3.10 Hydrology and Water Quality

This section describes the regulatory and environmental setting for hydrology and water quality. It also describes impacts on hydrology and water quality that would result from implementation of the Climate Action 2020: Community Climate Action Plan (CAP) and includes mitigation for significant impacts, where feasible and appropriate.

3.10.1 Environmental Setting

This section describes the hydrology and water quality conditions present in Sonoma County. This information has primarily been drawn and modified from the *Sonoma County General Plan 2020 EIR* (Sonoma County 2006).

3.10.1.1 Regional Climate and Topography

The climate of Sonoma County is characterized as Mediterranean. Temperatures along the coast are generally cool throughout summer and seldom drop below freezing in winter. Inland, however, temperature can vary greatly, with occasional highs exceeding 100 degrees Fahrenheit and lows sometimes falling below freezing.

Both precipitation and temperature in Sonoma County are influenced by the area's topography, the Pacific Ocean, and the waters of San Pablo Bay to the south. Annual precipitation generally increases with elevation, and is greatest in the western part of the County. Average annual precipitation ranges from roughly 20 inches in the southeastern County to 30 to 40 inches in central and northern valley areas. Annual precipitation in upper and coastal watersheds can exceed 80 to 100 inches. During summer months, low clouds and evening drizzle in coastal areas can provide enough moisture to keep vegetation green. Inland, however, the summer dry period is long enough to deplete soil moisture and dry up vegetation.

3.10.1.2 Watersheds and Surface Hydrology

Hydrologically, land in Sonoma County falls within seven distinct watersheds. Table 3.10-1 summarizes the characteristics of the watersheds within the County. The Russian River watershed is the largest in terms of area, runoff volume, number of cities, and population. Due to the large size of the Russian River watershed and the complexity of the coastal watersheds, it is useful to divide or group the Russian River watershed and several of the coastal watersheds into subbasin units whose size and boundaries are determined by several common traits including runoff patterns, geology, topography, vegetation, and land use.

Table 3.10-1. Summary of Watershed and Subbasins in Sonoma County

Watershed (subbasin in *italics*)	Impaired Water Body[a]	Land Use	Hydrological Issues
North Coast (49 square miles)	No	70% rural 21% park/recreation area 9% agricultural	Sea cliff/bluff retreat; upland gully erosion; stream bank failure
Gualala River (269 square miles)	Yes	99% rural (timber/grazing)	Excessive sedimentation and siltation due to habitat modification and erosion of unpaved roads
Russian River (921 square miles in Sonoma County)	Yes	--	Sedimentation and siltation due to grazing, agriculture, road construction, and habitat modification
Russian River Subbasin (237 square miles)	--	61% rural 32% agricultural 4% park/recreation area	Flooding; bank erosion; streambed downcutting; elevated bacteria levels; hillside vineyards; and gravel mining
Austin Creek Subbasin (70 square miles)	--	93% rural 7% park/recreation area	Erosion along roads
Dry Creek Subbasin (70 square miles)	--	57% rural 20% agricultural (vineyards/orchards) 12% park/recreation area 10% commercial/industrial	Erosion along roads; vineyards and orchards; creek bank instability; loss of riparian habitat
Big Sulphur Creek Subbasin (80 square miles)	--	97% rural 3% agricultural	Erosion of unpaved roads; erosion after wildfires
Maacama Creek Subbasin (69 square miles)	--	44% rural 46% agricultural 7% commercial/industrial	--
Santa Rosa Creek Subbasin (81 square miles)	Yes	38% rural 35% urban 18% agricultural 8% park/recreation area	Urbanization (water quality and stormwater runoff); bank instability; fisheries; riparian restoration
Laguna de Santa Rosa Subbasin (89 square miles)	Yes	17% urban 44% agricultural 33% rural	Flooding in the lower reaches; siltation and shallowing causing loss of floodplain storage and flood conveyance capacity; water quality and biological resources
Mark West Subbasin (83 square miles)	Yes	55% rural 29% agricultural 11% urban	Low gradient in lower reaches resulting in some flooding

Watershed (subbasin in *italics*)	Impaired Water Body[a]	Land Use	Hydrological Issues
Green Valley Subbasin (37 square miles)	Yes	56% agricultural 39% rural	Inadequate channel capacities along Atascadero Creek causing flooding problems; expansion of two large rock quarries impacting water quality and salmonid habitat
Sonoma Creek (170 square miles)	Yes	54% agricultural 30% rural 11% park/recreation area	Flooding; stream bank erosion; riparian & fisheries habitat; water diversions; groundwater pumping; sedimentation, nutrients and pathogens
Estero Americano (50 square miles in Sonoma County)	Yes	Predominantly rural, very little development	Gully erosion; stream bank instability
Petaluma River (112 square miles in Sonoma County)	Yes	Predominantly agricultural	Flooding; sedimentation/ siltation, nutrients and pathogens
Stemple Creek (22 square miles in Sonoma County)	Yes	91% agricultural 8% park/recreation area	High nutrient levels
Salmon Creek (37 square miles)	No	51% agricultural 47% rural	Gully erosion; stream bank instability
South Coast (9 square miles)	No	79% agricultural 17% park/recreation area	--

Source: Sonoma County 2006

Notes:

[a] The term Impaired Water Body refers to waters that are not attaining water quality standards set forth by the Environmental Protection Agency and regulated by the State Water Resources Control Board.

3.10.1.3 Groundwater Hydrology

In Sonoma County, rivers and stream corridors are important source areas for groundwater recharge, as are some upland areas underlain by permeable formations. Groundwater is a vital source of water supply for both agricultural and urban uses in Sonoma County. In fact, Sonoma has the second largest number of wells of any county in California. Groundwater provides an important portion of the water supply for the cities of Sonoma, Sebastopol, Cotati, Rohnert Park, and Petaluma. The Valley of the Moon Water District and the Sonoma County Water Agency also rely on groundwater to supplement their water supply.

General groundwater availability issues found in portions of Sonoma County include the decrease in groundwater recharge rates, lack of groundwater monitoring, local well interference, and potential groundwater management problem areas.

Table 3.10-2 summarizes the characteristics of the 11 separate groundwater basins in Sonoma County. These basins, formed over geologic time under various conditions, vary in water availability,

water quality, and recharge potential. In some cases, the groundwater basins have been divided into groundwater subbasins that have different hydrogeologic characteristics.

Table 3.10-2. Summary of Groundwater Basins in Sonoma County

Groundwater Basin (subbasin in *italics*)	Surface Area (square miles)	Groundwater Availability Class(es)	Notes
Annapolis Ohlson Ranch Formation Highland	13.5	III	Some wells may go dry in fall months
Knights Valley	6	I	Usually adequate for domestic use
Alexander Valley	--	--	--
Cloverdale Area Groundwater Subbasin	10	I, IV	Groundwater elevations may be declining in some areas
Alexander Groundwater Subbasin	--	--	Groundwater levels relatively stable
Santa Rosa Valley	--	--	--
Healdsburg Area Groundwater Subbasin	--	--	USGS currently conducting studies
Santa Rosa Plain Groundwater Subbasin	262	I, II, III, IV	Overall lowering of groundwater levels compared to historic baseline conditions; reduced groundwater contribution to stream flow; reduced groundwater evapotranspiration in riparian areas; more infiltration of surface water to groundwater[1]
Rincon Valley Groundwater Subbasin	--	--	--
Bodega Bay Area	--	IV	Limited information available
Wilson Grove Formation Highlands	--	II, III, IV	Well yields may be low in fall months in some parts of basin
Lower Russian River Valley	10	I, IV	Mostly high yield
Fort Ross Terrace Deposits	--	III, IV	Variable yields
Petaluma Valley	70	I, III, IV	City conducting groundwater assessment

Groundwater Basin (subbasin in *italics*)	Surface Area (square miles)	Groundwater Availability Class(es)	Notes
Napa-Sonoma Valley	--	--	--
Sonoma Valley Groundwater Subbasin	70	I	Groundwater level trends within shallow zones are generally stable. Groundwater level declines are present within deep zone aquifers[2]
Napa-Sonoma Lowlands	65	III, IV	Potential problems with salt water intrusion
Kenwood Valley	8	I	Some concerns over local well interference effects and water level declines

Source: Sonoma County 2006.

Notes:

A four-tier classification system is used to indicate general areas of groundwater availability: Class I is the major groundwater basins; Class II is major natural recharge areas; Class III is marginal groundwater availability areas; and Class IV is areas with low or highly variable water yield.

1 This information is summarized from the Santa Rosa Plain Watershed Groundwater Management Plan (Santa Rosa Plain Basin Advisory Panel 2014)

2 This information is summarized from the Sonoma Valley Groundwater Management Program Five-Year Review and Update Final Report (Sonoma County Water Agency 2014).

3.10.1.4 Water Quality

Overall, Sonoma County is predominantly rural, with areas of intense development primarily along the US 101 corridor. Anthropogenic land use changes (including urban and agricultural uses) have negatively impacted the water quality of some waterways in the County. While the U.S. Environmental Protection Agency (EPA) and the State Regional Water Quality Control Boards (RWQCBs) do not compile a list of waterways that have good water quality, they do compile a list of waterways that do not meet the water quality standards set forth by the EPA.

Table 3.10-3 provides an overview of the water quality impairments in the County. There are several waterways in Sonoma County that have been placed on a Section 303(d) list by either the RWQCBs or the EPA: Bodega Harbor, Estero Americano, Calabazas Creek, Campbell Cove, Gualala River, Russian River (including Stemple Creek and Big Sulphur Creek), Petaluma River, and San Antonio River. Additionally, San Pablo Bay, which receives water from the Petaluma River, has also been listed as an impaired water body for constituents. The most prominent water quality problems affecting waterways in the County are sedimentation and siltation, nutrients, and pathogens, or high bacteria levels.

Table 3.10-3. Overview of Water Quality Impairments in Sonoma County

Waterway	Pollutant/Stressor
Bodega Harbor	Invasive species
Estero Americano	Nutrients and sedimentation/siltation
Calabazas Creek	Diazinon

Waterway	Pollutant/Stressor
Campbell Cove	Indicator bacteria
Gualala River	Aluminum, sedimentation/siltation, water temperature
Russian River	Sedimentation/Siltation, water temperature, aluminum, indicator bacteria, specific conductivity, diazinon, phosphorus, dissolved oxygen, mercury, manganese, nutrients
San Pablo Bay[d]	Chlordane, DDT, dieldrin, dioxin compounds, invasive species, furan compounds, mercury, PCBs, PCBs (dioxin-like), selenium
Petaluma River	Diazinon, nickel, nutrients, pathogens, sedimentation/siltation, trash
Sonoma Creek	Nutrients, pathogens, sedimentation/siltation
San Antonio Creek	Diazinon

Source: California State Water Resources Control Board 2012

3.10.1.5 Flooding

Flood Hazard Areas

The flood hazard areas within the County include areas near the Russian River, streams, and the southern portions of the County adjacent to San Pablo Bay (see Figure PS-1e of the Sonoma County General Plan). Flood zone hazards in Sonoma County are sub-regional in geographic scope, and could affect County residents, structures, and land use activities throughout certain portions of the County.

Several FEMA-designated floodplain areas within Sonoma County have a history of repetitive flood damage. These include areas along Sonoma Creek in and near the city of Sonoma, along the Petaluma River above and within the City of Petaluma, along the Laguna de Santa Rosa in and near Sebastopol, and along the middle and lower course of the Russian River, including the communities of Guerneville and Monte Rio.

Section 7B of the current County Code requires that residential structures built within FEMA-designated 100-year flood hazard zones be elevated at least 1 foot above the elevation of the 100-year flood level to protect these structures from flood damage. New non-residential buildings must either meet this criterion or provide an alternate method of flood proofing that is certified by a registered engineer and approved by the PRMD Chief Building Inspector. Similar requirements exist in the incorporated cities in the County.

Dam Failures

The County has 44 regulated dams within its boundaries. Larger dams whose potential failure could cause severe inundation include the Warm Springs Dam built by the Army Corps of Engineers in 1983 at the confluence of Warm Springs Creek and Dry Creek, and the Coyote Dam built in 1958 on the East Fork Russian River in Mendocino County. Although the County has not experienced dam failure in the last 20 years, the sudden failure of any one of these facilities—for instance, in response to a large magnitude earthquake—could potentially cause flooding in communities downstream of the dams.

The most extensive series of levees in Sonoma County that are potentially susceptible to failure are the predominantly non-engineered farm levees that protect low lying farmland and rural housing along the lower reaches of the Petaluma River and Sonoma Creek. Although some of these may be maintained by small reclamation districts, most of the non-engineered farm levees in these areas are maintained by the individual farmers and ranchers. Technical support and assistance are sometimes provided by the Department of Agriculture and local Resource Conservation Districts. Levees in these areas probably represent the greatest risk of levee failure, and several farm levees along the lower Petaluma River and Sonoma Creek failed during flood events as recently as 1998. Although several low lying farmhouses and some farm buildings and equestrian facilities were flooded, and there was some loss of agricultural crops, widespread damage did not occur.

3.10.2 Regulatory Setting

3.10.2.1 Federal

Clean Water Act

Several sections of the Clean Water Act (CWA) pertain to regulating impacts on waters of the United States. The term *waters of the United States* essentially refers to all surface waters, such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. The EPA is the overarching authority protecting the quality of waters of the United States. However, the State Water Resources Control Board (State Water Board) regulates waters of the United States under CWA Sections 303, 401 and 402, and the United States Army Corps of Engineers (USACE) has jurisdiction over waters of the United States under CWA Section 404.

Section 303—Impaired Waters

The State of California adopts water quality standards to protect beneficial uses of state waters as required by CWA 303 Total Maximum Daily Load Program and the state's Porter-Cologne Water Quality Control Act of 1969. CWA Section 303(d) established the total maximum daily load (TMDL) process to guide the application of state water quality standards (see the discussion of state water quality standards below). To identify candidate water bodies for TMDL analysis, a list of water-quality–limited streams is generated. These streams are impaired by the presence of pollutants, including sediments, and have no additional assimilative capacity for these pollutants.

In addition to the impaired waterbody list required by CWA Section 303(d), CWA Section 305(b) requires states to develop a report assessing statewide surface water quality. Both CWA requirements are being addressed through the development of a 303(d)/305(b) Integrated Report, which will address both an update to the 303(d) list and a 305(b) assessment of statewide water quality. The State Water Board developed a statewide 2010 California Integrated Report based on the Integrated Reports from each of the nine RWQCBs. The 2010 California Integrated Report was approved by the State Water Board at a public hearing on August 4, 2010, and the report was submitted to the EPA for final approval. Although updates to the 303(d) list must be finalized by the EPA before becoming effective, this updated 303(d) list will be used for this analysis in order to have the most up-to-date information available.

Section 401—Water Quality Certification

CWA Section 401 requires that an applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant obtain a water quality certification (or waiver). Water quality certifications are issued by the RWQCBs in California. Under CWA, the state (as implemented by the relevant board) must issue or waive CWA 401 water quality certification for the CAP to be permitted under CWA 404. Water quality certification requires the evaluation of water quality considerations associated with dredging or the placement of fill materials into waters of the United States.

Section 402—National Pollutant Discharge Elimination System

The 1972 amendments to the federal Water Pollution Control Act established the National Pollutant Discharge Elimination System (NPDES) permit program to control discharges of pollutants from point-source discharges, or discharges that one can point to as a known source of pollutants. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

The 1987 amendments to the CWA created a new section of the CWA devoted to stormwater permitting (Section 402). EPA has granted the State of California primacy in administering and enforcing the provisions of the CWA and NPDES within state boundaries. NPDES permits are issued by one of the nine RWQCBs.

National Flood Insurance Program

In response to increasing costs of disaster relief, Congress passed the National Flood Insurance Act (NFIP) of 1968 and the Flood Disaster Protection Act of 1973. The Federal Emergency Management Agency (FEMA) administers the NFIP to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. A Flood Insurance Rate Map (FIRM) is the official map of a community prepared by FEMA to delineate both the special flood hazard areas and the flood risk premium zones applicable to the community.

3.10.2.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act was established and is implemented by the State Water Board and nine RWQCBs. The State Water Board is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, or *waters of the state*. Waters of the state are defined more broadly than *waters of the United States* and defined as any surface water or groundwater, including saline waters, within the boundaries of the state. This includes waters in both natural and artificial channels. It also includes all surface waters that are not waters of the United States or non-jurisdictional wetlands, which are essentially distinguished by whether they are navigable. If waters are not navigable, then they are considered to be isolated and, therefore, only fall under the jurisdiction of the Porter-Cologne Act and not the CWA. The RWQCBs are responsible for implementing CWA Sections 303(d), 401, and 402 mentioned above and described in more detail below.

The Porter-Cologne Act authorizes the State Water Board to draft state policies regarding water quality. The act requires projects that are discharging, or proposing to discharge, wastes that could

affect the quality of the state's water to file a Report of Waste Discharge (RWD) with the appropriate RWQCB. The Porter-Cologne Act also requires that State Water Board or a RWQCB adopt basin plans for the protection of water quality. Basin plans are updated and reviewed every 3 years and provide the technical basis for determining Waste Discharge Requirements (WDRs), taking enforcement actions, and evaluating clean water grant proposals. A basin plan must include (1) a statement of beneficial water uses that the RWQCB will protect, (2) water quality objectives needed to protect the designated beneficial water uses, and (3) strategies to be implemented with time schedules for achieving the water quality objectives.

Sonoma County is located within the jurisdiction of two RWQCBs: the North Coast (Region 1) RWQCB, and the San Francisco Bay (Region 2) RWQCB, which includes the Petaluma River and Sonoma Creek. The RWQCBs have the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within their respective jurisdictions. Their jurisdiction also extends to discharge of wastes and wastewater to land, and to land disturbance, if the activities could affect the beneficial uses of surface water or groundwater.

In basin plans, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect these uses. Consequently, the water quality objectives developed for particular water segments are based on the designated use and vary depending on such use. The RWQCBs have region-wide and water body-specific beneficial uses and have set numeric and narrative water quality objectives for several substances and parameters in numerous surface waters in its region. For those waters that don't have specific beneficial uses or water quality objectives, the tributary rule[1] applies to streams. Specific objectives for concentrations of chemical constituents are applied to bodies of water based on their designated beneficial uses.

In addition, the State Water Board identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If it is determined that waters are impaired for one or more constituents and the standards cannot be met through point source or non-source point controls (NPDES permits or Waste Discharge Requirements), then CWA requires the establishment of TMDLs. TMDLs may establish daily load limits of the pollutant, or in some cases require other regulatory measures, with the ultimate goal of reducing the amount of the pollutant entering the water body to meet water quality objectives. The latest 303(d) impairments are listed in the 2010 Clean Water Act Section 303(d) and 305(b) Integrated Report (California State Water Resources Control Board 2011). More information on beneficial uses, water quality objectives, and 303(d) impairments that apply to the implementation of the CAP are provided in the surface water quality discussions in Section 3.8.2, *Environmental Setting*.

NPDES General Construction Stormwater Permit

The General NPDES Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ) (Construction General Permit) regulates stormwater discharges for construction activities CWA Section 402. Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the Construction General Permit. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must list best

[1] The "tributary rule" refers to any streams not specifically listed in the plan that are deemed to have the same beneficial uses and water quality objectives of the listed stream, river, or lake to which they are a tributary.

management practices (BMPs) that the discharger will use to protect stormwater runoff and document the placement and maintenance of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants, to be implemented in case of a BMP failure; and a monitoring plan for turbidity and pH for projects that meet defined risk criteria (California State Water Resources Control Board 2015). The requirements of the SWPPP are based on the construction design specifications detailed in the final design plans of a project and the hydrology and geology of the site expected to be encountered during construction. The local or lead agency requires proof of coverage under the CGP prior to building permit issuance. The SWPPP is submitted to the State Water Board, and a copy is kept at the jobsite where it is updated during different phases of construction. The SWPPP must be available for inspection and review upon request.

NPDES General Municipal Stormwater Permit

CWA Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for Municipal Separate Storm Sewer Systems (MS4) (MS4 Permit). Phase I MS4 regulations cover municipalities with populations greater than 100,000, certain industrial processes, or construction activities disturbing an area of 5 acres or more. Phase II (Small MS4) regulations require that stormwater management plans be developed by municipalities with populations smaller than 100,000 and construction activities disturbing 1 or more acres of land area. The State Water Board adopted a Statewide Phase II Small MS4 General Permit in 2013 to efficiently regulate discharges from numerous, qualifying, small MS4s under a single permit. Small MS4s were categorized as either Traditional or Non-Traditional. Traditional MS4s operate throughout a community. Non-Traditional MS4s are similar to a Traditional MS4 but operate at a separate campus facility. Most Non-Traditional MS4s throughout California were not designated as having to comply with the statewide Phase II Small MS4 General Permit, although the State Water Board reserved the right to allow the RWQCBs to designate through due process any single Non-Traditional MS4 if it deemed necessary.

MS4 permits require that cities and counties develop and implement programs and measures to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate. As part of permit compliance, these permit holders have created Stormwater Management Plans (SWMP) for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. These requirements may include multiple measures to control pollutants in stormwater discharge. During implementation of specific projects under the program, project applicants will be required to follow the guidance contained in the stormwater management plans as defined by the permit holder in that location.

The State Water Board is advancing Low Impact Development (LID) in California as a means of complying with municipal stormwater permits. LID incorporates site design, such as the use of vegetated swales and retention basins and minimizing impermeable surfaces, to manage stormwater to maintain a site's predevelopment runoff rates and volumes.

California Department of Pesticides Regulation

California Department of Pesticides Regulation (DPR) is the lead agency for regulating the registration, sale, and use of pesticides in California. It is required by law to protect the environment,

including surface waters, from adverse effects of pesticides by prohibiting, regulating, or controlling the uses of such pesticides. DPR has both a Surface Water and Groundwater Protection Program that addresses sources of pesticide residues in surface waters and has preventive and response components that reduce the presence of pesticides in surface and ground waters. The preventive component includes local outreach to promotion of management practices that reduce pesticide runoff and prevents continued movement to groundwater in contaminated areas. In order to promote cooperation to protect water quality from the adverse effects of pesticides, DPR and the State Water Board signed a Management Agency Agreement (MAA). The MAA, and its companion document, *The California Pesticide Management Plan for Water Quality*, are intended to coordinate interaction, facilitate communication, promote problem solving, and ultimately ensure the protection of water quality.

3.10.2.3 Local

Appendix C, *Local General Plan Goals, Objectives, and Policies*, provides a list of the goals, objectives, and policies in the local general plans of the participating jurisdictions including those related to hydrology and water quality. These goals, objectives, and policies were reviewed to assess whether the project is consistent with the general plans of participating jurisdictions. Disclosure of this consistency analysis is for informational purposes. An additional purpose of providing a list of relative local policies is, where appropriate, to provide the context within which the CAP will be locally implemented. As described in the CAP, most of the CAP measures represent implementation of many of the priorities outlined in existing local policies.

Inconsistencies with general plan policies are not necessarily considered significant impacts under CEQA unless they are related to physical impacts on the environment that are significant in their own right.

Implementation of the CAP is consistent with the applicable general plan goals, objectives, and policies of the participating jurisdictions in relation to hydrology and water quality.

3.10.3 Impacts Analysis

3.10.3.1 Methodology

Effects related to hydrology and water quality are analyzed qualitatively and are focused on the CAP's potential to impact surface water hydrology, groundwater hydrology, water quality, and flooding in the County during construction and/or operation based on the CAP's magnitude, intensity, location, and duration of activities.

3.10.3.2 Significance Criteria

The State CEQA Guidelines Appendix G (14 CCR 15000 et seq.) has identified significance criteria to be considered for determining whether a project could have significant impacts on existing hydrology and water quality resources.

An impact would be considered significant if construction or operation of the project would have any of the following consequences.

- Violate any water quality standards or waste discharge requirements.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in 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 that would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing 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.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- 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.
- Contribute to inundation by seiche, tsunami, or mudflow.

The California Supreme Court has recently confirmed that "CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents." However, an agency must "evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present."

3.10.3.3 Impacts and Mitigation Measures

Impact HYD-1a: Implementation of the CAP could violate water quality standards and waste discharge requirements, or could otherwise substantially degrade water quality during construction (less than significant).

The CAP is a policy-level document that does not include any site-specific designs or proposals, or grant any entitlements for development that would have the potential to violate water quality standards and waste discharge requirements. As a policy document, the CAP would have no direct impact on water quality and waste discharge, but future implementation activities could violate water quality standards and waste discharge requirements, or could otherwise substantially degrade water quality during construction activities.

There are several CAP measures that promote and could include the construction of new facilities or retrofits to existing buildings aimed to increase energy efficiency, renewable energy use, solid waste diversion, recycled water and greywater use, and capture/use of methane from landfills and dairies. Further, several CAP promote the construction of minor changes to the existing streetscape, such as traffic calming roadways improvements, and additional transit, pedestrian, and bicycle facilities to promote increased transit accessibility.

Although construction details are unknown, construction of these facilities may include land-disturbing activities that could result in sedimentation and other pollutants which can degrade surface water quality. Construction activities may also involve the use of chemicals and operation of heavy equipment that could result in accidental spills of hazardous materials (e.g., fuel and oil) which can also degrade surface water quality. Activities involving more than 1 acre of land disturbance would be required to comply with the State Water Board general construction permit to ensure water quality is not degraded during the construction process. The construction general permit requires the development and implementation of a SWPPP and BMPs for erosion control. Construction activities promoted by the CAP that disturb more than 1 acre of land would be required to comply with the State Water Board general construction permit to minimize water quality impacts during construction. Construction activities that are not required to comply with the State Water Board construction general permit could result in water quality impacts during construction but are still required to comply with BMPs (as generally mandated in the local agencies' applicable MS4 permits). Where there is the potential for these impacts, they are routinely addressed through project-level environmental review and permitting. Many existing city and county policies and ordinances address such impacts. Where existing ordinances do not address these impacts, then project-level CEQA review will assess the specific significance of the project impact and, where appropriate, identify mitigation to address those impacts. In particular, this impact is routinely addressed with standard mitigation identified during project-level review such as implementing erosion-control measures to protect water quality during construction. Future facilities will be analyzed on a site-specific basis pursuant to CEQA. Based on available information, there is no current basis to conclude that there would be a significant impact.

Impact HYD-1b: Implementation of the CAP could violate water quality standards and waste discharge requirements, or could otherwise substantially degrade water quality during operation (less than significant).

There are several CAP measures that promote and could include the construction of new facilities aimed to increase energy efficiency, renewable energy use, use alternative fuels, solid waste diversion, recycled water and greywater, and capture/use of methane from landfills and dairies. Most of these new facilities would be constructed within or on existing buildings (e.g., rooftops, existing buildings, wastewater treatment plants, landfills, and dairies). The installation of most of these new facilities within existing buildings would not result in a substantial new source of discharge or stormwater runoff that could impact water quality because they are located within or on existing facilities (see separate discussion of recycled water and greywater below). Further, the CAP also promotes mixed-use and transit-oriented development in city centers. These new structures and associated impervious areas could increase surface runoff from storms and introduce new pollutants to storm drains that could impact water quality; however, such development is already called for in local land use plans and would not be an additional impact of CAP implementation above that already called for.

Recycled water facilities promoted by the CAP would include additional water treatment facilities which would be located at or immediately adjacent to existing wastewater treatment facilities and would be subject to all local, state, and federal water quality requirements relative to any associated discharges. New recycled water lines would also be required. Recycled water is wastewater effluent that has been further treated and disinfected to provide a non-potable (non-drinking water) water supply. Recycled water is safe and suitable for uses such as landscape irrigation and some industrial processes. The California Water Recycling Criteria (encoded in Title 22 of the California Code of Administration) allow 43 specified uses of recycled water, including irrigation of all types of food

crops, parks and schools, golf courses, and landscaping. These criteria include different water quality requirements for different types of irrigation. In addition to crops and landscaping, the state's criteria also outline recycled water use for industrial applications such as cooling towers and toilet flushing. In specific instances, recycled water can also be used for groundwater recharge. California's regulations are among the most stringent in the world and have been used as a model for many other countries' guidelines and water reuse regulations. Thus, new proposals for increased recycled water use would follow all applicable state regulations which are specifically designed to protect water quality.

Increased greywater use would involve the reuse of non-potable water from a building structure within that same buildings and thus does not require large-scale distribution lines, but rather local plumbing within the building itself. The residential Greywater Standard, incorporated into the California Plumbing Code (Title 24, Part 5, Chapter 16A), divides greywater installations into three tiers: clothes washer systems (commonly referred to as laundry-to-landscape systems); simple systems, which reuse up to 250 gallons per day; and complex systems, using over 250 gallons per day. A clothes washer system can be installed without a building permit, as long as installation guidelines in the code are followed. The next two tiers do require a building permit, but the technical stipulations help ensure a consistent level of quality that protects consumers and the environment. The state code specifies that untreated greywater may only be used outdoors (for irrigation). It may be applied to all kinds of plants, including food plants, except the edible portions. It may be distributed fairly near the soil surface, but must be covered by at least 2" of mulch. Required setbacks from buildings and property lines are 2.0 and 1.5 feet respectively, so greywater can be used to irrigate landscape strips along buildings and boundary fences. Greywater that will be reused indoors (for toilet and urinal flushing) must be treated to at least tertiary recycled water standards and it is subject to other regulations governing recycled water. Kitchen sink water, dishwasher effluent and diaper wash water are excluded from the greywater standard. They are effectively defined as blackwater (sewage). With compliance with all applicable local and state standards, greywater use can be expanded without adverse effects to water quality.

Any structures that could be constructed consistent with the CAP would be subject to further CEQA analysis of project-specific impacts and State Water Board regulations for stormwater discharge. Post-construction, implementation of the CAP as a component of a specific project would be subject to the NPDES and local ordinances and regulations requiring the development of a long-term SWPPP or a long-term SWMP to cover potential stormwater pollution associated with site development. The long-term SWPPP and/or SWMP would identify potential sources of pollution that may be reasonably expected to affect the quality of stormwater discharges and implement long-term BMPs that would ensure the reduction of these pollutants during operational stormwater discharges. With compliance to local regulations and the NPDES requirements, impacts associated with operational water quality impacts from stormwater discharges would be less than significant.

Impact HYD-2: Implementation of the CAP could substantially deplete groundwater supplies or interfere substantially with groundwater recharge in the County (less than significant).

Most of the new facilities promoted by the CAP would be constructed within or on existing buildings (e.g., rooftops, water treatment plants and wastewater treatment plants, landfills, and dairies), and these minor improvements to existing structures would not likely result in substantial new impervious surfaces that would interfere with groundwater infiltration. The CAP also promotes mixed-use and transit-oriented development. This type of development is consistent with current local land use plans that promote more compact urban growth which helps to reduce more extensive increase in impervious areas and additional roadway building which would otherwise

occur with a relatively greater amount of low-density development in outlying areas. Several CAP measures promote the construction of minor changes to the existing streetscape, such as traffic calming and additional transit, pedestrian, and bicycle facilities. Construction of these facilities could result in additional impervious surfaces that could interfere with groundwater infiltration.

Any structures that could be constructed consistent with the CAP would be subject to further CEQA analysis of project-specific impacts and applicable local regulations regarding the protection of groundwater supplies. Local agencies' applicable MS4 permits require that discretionary projects maintain or increase a site's pre-development absorption of runoff to recharge groundwater to the maximum extent practicable. With compliance to local regulations, impacts associated with groundwater recharge would be less than significant.

Impact HYD-3: Implementation of the CAP could alter existing drainage patterns in the County that would result in substantial erosion or siltation onsite or offsite, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite (less than significant).

As described above, there are several CAP measures that promote the construction of new facilities. These new facilities might alter existing drainage patterns that would result in substantial erosion or siltation or substantially increase the rate or amount of surface runoff that would result in flooding on or off site. Any structures that could be constructed consistent with the CAP would be subject to further CEQA analysis of project-specific impacts and applicable State Water Board and local regulations for erosion and runoff. New facilities would be subject to NPDES requiring the development of a long-term SWPPP or a long-term SWMP to cover potential stormwater pollution associated with site development. Further, County regulations require that discretionary projects maintain or increase a site's pre-development absorption of runoff to recharge groundwater to the maximum extent practicable. With compliance to local regulations, impacts associated with erosion or siltation or flooding on or off site as a result of altering existing drainage patterns or substantially increasing the rate or amount of runoff would be less than significant.

Impact HYD-4: Implementation of the CAP could create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (less than significant).

As described above, new facilities constructed as part of implementation of CAP measures could result in additional impervious surfaces that could create or contribute runoff water exceeding the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Any structures that could be constructed consistent with the CAP would be subject to further CEQA analysis of project-specific impacts and applicable State Water Board and local regulations for stormwater discharge and runoff. Implementation of the CAP as a component of a specific project would be subject to NPDES requiring the development of a long-term SWPPP or a long-term SWMP to cover potential stormwater pollution associated with site development. Further, County regulations require that discretionary projects maintain or increase a site's pre-development absorption of runoff to recharge groundwater to the maximum extent practicable. With compliance to local regulations, impacts associated with increased runoff exceeding the capacity of existing or planned stormwater drainage systems or resulting in additional sources of polluted runoff would be less than significant.

Impact HYD-5: Implementation of the CAP could place housing within flood hazard areas or could place structures within flood hazard areas that would impede or redirect flood flows (less than significant).

The flood hazard areas within the County include general areas near the Russian River, streams, and the southern portions of the County adjacent to San Pablo Bay as well as more localized areas of flood risk. There is existing development in these locations designed as flood hazard areas and several local general plans would continue to allow new development and redevelopment in these FEMA 100-year flood hazard areas. As described above, there are several CAP measures that promote the construction of new facilities. Although the siting of these facilities is unknown, these facilities promoted by the CAP could be located within flood hazard areas that would impede or redirect flood flows. Any structures that could be constructed consistent with the CAP would be subject to further CEQA analysis of project-specific impacts and applicable local regulations for flood hazards. County and local city regulations require that residential structures built within FEMA-designated 100-year flood hazard zones be elevated at least 1 foot above the elevation of the 100-year flood level to protect these structures from flood damage. New non-residential buildings must either meet this criterion or provide an alternative method of flood-proofing that is certified by a registered engineer and approved by local land use officials. In addition, the County's Zero Net Fill Ordinance and similar local city requirements would require that any materials placed within the 100-year floodplain that could displace floodwaters and result in flooding elsewhere be offset by the removal of a like amount of material. With compliance to local regulations, impacts associated with placing housing or structures within flood hazards areas would be less than significant.

As noted above, in locations where placement of housing would result in flood risks to new individuals or structures associated with the new development but would not exacerbate the underlying flood risk, this is not considered a significant impact under CEQA per the recent ruling in the *BIA vs. BAAQMD* case. Nevertheless, local land use jurisdictions will continue to apply all relevant regulations concerning flood risk management regardless of whether CEQA applies or not.

Impact HYD-6: Implementation of the CAP could expose people or structures to significant risk involving flooding a result of levee or dam failures (less than significant).

The County has 44 regulated dams within its boundaries, but the most extensive series of levees in Sonoma County that are potentially susceptible to failure are the predominantly non-engineered farm levees that protect low lying farmland and rural housing along the lower reaches of the Petaluma River and Sonoma Creek. Implementation of the CAP would support development in urban city center areas consistent with existing land use plans but would not change local land use plans and thus would not change the potential for exposure to flood risks in relation to the promotion of mixed use development, transit-oriented development, or affordable housing linked to transit. Some of the CAP measures promote new facilities such as solid waste diversion facilities, water treatment and wastewater treatment efficiency upgrades, recycled water facilities, and other facilities. Some of these facilities may be located in areas subject to risk of flooding associated with levee or dam failures. However, these facilities would not introduce large numbers of people to potential risks. Furthermore, any such new facilities would be subject to project-level review under CEQA which would assess and address any significant flood risks related to dam or levee failure. With project-level review, impacts associated with exposing people or structure to risks involving flooding as a result of levee or dam failures would be less than significant.

As noted above, in locations where placement of new structures would result in flood risks to new individuals or structures associated with the new structure but would not exacerbate the underlying flood risk, this is not considered a significant impact under CEQA per the recent ruling in the *BIA vs.*

BAAQMD case. Nevertheless, local land use jurisdictions will continue to apply all relevant regulations concerning flood risk management regardless of whether CEQA applies or not.

Impact HYD-7: Implementation of the CAP could contribute to inundation by seiche, tsunami, or mudflow (less than significant).

The western portions of Sonoma County border the Pacific Ocean and the southeastern tip of the County borders San Pablo Bay. Tsunami hazards are potential along the San Pablo Bay margin and long the Pacific Coast. Shoreline areas along Bodega Bay Harbor, Lake Sonoma, and similar enclosed bodies of water in the County are subject to impacts from seiches. Implementation of the CAP would support development in urban city center areas and would not promote increased development or in rural areas along the Pacific Ocean or outlying large bodies of water (such as Lake Sonoma). The CAP would promote infill redevelopment in urbanized areas consistent with existing land use plans. Thus, implementation of the CAP would not significantly contribute to inundation by seiche, tsunami, or mudflow, and impacts would be less than significant.

3.10.3.4 Cumulative Impacts

Impact C-HYD-1: Implementation of the CAP, in combination with other foreseeable development in the surrounding area, could have a significant cumulative impact to hydrology and water quality (less than considerable contribution).

The geographic context for the analysis of cumulative impacts associated with surface hydrology and water quality are the subwatersheds and watersheds within Sonoma County (provided in Table 3.10-1). The context for groundwater hydrology is the subbasins and basins within Sonoma County (provided in Table 3.10-2). The context for cumulative hydrology and water quality impacts is geographic and a function of whether impacts could affect surface water features/watersheds, the storm drainage systems within the County, or groundwater, each of which has its own physical boundary. The context of cumulative hydrology and water quality impacts addresses the effects of the CAP in combination with other development in Sonoma County.

Implementation of the CAP, combined with other past and future development within the potentially affected geographic area, could degrade stormwater quality through an increase in impervious surface area and an increase in contaminated runoff, which could ultimately violate water quality standards. During construction, runoff may contain sediments and other construction materials and wastes (e.g., concrete debris), resulting from activities such as site clearing and grubbing, demolition and the removal of existing structures and pavement, cut-and-fill activities, grading and excavation, paving, building construction, tree removal, and landscaping. During operation, runoff may contain oil, grease, and metals accumulated in streets and driveways as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other oxygen-depriving substances from landscaped areas. Where there is the potential for these impacts, they are routinely addressed through project-level environmental review and permitting. Many existing city and county policies and ordinances address such impacts. Where existing ordinances do not address these impacts, then project-level CEQA review will assess the specific significance of the project impact and, where appropriate, identify mitigation to address those impacts. In particular, this impact is routinely addressed with standard mitigation identified during project-level review such as implementing erosion-control measures to protect water quality during construction and operation. Through compliance with applicable regulatory requirements, the project's contribution to potentially cumulative impacts on water quality would be less than considerable.

Groundwater recharge in the subbasins within Sonoma Country occurs primarily through streamflow infiltration and direct recharge from percolating precipitation. Cumulative development in highly urbanized areas would not be expected to increase the amount of impervious surfaces substantially because this development would occur mostly in already urbanized areas. Therefore, groundwater recharge from percolating rainfall would not be adversely affected, and an indirect lowering of the local groundwater table is not likely to occur. However, development outside of areas with prior impervious surfaces would affect groundwater recharge, and the effects may be cumulatively significant. Because the CAP promoted infill development in city centers, the CAP contributes only minimally to groundwater recharge, and thus, impacts related to implementation of the CAP would be less than cumulatively considerable with respect to any potential cumulative loss of groundwater recharge and supply.

In regards to storm drain capacity, implementation of the CAP in combination with other development could increase the rate and volume of stormwater runoff because of the overall increase in impervious surfaces. Increases in the rate or volume of stormwater runoff can cause localized flooding if storm drain capacity is exceeded. All projects would be required to include design features to reduce flows to pre-project conditions, according to local County requirements. Thus, impacts related to implementation of the CAP would be less than cumulatively considerable with respect to any potential cumulative impacts on storm drainage capacity.

In regards to flooding risks, implementation of the CAP in combination with other development could increase impervious area and result in greater flood flows, create impediments to flow that would raise flood levels, and/or place additional people or structures within flood-prone areas. All projects would be required to include design features to elevate structures at least 1 foot above the elevation of the 100-flood level and comply with the local regulations to offset floodplain fill that could displace floodwaters and result in flooding elsewhere. Thus, impacts associated with implementation of the CAP would be less than cumulatively considerable with respect to cumulative flooding impacts.