

4.9 HYDROLOGY AND WATER QUALITY

This section analyzes potential impacts on hydrology and water quality based on a review of existing publications and regulations.

4.9.1 RELEVANT PROGRAMS AND REGULATIONS

Federal

Clean Water Act and National Pollutant Discharge Elimination System

In 1972, the Federal Water Pollution Control Act (Clean Water Act [CWA]) was amended to require National Pollutant Discharge Elimination System (NPDES) permits for the discharge of pollutants to “Waters of the U.S.” from any point source. In 1987, the CWA was again amended to require that the U.S. Environmental Protection Agency (USEPA) establish regulations for permitting under the NPDES permit program for municipal and industrial storm water discharges. The USEPA published final regulations regarding storm water discharges on November 16, 1990. The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters be regulated by an NPDES permit. MS4s are a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains), and are owned or operated by a public body that has jurisdiction over the disposal of sewage, industrial wastes, storm water, or other wastes. The MS4s are designated or used for collecting or conveying storm water only (i.e., not wastewater or combined sewage).

In addition, the CWA requires States to adopt water quality standards for water bodies for USEPA approval. Water quality standards consist of designated beneficial uses for a particular water body (e.g., wildlife habitat, agricultural supply, fishing), along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents, such as lead, suspended sediment, and fecal coliform bacteria, or narrative statements which represent the quality of water that supports a particular use. Because California had not established a complete list of acceptable water quality criteria, the USEPA established numeric water quality criteria for certain toxic constituents in the form of the California Toxics Rule (see 40 *Code of Federal Regulations* §131.38).

National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP), which provides flood insurance, floodplain management, and flood hazard mapping. Communities subject to flood hazards voluntarily participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce the potential for flood damage. In turn, the NFIP offers Federally funded flood insurance to homeowners, renters, and business owners in participating communities. Under this program, FEMA produces Flood Insurance Rate Maps (FIRM) that identify properties and buildings in flood insurance risk areas. Flood hazards related to storm events are generally described in terms of 100- or 500-year floods. These are floods that, respectively, have a 1 percent and 0.2 percent chance of occurring every year.

Emergency Action Plans for Dams

Because dam failure can have severe consequences, FEMA requires that all dam owners develop Emergency Action Plans (EAP) that specify warning, evacuation, and post-flood actions to be implemented in the event of dam failure. Although there may be coordination with County

officials in the development of the EAP, the responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the dam owner.

State

California Porter-Cologne Act

Although it does establish certain guidelines for program development, the CWA places the primary responsibility for the control of water pollution and for planning the development and use of water resources with the States. California's primary statute governing water quality and water pollution issues is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) broad powers to protect water quality and is the primary vehicle for implementing California's responsibilities under the Federal CWA. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to (1) adopt plans and policies; (2) regulate discharges to surface water and groundwater; (3) regulate waste disposal sites; and (4) require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, and oil or petroleum products.

Each RWQCB must formulate and adopt a water quality plan (or Basin Plan) for its region. The regional plans conform to the policies set forth in the Porter-Cologne Act and those established by the SWRCB in its State Water Policy. The Porter-Cologne Act also enables the RWQCBs to include water discharge prohibitions applicable to particular conditions, areas, or types of waste within its regional plan. The RWQCBs are also authorized to (1) enforce discharge limitations; (2) take actions to prevent violations of these limitations from occurring; and (3) conduct investigations to determine the status of the quality of any of the waters of the State. Civil and criminal penalties are imposed on persons who violate the requirements of the Porter-Cologne Act or any SWRCB/RWQCB orders.

Safe Water Drinking Act

The Safe Water Drinking Act of 1974 regulates public drinking supplies to protect public health and safety. The law is designed to protect drinking water and water sources such as rivers, lakes, reservoirs, springs, and groundwater wells.

NPDES Construction General Permit

Pursuant to CWA Section 402(p), which requires regulations for permitting of certain storm water discharges, the SWRCB has issued a Statewide General NPDES Permit for storm water discharges from construction sites (NPDES No. CAS000002, California Water Resources Control Board Resolution No. 2001-046; Modification of Water Quality Order 99-08-DWQ, SWRCB, NPDES, General Permit for Storm water Discharges Associated with Construction Activity). This permit was revised on September 2, 2009, and is now Construction General Permit Order 2009-0009-DWQ. Construction activities subject to this permit include clearing, grading, and ground disturbances such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

Under the Construction General Permit, storm water discharges from construction sites with a disturbance area of one acre or more are required to either obtain individual NPDES permits for storm water discharges or be covered by the Construction General Permit. Coverage under the Construction General Permit coverage is obtained by completing and filing a Notice of Intent

(NOI) with the SWRCB and preparing a Storm Water Pollution Prevention Plan (SWPPP) prior to any land disturbance. The SWPPP identifies erosion control, sediment control, tracking control, wind erosion control, waste management, and non-storm water management best management practices (BMPs) that would be implemented during the construction phase to reduce or eliminate pollutants entering the storm drain system.

Dam Safety and Inundation Maps

Dams with heights greater than 25 feet or storage capacities of more than 50 acre-feet are regulated and monitored for structural safety by the California Department of Water Resources, Division of Safety of Dams in accordance with Division 3 of the *California Water Code*. Dam regulations substantially reduce the chance of catastrophic failure in the event of an earthquake or dam failure.

In addition, Section 8589.5 of the *California Government Code* requires dam owners to provide the Governor's Office of Emergency Services with an inundation map showing the extent of damage to life and property that would occur given a complete and sudden dam failure at full capacity. These maps facilitate emergency planning and response by dam operators, Cities, and Counties affected by inundation hazards.

Regional

Water Quality Control Plan for the Santa Ana River Basin

The *Water Quality Control Plan for the Santa Ana River Basin* (also the Basin Plan for the Santa Ana Region, hereafter referred to as the "Basin Plan") seeks to preserve and enhance water quality and to protect the beneficial uses of water bodies in the Santa Ana River watershed. The Basin Plan discusses the existing water quality, beneficial uses of the groundwater and surface waters, and local water quality conditions and problems within the Santa Ana River watershed. The Basin Plan provides water quality standards for water resources in the Santa Ana River and its watershed, and includes an implementation plan to maintain these standards. The standards serve as the basis for the basin's regulatory programs.

Basin Plan implementation occurs primarily through issuance of individual Waste Discharge Requirements (WDRs); discharge prohibitions; water quality certifications; programs for salt management, non-point sources, and storm water; and monitoring and regulatory enforcement actions, as necessary.

An amendment to the Basin Plan is currently in progress, which would revise the definition and water quality objectives related to beneficial uses for REC-1 (water contact recreation) and REC-2 (non-contact water recreation).

Municipal Separate Storm Sewer System (MS4) Permit

In 2002, the Santa Ana RWQCB issued an NPDES Storm Water Permit and WDRs (Order No. R8-2002-0012) under the CWA and the Porter-Cologne Act for discharges of storm water runoff, snowmelt runoff, surface runoff, and drainage within the Upper Santa Ana River watershed in San Bernardino and Riverside Counties. This permit expired on April 27, 2007 and was administratively extended. Renewal of waste discharge requirements and an NPDES permit for San Bernardino County is in process under Order No. R8-2010-0036, NPDES No. CAS618036.

The City of Rancho Cucamonga is within the jurisdiction of the Santa Ana RWQCB and is subject to the waste discharge requirements of the MS4 Permit for San Bernardino and Riverside Counties and the proposed permit for San Bernardino County. The County and cities within the County are co-permittees under the MS4 permit, and have legal authority to enforce the terms of the permit in their jurisdictions.

The ultimate goal of the MS4 Permit and the related urban storm water management program is to protect the beneficial uses of the receiving waters.¹ To implement the requirements of the permit, the County developed guidelines to control and mitigate storm water quality and quantity impacts to receiving waters as a result of new development and redevelopment. The guidelines require the development of a Water Quality Management Plan that identifies post-construction BMPs to reduce discharges of pollutants into storm water.

Water Quality Management Plan

The NPDES Permit and WDRs for the Upper Santa Ana River watershed (Order No. R8-2002-0012) requires co-permittees to develop and implement programs for storm water management within San Bernardino and Riverside Counties, which would regulate the discharge of pollutants into the storm water and/or runoff into the storm drain system and receiving waters within the area covered by the NPDES permit.

In compliance with this permit, the San Bernardino County Department of Public Works' Storm Water Program contains guidelines for the preparation of Water Quality Management Plans (WQMPs) by new development and major redevelopment projects of specific land uses and sizes. A WQMP is required as part of the permit process and commits the developer to the implementation of long-term BMPs. Individual WQMPs need to identify pollutants of concern based on the proposed land use and site activities, and select applicable site design, source control, and treatment control BMPs that would effectively prohibit non-storm water discharges from entering the storm drain system and that would reduce the discharge of pollutants from storm water conveyance systems to the maximum extent possible. The WQMP also calls for the on-site retention of storm water to prevent hydrologic conditions of concern (HCOC)—including flooding, erosion, scour, sedimentation, natural habitats, vegetation stress, slope stability, water quality degradation, and altered flow regime at downstream water channels/bodies—if the facilities have not been engineered to their ultimate capacities or if natural conditions are present.

Santa Ana River Mainstream Project

The Counties of Orange, Riverside, and San Bernardino are working with the U.S. Army Corps of Engineers (USACE) to design and construct the Santa Ana River Mainstream project. This project will provide increased flood protection to the communities within the three counties, and will include specific environmental restoration projects. The Mainstream Project will cover 75 miles from the Santa Ana River headwaters to its mouth, providing the upper and lower Santa Ana River Basin with flood protection levels ranging from 100-year to 190-year flood flows. Structural improvements have been completed at Seven Oaks Dam and are planned at Mill Creek Levee, San Timoteo Creek, Prado Dam, Oak Street Drain in Corona, 23 miles of the lower Santa Ana River, and Santiago Creek. Prado Dam and the spillway will be raised an additional 30 feet in height. Ninety-two acres of marshland located within the Santa Ana River Salt Marsh will be restored to increase the marsh's value as a wetland habitat. In addition, a large portion of Santa Ana Canyon will be purchased, and a resource, habitat, and floodplain

¹ Beneficial uses refers to the various ways that water can be used for the benefit of people and wildlife (i.e., drinking, swimming, agricultural water supply, and support of aquatic habitats).

management plan will be developed to ensure that part of the canyon will not be subject to urban development. Since the City of Rancho Cucamonga is located within the Santa Ana River watershed, this project would improve flood protection in the City while reducing the potential for downstream flooding due to runoff from the City.

Water Rights

Groundwater resources within the Cucamonga and Chino basins that underlie the City are adjudicated. The Chino Basin Watermaster Judgment in 1975 (Case No. RCV 51010—formerly Case No. SCV 164327) regulates groundwater pumping in the Chino Basin by various public and private entities. The Chino Basin Watermaster is responsible for implementing the judgment through the Optimum Basin Management Program. This program calls out groundwater monitoring; development of recharge capabilities, storage, and recovery projects; management of salt loads; development of reclaimed and storm water recharge; and coordination with other agencies to enhance groundwater resources (Chino Basin Watermaster 2009). The adjudication safe yield of the Chino Basin is estimated at approximately 145,000 acre-feet/year (MWD 2007).

Groundwater pumping from the Cucamonga Basin is limited by a 1958 Superior Court judgment, which specifies water rights of individual groundwater producers and the amount that can be exported to non-overlying areas for use by individual producers. Requirements for spreading are included, but no annual reporting is required. No watermaster has been appointed for the Cucamonga Basin. Instead, this basin is operated as part of the Chino Basin. This basin has approximately 22,721 acre-feet/year of groundwater that is considered its adjudication safe yield (MWD 2007).

Local

Floodplain Management Regulations

The City's Floodplain Management Regulations are contained in Chapter 19.12, Floodplain Management Regulations of the Rancho Cucamonga Municipal Code. The City restricts or prohibits structures and land uses within designated floodplains that do not comply with the regulations. The regulations require that development be reasonably safe from flooding and not increase the base flood level by more than one foot where base flood elevations have been determined, but a floodway has not been designated. Projects that involve alteration or relocation of a watercourse are required to notify adjacent communities and the California Department of Water Resources of the relocation, provide the Federal Insurance Administration and FEMA with evidence of such notification, and ensure that the flood-carrying capacity within the altered or relocated portion of the watercourse is maintained.

Floodplain Management Regulations also require that flood hazard reduction measures be implemented in the floodplain areas, which would include anchoring, flood-resistant materials, drainage around structures, elevation of lowest floor above base flood elevation, floodproofing, elimination of floodwater infiltration or discharges from water and sewer lines; prohibition of floodway encroachment; and mobile home and recreational vehicle standards. Regulations for development in mudslide-prone and erosion-prone areas are also included.

Storm Water Discharge Regulations

Chapter 19.20 of the Municipal Code is the City's Storm Water and Urban Runoff Management and Discharge Control Ordinance. The ordinance was adopted to comply with the CWA, the California Porter-Cologne Water Quality Control Act, and the City's NPDES permit, and seeks to protect and enhance the quality of water bodies and water courses. The regulations address

connections to the City's MS4 system, prohibited discharges, compliance with NPDES permits, implementation of BMPs, spill containment, immediate notification and written notification of accidental discharge, and property owner responsibility for illegal discharges.

Drainage Master Plans

The City of Rancho Cucamonga has adopted two drainage master plans for the eastern and the western sections of the City. The drainage master plans establish a means to collect revenue from development in order to offset the cost of constructing the drainage system. The City Master Plan of Drainage-Westside Area applies to the area located primarily between the Deer Creek Channel on the east and the Cucamonga Channel on the west. The Etiwanda/San Sevaine Area Drainage Policy, with its associated Etiwanda Area Master Plan of Drainage, identifies drainage facilities and fees for the area located along the western side of Etiwanda Avenue to the easterly City limits north of 4th Street. These drainage master plans address the flood control needs of a fully developed drainage area and identify the regional and local facilities needed to adequately convey a 100-year storm event.

Areas not covered by the two drainage master plans are expected to provide the needed storm drainage system as outlined in the applicable Specific Plan or Community Plan. Developers within these areas are responsible for completing the necessary drainage facilities not covered by the City's drainage master plans.

4.9.2 EXISTING CONDITIONS

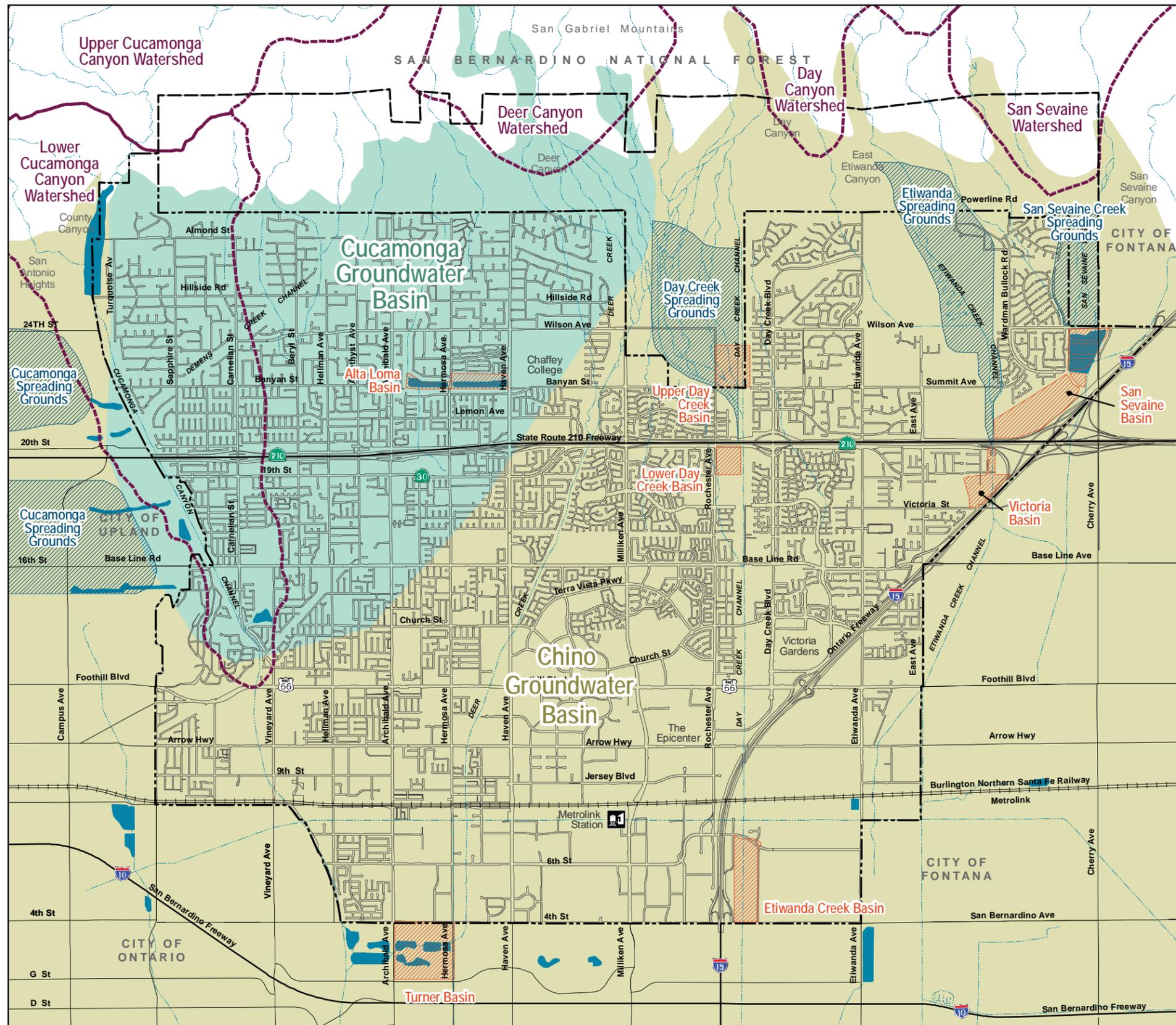
Hydrology

Surface Water

The Santa Ana River drains a 2,620-square-mile area located south of the east-west ridges of the San Gabriel and San Bernardino Mountains and north of the Santa Margarita River watershed. The 100-mile long river generally runs southwesterly from the San Bernardino Mountains north of Seven Oaks Dam toward the San Bernardino and Chino valleys, cutting through the Santa Ana Mountains, and flowing down into the Orange County coastal plain before its outlet at the Pacific Ocean in Huntington Beach. The City of Rancho Cucamonga is located within the watershed of the Santa Ana River. Runoff from the City drains into Reach 3 of the Upper Santa Ana River, which is the segment located between Prado Dam and Mission Boulevard in Riverside County (Santa Ana RWQCB 2008).

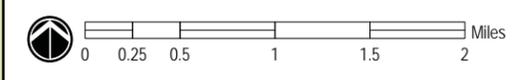
Locally, there are four canyon watersheds in the San Gabriel Mountains that direct storm water through the City: the Cucamonga Canyon, Deer Canyon, Day Canyon, and East Etiwanda Canyon watersheds. Two smaller watershed areas—Demens and Hermosa Creeks—are located just south of Cucamonga and Deer Canyons (Rancho Cucamonga 2001a). Exhibit 4.9-1, Major Watersheds, shows the location of the four major watersheds.

The alluvial fans located at the mouth of the San Antonio, Cucamonga, Deer, Day, East Etiwanda, and San Sevaine Canyons are subject to flooding, and flood control basins/spreading grounds have been built to limit the extent of floodwaters on downstream areas. Creeks through the City have also been channelized. Cucamonga Creek, Demens Creek, and Deer Creek drain the western section of the City. Demens and Deer Creeks join Cucamonga Creek, which runs southerly and connects to Chino Creek near the State Route 71 (SR-71) Freeway and to Mill Creek and the Santa Ana River at Prado Park (just east of Prado Dam). Day Creek, Etiwanda Creek, and San Sevaine Creek drain the eastern section of the City. Day Creek and San



- Groundwater Basins**
- Chino Basin
 - Cucamonga Basin
- Recharge Basins and Spreading Grounds**
- Recharge Basins
 - Spreading Grounds
- Watersheds**
- Watersheds
- Base Features**
- Rancho Cucamonga City Boundary
 - Sphere of Influence
 - Waterways

Source: California Department of Water Resources, 1997 and California Resources Agency, 2006.



Major Watersheds

Rancho Cucamonga General Plan Update

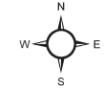


Exhibit 4.9-1



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Sevaine Creek join Etiwanda Creek, which runs southerly and connects to the Santa Ana River east of the Interstate 15 (I-15) Freeway (Santa Ana RWQCB 2008).

Storm Drainage

The City's storm drainage and flood control system provides both regional and local drainage, and provides debris basins and spreading grounds designed to reduce mud flows. Storm drainage in the City is provided by curbs and gutter along streets, which direct storm water into catch basins, pipes, and concrete channels that run southerly in or near the City. The City maintains 104 miles of storm drains and 2,200 drainage structures within its storm drainage system (Rancho Cucamonga 2010a). These facilities connect to the regional storm drainage system owned and maintained by the San Bernardino County Department of Public Works, which includes channelized creeks, debris basins, and spreading grounds. Together, the City and the San Bernardino County Department of Public Works prepare drainage plans and review development projects using the County's design criteria (Rancho Cucamonga 2009b).

Groundwater

The City of Rancho Cucamonga is underlain by the Chino and Cucamonga groundwater basins, with the Cucamonga basin underlying the area located generally north of the Red Hill inferred fault and the Chino basin underlying the area south of the fault. The Red Hill Fault acts as a hydrological barrier between the two groundwater basins. Exhibit 4.9-2, Groundwater Basins, shows the boundaries of the Chino and Cucamonga Basins (Chino Basin Watermaster 2005a).

The Chino Groundwater Basin is located under approximately 235 square miles of the upper Santa Ana River Watershed, and is bound by the Red Hill Fault, the San Gabriel Mountains, and the Cucamonga Basin to the north; the Rialto-Colton Fault to the northeast; the groundwater divide to the Rialto-Colton Basin to the east; Jurupa Hills, Pedley Hills, and the Riverside Narrows to the southeast; La Sierra Hills and the Temescal Basin to the south; Chino Hills and Puente Hills to the southwest; the groundwater divide to the Pomona and Claremont Groundwater Basins to the west; and the San Jose Fault to the northwest (Chino Basin Watermaster 2005a).

The Chino Groundwater Basin underlies an alluvial valley that slopes from the north to the south at a one to two percent grade. Data from the Chino Basin Watermaster indicates that groundwater depths in the Chino Basin in the City range from 350 to 600 feet below the ground surface, with deeper groundwater levels at the northern section and shallower groundwater levels at the southern section (Chino Basin Watermaster 2007b).

Water sources in the Chino Basin include water flow infiltration within unlined stream channels overlying the Basin; infiltration of storm water and municipal wastewater discharges within the Santa Ana River channel; underflow from the saturated sediments and fractures within the nearby mountains and hills; artificial recharge at storm water spreading grounds; imported water; recycled water; underflow from seepage across the Red Hill Fault (from the Cucamonga Basin), the San Jose Fault (from the Claremont Heights and Pomona basins), and the Rialto-Colton Fault (from the Rialto-Colton Basin); intermittent underflow from the Temescal Basin; and percolation of rainfall and returns from irrigation use (Chino Basin Watermaster 2005a).

An average of approximately 154,000 acre-feet/year of water was pumped from this basin between 1985 and 2005 (MWD 2007). In 2006/2007, approximately 171,491 acre-feet was pumped from the basin. In 2007/2008, 137,427 acre-feet was pumped from the basin (Chino Basin Watermaster 2008). Amounts in excess of the safe yield were accompanied by basin recharge with imported water and recycled water.

The estimated total basin storage is about 6 million acre-feet, with 5 million acre-feet of water in storage and about 1 million acre-feet of unused storage space. Approximately 500,000 acre-feet of unused storage space is available (MWD 2007).

The Cucamonga Basin is bound on the north by the San Gabriel Mountains and the Cucamonga fault, and on the west, south, and east by the Red Hill fault. The Red Hill Fault also serves as the groundwater barrier between the Chino and Cucamonga groundwater basins, with groundwater 225 to 375 feet higher on the northern side of the fault. The aquifer is over 1,600 feet deep and consists of unconfined older and younger alluvium. Storage capacity is estimated at 53,600 acre-feet. Groundwater levels in this basin were approximately at 1,350 feet above mean sea level (msl) in 1985, declining to 1,225 feet above msl in 2004 (MWD 2007).

Water in the Cucamonga Basin comes from infiltration of stream flow, percolation of rainfall, underflow from the San Gabriel Mountains, and return irrigation flow. Spreading grounds along Cucamonga Creek and at the Alta Loma basins also contribute to basin recharge. An estimated safe yield of 13,800 to 22,220 acre-feet/year is present in this basin. An average of approximately 14,500 acre-feet/year of water was pumped from this basin between 2000 and 2004 (MWD 2007).

The Groundwater Assessment Study by the Metropolitan Water District of Southern California (MWD) estimates the available groundwater storage within the Cucamonga and Chino Basins at 439,000 acre-feet in 2006 (MWD 2007).

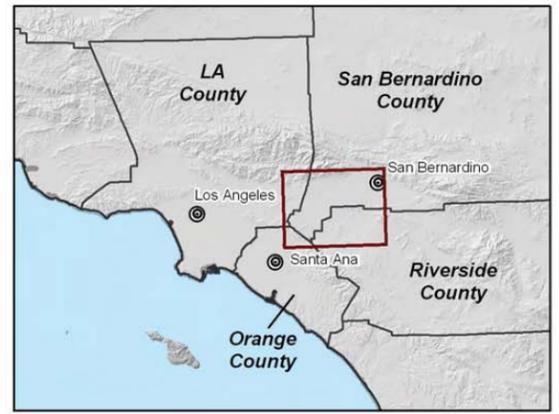
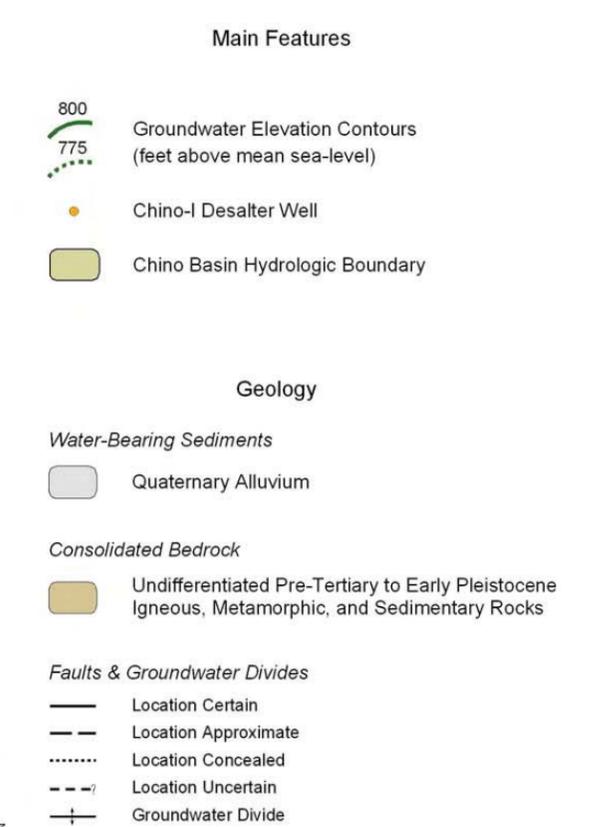
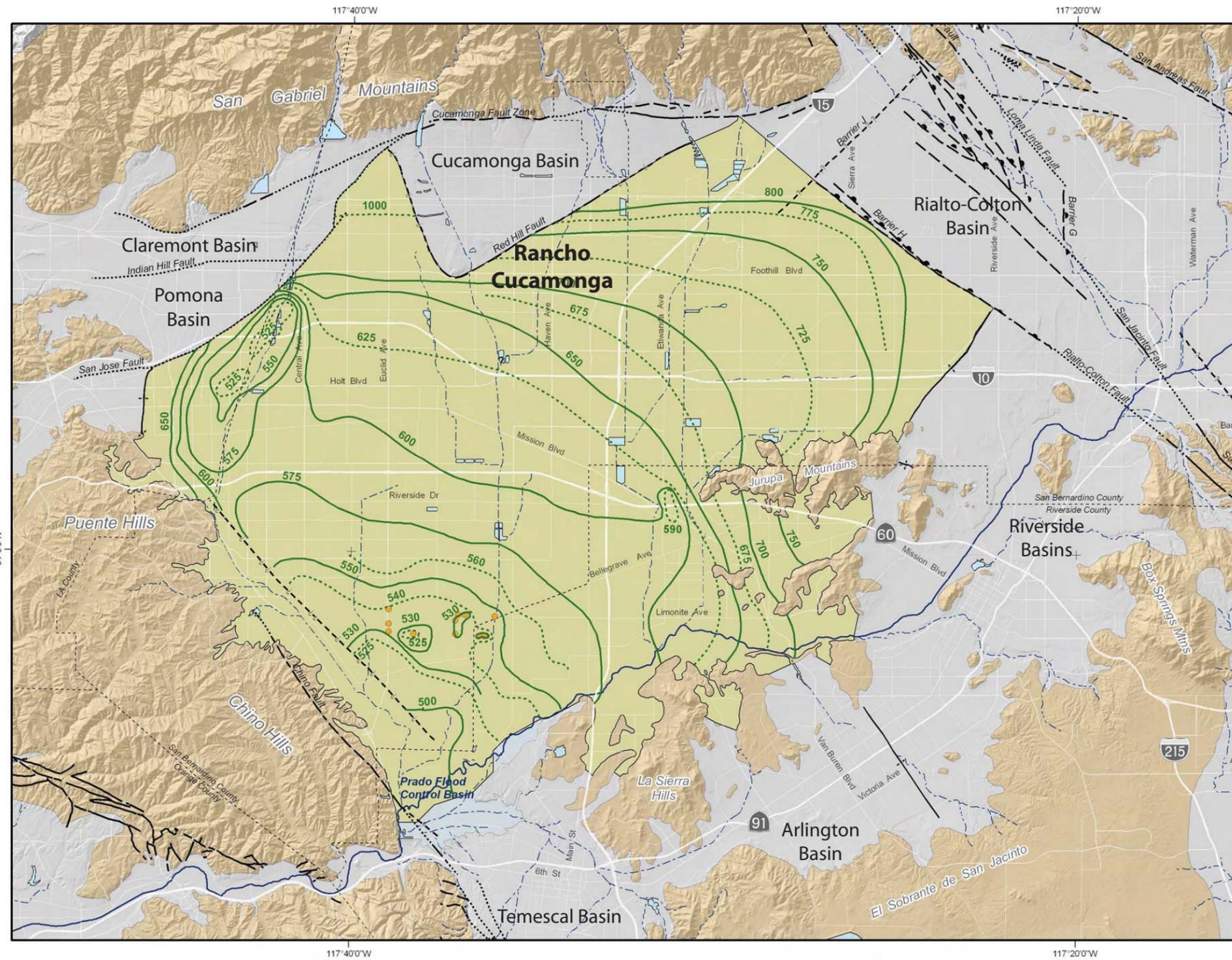
The Cucamonga Valley Water District (CVWD) provides water to the entire City of Rancho Cucamonga; the SOI area; and portions of the cities of Fontana, Ontario, and Upland. The majority of CVWD's water comes from three main sources: imported water from the MWD, the Chino and Cucamonga Basins groundwater, and local canyon runoff (CVWD 2003).

Water Quality

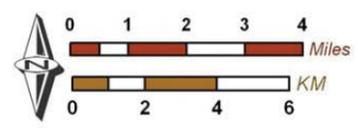
Surface Water Quality

Storm waters within Rancho Cucamonga are discharged into Day Creek, Deer Creek, East Etiwanda Creek, Cucamonga Creek, Mill Creek, Chino Creek, and the Santa Ana River and the Prado Basin along the river. The following are beneficial uses of these receiving waters:

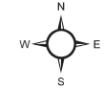
- ***Municipal and Domestic Supply (MUN):*** Used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- ***Agricultural Supply (AGR):*** Used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- ***Industrial Process Supply (PROC):*** Used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, processing water supply and all uses of water related to product manufacture or food preparation.
- ***Groundwater Recharge (GWR):*** Used for natural or artificial groundwater recharge for purposes that may include, but are not limited to, future extraction, water quality maintenance, or halting of saltwater intrusion into freshwater aquifers.



Source: Chino Basin Watermaster 2004



Groundwater Basins
 Rancho Cucamonga General Plan Update



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- **Water Contact Recreation (REC 1*):** Used for recreational activities involving bodily contact with water and where ingestion is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.
- **Non-contact Water Recreation (REC 2*):** Used for recreational activities involving proximity to water, but not normally involving bodily contact with water and where ingestion would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the aforementioned activities.
- **Warm Freshwater Habitat (WARM):** Used to support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, and fish and wildlife, including invertebrates.
- **Limited Warm Freshwater Habitat (LWRM):** Used to support warm water ecosystems that are severely limited in diversity and abundance as the result of concrete-lined watercourses and low, shallow, dry weather flows, which result in extreme temperature, pH, and/or dissolved oxygen conditions. Naturally reproducing finfish populations are not expected to occur in LWRM waters.
- **Cold Freshwater Habitat (COLD):** Used to support coldwater ecosystems that may include, but are not limited to, preservations and enhancement of aquatic habitats, vegetation, and fish and wildlife, including invertebrates.
- **Wildlife Habitat (WILD):** Used to support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
- **Rare, Threatened, or Endangered Species (RARE):** Used to support the habitats necessary for the survival and successful maintenance of plant or animal species designated under State or Federal law as Rare, Threatened, or Endangered.
- **Spawning, Reproduction, and Development (SPWN):** Used to support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.

The existing, potential, and intermittent beneficial uses for each water body in and downstream of Rancho Cucamonga are listed in Table 4.9-1.

**TABLE 4.9-1
BENEFICIAL USES OF RECEIVING WATERS**

Water Body	Beneficial Uses											
	MUN	PROC	AGR	GWR	REC1	REC2	WARM	LWARM	COLD	WILD	RARE	SPWN
Day Creek	X	X	-	X	X	X	-		X	X	-	-
East Etiwanda Creek	X	X	-	X	X	X	-		X	X	X	-
Reach 1 of Cucamonga Creek	-	-	-	X	X*	X	-	X	-	X	-	-
Deer Creek	I	-	-	I	I	I	-		I	I	-	-
Reach 3 of Upper Santa Ana River	-	-	X	X	X	X	X		-	X	X	X
Mill Creek (Prado Area)	-	-	-	-	X	X	X	-	-	X	X	-
Reach 1 of Chino Creek	-	-	-	-	X	X	X	-	-	X	X	-
Prado Basin Mgt Zone	-	-	-	-	X	X	X			X	X	

X – Present and Potential Beneficial Use
I – Intermittent Beneficial Use
* - Access prohibited in some portions by the San Bernardino County Flood Control District
Source: Santa Ana RWQCB 2008.

Water quality objectives for algae, ammonia, coliform bacteria, boron, chemical oxygen demand, chloride, chlorine, color, total dissolved solids, fluoride, hardness, metals, methylene blue-activated substances, nitrate, oil and grease, dissolved oxygen, percent hydrogen (pH), radioactivity, sodium, suspended solids, sulfates, sulfide, surfactants, taste and odor, temperature, toxic substances, and turbidity are also included for surface waters in the Basin Plan. In addition, water quality objectives for arsenic, coliform bacteria, barium, boron, chloride, color, cyanide, total dissolved solids, fluoride, hardness, metals, methylene blue-activated substances, nitrate, oil and grease, pH, radioactivity, sodium, sulfates, taste and odor, and toxic substances in groundwater are also provided.

Water bodies that do not meet water quality standards are deemed “impaired” and, under Section 303(d) of the CWA, are placed on a list of impaired waters for which a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a “factor of safety”). Once established, the TMDL is allocated among current and future pollutant sources to the water body.

Runoff from properties in the 2010 General Plan Update Study Area flows into Day Creek, Deer Creek, East Etiwanda Creek, Cucamonga Creek, Chino Creek, Mill Creek, and eventually into the Santa Ana River and the Prado Dam and Basin at Prado Park. Prado Park Lake is listed as impaired due to nutrients from non-point sources, with the TMDL to be adopted by 2019. Mill Creek (in the Prado Area) is also listed as impaired due to high levels of nutrients and suspended solids from agricultural uses and dairies, with the TMDL to be adopted by 2019 (USEPA 2007a).

As part of a current update, Reach 1 of Cucamonga Creek is proposed for listing due to high levels of pH (the measure of acidity) and copper, with the TMDL to be adopted by 2021. Reach

3 of the Santa Ana River is also proposed for listing due to high levels of iron and copper, with the TMDL to be adopted by 2021 (Santa Ana RWQCB 2009b).

While the impairment of Prado Park Lake, Mill Creek, Reach 3 of the Santa Ana River, and Reach 1 of the Cucamonga Creek are not entirely attributable to pollutants and land uses in Rancho Cucamonga, discharges from the City are subject to the discharge limitations of established TMDLs.

Groundwater Quality

All public water supplies in California must meet both State and Federal regulations for water quality. State-mandated standards are enforced by the California Department of Health Services. Federal regulations for water quality are mandated by the Safe Drinking Water Act of 1974. Standards and monitoring requirements have been set by the USEPA.

An annual Water Quality Report is prepared by the CVWD, which provides water to the City and conducts regular testing for 31 Federally and State-regulated constituents. According to the 2008 Water Quality Report, the CVWD's water supply met all applicable standards.

A salt imbalance present in the Chino Groundwater Basin has been remedied by desalters and the Santa Ana River Interceptor (SARI) Brine Line. Total dissolved solids (TDS) and nitrate concentrations have also been found in high levels within the Chino Groundwater Basin due to agricultural and dairy operations (Santa Ana RWQCB 2008). TDS levels range from 250 to 500 milligrams per liter (mg/L) in the areas south of the Interstate 60 (I-60) Freeway, with some areas having TDS levels greater than 2,000 mg/L. The Maximum Contaminant Level (MCL) for TDS is 500 mg/L. Nitrate concentrations also increase from north to south, with levels south of the I-60 Freeway exceeding 40 mg/L. The MCL for nitrate concentrations is 10 mg/L. Volatile organic compounds (VOCs) are generally below detection limits, with isolated pockets exceeding the MCL (MWD 2007). Plumes of VOCs and perchlorate have been found in the Chino Groundwater Basin, but these are not located in the portions of the basin that underline the City of Rancho Cucamonga (SAWPA 2009).

TDS levels in the Cucamonga Basin range from 163 to 446 mg/L, with an average of 250 mg/L. The average ambient nitrate level in the Cucamonga Basin is approximately 4.3 mg/L. No VOCs have been detected in this basin, and perchlorate levels are below the MCL. However, declining water levels have led to decreased pumping in the Cucamonga Basin (MWD 2007).

Flood Hazards

Rancho Cucamonga has a history of flooding. In 1969, storms in January and February caused extensive flooding in San Bernardino County and six neighboring counties, leading to these areas being declared national disaster areas. Damage to a flood levee structure in the Cucamonga Spreading Grounds caused Cucamonga Creek to breach its channel and resulted in extensive flooding in the City. In 1977, flooding and street damage on Vineyard Avenue, Hellman Avenue, and the surrounding areas occurred due to intense rainfall. In 1983, Alta Loma High School was damaged, homes were flooded, and street wash-outs and cave-ins occurred during the initial hours of the storm (Rancho Cucamonga 2004).

Legislated through Assembly Bill (AB) 162, General Plan Land Use Elements must identify areas that are subject to flooding, as identified by FEMA or DWR floodplain mapping, and an annual review of the flood-prone area(s) must be conducted. FEMA's FIRMs (2008) indicate areas in the City that are subject to 100-year and 500-year floods (see Exhibit 4.9-3, Flood Hazard Zones). These include areas on the Cucamonga Creek Channel, Demens Creek

Channel, Etiwanda Creek Channel, upper Day Creek, and other scattered sites throughout the City (FEMA 2008).

The drainage system in Rancho Cucamonga has been substantially improved in recent decades and contains an integrated approach that addresses regional and local drainage flows. The completion of the Hillside Storm Drain, Deer Creek Channel, and Demens Creek Channel has reduced the extent of potential flooding within the City. Recent improvements—including the Upper and Lower Hermosa Storm Drain projects, the Archibald Storm Drain project, the Day Creek project, and the Etiwanda/San Sevaine Flood Control project—have further reduced flooding potential in the City (Rancho Cucamonga 2001a).

The San Bernardino County Department of Public Works has constructed regional flood and debris control facilities throughout the County, including flood control channels in Rancho Cucamonga that direct runoff through the City into regional facilities. A system of spreading basins along major creeks has also been constructed to manage storm water runoff and to help recharge local groundwater basins. These include the Cucamonga Creek Debris Basin, Deer Canyon Debris Basin, Day Creek Debris Basin, Alta Loma Basins, Etiwanda Creek Debris Basin, Demens Creek Debris Basin, and San Sevaine Debris Basin. Levees along the creeks have also reduced flood hazards (Eke 2009).

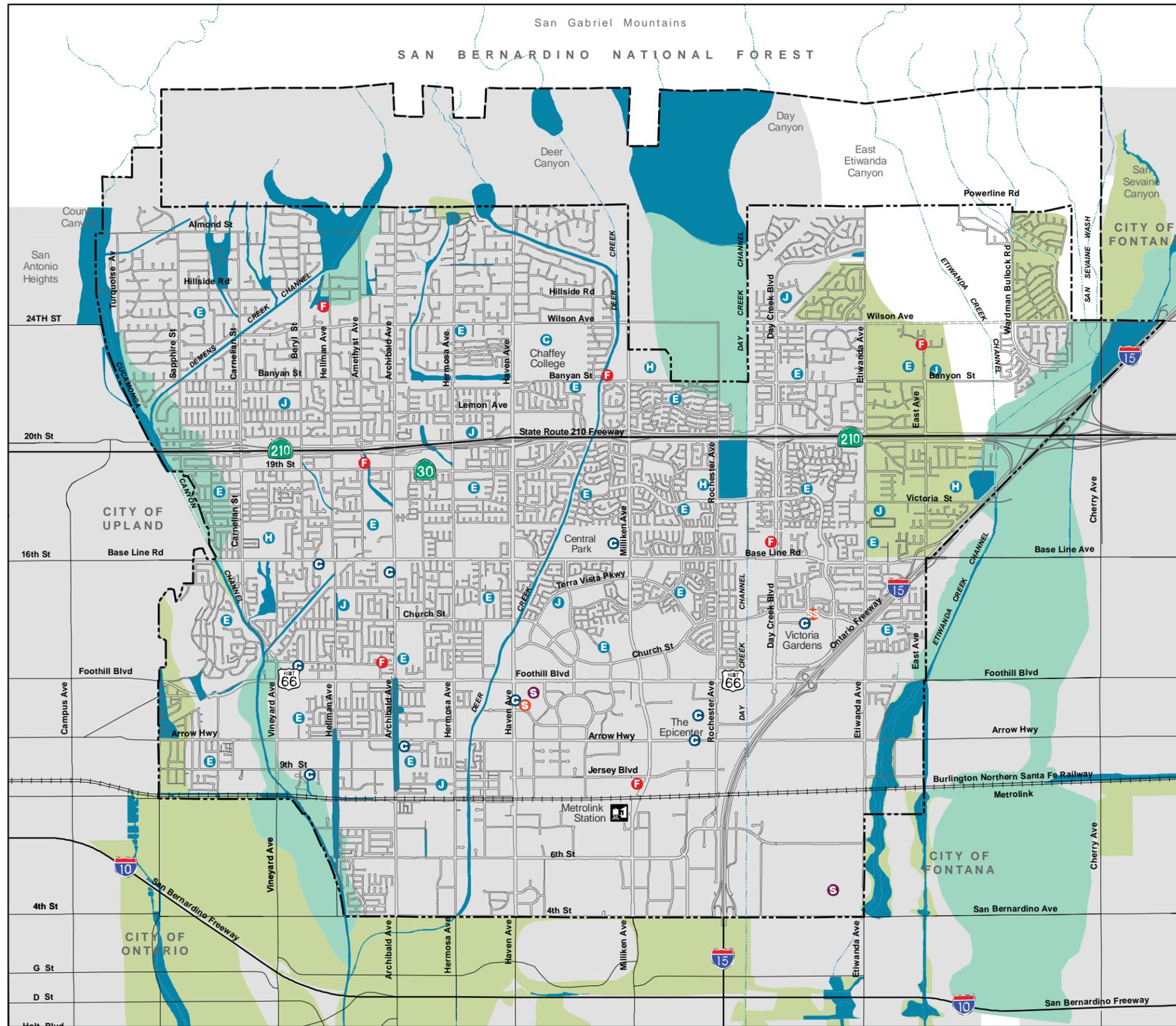
Two areas within the City are known to have deficient drainage facilities: the undeveloped portions of the City that have no flood control improvements and certain areas within the Industrial Specific Plan that require additional detention facilities. The drainage facilities for the industrial property located generally north and south of the Metrolink railroad tracks between Haven Avenue and Rochester Avenue were designed and constructed using San Bernardino County Flood Control criteria in effect during the early 1980s. New development within this area may require the addition of detention facilities on a case by case basis to provide 100-year flood protection for the structures on these properties (James 2010).

Dam Inundation

Dam failure due to an earthquake, erosion, design flaw, or water overflow during storms can cause inundation hazards in the City. The San Antonio Dam in the City of Upland is located west of the City of Rancho Cucamonga, and dam failure may result in inundation hazards in the City. Failure of debris basin slopes may also lead to inundation of downstream areas. The potential inundation areas in and near the City are shown in Exhibit 4.9-4, Dam Inundation Areas. These include areas downstream of debris basins and a small portion of the southwestern section of the City that could be affected by a breach of the San Antonio Dam in Upland (USACE 1986).

The Emergency Action and Notification Subplan for the San Antonio Dam has been prepared by the USACE. The subplan identifies (1) actions that determine when emergency operations are necessary; (2) actions during extreme inflow conditions and after earthquakes; (3) available resources and assistance; (4) notification lists; (5) inundation maps; and (6) the emergency response team.

Inundation studies based on failures of the CVWD's water tanks indicate that 4 of the projected reservoir failures will impact land that is currently vacant; 3 are expected to inundate 1 or 2 structures; and 1 reservoir site may inundate as many as 15 residences. State law requires the City to have emergency procedures in place for the evacuation and control of populated areas located within inundation limits below the dams. In addition, real estate disclosure upon sale or transfer of property in the inundation area is required (Rancho Cucamonga 2001a).



- Flood Hazard Zones**
- Special Hazard Area (100-year Floodplain)
 - 1% Annual Chance of Flood Hazard Area
 - Moderate Hazard Area (500-year Floodplain)
 - 0.2% Annual Chance of Flood Hazard Area
 - Protected by Levee
 - Minimum Hazard Area (500-year Floodplain)
 - Area Outside of 0.2% Annual Chance of Flood Hazard

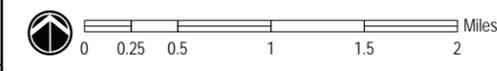
- Base Map**
- Rancho Cucamonga City Boundary
 - Sphere of Influence
 - Waterways

- Critical Facilities**
- E Elementary School
 - J Junior High/Middle School
 - H High School
 - C College
 - F Fire Station
 - S Sheriff's Station
 - SS Sheriff's Sub-Station
 - SB San Bernardino Government Facilities
 - City Facilities

Note: The National Flood Hazard Layer (NFHL) data used to create this map incorporates all Digital Flood Insurance Rate Map (DFIRM) databases published by FEMA, and any Letters Of Map Revisions (LOMRs) that have been issued against those databases since their publication date. The published effective Flood Insurance Rate Map (FIRM) and DFIRM maps are issued as the official designation of the Special Flood Hazard Areas (SFHAs).

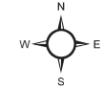
For official FIRM visit FEMA's Website: <http://msc.fema.gov>

Source: City of Rancho Cucamonga, 2008 and Federal Emergency Management Agency, DFIRM published August 28, 2008.

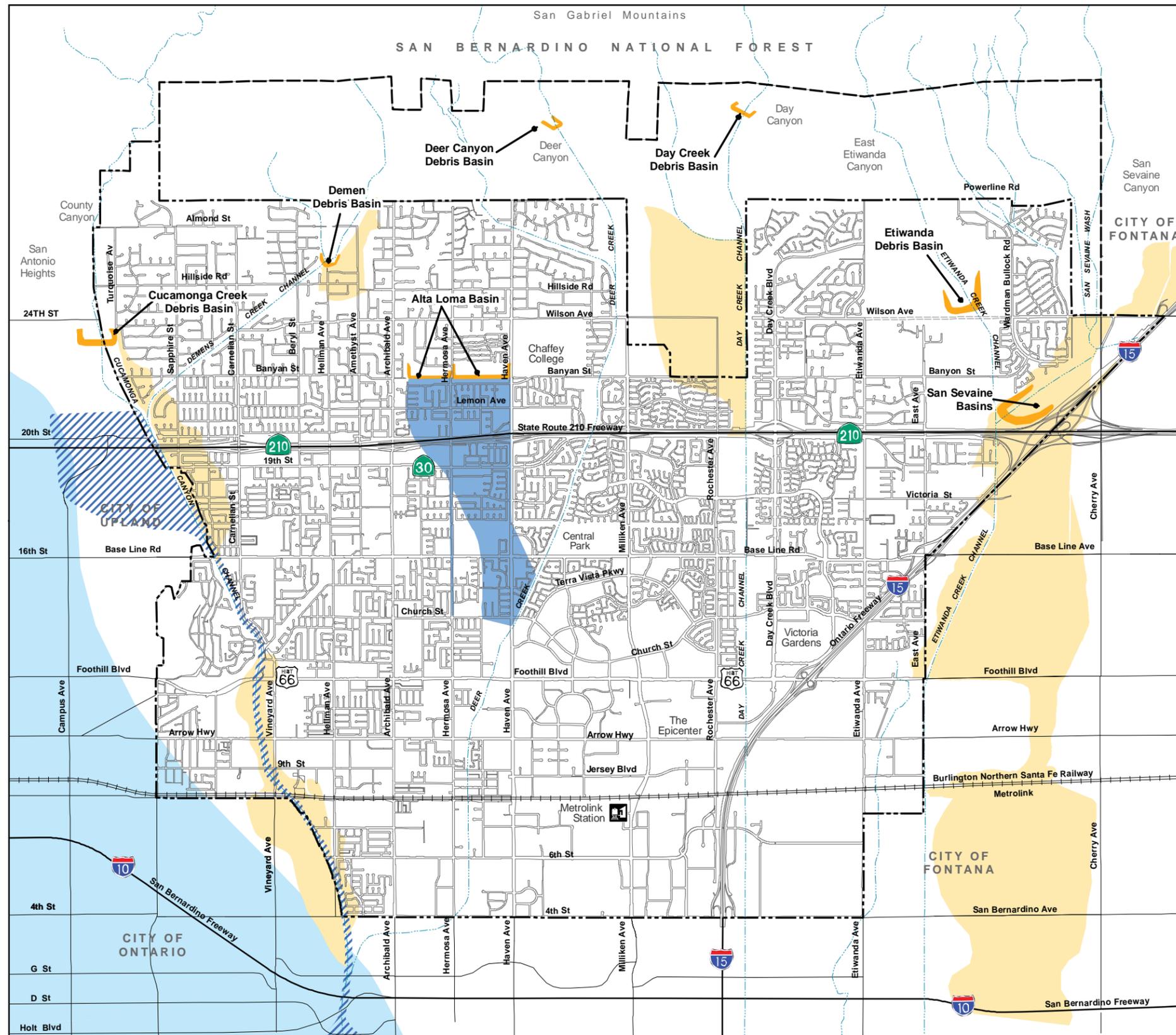


Flood Hazard Zones
Rancho Cucamonga General Plan Update

Exhibit 4.9-3



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- Inundation Areas**
- Dams/Catch Basins
 - Alta Loma Basin Inundation Area
 - Cucamonga Creek Inundation Area
 - 500-year Flood Zone Area Protected by Levee
 - San Antonio Dam Inundation Area

- Rancho Cucamonga City Boundary
- Sphere of Influence
- Waterways

Source: Rancho Cucamonga, 2001 and San Bernardino County Assessor, 2009.



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Dam Inundation Hazards

Rancho Cucamonga General Plan Update



Exhibit 4.9-4



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Tsunami and Seiche

Tsunami (sea waves) are not a hazard for the City of Rancho Cucamonga due to the City's elevation and distance from the ocean.

A seiche is the formation of large waves in landlocked bodies of water due to seismic activity. In the event of an earthquake, a seiche can occur and potentially cause major flooding and water inundation damage. There are no large open water bodies in Rancho Cucamonga outside of the dams and reservoirs discussed above.

4.9.3 THRESHOLDS OF SIGNIFICANCE

The following significance criteria are derived from Appendix G of the State CEQA Guidelines. The proposed 2010 General Plan Update would result in a significant adverse impact related to hydrology and water quality if it would:

- Threshold 4.9a:** Violate any water quality standards or waste discharge requirements;
- Threshold 4.9b:** 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);
- Threshold 4.9c:** 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;
- Threshold 4.9d:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river;
- Threshold 4.9e:** Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- Threshold 4.9f:** Otherwise substantially degrade water quality;
- Threshold 4.9g:** 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;
- Threshold 4.9h:** Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Threshold 4.9i:** 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;
- Threshold 4.9j:** Result in inundation by seiche, tsunami, or mudflow; and/or

Threshold 4.9k: Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

4.9.4 GENERAL PLAN GOALS AND POLICIES

A number of goals and policies in the proposed 2010 General Plan Update address hydrology, water quality, and flooding in the City. Implementation of these goals and policies and their corresponding implementation actions would reduce impacts on hydrology and water quality from future development and redevelopment. These include:

Policy LU-3.4: Promote development that is sustainable in its use of land and that limits impacts to natural resources, energy, and air and water quality.

Implementation Action: *Adopt a sustainable development program that incorporates green building standards.*

GOAL RC-2: *Provide adequate, reliable, and sustainable water supplies to the community.*

Policy RC-2.1: In consultation with the Cucamonga Valley Water District and other agencies, designate appropriate land use patterns and take other suitable actions to protect major areas within the Planning Area that are critical to replenishment of groundwater supplies and local surface waters.

Implementation Action: *Continue to consult with the CVWD to ensure that development activities retain designated areas for groundwater recharge.*

Policy RC-2.2: Continue to consult with the Cucamonga Valley Water District and support programs that protect water quality, conserve water usage, and promote re-use of water in accordance with State guidelines.

Implementation Action: *Continue to consult with the CVWD on meeting targets for water recycling and conservation.*

Policy RC-2.4: Promote the protection of natural stream courses from erosion and from polluted urban runoff.

Implementation Action: *Develop standards for City staff to use during the review of development proposals to consider requiring greater setbacks and preventative landscape strategies, and limiting access to minimize impacts. Implement required provisions of the City's NPDES permit.*

Policy RC-2.6: Where it is consistent with public safety priorities, take actions to retain natural drainage courses within the Planning Area.

Implementation Action: *Develop standards for City staff to use during the review of development proposals to consider requiring greater setbacks and preventative landscape strategies, and limiting access to minimize impacts. Implement required provisions of the City's NPDES permit.*

Policy RC-2.7: Protect the watershed by achieving mandates imposed by regulations.

Implementation Action: Continue to coordinate information and regulations between the multi-agency and multi-jurisdictions sharing the collective watershed.

GOAL PS-7: Provide adequate and appropriately designed storm drainage and flood control facilities to minimize the risk of flooding.

Policy PS-7.1: Continue to upgrade and expand the flood control system so that the community is protected from flooding.

Implementation Action: Consult with the County Flood Control District to ensure regional facilities are appropriately maintained. Continue to inventory any deficiencies in the City's flood control system and implement required improvements through the CIP or other methods that may expedite improvements.

Policy PS-7.2: Continue to maintain and improve the City's flood control system and upstream tributary areas.

Implementation Action: Continue to collect flood control fees as part of the development permitting process, and continue to participate in the regional Zone 1A Advisory Committee meetings.

Policy PS-7.3: Provide input on the level of development intensity and conservation practices within the City's Sphere of Influence area and the San Bernardino National Forest.

Implementation Action: Continue to review plans and programs and provide City input to the County of San Bernardino and National Forest Service concerning areas in the City's Sphere. For development projects within the Sphere, insist upon application of City development standards and review practices in lieu of those of the county.

Policy PS-7.4: Maintain structural and operational integrity of essential public facilities in the event of a flooding hazard, and locate new essential public facilities outside of flood hazard zones.

Implementation Action: Continue to locate essential public facilities in protected areas outside of recognized flood zones.

Policy PF-5.2: Support the efforts of the CVWD and San Bernardino County agencies to provide and expand water treatment facilities to treat local water sources from canyon surface waters and groundwater.

Implementation Action: Continue to consult with the CVWD to ensure that development activities retain designated areas for groundwater recharge. Continue to consult with the CVWD on meeting targets for water recycling and conservation. Develop standards for City staff to use during the review of development proposals to consider requiring greater setbacks and preventative landscape strategies, and limiting access to minimize impacts. Implement required provisions of the City's NPDES permit. Provide CVWD with requested population projections and other information that will inform regular updates of CVWD's Urban Water Management Plan. Continue to coordinate information and regulations between the multi-agency and multi-jurisdictions sharing the collective watershed.

Policy PF-6.1: Continue to ensure an adequate treatment and collection system capacity for Rancho Cucamonga's wastewater that is conveyed to the Inland Empire Utilities Agency water reclamation facilities, while protecting water quality and public health and minimizing adverse impacts to the environment.

Implementation Action: *Consult on the periodic analysis by the CVWD and other responsible agencies to ensure that operating levels remain the same. For major development projects, require capacity assessments of both transmission and treatment facilities.*

4.9.5 STANDARD CONDITIONS OF APPROVAL

There are existing Federal, State, and regional regulations that relate to hydrology and water quality issues. Compliance with these regulations would be required for all new development and redevelopment in the City. These include the standard conditions of approval (SCs) listed below.

- SC 4.9-1** Chapter 19.20 of the Rancho Cucamonga Municipal Code is the City's Storm Water and Urban Runoff Management and Discharge Control Ordinance, which provides regulations to comply with the CWA, the California Water Quality Control Act, and the City's NPDES permit. This ordinance prohibits the discharge of specific pollutants into the storm water; regulates connections to the storm drain system; and requires development projects to implement permanent BMPs on individual sites to reduce pollutants in the storm water.
- SC 4.9-2** The Santa Ana RWQCB implements the Water Quality Control Plan for the Santa Ana River Basin through the through issuance of individual WDRs; discharge prohibitions; water quality certifications; programs for salt management, non-point sources, and storm water; and monitoring and regulatory enforcement actions, as necessary. Individual developments are required to obtain water quality certifications and/or WDRs and comply with the discharge prohibitions, TMDLs, and various programs of the Board.
- SC 4.9-3** In compliance with the terms of the adjudications for the Chino and Cucamonga Groundwater Basins, the CVWD and other participating entities shall pump groundwater according to their prescriptive water rights as managed by the Chino Basin Watermaster.
- SC 4.9-4** The City's Floodplain Management Regulations (Chapter 19.12 of the Rancho Cucamonga Municipal Code) require all structures and land uses within the designated floodplains to be reasonably safe from flooding and not increase the base flood by more than one foot where base flood elevations have been determined but a floodway has not been designated. This is accomplished by the implementation of flood hazard reduction measures, which would include anchoring; flood-resistant materials; drainage around structures; elevation of lowest floor above base flood elevation; floodproofing; elimination of infiltration of floodwater or discharges from water and sewer lines; prohibition of floodway encroachment; and mobile home and recreational vehicle standards.
- SC 4.9-5** Storm drainage system improvements in the City are constructed in accordance with the Master Plan of Drainage-Westside Area and the Etiwanda/San Sevaine Area Drainage Policy, with its associated Etiwanda Area Master Plan of Drainage. These drainage master plans address the flood control needs of a fully

developed drainage area and identify the regional and local facilities needed to adequately convey a 100-year storm event. Storm drainage system improvements in other areas of the City are constructed in accordance with the storm drain plan in the applicable Specific Plan or Community Plan. Buildout of the proposed 2010 General Plan Update shall comply with the applicable drainage master plans.

- SC 4.9-6** The Santa Ana River Mainstream Project will provide increased flood protection to the communities within Orange, San Bernardino and Riverside Counties by constructing structural improvements at dams, levees, creeks, street drains, and the Santa Ana River; restoring marshland; and protecting canyon areas. Implementation of this project is being coordinated between the flood control districts of the three counties (as local sponsors) and the USACE. The City of Rancho Cucamonga shall continue coordination and cooperation with the USACE and local sponsors for the ongoing implementation of this project.
- SC 4.9-7** A final drainage study shall be submitted to and approved by the City Engineer prior to final map approval or the issuance of building permits, whichever occurs first. All drainage facilities shall be installed as required by the City Engineer.
- SC 4.9-8** Adequate provisions shall be made for acceptance and disposal of surface drainage entering the property from adjacent areas.
- SC 4.9-9** The San Bernardino County Department of Public Works owns and maintains the channelized creeks, debris basins, levees, and spreading grounds located in and north of the City, which reduce storm water flows in canyons and flood hazards. Buildout of the proposed 2010 General Plan Update shall be subject to the County's ongoing maintenance of debris basins, channels, and spreading grounds reduces hazards associated with flooding, mudflow, and debris flows from the mountains (Eke 2009).
- SC 4.9-10** The proposed 2010 General Plan Update shall comply with requirements set forth by the USACE in the Emergency Action and Notification Subplan for the San Antonio Dam, which identifies actions and responsibilities for warning, evacuation, and post-disaster recovery that will be followed in the event of dam failure.

4.9.6 ENVIRONMENTAL IMPACTS

Water Quality and Waste Discharge Standards

Threshold 4.9a: Would the proposed General Plan Update violate any water quality standards or waste discharge requirements?

Construction Impacts

Storm water runoff from individual construction sites could contain pollutants such as soils and sediments that are released during grading and excavation activities and petroleum-related pollutants due to spills or leaks from heavy equipment and machinery. Other common pollutants that may result from construction activities may include solid or liquid chemical spills; concrete and related cutting or curing residues; wastes from paints, stains, sealants, solvents, detergents, glues, acids, lime, plaster, and cleaning agents; and heavy metals from equipment.

The storm water runoff flows into the storm drain inlets in the City or in the surrounding area and would enter into the Cucamonga Creek, Day Creek, Deer Creek, Etiwanda Creek or San Sevaine Creek, which are connected to the Santa Ana River, Prado Dam, and Mill Creek. Segments of the Cucamonga Creek, Santa Ana River, Prado Park Lake, and Mill Creek are considered to be impaired water bodies, and pollutants in the storm water could further degrade water quality and violate TMDLs in these water courses/water bodies.

The CWA establishes a framework for regulating potential water quality impacts from construction activities through the NPDES program. Construction activities that disturb one acre or more of land are required to obtain an NPDES permit from the SWRCB, Division of Water Quality. An SWPPP is required for a project to be covered under the Construction General NPDES permit and must include BMPs to reduce water quality impacts. These BMPs include various measures to control on-site erosion; reduce sediment flows into the storm water; control wind erosion; track soil and debris into adjacent roadways and off-site areas; and manage wastes, materials, wastewater, liquids, hazardous materials, stockpiles, equipment, and other site conditions in order to prevent pollutants from entering the storm drain system. Inspections, reporting, and storm water sampling and analysis are also required to ensure that visible and non-visible pollutants are not discharged off site.

According to MMs 4.9-1 and 4.9-2, individual property owners/developers of future development and redevelopment pursuant to the proposed 2010 General Plan Update shall be required to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction Activities (NPDES No. CAS000002, Order No 2009-0009-DWQ). Compliance with the NPDES permit would reduce short-term, construction-related storm water quality impacts to Cucamonga Creek, the Santa Ana River, Prado Park Lake, and Mill Creek. Impacts would be reduced to less than significant; no mitigation is required.

Operational Impacts

Potential pollutants that could be generated by the occupancy/operation of future development and redevelopment pursuant to the 2010 General Plan Update could include, but are not limited to, bacteria/viruses, heavy metals, nutrients, pesticides, organic compounds, sediments, trash and debris, oxygen demanding substances, and oil and grease. Specific pollutants would depend on the type of land use and the site improvements proposed by individual projects; basically, residential developments, industrial or commercial developments, automotive repair shops, restaurants, hillside developments, parking lots, and streets would have the potential to generate different storm water pollutants.

Implementation of MM 4.9-3 calls for new development and major redevelopment projects to prepare individual WQMPs that identify (1) the potential pollutants of concern that would be generated by the project and (2) the site and hydrologic conditions of concern at downstream locations. The WQMP would identify permanent site design, source control, and treatment control BMPs that would be implemented as part of the project, including maintenance responsibilities and funding sources, and would be signed as a notarized agreement between the City and the property owner to provide a long-term commitment to its implementation. Preparation and implementation of a WQMP for new development and redevelopment projects satisfies MS4 Permit requirements and allows the City comply with the water quality standards for storm water runoff.

As stated in SC 4.9-1, the City's Storm Water and Urban Runoff Management and Discharge Control Ordinance prohibits the discharge of specific pollutants into the storm water and requires development projects to provide BMPs to reduce pollutants in the storm water. Compliance with this ordinance would reduce storm water pollution from individual

developments in the long term. MM 4.9-4 requires that all project developers implement the identified BMPs, thereby reducing impacts to less than significant.

The RWQCB requires industrial projects and land uses that generate storm water or discharges that may directly affect water courses/water bodies to obtain individual WDRs and/or water quality certifications, as provided in SC 4.9-2. Compliance with WDR conditions of approval and water quality certification would prevent the violation of water quality standards.

Policy RC-2.7 of the proposed 2010 General Plan Update recognizes mandates imposed through regulations to protect watersheds. Compliance with NPDES regulations would reduce storm water pollutants generated within the 2010 General Plan Update Study Area.

Impacts would be reduced to a less than significant level.

Impact 4.9a: Future development and redevelopment have the potential to generate pollutants that could enter the storm drainage system and affect water quality at local and regional creeks and the Santa Ana River. Implementation of BMPs in the SWPPP and a WQMP for individual projects (MMs 4.9-1 through 4.9-3), and compliance with pertinent Santa Ana RWQCB regulations (SC 4.9-2), the City's Storm Water and Urban Runoff Management and Discharge Control Ordinance (SC 4.9-1), and Policy RC-2.7 and implementation of MM 4.9-4 would reduce impacts to less than significant levels.

Groundwater

Threshold 4.9b: Would the proposed General Plan Update 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)?

Future development and redevelopment pursuant to the proposed 2010 General Plan Update would not lead to a direct withdrawal of groundwater. Construction of future development and redevelopment would also not interfere with groundwater recharge since local spreading grounds in and near the City are designated as Flood Control/Utility Corridor and Conservation areas per the proposed Land Use Plan. Development on other sites in the City would have limited effects on groundwater recharge due to their relatively small sizes and scattered locations.

Groundwater elevations in the City are approximately 300 feet north of the Red Hill Fault and at the southern section of the City, with other areas having groundwater at deeper levels. Excavation and grading activities for future development and redevelopment would not be deep enough (up to 300 feet) to affect the underlying groundwater resources. Thus, future development and redevelopment would not affect the underlying groundwater.

The City of Rancho Cucamonga obtains water services from the CVWD, with approximately 35 percent of the water supplies coming from the underlying Chino and Cucamonga Groundwater Basins. Future development and redevelopment would create a long-term demand for water to be used for domestic purposes, landscape irrigation and maintenance activities. This water demand may lead to an increase in groundwater pumping from local wells.

The Chino Basin Watermaster regulates groundwater pumping for the Chino Groundwater Basin and the Cucamonga Groundwater Basin. The CVWD complies with its pumping rights, as required under SC 4.9-3. Thus, groundwater pumping that may lead to the depletion of local groundwater resources is not expected to occur.

Goal RC-2 in the Resource Conservation Chapter of the proposed 2010 General Plan Update calls for adequate, reliable, and sustainable water supplies to the community. Supporting policies include consultation with the CVWD and other agencies on land use as it relates to the replenishment of groundwater supplies and local surface waters (Policy RC-2.1); support for programs that protect water quality; water conservation; promotion of water reuse in accordance with State guidelines (Policy RC-2.2); protection of natural stream courses from erosion and from polluted urban runoff (Policy RC-2.4); and retention of natural drainage courses within the planning area (Policy RC-2.6).

Implementation of water conservation measures would reduce demand for groundwater resources. Based on the CVWD's Urban Water Management Plan (UWMP), the CVWD's three main sources of water include (1) groundwater; (2) local canyon runoff (surface and subsurface flows); and (3) imported surface water delivered through MWD. In addition, recycled water is a major component of the CVWD's future water supply (CVWD 2005). Available water supplies are expected to be available to meet the water demand of the City to the year 2030. Water supply is further discussed in Section 4.17, Utilities and Service Systems. Indirect impacts on groundwater supplies would be less than significant; no mitigation is required.

Impact 4.9b: Future development and redevelopment would not directly impact local groundwater resources, and the increase in demand for groundwater resources at buildout is not expected to result in significant adverse impacts with implementation of SC 4.9-3, Goal RC-2 and supporting policies, and CVWD water conservation programs. No mitigation is required.

Drainage and Erosion

Threshold 4.9c: Would the proposed General Plan Update 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?

The City of Rancho Cucamonga is largely developed, with an improved storm drain system of underground lines and concrete-lined creeks. This would not change with the 2010 General Plan Update or future development and redevelopment pursuant to the 2010 General Plan Update. Future development and redevelopment would connect to the existing storm drain system and occur on scattered sites throughout the City. While changes to the local hydrology would occur through the development of vacant lots or the redevelopment of underutilized parcels, this change would be confined to the individual sites and would not affect major underground storm drain lines and channelized creeks in the City. Internal changes in drainage patterns on development sites would not adversely impact regional hydrology or drainage flows in the surrounding area.

With channelized creeks, no alteration in the course of a stream or river is expected. Also, construction activities need to implement erosion control measures under the SWPPP, as required with MM 4.9-1. In addition, the WQMP requirements (MM 4.9-2) require the implementation of on-site BMPs to prevent off-site HCOCs, which include erosion and scour at downstream channels. SC 4.9-4, the City's Floodplain Management Regulations, also includes

standards for development in mudslide-prone areas and erosion-prone areas. Compliance with SC 4.9-4 would prevent erosion hazards on-site and off-site. Additionally, implementation of MM 4.9-5, calling for preparation of an Erosion Control Plan would further reduce potential erosion impacts.

Policy RC-2.4 calls for the protection of natural stream courses from erosion and from polluted urban runoff. Policy RC-2.6 calls for the retention of natural drainage courses if consistent with public safety priorities. Compliance with these policies by future development and redevelopment pursuant to the proposed 2010 General Plan Update would prevent alteration of water courses and substantial erosion.

Adherence to SC 4.9-4 as well as implementation of MMs 4.9-1, 4.9-2, and 4.9-5 would reduce impacts related to erosion and siltation to less than significant levels.

Impact 4.9c: Changes in drainage patterns would be largely confined to individual development sites and no substantial erosion or siltation impacts would be reduced to less than significant levels with adherence to applicable 2001 General Plan Update policies and SC 4.9-4 as well as implementation of MMs 4.9-1, 4.9-2, and 4.9-5.

Drainage Patterns

Threshold 4.9d: Would the proposed General Plan Update substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river?

As discussed above, changes in drainage patterns would be confined to individual development sites and would not affect underground storm drain lines and channelized creeks in the City or downstream of the City. Increase in runoff volume and velocity would be relatively minor due to the anticipated sizes and locations of sites where future development and redevelopment under the proposed 2010 General Plan Update are expected. Assuming all future development and redevelopment is consistent with the proposed 2010 General Plan Update, impacts would be less than significant and no mitigation would be required.

Impact 4.9d: Less than significant impacts related to the alteration of the course of a stream or river would occur from future development and redevelopment pursuant to the proposed General Plan; no mitigation is required.

Surface Runoff

Threshold 4.9e: Would the proposed General Plan Update substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; 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?

Threshold 4.9k: Would the proposed General Plan Update require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The amount of impervious surface area in the City would increase as new development and redevelopment introduces structures, driveways, parking lots, walkways, and other site improvements. Thus, runoff volumes are likely to increase over existing conditions. The existing drainage system would need to convey these increased volumes.

As shown in Exhibit 4.9-3, several areas of the City are subject to flooding. Two areas within the City are also known to have deficient drainage facilities. Development within the areas with flood hazards and deficient storm drainage may cause flooding or add to existing flood hazards.

Development in the undeveloped portions of the City that have no flood control improvements would have to provide the necessary infrastructure to accommodate storm drain needs. Also, development within the Industrial Specific Plan may be required to provide on-site detention facilities to prevent flood hazards. This would be required where storm water runoff from a project site within this area would otherwise flow beyond the City's right-of-way and onto private property (James 2010). As stated under SC 4.9-5, continued implementation of the Master Plan of Drainage-Westside Area and the Etiwanda/San Sevaine Area Drainage Policy, with its associated Etiwanda Area Master Plan of Drainage, would fund the improvement of the storm drainage systems in these areas. Storm drainage system improvements in other areas of the City are constructed in accordance with the storm drain plan in the applicable Specific Plan or Community Plan. Compliance with this standard condition would result in the development and/or improvement of the storm drainage systems and prevention of flood hazards. The potential environmental impacts of construction of the necessary storm drain facilities would be assessed on a project-by-project basis as proposed projects pursuant to the 2010 General Plan Update is implemented. The Santa Ana River Mainstream Project (SC 4.9-6) will improve flood protection within the Santa Ana River watershed, which includes the City of Rancho Cucamonga. Additionally, compliance with SCs 4.9-7 and 4.9-8 would require preparation of a final drainage study as well as provisions for surface drainage entering off-site areas.

Goal PS-7 of the proposed 2010 General Plan Update calls for adequate and appropriately designed storm drainage and flood control facilities to minimize flood risk. Supporting policies include upgrade and expansion of the flood control system (Policy PS-7.1) and maintenance of the flood control system and upstream tributary areas (Policy PS-7.2).

In addition, implementation of BMPs to prevent HCOCs, as contained in the individual WQMPs (MM 4.9-4), would decrease off-site flows. Site design, source control, and treatment control BMPs in the WQMPs and in compliance with the City's storm water system regulations (SCs 4.9-1 and 4.9-4) would also reduce pollutants in the runoff that would be conveyed into the creeks serving the City.

Thus, impacts related to flooding or drainage system capacity of water bodies downstream of the site would be reduced to less than significant levels.

Impacts 4.9e and 4.9k: Significant impacts from increase in runoff volumes and rates would occur from future development and redevelopment under the proposed 2010 General Plan Update in terms of flooding or the capacities of downstream drainage systems. Compliance with SCs 4.9-1, 4.9-5, 4.9-6, 4.9-7, 4.9-8, and 4.9-9; with Goal PS-7; and with Policies PS-7.1 and PC-7.2 as well as implementation of MM 4.9-4 would reduce impacts to less than significant levels.

Water Quality

Threshold 4.9f: Would the proposed General Plan Update otherwise substantially degrade water quality?

Future development and redevelopment under the proposed 2010 General Plan Update would generate pollutants that may degrade water quality at downstream surface water bodies.

The western section of the City drains into the Cucamonga Creek, Demens Creek, and Deer Creek at the western section of the City. The eastern section drains into Day Creek, Etiwanda Creek, and San Sevaine Creek. Cucamonga Creek and Etiwanda Creek eventually connect to Chino Creek, Mill Creek, and the Santa Ana River. Under Section 303(d) of the CWA, impaired water bodies in or downstream of the City include Prado Park Lake at the Santa Ana River, Mill Creek, Reach 3 of the Santa Ana River, and Reach 1 of Cucamonga Creek.

Discharges from future development and redevelopment under the proposed 2010 General Plan Update, if unmitigated, would contribute to the continued impairment of these water bodies/water courses.

The Santa Ana RWQCB's *Water Quality Control Plan for the Santa Ana River Basin* (Basin Plan) contains water quality standards for water resources in the region and an implementation plan to maintain these standards. The Basin Plan discusses existing water quality, beneficial uses of ground and surface waters, and local water quality conditions and problems. The Basin Plan also sets water quality goals and TMDLs that are used as a basis for the basin's regulatory programs. Compliance with Santa Ana RWQCB regulations (SC 4.9-2) would prevent the discharge of pollutants into receiving waters that are considered "impaired."

Also, the City's NPDES permit requires that future development and major redevelopment projects prepare and implement a WQMP, which would identify site design, source control, and treatment control BMPs that would effectively prohibit non-storm water discharges from entering into the storm drain system (MMs 4.9-3 and 4.9-4). This would ensure that no conflict with the *Water Quality Control Plan for the Santa Ana River Basin* would occur with future development and redevelopment. Implementation of BMPs in the SWPPP for future development and redevelopment projects on sites of 1 acre or more would also reduce storm water pollutants during the construction phase of any individual project (MM 4.9-1).

Pursuant to SC 4.9-1, Chapter 19.20 of the City's Municipal Code supplements the NPDES requirements. Compliance with this standard condition would reduce pollutants in storm water from future development and redevelopment. Policy PF-5.2 in the proposed 2010 General Plan Update calls for support for agencies that would provide and/or expand water treatment facilities to treat local water sources from canyon surface waters and groundwater. Policy PF-6.1 calls for adequate wastewater treatment and collection while protecting water quality and public health.

In addition to compliance with applicable SCs and 2010 General Plan Update Policies, implementation of MMs 4.9-1 and 4.9-2 would require preparation of a SWPPP and MMs 4.9-6 and 4.9-7 identify appropriate methods for controlling discharge of debris and sediment into water bodies and 4.9-8 controls use of fertilizers/pesticides/herbicides through preparation of a landscaping plan. Therefore, the potential impact related to water quality would be reduced to a less than significant level.

Impact 4.9f: Adherence to policies PF-5.2 and PF-1 and SCs 4.9-1 and 4.9-2 and implementation of MMs 4.9-1, 4.9-2, 4.9-3, 4.9-4, and 4.9-6 through 4.9-8 would reduce the potential impact related to water quality to a less than significant level.

Flood Hazards: Housing

Threshold 4.9g: Would the proposed General Plan Update 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?

The proposed Land Use Plan designates the majority of the 100-year floodplain as Flood Control/Utility Corridor and Conservation Areas where no development is allowed. However, some areas are designated as Hillside Residential, Open Space, or Very Low Density Residential where residential structures may be developed in the future. Future residential development and redevelopment pursuant to the proposed 2010 General Plan Update in these areas would be exposed to flood hazards.

SC 4.9-4 requires all structures and land uses within the designated floodplains to comply with the City's Floodplain Management Regulations. These regulations would keep future development and redevelopment under the proposed 2010 General Plan Update protected from flood hazards through the implementation of various flood hazard reduction measures. Also, SC 4.9-5 requires the construction of needed storm drain facilities or the payment of fees for storm drainage system improvements. Compliance with these standard conditions would prevent exposure of new development and redevelopment to flood hazards and would provide the storm drainage infrastructure necessary to prevent flood hazards. In addition, the Santa Ana River Mainstream Project (SC 4.9-6) will provide regional storm drainage improvements for increased flood protection to the communities within Orange, San Bernardino and Riverside Counties.

In addition, the proposed 2010 General Plan Update includes Goal PS-7, which calls for adequate and appropriately designed storm drainage and flood control facilities. Supporting policies include upgrade and expansion of the flood control system so that the community is protected from flooding (Policy PS-7.1) and maintenance of the flood control system and upstream tributary areas (Policy PS-7.2). The goal and policies would reduce flood hazards in the City.

Compliance with pertinent standard conditions and proposed 2010 General Plan Update goal and policies would result in less than significant impacts; no mitigation is required.

Impact 4.9g: Future residential development and redevelopment may be located in the designated 100-year floodplain. Compliance with the City's Floodplain Management Regulations (SC 4.9-4) and construction of the necessary local storm drain infrastructure (SC 4.9-5) and improvements of the regional storm drainage facilities (SC 4.9-6) would prevent any significant adverse impacts related to the placement of housing within a 100-year flood hazard area; no mitigation is required.

Flood Hazards: Structures

Threshold 4.9h: Would the proposed General Plan Update place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Areas along various creeks and channels in the City are located within the 100-year flood hazard area, as mapped by FEMA and shown in Exhibit 4.9-3. Structures that would be built within the 100-year floodplain as part of future development and redevelopment under the proposed 2010 General Plan Update would potentially impede or redirect flood flows.

SC 4.9-4 requires all structures and land uses within the designated floodplains to comply with the City's Floodplain Management Regulations. These regulations would keep future development and redevelopment pursuant to the proposed 2010 General Plan Update protected from flood hazards through the implementation of various flood hazard reduction measures. Additionally, regulations require structures and land uses to prevent an increase of more than one foot in the base flood level where base flood elevations have been determined but a floodway has not been designated. Compliance with the regulations would prevent the impediment or redirection of flood flows. Thus, impacts related to the impediment or redirection of flood flows would be less than significant; no mitigation is required.

Impact 4.9h: Structures built as part of future development and redevelopment under the proposed 2010 General Plan Update could impede or redirect flood flows. Impacts would be less than significant with compliance with the City's Floodplain Management Regulations (SC 4.9-4); mitigation is not required.

Flood Hazards: Dam Inundation and Mudflows

Threshold 4.9i: Would the proposed General Plan Update 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; or, inundation by seiche, tsunami, or mudflow?

Dam Inundation

The City is located within the dam inundation area of San Antonio Dam and several debris basins, as shown in Exhibit 4.9-4. Hazards from dam inundation would affect future development and redevelopment proposed in these areas.

Failure of the San Antonio Dam due to acts of terrorism, earthquake, or other damage when the dam is at capacity may lead to floodwaters reaching the southwestern end of the City within 30 minutes of dam failure, with flood waters reaching peak elevation of 7 feet in 45 minutes. The flooded areas could sustain damage from rapidly flowing water, severe erosion, and associated floating debris. Additionally, inundation from the debris basins and levees along the creeks would lead to flooding of the areas downstream of these facilities (similar to the limits and hazards of the 500-year floodplain).

Per SC 4.9-9, the San Bernardino County Department of Public Works provides ongoing maintenance of the creeks, debris basins, levees, and spreading grounds located in and north of the City, which reduce storm water flows in canyons and flood hazards. Ongoing maintenance of debris basins, channels, and spreading grounds by the County would reduce inundation hazards from debris basins.

Compliance with the City's Floodplain Management Regulations (under SC 4.9-4) would ensure that future development and redevelopment are adequately anchored to prevent flotation, collapse, or lateral movement of structures within the designated floodplains, which includes the inundation areas of the debris basins. Regulations also include standards for development in mudslide-prone and erosion-prone areas. Compliance with SC 4.9-4 would reduce inundation hazards to future development and redevelopment.

As required by FEMA, the USACE has prepared an emergency action plan, which specifies warning, evacuation, and post-flood actions that need to be taken by assigned individuals in the event of dam failure. Implementation of the emergency action plan would warn residents, employees and visitors in the southwestern corner of the City and allow for evacuation to areas outside the inundation zones. This would reduce personal injury and property damage to existing and future developments within the dam's potential inundation area to the extent feasible (SC 4.9-10).

While future development and redevelopment would be exposed to these inundation hazards, the 2010 General Plan Update would not increase these hazards in the City or the surrounding area. Policy PS-7.4 in the proposed 2010 General Plan Update contains a standard for a minimum level of acceptable risk for development in potential inundation areas, and requires mitigation to the satisfaction of the Building and Safety Department and other responsible agencies.

Thus, development standards and emergency plans in the event of dam failure would reduce impacts relating to dam inundation to less than significant levels; no mitigation is required.

Mudflows

The hillside areas at the northern end of the City have a potential for mudflow hazards. The County has constructed and maintains a number of debris basins and spreading grounds near the foothills of the San Gabriel Mountains to reduce the volume and velocity of runoff and to prevent mudflow. These facilities include the Cucamonga Creek Debris Basin, Deer Canyon Debris Basin, Day Creek Debris Basin, Alta Loma Basins, Etiwanda Creek Debris Basin, Demens Creek Debris Basin, and San Sevaine Debris Basin.

Ongoing maintenance of the creeks, debris basins, and spreading grounds in and near the City (SC 4.9-9) would reduce mudflows and the hazards associated with them. The City's Floodplain Management Regulations (under SC 4.9-4) also include standards for development in mudslide-prone and erosion-prone areas. Compliance with SCs 4.9-9 and 4.9-4 would reduce mudflow hazards to future development and redevelopment under the proposed 2010 General Plan Update; no mitigation measures are required.

Tsunami

The City is located inland, and future development and redevelopment would not be subject to tsunami hazards. There would be no impact; no mitigation is required.

Seiche

There are no large open water bodies in or near Rancho Cucamonga other than the San Antonio Dam and the debris basins at the canyons in the northern section of the City and in the SOI. Impacts associated with failure of these facilities are discussed above. Impacts to future development and redevelopment would be less than significant; no mitigation is required.

Impact 4.9i: Impacts associated with flooding due to dam or levee failure and inundation by seiche or mudflow would be less than significant with compliance with existing regulations (SCs 4.9-4, 4.9-9, and 4.9-10). No impacts from tsunami hazards would occur.

4.9.7 CUMULATIVE IMPACTS

Cumulative hydrology and water impacts are considered in the Santa Ana River watershed, where the City of Rancho Cucamonga is located. While this area extends beyond County boundaries, areas downstream of the City and in other areas in San Bernardino County and in Orange County could be affected by storm water volumes and pollutants that would be generated within the City.

Future development and redevelopment within the Santa Ana River watershed would generate new sources for urban pollutants, which could impact of surface water quality and groundwater resources. However, construction activities are regulated under the NPDES and Construction General Permit for the State. NOIs and SWPPPs are required for construction activities in order to reduce pollutants in storm water during temporary ground-disturbing activities. San Bernardino and Orange Counties and participating Cities (Co-permittees) have also adopted programs for long-term storm water pollution mitigation by requiring WQMPs for individual developments. In addition, the Santa Ana RWQCB's WDRs impose conditions, prohibitions, and guidelines for individual developments that may lead to discharges into the storm drain system or surface water bodies. These regulations implement the Water Quality Control Plan for the Santa Ana River Basin and help meet the established water quality objectives for both groundwater and surface water bodies. No cumulative adverse impacts on hydrology and water quality are expected from the proposed 2010 General Plan Update and future development and redevelopment within the Santa Ana River watershed.

Increases in the resident population and intensity of development in the Santa Ana River watershed would result in a greater demand for water, increased pumping of the groundwater basins, and greater use of imported water sources. The Chino Basin Watermaster is responsible for monitoring groundwater levels and water quality, including the safe operation yields of the Chino Basin and extraction limits and amounts. The CVWD and participating entities together manage the adjudication of the Cucamonga Basin as part of the Chino Basin. Continued management of the groundwater basins and compliance with the pertinent adjudication orders would prevent overdraft conditions, water quality problems, and other impacts on groundwater resources in the watershed.

Future development and redevelopment within the watershed would increase impermeable surfaces and decrease water percolation areas. Increases in impervious surfaces would reduce recharge, but since individual project sites are limited in size and are not designated as groundwater recharge areas, no significant adverse impacts are expected. Increases in runoff volumes would increase storm water volumes and flow rates in local and regional drainage channels. The regional channels have been designed to accommodate runoff from the entire watershed, and new developments are required to provide on-site improvements and other storm drainage system upgrades to prevent the creation of flood hazards at downstream areas. Thus, no cumulative adverse impacts related to flood hazards or inadequate storm drainage would occur.

Several debris basins and dams at the foothills of the San Gabriel and San Bernardino Mountains pose inundation hazards to downstream areas in the event of dam failure. Dam failure could affect existing and future developments in the watershed. The potential for property damage and personal injury is reduced by the construction of dams in accordance with State

and Federal dam safety regulations and the preparation of emergency action plans for individual dams, which include warning, evacuation, and post-disaster actions. Cumulative impacts from dam inundation would be less than significant.

The hazards associated with a tsunami are confined to the shoreline and coastal areas of Orange County. The City of Rancho Cucamonga and San Bernardino County would not be exposed to these hazards nor would the proposed 2010 General Plan Update increase exposure or create these hazards. Seiche hazards would affect local areas downstream of a water body or reservoir and would not create cumulative impacts. Future development and redevelopment on steep hillside areas may be exposed to potential mudflow hazards. The debris basins that have been constructed by the San Bernardino County Department of Public Works at the foothills of the San Gabriel and San Bernardino Mountains are expected to reduce storm water flows and debris volumes. Thus, cumulative impacts would be less than significant.

4.9.8 MITIGATION MEASURES

MM 4.9-1 Prior to issuance of grading permits, the permit applicant shall submit to Building Official for approval, Storm Water Pollution Prevention Plan (SWPPP) specifically identifying Best Management Practices (BMPs) that shall be used on-site to reduce pollutants during construction activities entering the storm drain system to the maximum extent practicable.

MM 4.9-2 Prior to issuance of grading or paving permits, applicant shall obtain a Notice of Intent (NOI) to comply with obtaining coverage under the National Pollutant Discharge Elimination System (NPDES) General Construction Storm Water Permit from the State Water Resources Control Board. Evidence that this has been obtained (i.e., a copy of the Waste Discharger's Identification Number (shall be submitted to the City Building Official for coverage under the NPDES General Construction Permit.

MM 4.9-3 Prior to issuance of building permits, the applicant shall submit to the City Engineer for approval of a Water Quality Management Plan (WQMP), including a project description and identifying Best Management Practices (BMPs) that will be used on-site to reduce pollutants into the storm drain system to the maximum extent practicable. The WQMP shall identify the structural and non-structural measures consistent with the current Guidelines for New Development and Redevelopment adopted by the City of Rancho Cucamonga.

MM 4.9-4 The developer shall implement the BMPs identified in the Water Quality Management Plan prepared by (name/date) to reduce pollutants after construction entering the storm drain system to the maximum extent practical.

MM 4.9-5 An Erosion Control Plan shall be prepared, included in the Grading Plan, and implemented for the proposed project that identifies specific measures to control on-site and off-site erosion from the time ground disturbing activities are initiated through completion of grading. This Erosion Control Plan shall include the following measures at a minimum: a) Specify the timing of grading and construction to minimize soil exposure to rainy periods experienced in Southern California, and b) An inspection and maintenance program shall be included to ensure that any erosion which does occur either on-site or off-site as a result of this project will be corrected through a remediation or restoration program within a specified time frame.

- MM 4.9-6** During construction, temporary berms such as sandbags or gravel dikes must be used to prevent discharge of debris or sediment from the site when there is rainfall or other runoff.
- MM 4.9-7** During construction, to remove pollutants, street cleaning will be performed prior to storm events and after the use of water trucks to control dust in order to prevent discharge of debris or sediment from the site.
- MM 4.9-8** Landscaping plans shall include provisions for controlling and minimizing the use of fertilizers/pesticides/herbicides. Landscaped areas shall be monitored and maintained for at least two years to ensure adequate coverage and stable growth. Plans for these areas, including monitoring provisions for a minimum of two years, shall be submitted to the City for review and approval prior to the issuance of grading permits.

4.9.9 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Water Quality and Waste Discharge Standards

Less Than Significant With Mitigation.

Groundwater

Less Than Significant.

Drainage and Erosion

Less Than Significant With Mitigation.

Drainage Patterns

Less Than Significant.

Surface Runoff

Less Than Significant With Mitigation.

Water Quality

Less Than Significant With Mitigation.

Flood Hazards: Housing

Less Than Significant.

Flood Hazards: Structures

Less Than Significant.

Flood Hazards: Dam Inundation and Mudflows

Less Than Significant.

Cumulative Impacts

Less Than Significant.