

3.9 HYDROLOGY AND WATER QUALITY

3.9 HYDROLOGY AND WATER QUALITY

3.9.1 Environmental Setting

Regional

The proposed project would be located in an area subject to the jurisdiction of the NCRWQCB. The NCRWQCB is separated into two natural drainage basins: the Klamath River Basin and the North Coastal Basin. The proposed project would be located within the North Coastal Basin. The North Coastal Basin is bounded on the west by the Pacific Ocean, on the north by the Klamath River, on the east by the Sacramento Valley, and on the south by the Marin-Sonoma area. Most of the basin consists of rugged, forested coastal mountains dissected by six major river systems, including the Russian River. Surface water storage areas in the Russian River hydrologic unit include Lake Mendocino, which is formed by Coyote Dam, and Lake Sonoma, which is formed by Warm Springs Dam (NCRWQCB 2011).

Local

Surface Waters

Overview

The proposed project would be located within the Guerneville and Mark West Creek Watersheds. Both watersheds collect water from the foothills of the Santa Rosa Plain and drain across the Plain into the Russian River. The watersheds drain a collective area of approximately 68 square miles. Several named and unnamed surface waters (i.e., streams, creeks, rivers, ponds, and reservoirs) are located within the project vicinity, as shown on Figure 3.9-1 and Figure 3.9-2.

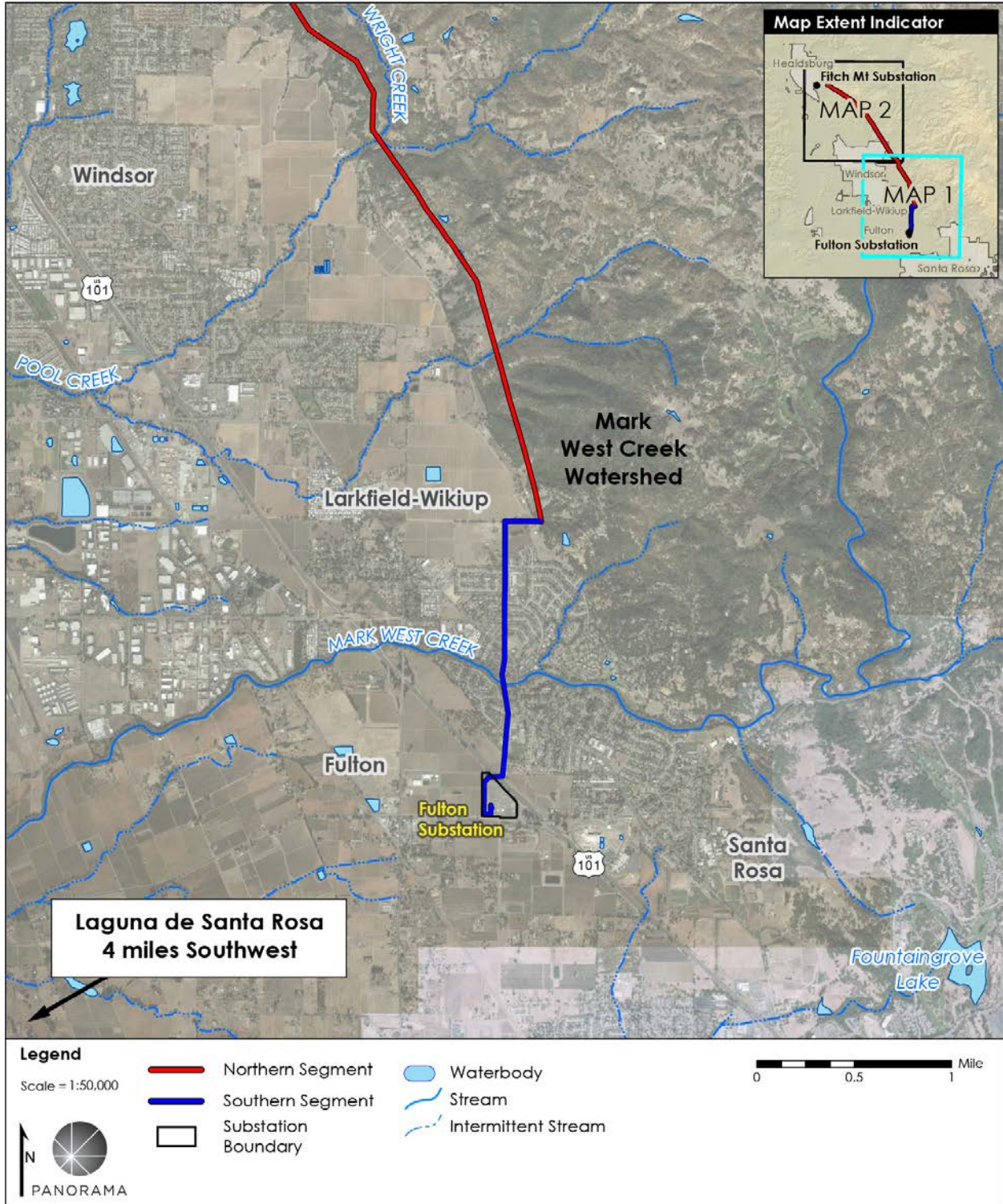
Mapped surface waters in the project study area are shown on Figure F-1, located in Appendix F. Table 3.9-1 provides a summary of the number and mapped area for all waters and potential wetland features in the study area. Table F-1 located in Appendix F lists features that would be crossed by an access route. Table F-2 located in Appendix F lists features within 50 feet of, or inside, preliminary work area boundaries.

Mark West Creek

Mark West Creek is an approximately 30-mile-long stream with headwaters in the Mayacamas Mountains of Sonoma County. The creek drains an area of approximately 45 square miles. Mark West Creek passes under the project alignment in the Southern Segment approximately 0.5 mile north of Fulton Substation, as shown generally on Figure 3.9-1, and in detail on maps located in Appendix F. The creek channel at the crossing site is located within a wide riparian corridor. Downstream of the crossing, Mark West Creek extends approximately 6 miles to its confluence with Laguna de Santa Rosa. From the confluence, the creek flows north to a second confluence with Windsor Creek and then flows westward, entering the Russian River east of Steelhead Beach Regional Park.

3.9 HYDROLOGY AND WATER QUALITY

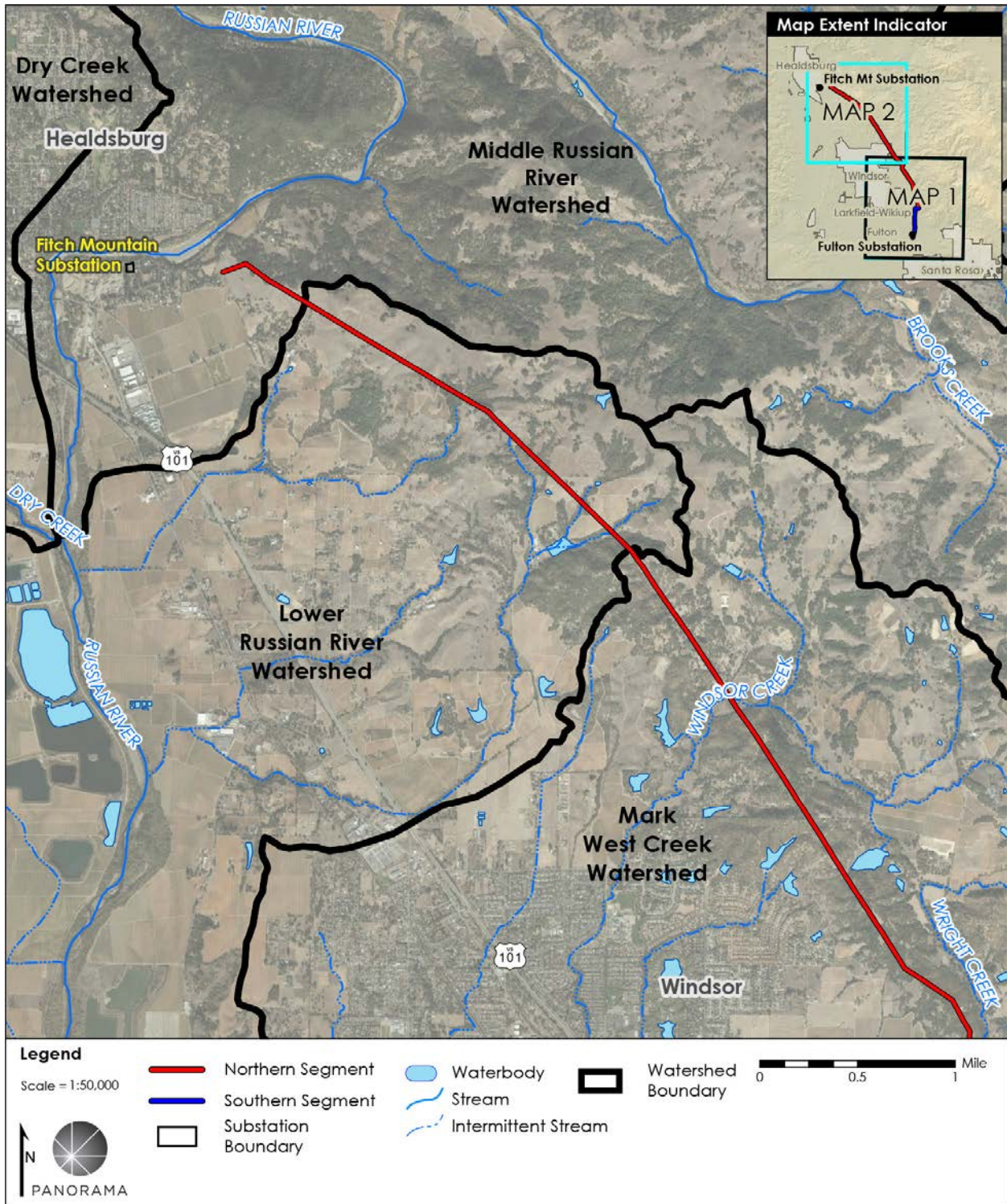
Figure 3.9-1 Surface Waters in the Project Study Area (Map 1 of 2)



Sources: (ESRI 2016, USGS 2012, PG&E 2016)

3.9 HYDROLOGY AND WATER QUALITY

Figure 3.9-2 Surface Waters in the Project Study Area (Map 2 of 2)



Sources: (ESRI 2016, USGS 2012, PG&E 2016)

3.9 HYDROLOGY AND WATER QUALITY

Table 3.9-1 Summary of Mapped Surface Waters and Wetlands in the Project Study Area

Waters/Wetlands Type	Number of Features	Total Mapped Area (Acres) ^a
Channel	4	0.010
Drainage Ditch	7	0.363
Open Water	2	0.701
Seasonal Watercourse	61	11.430
Seasonal Wetland	13	2.072
Total	81	14.576

Note:

^a Three drainage ditches and two seasonal watercourses were mapped as linear features with no defined width. The area for these features was not included in the summary totals.

Sources: (GANDA 2012, GANDA 2016, TRC 2015a, TRC 2015b, TRC 2016a, TRC 2016b, TRC 2016c, GANDA 2017, TRC 2017b, TRC 2017a)

Windsor, Pool, and Wright Creeks, and Unnamed Tributaries

The proposed project would cross a network of creeks that drain the western slopes of the foothills of the Santa Rosa Plain into Mark West Creek. Windsor Creek and its tributaries drain an area measuring approximately 26 square miles. Creek elevations range from approximately 1,000 feet at their headwaters to approximately 50 feet at their mouths. Windsor Creek is the primary tributary of Mark West Creek in the project study area. Pool Creek is one of Windsor Creek's major tributaries, and Wright Creek is a tributary of Pool Creek. Windsor, Pool, and Wright Creeks and their tributaries are intermittent or ephemeral creeks (i.e., they convey water seasonally).

Russian River

The Russian River is an approximately 110-mile-long river with its headwaters in the Laughlin Range in Mendocino County. Fitch Mountain Substation is located south of an approximately 250-foot-wide area of woodland on the south bank of the river. The Russian River flows generally south and west, draining approximately 1,145 square miles of Sonoma and Mendocino Counties to the Pacific Ocean.

Ponds and Reservoirs

Approximately twenty ponds and three privately-owned reservoirs are located within 0.5 mile of the project alignment. These ponds and reservoirs contain water throughout the year, and store water primarily for agricultural purposes. Ponds in Foothill Regional Park are created by a dam on Windsor Creek, and are maintained for water storage and flood control.

3.9 HYDROLOGY AND WATER QUALITY

Water Quality

Section 303(d) of the 1972 federal Clean Water Act requires states to identify water bodies that do not meet water quality objectives and are not supporting their beneficial uses. Each state must submit a list of waters that are not meeting water quality objectives (303[d] list) to the USEPA every 2 years. In addition to identifying the water bodies that are not supporting beneficial uses, the list also identifies the pollutant(s) causing impairment, and establishes a priority for developing a control plan known as the Total Maximum Daily Load (TMDL) to address the impairment. The TMDL process provides a quantitative assessment of water quality problems, contributing sources of pollution, and the pollutant load reductions or control actions needed to restore and protect the beneficial uses of an individual water body impaired from loading of a pollutant. The NCRWQCB is responsible for defining beneficial uses of surface waters and groundwater and identifying impaired water bodies (identified on the 303[d] list) in the project study area. Impaired water bodies downstream of the project study area and associated pollutants are summarized in Table 3.9-2.

Flooding Potential

A 100-year flood zone, as defined by the Federal Emergency Management Agency (FEMA), is an area of land that has a 1 percent chance of being inundated by a flood during any given year. The 100-year flood zone occurs in the project study area along Mark West Creek; however, proposed poles would be located outside the flood zone boundaries. FEMA flood zones within the project study area are shown on Figure 3.9-3. Fitch Mountain Substation is located approximately 250 feet south of the Russian River and outside of the 100-year flood zone in an area mapped as having a 0.2 percent annual chance of being inundated by a flood (the 500-year flood zone). FEMA has designated floodways (Zone AE) on the Russian River north of Fitch Mountain Substation; however, the substation is not located within the floodway.

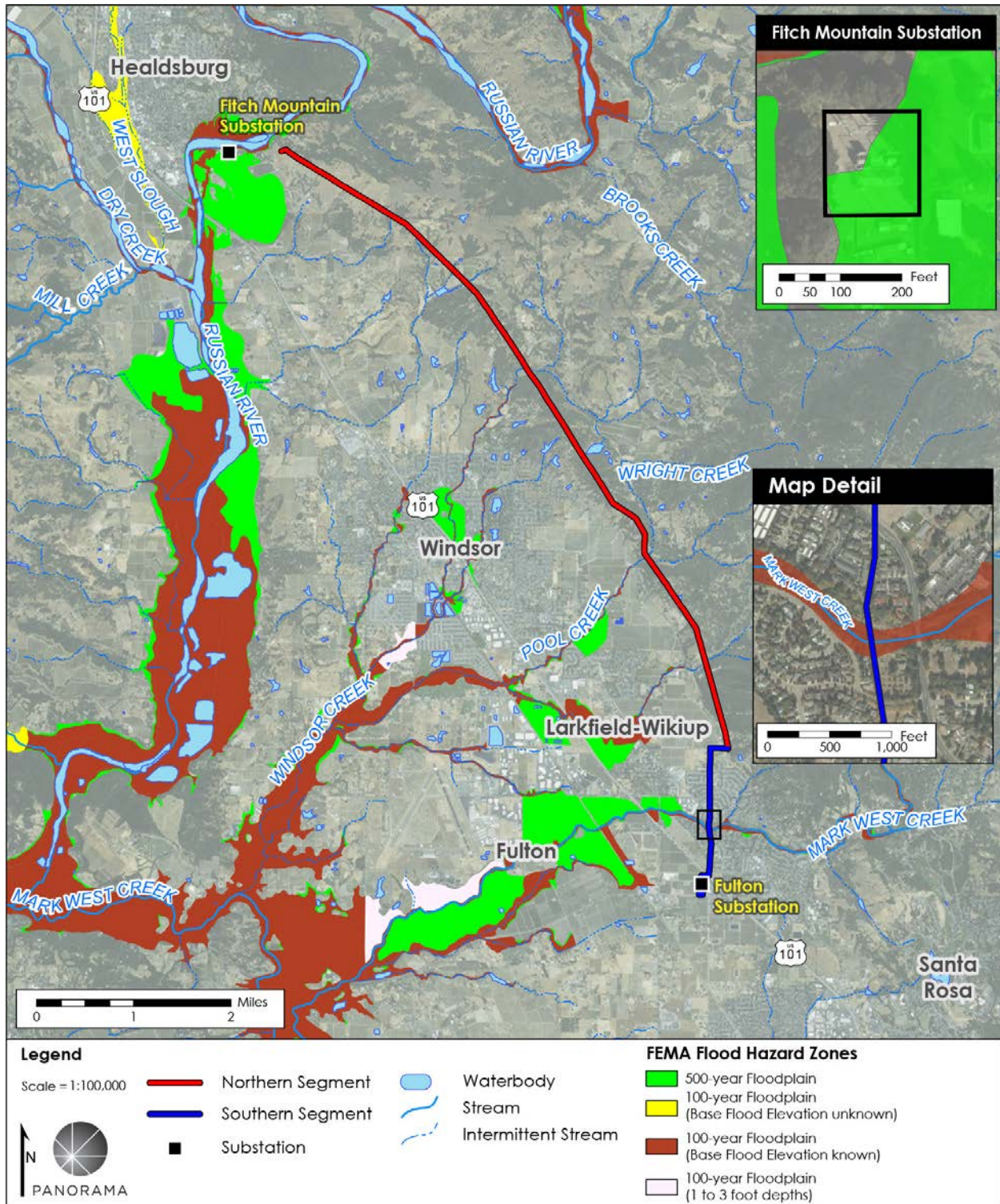
Table 3.9-2 303(d) List (Impaired) Water Bodies in the Project Study Area

Water Body	Proximity to Project Alignment	Source of Impairment/Pollutant	TMDL Status
Mark West Creek, main stem of Mark West Creek upstream of the confluence with Laguna de Santa Rosa	Alignment crosses Mark West Creek	<ul style="list-style-type: none"> • Sedimentation/Siltation • Temperature 	Estimated completion of TMDL in 2025
Tributaries to Mark West Creek (except Windsor Creek and its tributaries)	Alignment crosses tributaries to Windsor Creek	<ul style="list-style-type: none"> • Sedimentation/Siltation • Temperature 	Estimated completion of TMDL in 2025
Windsor Creek and its tributaries	Alignment crosses Windsor Creek	<ul style="list-style-type: none"> • Sedimentation/Siltation • Temperature 	Estimated completion of TMDL in 2025
Russian River (main stem)	225 feet from Fitch Mountain Substation	<ul style="list-style-type: none"> • Sedimentation/Siltation • Temperature • Pathogen Indicator Bacteria 	Estimated completion of TMDL in 2025 Draft TMDL issued August 2015

Source: (NCRWQCB 2014)

3.9 HYDROLOGY AND WATER QUALITY

Figure 3.9-3 FEMA Flood Zones in the Project Area



Sources: (ESRI 2016, PG&E 2016, USGS 2012, FEMA 2014)

3.9 HYDROLOGY AND WATER QUALITY

Dam Failure Inundation Areas

There is one dam inundation zone in the project study area: the Warm Springs Dam inundation zone. The Warm Springs Dam inundation zone is located downstream from Sonoma Lake and extends along the Russian River, which encompasses portions of the project study area at Fitch Mountain Substation, the Fitch Mountain #1 Tap, and the Mark West Creek crossing (Sonoma County 2011).

Groundwater

The southern half of the project study area is located in the northern half of the Santa Rosa Plain Subbasin of the Santa Rosa Valley. No groundwater basins underlie the northern portion of the project study area (California Department of Water Resources 2016). The Santa Rosa Valley occupies a northwest-trending structural depression in the southern part of the Coast Ranges of Northern California. The Santa Rosa Plain Subbasin is bounded on the northwest by the Russian River and flanked on the western boundary by the mountains of the Mendocino Range. The subbasin is drained principally by Santa Rosa Creek and Mark West Creek.

The Santa Rosa Subbasin is a medium-priority groundwater basin (California Department of Water Resources 2014). The subbasin has one main water-bearing geologic unit (Merced Formation) and several units with lower water-bearing capacities (Glen Ellen Formation and Quaternary Alluvium). Because of the high degree of faulting in the subbasin, water-bearing materials tend to be discontinuous and isolated in lenses. The proposed project would overlay the Glen Ellen Formation, which consists of partially cemented beds and lenses of poorly-silted gravel, sand, silt, and clay. This geologic unit has moderate permeability, so recharge may occur relatively quickly. The Glen Ellen Formation is tapped for domestic and some irrigation use. Although few wells in the Santa Rosa Plain Subbasin contain constituents over the recommended concentration for drinking water, many wells produce water with high hardness, color, and taste. Overall, however, the quality of groundwater is considered good.

The proposed project would also be located within the Santa Rosa Plain Groundwater Management Plan Area. The Santa Rosa Plain Groundwater Management Plan defines groundwater management procedures for five geologic units of Cenozoic age that form the area's primary aquifers, including three that would be crossed by the project: (1) Quaternary Alluvium, (2) Glen Ellen Formation, and (3) Sonoma Volcanics. Most municipal water supplies and urban communities in the project vicinity rely on surface water from the Russian River and local groundwater. Smaller public supply systems, and rural residential and agricultural water users, rely primarily on local groundwater. Other local sources of water include surface water from streams and treated recycled water for irrigation (Santa Rosa Plain Basin Advisory Panel 2014).

The US Geological Survey (USGS) conducted a study using data from 1976 and 2010 to evaluate changes in groundwater levels in the Santa Rosa Plain Basin (USGS 2014). The USGS study found declines in groundwater levels in 2010 in response to increased groundwater pumping, which reduced groundwater contributions to stream flow, groundwater uptake by plants, and groundwater storage (USGS 2014).

3.9 HYDROLOGY AND WATER QUALITY

3.9.2 Impact Analysis

Summary of Impacts

Table 3.9-3 presents a summary of the CEQA significance criteria and the impacts on hydrology and water quality that would occur during construction, operation, and maintenance of the proposed project.

Table 3.9-3 Summary of Proposed Project Impacts on Hydrology and Water Quality

Would the proposed project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.9 HYDROLOGY AND WATER QUALITY

Would the proposed project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j) Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Impact Discussion

a) Would the proposed project violate any water quality standards or waste discharge requirements?	Significance Determination
	Less than significant with mitigation

Construction

Water Quality Standards

Construction would involve: excavation at pole and guard structure work areas; grading and vegetation clearing at construction work areas, where necessary to create flat and stable workspaces; and grading of existing unpaved access routes, where necessary to establish access. Ground disturbance and vegetation removal have the potential to loosen and expose the soil and increase the risk of erosion and sedimentation to nearby waters. Waterbodies in the project study area and downstream are currently listed as impaired for siltation/sedimentation. Erosion caused by construction activities could exacerbate existing water quality violations, which would be considered a potentially significant impact.

APM WQ-1 and the State of California NPDES program require PG&E to obtain coverage under the SWRCB Construction General Permit and prepare a SWPPP prior to construction because the project would disturb more the 1 acre of land. SWPPPs developed for construction projects generally address risk factors and BMPs to reduce erosion, sediment/siltation, and other pollution. APM WQ-1 and the Construction General Permit do not require third-party review of the SWPPP and do not address the existing local water quality violation for sediment/siltation. Even with implementation of the standard SWPPP requirements, a significant impact on water quality could occur due to the existing violation of water quality standards. APM WQ-1 is superseded by MM Hydrology-1, which defines performance standards for the SWPPP and requires PG&E to obtain CPUC approval for the SWPPP.

3.9 HYDROLOGY AND WATER QUALITY

APM WQ-2 requires BMP inspections during construction, but does not address BMP monitoring and maintenance that could be required after construction is completed, and until final stabilization is achieved. A significant impact could occur if BMPs were not maintained and erosion occurred within disturbed areas after construction was completed. APM WQ-2 is superseded by MM Hydrology-2, which requires monitoring and maintenance of BMPs until all ground-disturbing activities have ended and disturbed areas are sufficiently stabilized. Adequately defining, implementing, and monitoring erosion and sediment control BMPs would avoid significant impacts on water quality and impaired waters downstream from the proposed project. The impact on water quality would be less than significant with mitigation.

Waste Discharge Requirements

Groundwater may be removed and discharged from pole holes if perched or shallow groundwater is encountered in the holes. Access routes identified for the proposed project would cross wetlands and waters at locations identified in Table F-1 and on Figure F-1 (refer to Appendix F). Establishing access over these crossing locations may involve grading and vegetation clearing, repairing or replacement existing culverts, or installing temporary crossing materials including fiberglass mats, steel plates, bridges, or “Arizona” low-water crossings. Discharging groundwater or placing fill materials into waters of the state requires applicable permits from the NCRWQCB to comply with the Porter-Cologne Water Quality Control Act. The proposed project could violate waste discharge requirements and cause a significant impact if groundwater was discharged, or fill materials were placed, into waters of the state without obtaining required permits. Waste discharge violations could be avoided by obtaining applicable permits from the NCRWQCB prior to dewatering pole holes or establishing access route crossings. PG&E has not proposed to obtain a permit for discharge of groundwater and has not proposed permitting for all crossings of waters of the state. The impact from unpermitted discharge of groundwater or fill materials to waters of the state would be significant.

APM WQ-3 requires the use of mats or fiberglass plates at water crossings to minimize impacts; however, the use of these materials would not fully avoid the potential for unauthorized discharges to waters of the state. APM WQ-3 is superseded by MM Hydrology-3, which requires groundwater removed from excavations to be used or disposed of properly to avoid discharges into wetlands, waters, or storm drains. APM WQ-3 is also superseded by MM Hydrology-4, which requires PG&E to either avoid discharge of fill materials to waters of the state, or obtain permits from the NCRWQCB to avoid violation of waste discharge requirements. The proposed project would not violate waste discharge requirements with implementation of MM Hydrology-3 and MM Hydrology-4. The impact would be less than significant with mitigation.

Operation and Maintenance

Operation and maintenance activities for the proposed project would be approximately the same as the operation and maintenance activities for the existing lines and substations. PG&E would continue to regularly inspect, maintain, and repair conductor, poles, and substation facilities, as well as maintain vegetation clearances from all facilities in the proposed project

3.9 HYDROLOGY AND WATER QUALITY

alignment. Existing access roads and overland access routes would be used to provide ground access, and aerial access would be provided via helicopter to steep and remote areas. New access roads would not be required. The proposed project would not create any new water quality impacts. The impact would be less than significant.

Required APMs and MMs: MM Hydrology-1, MM Hydrology-2, MM Hydrology-3, and MM Hydrology-4

<p>b) Would the proposed project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?</p>	<p style="text-align: center;">Significance Determination</p> <p style="text-align: center;">Less than significant</p>
---	---

Construction

The proposed project would use a total of approximately 20,000 gallons of water (0.06 acre-feet) for dust control and compaction during construction, which would be obtained from local municipal sources. Local municipal water is supplied from a combination of surface water from the Russian River and local groundwater (Santa Rosa Plain Basin Advisory Panel 2014). Groundwater levels in the Santa Rosa Plain Basin are in decline with a cumulative reduction in groundwater storage of 120,000 acre-feet between 1976 and 2010 due to groundwater pumping (USGS 2014). The proposed project would not substantially deplete local groundwater supplies even if all the water used for construction came from groundwater supplies, because water use during construction would be short-term (approximately 18 months), and a fraction of the average annual water use for a single household in Sonoma County¹. Impacts from groundwater use during construction would be less than significant.

Groundwater elevations in the project study area range from 7 to 46 feet below ground surface (California Department of Water Resources 2015). Groundwater may be removed from pole holes if perched or shallow groundwater is encountered in the holes. Dewatering for the holes would only occur if needed during pole installation, which would be limited to a few days at each location. Groundwater levels at the pole locations would rebound after dewatering ceases, and any groundwater declines from dewatering would be localized to a few feet from the pole due to the limited duration and total volume of potential dewatering activities. The short-term and localized dewatering of shallow groundwater would not cause the production rate of groundwater wells to fall below a level that would support existing or planned land uses. The impact would be less than significant.

¹ Annual domestic water use in Sonoma County is approximately 99,000 gallons per year per household (Sonoma County Water Agency 2016).

3.9 HYDROLOGY AND WATER QUALITY

Operation and Maintenance

The proposed project would involve replacing existing poles in the Northern Segment at a near 1:1 ratio with new poles. Most of the new poles that would be installed are LDSPs, which would be installed directly in the ground like existing poles. Seven of the new poles are larger TSPs, which would be installed on either a concrete pier foundation or a micropile foundation. TSP foundations would cover a surface area of approximately 20 to 25 square feet. The new poles and TSP foundations would result in a net increase of approximately 125 square feet of impervious surface over the 9.9-mile-long project alignment. The proposed project would also involve paving an access road within portions of the Fitch Mountain Substation fence line, which is currently comprised of highly compacted gravel. Installing pavement over highly compacted gravel within the Fitch Mountain Substation would not create a substantially greater impervious surface, and only a portion of the approximately 155 by 170-foot substation area would be paved. The proposed project would not affect groundwater supply because the minor increase in impervious surface would not affect groundwater recharge. The impact would be less than significant.

Operation and maintenance of the project would not require the use of water; therefore, there would be no impact on groundwater supply.

Required APMs and MMs: None

c) Would the proposed project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	Significance Determination
	Less than significant with mitigation

Construction

The proposed project would not substantially alter the drainage pattern of the project study area or individual work sites, or alter the course of a stream or river. Grading at work areas and existing unpaved access routes would not substantially change the drainage pattern of each site or area because grading would be limited to the area required to create a flat pad at each pole. The proposed project would not require any diversions or modifications to the course of any creek, stream, or river. Existing culverts may be repaired or replaced where access roads cross drainage channels or small creeks to accommodate the weight or size of construction equipment. Any culvert replacement work would be conducted during the dry season, and diversion of water would therefore not be required. The impact would be less than significant.

An analysis of impacts on water quality from grading and ground disturbance associated with erosion and siltation impacts is provided in Impact a), above. Mitigation is also identified in Impact a) to reduce erosion and siltation impacts to less than significant (MM Hydrology-1 and MM Hydrology-2). Grading in areas with steep terrain could cause substantial erosion or slope destabilization, which would be a significant impact. MM Geology-1 requires the evaluation of project areas suspected of having unstable soils or landslide susceptibility and the development

3.9 HYDROLOGY AND WATER QUALITY

of site-specific recommendations to address soil and slope stability. The impact from erosion and siltation would be less than significant with implementation of MM Geology-1.

Operation and Maintenance

Operation and maintenance activities would not alter drainage patterns in the area or divert the course of a stream or river. Following construction, disturbed areas would be returned to approximate pre-project conditions. PG&E would continue to inspect, maintain, and repair the lines and substation at approximately the same frequency as existing operation and maintenance activities, and the rate of erosion or siltation would not increase. The impact from operation and maintenance would be less than significant.

Required APMs and MMs: MM Hydrology-1, MM Hydrology-2, and MM Geology-1 (refer to Section 3.6: Geology, Soils, and Mineral Resources)

d) Would the proposed project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	Significance Determination
	Less than significant with mitigation

Construction

As discussed under Impact c), the proposed project would not substantially alter the existing drainage pattern or redirect stream flows. On- or off-site flooding would not occur because of project construction.

Existing culverts may be repaired or replaced where access roads cross drainage channels or small creeks to accommodate the weight or size of construction equipment. Localized flooding could occur at culvert locations if the water flow capacity was reduced by installing a smaller culvert or by creating a potential obstruction, which would be a significant impact.

MM Hydrology-5 requires repaired or replaced culverts to meet the design standards outlined in the Sonoma County Flood Control Design Criteria. The proposed project would not cause flooding on- or off-site with implementation of proper design standards for culvert repair or replacement. The impact would be less than significant with mitigation.

Operation and Maintenance

The proposed project would not result in a substantial increase in impervious surfaces that could substantially increase the rate or amount of surface runoff. New poles and TSP foundations would result in a net increase of approximately 125 square feet of impervious surface over the 9.9-mile-long project alignment. Installing pavement over highly compacted gravel within the Fitch Mountain Substation would not create a substantially greater impervious surface, and only a portion of the approximately 155- by 170-foot substation area would be paved. This small increase in impervious surfaces would not change the rate of infiltration and runoff for watersheds in the area. Impacts would be less than significant.

3.9 HYDROLOGY AND WATER QUALITY

Operation and maintenance activities would not alter drainage patterns in the area or divert the course of a stream or river. Maintenance activities would be conducted in areas that would be disturbed during construction. Operation and maintenance activities would involve the use of existing and overland access routes and would not involve any new ground disturbance that could result in flooding. The impact would be less than significant.

Required APMs and MMs: MM Hydrology-5

e) Would the proposed project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	Significance Determination
	Less than significant with mitigation

Construction

The proposed project would require a total of approximately 20,000 gallons of water (0.06 acre-foot) during construction primarily for dust suppression (required by MM Air Quality-1). Water would be applied to disturbed soils in project work areas and along access roads when construction activities occur in dry conditions. Water would be applied at the minimum rate to moisten dry soils and prevent dust generation, and would not be applied at an excessive rate that could create or contribute to runoff water. Dust control would therefore not generate runoff to stormwater drainage systems. The impact would be less than significant.

Groundwater extracted from pole holes during construction could be polluted if the poles are in an area with contaminated groundwater. Discharging polluted groundwater extracted from pole holes would be a significant impact. MM Hydrology-3 defines methods for proper handling of potentially contaminated groundwater extracted during dewatering operations to avoid generation of polluted runoff. The impact would be less than significant with mitigation.

Construction activities proposed for the project would require the use of construction vehicles and heavy equipment containing fuels, hydraulic fluids, oil, grease, and other hazardous materials. Hazardous fluids have the potential to leak from vehicles and equipment during operation, refueling, overnight storage, or maintenance. Hazardous materials could also accidentally spill from containment vessels (i.e., tanks, barrels, or boxes) if they were improperly transported or stored. If hazardous material leaks or spills were not properly contained and cleaned up, the hazardous materials could be transported to nearby waterways during a rain event and create a substantial additional source of polluted runoff, which would be a significant impact. PG&E has proposed APM WQ-4, which requires vehicle maintenance at least 100 feet or more from a water body, and use of secondary containment. Even with APM WQ-4, a significant impact on water quality could occur if hazardous material spills were not properly cleaned up. MM Hazards-1 supersedes APM WQ-4, and requires incorporation of procedures for the proper storage and handling of hazardous materials into the SWPPP (MM Hydrology-1), as well as spill response procedures to contain and cleanup any contaminated soils to prevent hazardous materials from entering waterways during rain events. The impact would be less than significant with mitigation.

3.9 HYDROLOGY AND WATER QUALITY

Operation and Maintenance

Following construction, disturbed areas would be returned to approximate pre-project conditions. Inspection, maintenance, and repair of the lines would continue to be performed at approximately the same frequency as existing operation, and the maintenance activities would not contribute to runoff water.

As discussed under Impact d), the very small increase in impervious surface from new poles and TSP foundations would not substantially increase the rate or amount of runoff. The impact would be less than significant.

Herbicides are currently used along the entire project alignment to control vegetation growth, where necessary. PG&E normally uses herbicides to treat the stumps of trees and woody vegetation following removal to prevent re-sprouting. The use of herbicides would not change from current practices following construction of the project. Herbicides would be applied following PG&E's standard operating procedures and applicable laws and regulations governing the use of herbicides. The impact would be less than significant.

Required APMs and MMs: MM Hydrology-3 and MM Hazards-1 (refer to Section 3.8: Hazards and Hazardous Materials)

f) Would the proposed project otherwise substantially degrade water quality?	Significance Determination
	No impact

Impacts on water quality that could result from the proposed project include erosion, sedimentation, and hazardous materials contamination. These impacts are discussed under Impacts a), c), and e). The proposed project would not otherwise substantially degrade water quality. No impact would occur.

Required APMs and MMs: None

g) Would the proposed project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	Significance Determination
	No impact

The proposed project would not involve the building or replacement of new housing; therefore, no impact would occur.

Required APMs and MMs: None

3.9 HYDROLOGY AND WATER QUALITY

h) Would the proposed project place structures within a 100-year flood hazard area that would impede or redirect flood flows?	Significance Determination
	No impact

No project work areas or facilities would be located within a 100-year flood zone. The proposed project would span an area along Mark West Creek within a 100-year flood zone, but all proposed project facilities and work areas are located outside of the 100-year flood zone. No impact would occur.

Required APMs and MMs: None

i) Would the proposed project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	Significance Determination
	Less than significant

The proposed project would include replacement of substation facilities at Fitch Mountain Substation, which is within a FEMA 500-year flood zone. Replacing substation facilities in a 500-year flood zone would not increase the risk of loss, injury, or death involving flooding because new facilities would replace existing facilities within the existing substation boundary and within the same flood hazard area. The impact would be less than significant.

Fitch Mountain Substation and existing poles for the Fitch Mountain #1 Tap are located within the dam flood inundation area for Warm Springs Dam. The proposed project would include replacing existing substation facilities within the existing Fitch Mountain Substation fence line and replacing one existing pole for the Fitch Mountain #1 Tap that are within the dam flood inundation area. Replacing existing substation facilities and a pole within this area would not increase the risk of loss, injury, or death from flooding as a result of dam failure, because the replacement structures would be located in an area that has the same risk of dam flood inundation as the existing structure. The impact would be less than significant.

The proposed project would span an unnamed tributary to Windsor Creek in the Northern Segment (between Poles 30 and 31), which is located within a dam flood inundation area mapped by Sonoma County. Existing poles are located on ridgelines on either side of the tributary and approximately 300 to 600 feet outside of the dam flood inundation area. No impact would occur.

Required APMs and MMs: None

3.9 HYDROLOGY AND WATER QUALITY

j) Would the proposed project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	Significance Determination
	Less than significant

The proposed project would not be located within a tsunami inundation zone or an area that could be subject to a seiche (i.e., adjacent to a lake). Several poles that would be replaced are located adjacent to stream and creek channels. The areas directly adjacent to these channels could be subject to inundation by a mudflow. The proposed project would involve replacing poles at a near 1:1 ratio within approximately 12 to 35 feet of the existing pole location; therefore, the proposed project poles would be in areas with the same potential for mudflow as the existing poles. The impact would be less than significant.

Required APMs and MMs: None

3.9.3 Required Applicant Proposed Measures and Mitigation Measures

MM Hydrology-1: SWPPP Development and Implementation (Supersedes APM WQ-1)

A Qualified Stormwater Pollution and Prevention Plan (SWPPP) Developer (QSD) shall prepare a SWPPP for the project in accordance with the State Water Resources Control Board (SWRCB) Construction General Permit (CAS-2012-006-DWQ). The SWPPP shall address adequate procedures and standards required for specific project activities including, but not limited to, BMPs for erosion and sedimentation control; dewatering; hazardous materials identification, handling, storage, and disposal; and emergency response and cleanup. The SWPPP shall include an inspection and monitoring program that conforms to the requirements included in MM Hydrology-2. A QSD shall oversee implementation of the SWPPP and monitoring program. PG&E shall submit the SWPPP to the CPUC for review and comment no less than 30 days prior to construction. PG&E shall submit all filings, revisions, and Notices of Termination to the CPUC, as well as inspection reports, rain event action plans, and annual reports upon request.

BMP materials identified in the SWPPP shall be stored and available on site prior to initiating ground-disturbing activities.

All necessary erosion and sediment control BMPs shall be installed prior to conducting grading or vegetation clearing activities during the wet season and before the onset of any anticipated storm events. Temporary BMPs such as silt fences or wattles, which are intended to minimize sediment transport from temporarily disturbed areas, shall remain in place until disturbed areas have stabilized.

Applicable Locations: All project areas

Performance Standards and Timing:

- **Before Construction:** (1) A draft version of the SWPPP is submitted to CPUC at least 30 days prior to construction, and (2) the SWPPP addresses BMPs for all construction activities, and includes a monitoring program
- **During Construction:** The SWPPP is implemented appropriately until all project areas are sufficiently stabilized, SWPPP coverage is complete, and erosion, sedimentation, and pollution runoff from project activities is prevented
- **After Construction:** N/A

3.9 HYDROLOGY AND WATER QUALITY

MM Hydrology-2: SWPPP Monitoring Program (Supersedes APM WQ-2)

SWPPP monitoring shall be completed by a Qualified SWPPP Practitioner (QSP) on a weekly basis during the construction period and at least once every 24 hours before, during, and after forecast rain events (any likely precipitation event forecast of 50 percent or greater probability). The purpose of the monitoring program shall be to ensure all BMPs described in the SWPPP are installed, maintained, and functioning adequately. Should any BMP failure be observed during monitoring, additional BMPs shall be implemented to prevent further erosion or sedimentation to downstream waters.

A checklist form identified in the SWPPP shall be completed for each inspection by the QSP. The checklist forms shall be submitted to the CPUC with weekly monitoring reports. Annual reports prepared in accordance with the Construction General Permit shall also be submitted to the CPUC. The CPUC shall be notified within 24 hours of any BMP failures or discharge violations and provided with a description of corrective actions that have or will be implemented to resolve the issue.

SWPPP monitoring shall occur until all project areas are sufficiently stabilized, as defined in the SWPPP. At a minimum, all disturbed areas must achieve 70 percent or greater vegetation cover and meet the Construction General Permit requirements for filing Notices of Termination to end SWPPP coverage and the associated BMP and monitoring requirements.

Applicable Locations: All disturbed areas

Performance Standards and Timing:

- **Before Construction:** N/A
- **During Construction:** (1) A QSP inspects disturbed project areas and BMPs on a weekly basis, for storm events during construction, and as needed following construction, (2) BMPs are adequately installed and maintained, and any BMPs that are not functioning properly are replaced in a timely manner, and (3) Monthly SWPPP reports are submitted to the CPUC during construction, and annual reports are submitted until SWPPP coverage ends
- **After Construction:** All disturbed areas are stabilized as required and Notices and Termination are filed to end SWPPP coverage

MM Hydrology-3: Dewatering Procedures (Supersedes APM WQ-3)

Groundwater extracted during construction dewatering shall not be discharged to any surface waters or storm drains. If dewatering is necessary, the water shall either be used (1) to irrigate upland areas, (2) for dust control, or (3) for other construction process (e.g., concrete production). Any groundwater that is suspected of contamination shall be tested at a state certified laboratory and shall be stored in a Baker Tank until water quality testing has been completed. Any contaminated groundwater encountered during dewatering shall be disposed of in accordance with all applicable laws and the procedures described in the SWPPP.

Applicable Locations: Any excavations where dewatering occurs

Performance Standards and Timing:

- **Before Construction:** N/A
- **During Construction:** Dewatering procedures are implemented adequately, and water is not discharged into drainages or storm drains
- **After Construction:** N/A

3.9 HYDROLOGY AND WATER QUALITY

MM Hydrology-4: Watercourse Avoidance and Crossing Plan (Supersedes APM WQ-3 and APM BIO-3)

PG&E shall prepare a Seasonal Watercourse Avoidance and Crossing Plan that defines specific methods for (1) completely avoiding impacts on wetlands and streams, to the extent feasible, and (2) defining specific water quality impact minimization measures that would be implemented at each crossing location that cannot be fully avoided by construction activities.

PG&E shall submit the plan to the CPUC no less than 60 days prior to use of construction of surface water crossings or work within 50 feet of surface water resources. At a minimum, the plan shall provide the following information for each location where a wetland or watercourse is crossed by an access route or is within 50 feet of a work area:

- Available methods for complete avoidance (i.e., fencing, flagging, or alternative routes) or an explanation why complete avoidance is not feasible, where applicable.
- Proposed crossing methods.
- Anticipated impacts that cannot be avoided and anticipated permitting requirements for those impacts with an explanation why alternate crossing methods are not feasible.
- Methods that would be implemented to reduce water quality impacts, avoid inadvertent impacts on aquatic resources, and avoid direct impacts on potentially suitable aquatic habitat for CRLF and FYLF (refer to MM Biology-3). Methods could include restricting crossing to dry periods; installing temporary bridges; or placing fiber-glass mats, steel plates, or wooden beams to protect the feature.

PG&E shall obtain all necessary state and federal permits for impacts on waters of the state and/or US and supply copies of all permits to the CPUC prior to construction. PG&E shall comply with all applicable Nationwide Permit regional and general conditions for any impacts on waters subject to federal jurisdiction under the Clean Water Act. PG&E shall submit agency permits or verification documents and proof of compliance to the CPUC no less than 30 days prior to impacting waters of the state or US.

Applicable Locations: Water feature crossings

Performance Standards and Timing:

- **Before Construction:** (1) A draft plan is submitted to the CPUC no less than 60 days prior to construction, and (2) PG&E obtains all necessary state and federal permits for impacts on waters of the state and US that cannot be avoided and supplies copies to the CPUC no less than 30 days prior to impacts
- **During Construction:** Impacts on wetlands and waters are avoided to the extent feasible and avoidance and minimization measures are implemented adequately
- **After Construction:** Any post-construction permitting requirements are implemented as applicable

MM Hydrology-5: Culvert Design

PG&E shall design any repaired or replaced culverts to meet the standards outlined in the Sonoma County Flood Control Design Criteria. At a minimum, all culverts shall be designed to avoid any increase in flooding or erosion on adjacent stream banks or slopes. Design features shall be avoided that decrease water flow or impede the movement of aquatic wildlife. The culvert design shall be provided to Sonoma County for review, and any approvals shall be obtained prior to construction. Any Sonoma County comments or approvals for the culvert design shall be submitted to the CPUC for record keeping.

Applicable Locations: Any repaired or replaced culverts

Performance Standards and Timing:

- **Before Construction:** N/A
- **During Construction:** PG&E designs culverts to meet Sonoma County Flood Control Design Criteria
- **After Construction:** N/A

3.9 HYDROLOGY AND WATER QUALITY

3.9.4 References

- California Department of Water Resources. 2014. "CASGEM Groundwater Basin Prioritization Results - Abridged, Sorted by Overall Basin Score." May 26.
- . 2015. *CASGEM Online System*. Accessed September 12, 2016.
[https://www.casgem.water.ca.gov/OSS/\(S\(w0q5hvdetbmcsz5bbhmnadur\)\)/Public/ApplicationHome.aspx](https://www.casgem.water.ca.gov/OSS/(S(w0q5hvdetbmcsz5bbhmnadur))/Public/ApplicationHome.aspx).
- . 2016. "Final 2016 Bulletin 118 Groundwater Basin Boundaries."
- ESRI. 2016. "Raster, Vector, and On-line GIS Data Resources."
- FEMA (Federal Emergency Management Agency). 2014. "National Flood Hazards." *National Flood Hazard Data Layer ArcGIS WMS Server*. Accessed July 29, 2016.
<http://hazards.fema.gov/gis/nfhl/services/public/NFHLWMS/MapServer/WMServer?>
- GANDA (Garcia and Associates). 2012. "Biological Resources Technical Report, Pacific Gas & Electric Company's Fulton-Fitch 620 kV Power Line Reconductoring Project." Sonoma County, California, July.
- . 2016. "Fulton-Fitch Reconductoring Project, Water Crossing Mapping." January 15.
- . 2017. "Aquatic Resources Assessment for the Fulton-Fitch Mountain Reconductoring Project in Sonoma County, California." May 23.
- NCRWQCB (North Coast Regional Water Quality Control Board). 2011. "Water Quality Control Plan for the North Coast Region." May.
- . 2014. "California Environmental Protection Agency, North Coast Regional Water Quality Control Board." *Resolution No. R1-2014-0043, Approving the 303(d) List Portion of the North Coast Region's 2012 Integrated Report for the Clean Water Act Section 305(b) Assessment of Survey Water Quality and Clean Water Act Section 303(d) List of Water Quality Limited Segments*. August 14. Accessed July 29, 2016.
http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/303d/pdf/150710/03_NorthCoastRegion_SignedResolution.pdf.
- PG&E. 2016. "Project Elements GIS dataset."
- Santa Rosa Plain Basin Advisory Panel. 2014. "Santa Rosa Plain Watershed Groundwater Management Plan."
- Sonoma County. 2011. "Sonoma County Hazard Mitigation Plan." September 12.
- Sonoma County Water Agency. 2016. *Quick Facts*. Accessed October 13, 2016.
<http://www.scwa.ca.gov/quick-facts/>.

3.9 HYDROLOGY AND WATER QUALITY

- TRC. 2015a. "Delineation of Waters of the United States for Pacific Gas and Electric Company's Fulton-Fitch Mountain Reconductoring Project, Sonoma County, California." May.
- . 2015b. "Addendum #1 to the Biological Resources Technical Report." *Memorandum: Fulton-Fitch Mountain Reconductoring Project, Sonoma County, CA.* December 15.
 - . 2016a. "DRAFT Delineation of Waters of the United States for Pacific Gas and Electric Company's Fulton-Fitch Mountain Reconductoring Project, Sonoma County, California." *Version 1.* April.
 - . 2016b. "Addendum #2 to the Biological Resources Technical Report." *Memorandum: PG&E Fulton-Fitch Mountain Reconductoring Project Biological Reconnaissance Survey for Backup Work Areas, Access Roads, and Helicopter Touch-Down Areas.* June 23.
 - . 2016c. "DRAFT Delineation of Waters of the United States for Pacific Gas and Electric Company's Fulton-Fitch Mountain Reconductoring Project, Sonoma County, California." *Version 2.* October.
 - . 2017a. "Wetland Delineation Data Sheets for Seasonal Wetland (SW) 3." June 7.
 - . 2017b. "PG&E Fulton-Fitch Reconductoring Project SW3 at Pole 62, SW1 at Mount Weske Drive." June 9.
- USGS (United States Geologic Survey). 2012. "National Hydrography Dataset - Waterbodies and Flowlines GIS dataset."
- . 2014. *Simulation of Groundwater and Surface-Water Resources of the Santa Rosa Plain Watershed, Sonoma County, California.* USGS.

3.9 HYDROLOGY AND WATER QUALITY

This page is intentionally left blank.