of design), PRP will not cause adverse impacts on geological resources and will not cause an exposure of people or property to geological hazards. Additionally, there are no minor impacts that could combine cumulatively with those of other projects. Thus, the project will not result in a cumulatively considerable impact.

4.4.6 Mitigation Measures

Mitigation measures are necessary for the project site because of potential geologic hazards. Therefore, the following measure is proposed for the project:

Design and construct the project to conform to the 2013 CBC (or subsequent code in effect at the time of design). The project owner shall design, construct, and inspect the project in accordance with the 2013 California Building Standards Code (CBSC) and all other applicable engineering LORS in effect at the time initial design plans are submitted to the Chief Building Official for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously).

4.4.7 Agencies and Agency Contacts

The City of Pomona Building Department is responsible for the compliance of construction projects with regard to geologic hazards. Table 4.4-3 presents contact information for the City of Pomona.

4.4.8 Permits and Permit Schedule

No permits that specifically address geologic resources and hazards were identified. Compliance of building construction to CBC standards is covered under engineering and construction permits for the project.

Table 4.4-3. Agency Contacts
Small Power Plant Exemption Application for the Pomona Repower Project

Agency	Contact	Title	Address	Telephone
City of Pomona – Building and Safety Department	Gil Petris	Building Official	505 S. Gary Ave. Pomona, CA 91766	(909) 620-2371

4.4.9 References

California Building Code (CBC). 2013. California Code of Regulations, Title 24, California Building Standards Code.

California Division of Mines and Geology (CDMG). 1998a. *Geologic Map of the San Bernardino Quadrangle, California*. Regional Geologic Map Series, 1:250,000 scale. Complied by Bortugno, E.J., and Spittler, T.E.

California Division of Mines and Geology (CDMG). 1998b. Seismic Hazard Evaluation of the San Dimas 7.5-Minute Quadrangle, Los Angeles, California. Open-File Report 98-32.

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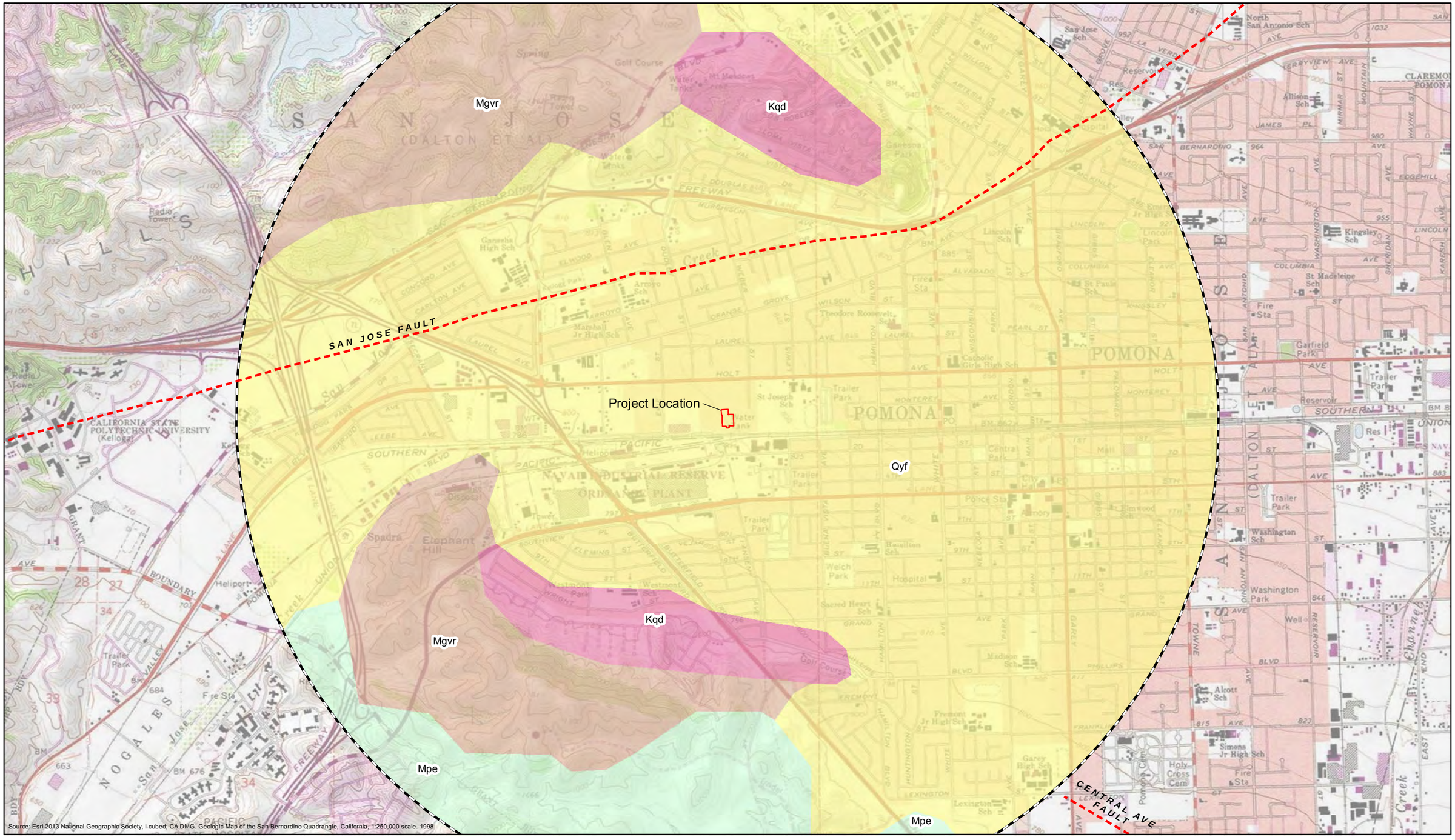
California Geological Survey (CGS). 2007. Special Publication 42 (Interim Revision 2007). Fault-Rupture Hazard Zones in California. Alquist-Priolo Earthquake Fault Zoning Act. California Department of Conservation.

California Geological Survey (CGS). 2010. *California Geological Survey 2010 Fault Activity Map of California*. CGS Geologic Data Map No. 6. Compiled by C.W. Jennings and W.A. Bryant. http://www.quake.ca.gov/gmaps/FAM/ faultactivitymap.html. Accessed October 12, 2015.

Chino Basin Watermaster (Chino). 2006. *Depth to Water Contours.*

City of Pomona. 2014. General Plan Update. City of Pomona General Plan. March.

Norris, R.M., and R.W. Webb. 1990. *Geology of California, 2nd Edition*. New York: John Wiley and Sons.



Legend

- Project Location
- 2 Mile Project Buffer
- Qyf – Quaternary. Alluvial Fan Deposits
- Mpe – Miocene Puente Formation. Marine siltstone, sandstone, and shale
- Mgvr – Miocene Volcanics. Rhyolite and Dacite
- Kqd – Cretaceous. Quartz Diorite
- Fault

0 2,000 Feet

N

FIGURE 4.4-1
Surficial Geology within Two Miles of Project Site
Pomona Repower Project
Pomona, California

ch2m

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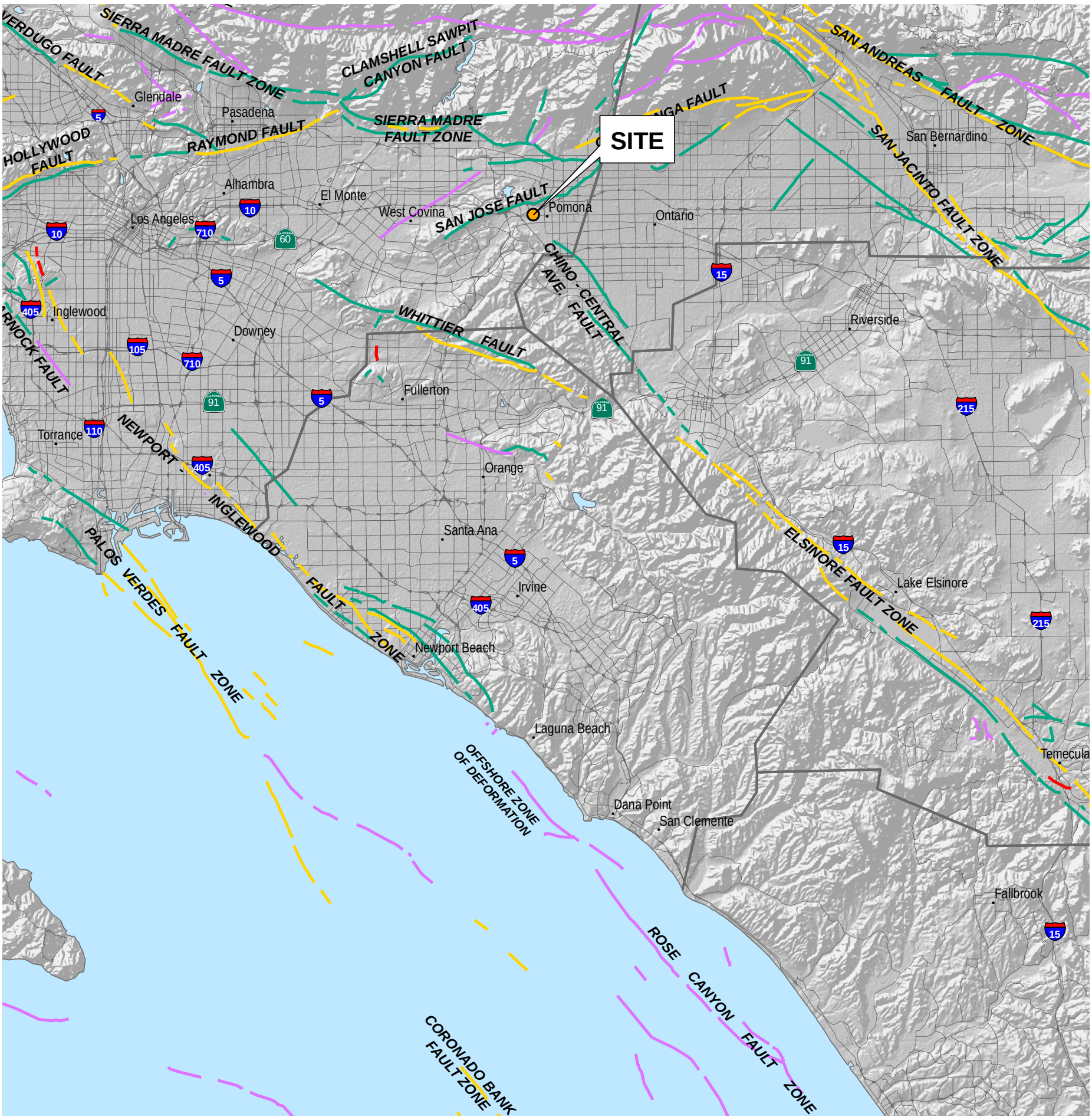

FIGURE 4.4-2
Site in Relation to Principal Faults
Pomona Repower Project