

4.8 Hydrology and Water Quality

This section evaluates potential hydrology and water quality impacts that could result from the future development consistent with the Encinitas Housing Element Update (HEU). Information in this section comes from secondary sources and the City of Encinitas Final Existing Conditions Report (2010).

4.8.1 Existing Conditions

4.8.1.1 Hydrology

a. Surface Water

There are numerous important surface hydrologic features within the City, including the coastal waters of the Pacific Ocean, two lagoons, and three major creeks (Figure 4.8-1). In addition, the City owns and maintains improved and open storm water channels, underground pipes of varying material, storm water detention basins, catch basins, and a variety of other municipal separate storm sewer system (MS4) facilities.

b. Watershed

The City of Encinitas is situated entirely within the Carlsbad Hydrological Unit (HU) and is split between the San Marcos Hydrological Area (HA), Batiquitos Subunit (HAS 904.51) to the north and the Escondido Creek HA, San Elijo Subunit (HAS 904.61) to the south (see Figure 4.8-1). The City is naturally divided by eight distinct drainage areas (sub-basins): Cardiff, Lower Escondido, La Orilla, La Costa South, Leucadia, Encinitas, Rancho Santa Fe, and Lux Canyon sub-basins.

Three creeks drain the City: Cottonwood Creek, Encinitas Creek, and Escondido Creek. Cottonwood Creek drains the heart of Encinitas and discharges to the Pacific Ocean at Moonlight Beach. Encinitas Creek drains the north-central portion of the City into Batiquitos Lagoon. Escondido Creek drains the southern and northeast (Olivenhain) portion of the City into San Elijo Lagoon. The location of the creeks and lagoons are also displayed on Figure 4.8-1.

c. Groundwater

A groundwater basin is generally defined as a hydrogeologic unit containing one large aquifer as well as several connected and interrelated aquifers that has reasonably well-defined boundaries and more or less definite areas of recharge and discharge. All major

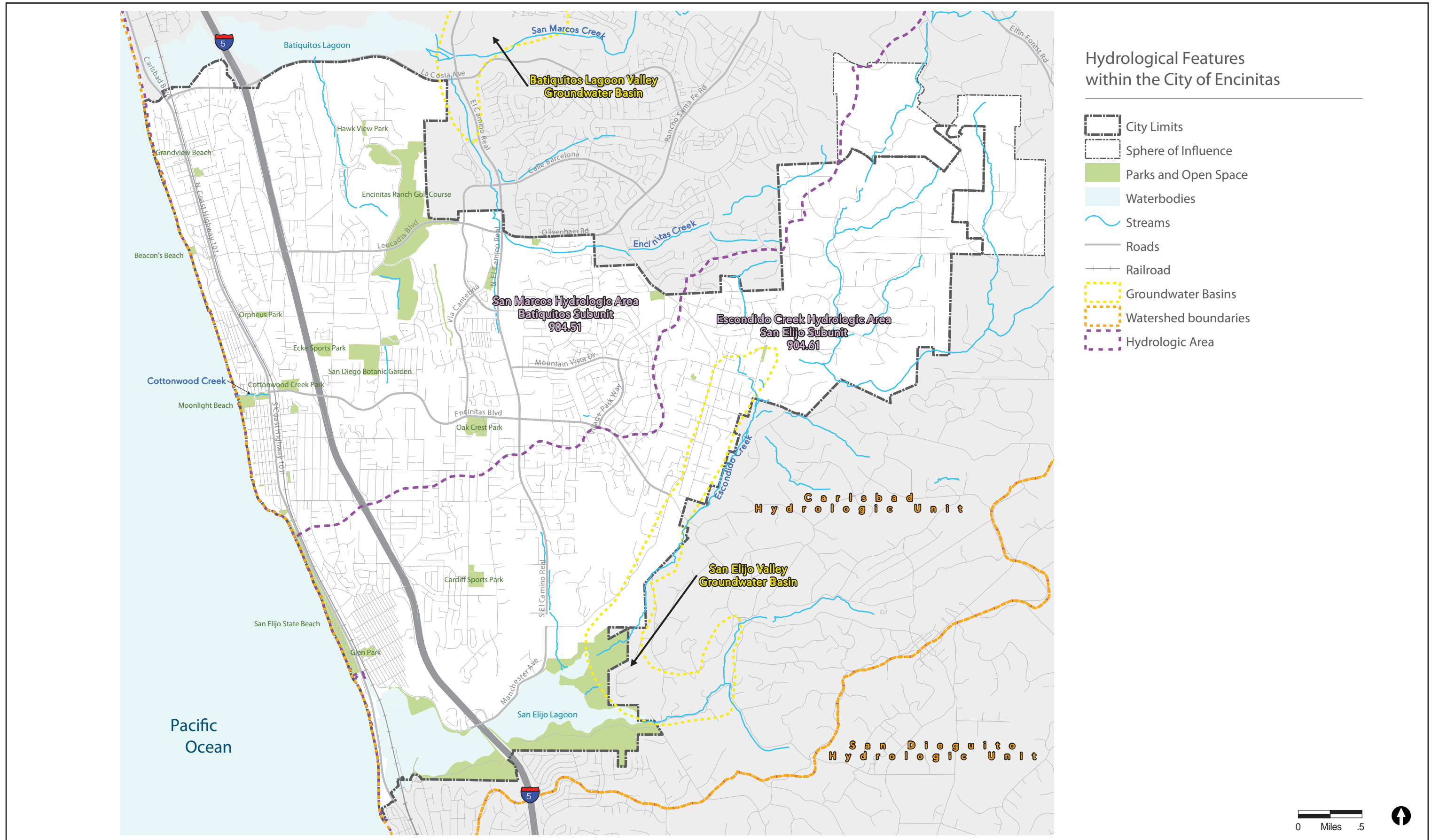


FIGURE 4.8-1
Hydrological Features in the City of Encinitas

drainage basins in the San Diego region contain groundwater basins. The basins are relatively small in area and usually shallow. Although these groundwater basins are limited in size, the groundwater yield from the basins has been historically important to the development of the San Diego region. Nearly all of the local groundwater has been intensively developed for municipal and agricultural supply purposes. Two groundwater basins, Batiquitos Lagoon Valley and San Elijo Valley, occur within the City (see Figure 4.8-1).

Batiquitos Lagoon Valley Groundwater Basin

The Batiquitos Lagoon Valley groundwater basin underlies Green Valley and San Marcos Creek Valley at the northwestern portion of the City. The basin is bounded on the northeast by impermeable crystalline rocks, on the west by Batiquitos Lagoon and by semi-permeable rocks of the La Jolla Formation. San Marcos and Encinitas creeks drain the valleys westward into Batiquitos Lagoon.

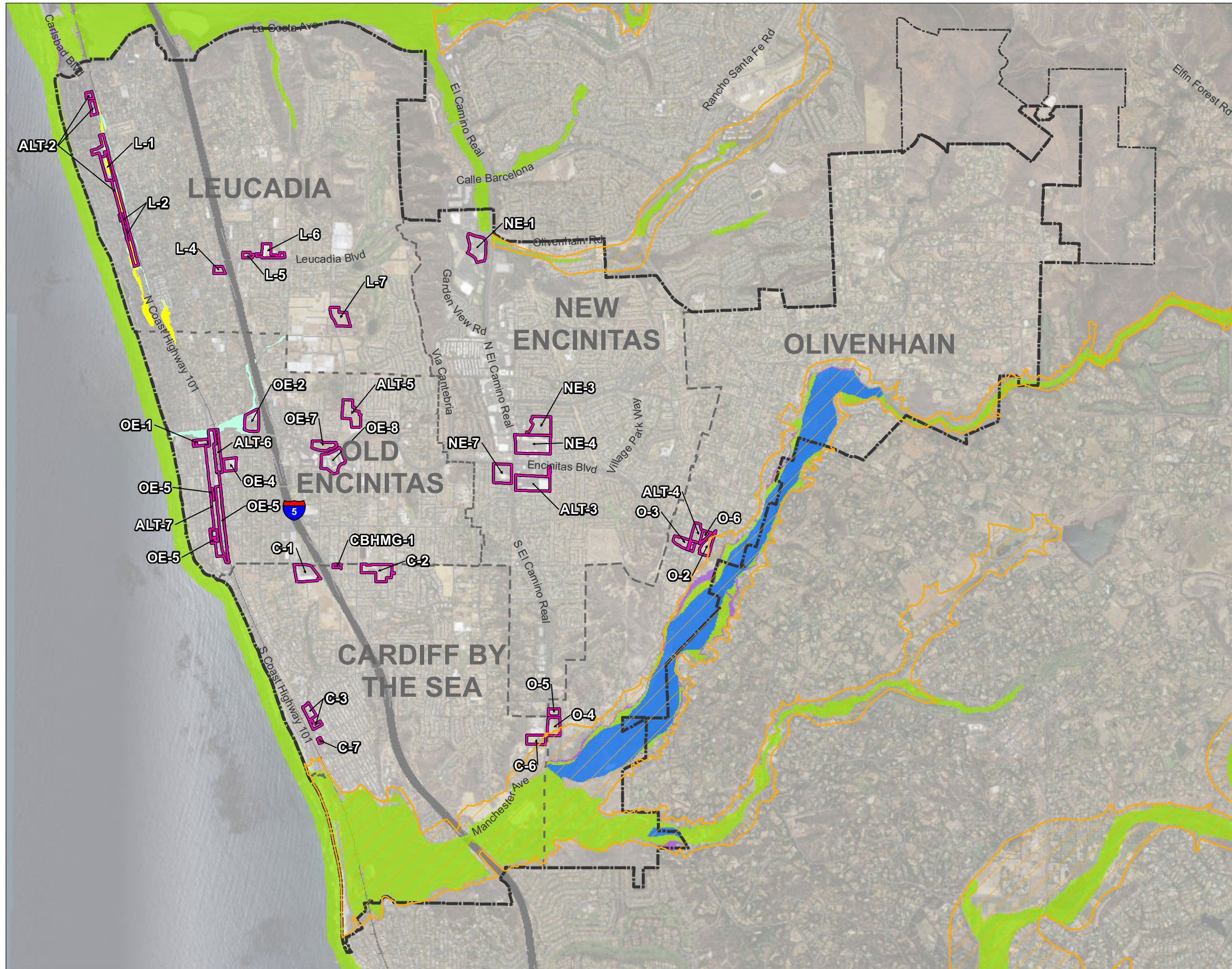
San Elijo Valley Groundwater Basin

The San Elijo Valley groundwater basin is located in the southeastern part of the City and underlies two valleys. Escondido Creek flows occasionally through the upper northeast valley, discharging into San Elijo Lagoon. The basin is bounded to the north and to the south by alluvium and semi-permeable marine deposits of the La Jolla Group. The northeastern boundary is defined by impermeable Cretaceous deposits of the Santiago Peak volcanics. The western boundary is the Pacific Ocean (Izbicki 1983). Groundwater in storage was estimated to be approximately 8,500 acre-feet in 1983.

d. Flood Hazard

Flood zones are geographic areas that the Federal Emergency Management Act (FEMA) has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. Although portions of the City are within a FEMA 100-year flood zone, none of the housing sites are. However, the City completed a hydrologic study of Highway 101 between Encinitas Boulevard and La Costa Avenue, which identified 10-year and 100-year 'flood problem areas' along portions of Highway 101 that have potential for flooding due to run-off (Figure 4.8-2).

Portions of the City are within a dam inundation area. Dam inundation areas are downstream areas subject to flooding or other effects during large storm events. Dam inundation areas are subject to the uncontrolled release of an upstream reservoir as well as events leading to breaks in levees or dams. Figure 4.8-2 shows the limits of the maximum probable dam inundation in the City. The areas of potential dam inundation are generally along the Cottonwood Creek, Encinitas Creek, and Escondido Creek; portions of tributary stream channels; and the low-lying areas near the coastal portions of the City. Based on historical data, the potential for serious hazards in the event of a dam failure is significant.



- City Limits
- Sphere of Influence
- Community Area Boundaries
- Housing Sites
- Dam Inundation Area
- Flood Problem Areas**
- 10-year
- 100-year
- FEMA Flood Zones**
- 100-year Flood Plain
- 500-year Flood Plain
- Flood Way

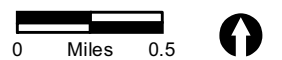


FIGURE 4.8-2
Flood Hazards
in the City of Encinitas

Housing sites identified as containing or with the potential to contain flood hazards are shown in Table 4.8-1.

Housing Site	Flood Problem Area	Dam Inundation
ALT-2	Yes	
ALT-6	Yes	
ALT-7	Yes	
C-6		Yes
L-1	Yes	
L-2	Yes	
O-2		Yes
O-4		Yes
OE-2	Yes	

e. Tsunamis and Seiches

The project area, at its nearest point, is approximately 400 feet east of the Pacific Ocean. Due to its elevation (approximately 150 feet above mean sea level), the nearest housing site to the coast would not likely be affected in the event of a tsunami. Furthermore, according to maps prepared to quantify risk from tsunamis/seiches, none of the housing sites are located within a tsunami hazard zone (California Emergency Management Agency 2011).

4.8.1.2 Water Quality

Water quality refers to the effect of natural and human activities on the composition of water. Water quality is expressed in terms of measurable physical and chemical qualities that can be related to planned water use. Within the City, urban runoff is transmitted directly to the storm drain system (rather than the sewer system). In general, storm water can potentially contain a host of pollutants such as trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, flora and fauna and public health. Water quality issues are especially prevalent during rainy periods; however, due to urban runoff (e.g., irrigation or car washing) that is transferred to the storm drain system, pollution can be a year-round problem. Combinations of urban runoff, agricultural runoff, sewage spills, livestock, and domestic animals affect water quality within the San Marcos and Escondido Creek HAs.

a. Beneficial Uses

Pursuant to the California Water Code Section 13240 and the Clean Water Act (CWA) Section 303, all surface waters and groundwater in the City are assigned beneficial uses by the Regional Water Quality Control Board (RWQCB) in the adopted Basin Plan.

The beneficial uses of surface water in the San Marcos and Escondido Creek HAs include industrial service supply, agricultural supply, navigation, water contact recreation, non-contact water recreation, commercial and sport fishing, preservation of biological habitats of special concern, estuarine habitat, wildlife habitat, preservation of rare and endangered species, marine habitat, fish migration, and shellfish harvesting. Contact uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, and fishing. Non-contact uses include, but are not limited to, picnicking, sunbathing, hiking, beach-combing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

The existing beneficial uses of San Diego County beaches and nearshore areas include water contact recreation (e.g., surfing, swimming), non-contact recreation (e.g., walking, jogging), ocean commercial and sport fishing, aquaculture, shellfish harvesting, municipal and domestic supply, preservation of rare and endangered species, marine and wildlife habitat, migration and spawning of aquatic organisms, and navigation.

Batiquitos Lagoon and San Elijo Lagoon are designated as estuarine habitats and have the same beneficial uses as the Pacific Ocean except for commercial fishing, industrial service supply, spawning of aquatic organisms, aquaculture, shellfish harvesting, and navigation.

b. 303(d) List Status

The Federal Clean Water Act (CWA) Section 303(d) requires that states assess the quality of their waters every two years and publish a list of those waters not meeting water quality standards. For water bodies placed on the 303(d) List of Water Quality Limited Segments, states are required to develop total maximum daily loads (TMDLs) for the pollutant(s) that are causing standards impairment. Once a water body is placed on the 303(d) List of Water Quality Limited Segments, it remains on the list until a TMDL is adopted and/or water quality standards are attained.

As identified in the 2010 California 303(d) List and TMDL Priority Schedule (303(d) List):

- The Pacific Ocean is listed as a 303(d) impaired water body at Moonlight Beach and San Elijo Lagoon Outlet for bacteria indicators due to urban runoff.
- San Elijo Lagoon is listed as an impaired water body for sediment/siltation, bacteria indicators, and eutrophic condition.
- Cottonwood Creek is listed for DDT (pesticide), phosphorous and sediment toxicity stressors (State Water Resources Control Board 2015).
- Encinitas Creek is listed for phosphorous impairments.
- Escondido Creek is listed for DDT, phosphorous, sediment toxicity, manganese, phosphate, selenium, sulfates, and total dissolved solids.

The affected segments within the City that are listed on the 303(d) List are summarized in Table 4.8-2 and shown on Figure 4.8-3.

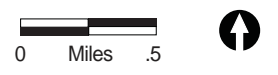
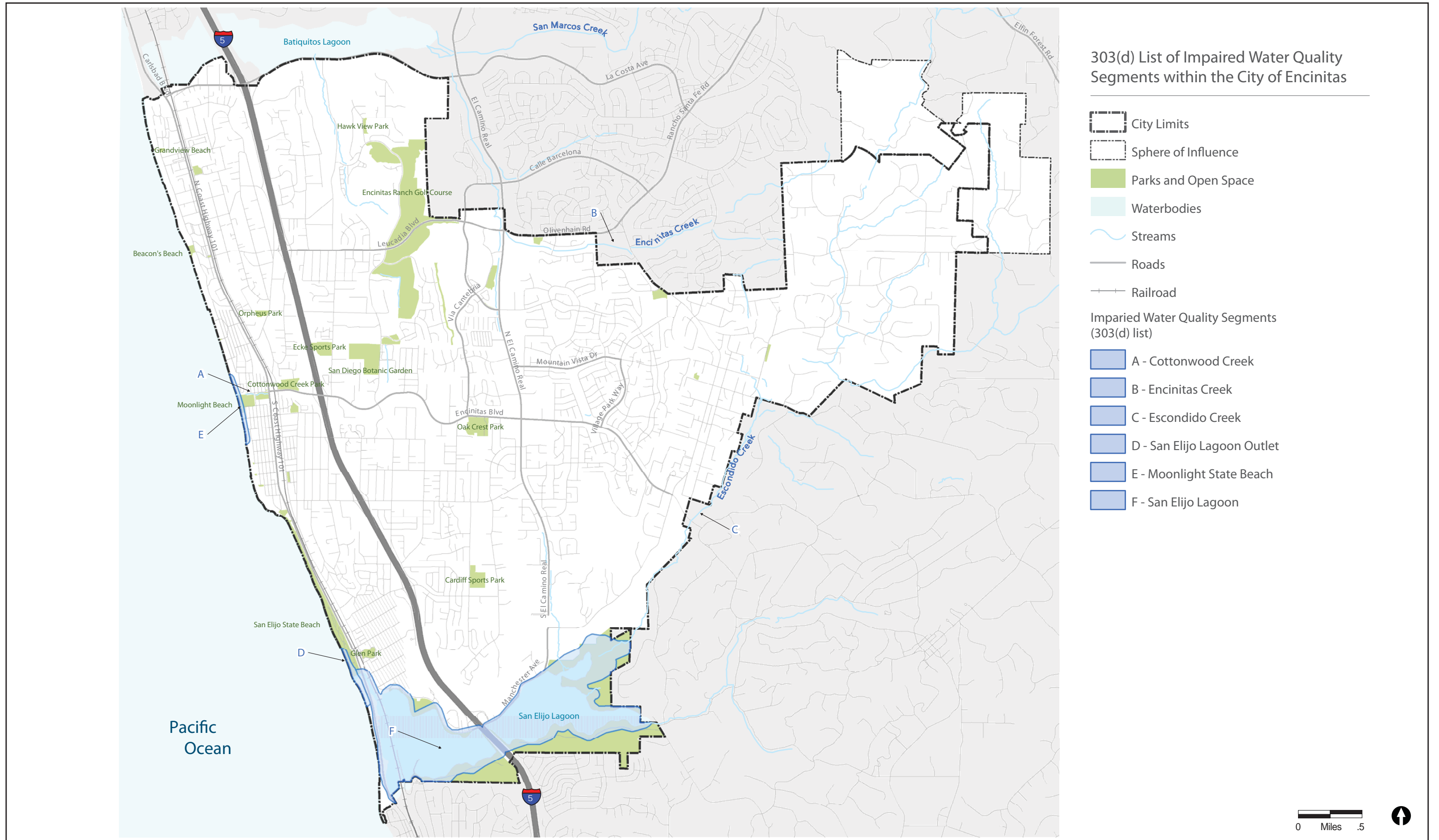


FIGURE 4.8-3
303(d) List of Impaired Water Quality Segments for the City of Encinitas

Table 4.8-2 303(d) List of Impaired Water Quality Segments for the City of Encinitas				
Name	Pollutant/Stressor	Potential Sources	Segment*	Estimated Size Affected
Cottonwood Creek	DDT, Phosphorous, Sediment Toxicity	Unknown	A	1.9 miles
Encinitas Creek	Phosphorous	Unknown	B	3 miles
Escondido Creek	DDT, Phosphorous, Sediment Toxicity, Manganese, Phosphate, Selenium, Sulfates, TDS	Unknown	C	26 miles
Pacific Ocean Shoreline, Escondido Creek HA (San Elijo Lagoon Outlet)	Indicator Bacteria	Nonpoint/ Point Source	D	0.44 mile
Pacific Ocean Shoreline, San Marcos HA (Moonlight State Beach)	Indicator Bacteria	Nonpoint/ Point Source	E	0.5 mile
San Elijo Lagoon	Eutrophic/Nutrients, Indicator Bacteria, Sedimentation/Siltation	Nonpoint/ Point Source	F	566 acres

SOURCE: City of Encinitas 2008 Jurisdictional Urban Runoff Management Program, Table 1-1.
 *See Figure 4.8-3.
 HA = Hydrological Area; TDS = total dissolved solid

On February 10, 2010, the San Diego Regional Water Quality Control Board adopted the TMDL for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region. This TMDL includes the mouth of Cottonwood Creek and Moonlight Beach in Encinitas. This TMDL set in motion a far-reaching regulatory statute that will shape management strategies in the future as the City and contributing jurisdictions develop plans around newly established compliance standards for bacterial indicators. Ongoing efforts are being made by the City to address the priority constituent and water body combinations as defined by the evolving 303(d) List.

Housing sites identified as discharging or with the potential to discharge to impaired water bodies are shown in Table 4.8-3.

Table 4.8-3 Housing Sites Identified as Discharging or with Potential to Discharge to Impaired Water Bodies	
Housing Site	303(d)-Listed Water Body
ALT-5	Yes
C-6	Yes
L-7	Yes
O-4	Yes
OE-7	Yes

c. Groundwater Quality

Within the Batiquitos Lagoon Valley Groundwater Basin, average total dissolved solid (TDS) content is about 1,280 mg/L with a range from about 788 to 2,362 mg/L. The groundwater was rated inferior for irrigation because of high chloride content and marginal for domestic use because of high sulfate and TDS concentrations (California Department of Water Resources 2004a as cited in City of Encinitas 2010). Within the San Elijo Valley Groundwater Basin, TDS concentration ranges from 1,170 to 5,090 milligrams per liter, with concentrations lowest in the eastern part of the basin and increasing toward the west (California Department of Water Resources 2004).

4.8.2 Regulatory Framework

4.8.2.1 Federal

a. Clean Water Act

The Federal Water Pollution Control Act, commonly called the CWA, establishes a broad national program for protecting water quality and regulating discharges of waste and pollutants into waters of the United States (Title 33, United States Code, Section 1251 et seq.). It provides authority for establishment of water quality standards and waste discharge limits for point source discharges (such as those from industrial facilities, sewage treatment plants, and storm water). The act also prohibits discharges of pollutants without a permit or other authorization and allows authorized states to implement provisions of the act in lieu of the U.S. Environmental Protection Agency (EPA).

Section 401 Water Quality Certification

Section 401 of the CWA requires that any applicant for a Federal permit to conduct any activity, including the construction or operation of a facility which may result in the discharge of any pollutant, must obtain certification from the State. This process is known as the Water Quality Certification.

Section 402 National Pollutant Discharge Elimination System General Construction Storm Water Permit

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate the discharge of pollutants from point sources and discharge pollutants into waters of the United States. In the State of California, the U.S. EPA has authorized the State Water Resources Control Board (SWRCB) permitting authority to implement the NPDES program. In general, the SWRCB issues two baseline general permits: one for industrial discharges and one for construction activities. Rather than setting numeric effluent limitations for storm water and urban runoff, CWA regulation calls for the implementation of best management practices (BMPs) to reduce or prevent the discharge of pollutants from these activities to the Maximum Extent Practicable for urban runoff and meeting the Best Available Technology Economically

Achievable and Best Conventional Pollutant Control Technology standards for construction storm water. Regulations and permits have been implemented at the Federal, State, and local level to form a comprehensive regulatory framework to serve and protect the quality of the nation's surface water resources.

Section 303(d) Total Maximum Daily Loads

Under Section 303(d) of the CWA, states and territories are required to develop a list of water quality limited segments for jurisdictional waters of the United States. The waters on the list are those that do not meet water quality standards, even after point source polluters have installed the minimum required levels of pollution control technology.

b. National Flood Insurance Act

The National Flood Insurance Act (1968) established the National Flood Insurance Program (NFIP), which is based on the minimal requirements for floodplain management and is designed to minimize flood damage within Special Flood Hazard Areas (SFHAs). FEMA administrates the NFIP. SFHAs are defined as areas that have a 1 percent chance of flooding within a given year. This is also referred to as the 100-year flood. FIRMs were developed to identify areas of flood hazards within a community.

4.8.2.2 State

a. Porter–Cologne Water Quality Control Act, as amended

The Porter–Cologne Water Quality Control Act was established to protect the water quality and beneficial uses of waters of the State (California Water Code, Division 7, Section 13000 et seq.) The law gives broad authority to the SWRCB and nine RWQCBs to establish water quality standards and discharge prohibitions, issue waste discharge requirements, and implement provisions of the Federal CWA. Under the Porter-Cologne Act, “waters of the State” include both surface and groundwater. Any entity or person proposing to discharge waste within any region of the State must file a Report of Waste Discharge with the appropriate regional board.

b. State Water Resources Control Board and Regional Water Resources Control Boards

In California, the SWRCB and local RWQCBs have assumed the responsibility of implementing the EPA's NPDES program and other programs under the CWA. In addition to its permitting programs, the SWRCB, through its nine RWQCBs, developed Regional Water Quality Control Plans (or Basin Plans) that designate beneficial uses and water quality objectives for California's surface waters and groundwater basins, as mandated by both the CWA and the State's Porter-Cologne Act. Water quality standards are thus established in these Basin Plans and provide the foundation for the regulatory programs implemented by the State.

The San Diego Basin encompasses approximately 3,900 square miles, including most of San Diego County and portions of southwestern Riverside and Orange counties. The Basin Plan provides all relevant information necessary to carry out Federal mandates for the anti-degradation policy, CWA Section 303(d) listing of impaired waters, and related TMDLs, and provides information relative to NPDES and WDR permit limits.

c. State Construction General Permit

For development projects that disturb greater than one acre of land area to comply with local NPDES regulations, a project applicant must meet the requirements of the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). In order to be covered under the State Construction General Permit, a Notice of Intent (NOI) must be filed with the SWQRCB. Compliance with the permit requires that a storm water pollution prevention plan (SWPPP) be prepared and implemented.

d. California Coastal Act

The California Coastal Commission (CCC) is responsible for protecting water quality in coastal environments as defined under Sections 30230 and 30231 of the California Coastal Act (Coastal Act). These water quality provisions provide a broad basis for protecting coastal waters, habitats, and biodiversity associated with new development and redevelopment projects. New development and redevelopment projects that are within the Coastal Zone are required to apply for a Coastal Development Permit (CDP) through the CCC prior to construction. As part of the CDP process, projects must provide drainage and erosion control plans.

4.8.2.3 Local

a. Municipal Stormwater Permit

The City of Encinitas and 20 other cities or jurisdictions in the region were issued a NPDES Municipal Stormwater (MS4) Permit on May 8, 2013, by the San Diego RWQCB (Order No. R9-2013-0001). The Municipal Stormwater Permit names the City and 20 other municipalities within the County of San Diego as Copermittees.

Under the Municipal Stormwater Permit, Copermittees must reduce, to the maximum extent possible, the pollutants discharged from their respective storm drain systems. The Municipal Stormwater Permit outlines the individual responsibilities of the Copermittees including, but not limited to, the implementation of: (1) management programs; (2) BMPs; and (3) monitoring programs. The San Diego RWQCB acknowledges that the retention of as much stormwater on-site is the most effective way to reduce pollutants in stormwater discharges to and from local watersheds. Pending regulations will allow Copermittees to focus on the ability to track the progress and improvements in the quality of receiving waters and discharges from storm drain and wastewater systems. Prior MS4 Permit standards were broader in scope and required a series of actions to be implemented;

however, they not provide the tools necessary to effectively and efficiently assess improvements in water quality after implementing their actions. As a result, the pending MS4 Permit will have stricter water quality regulations relative to on-site treatment for future projects.

Each Copermittee must implement the requirements of the Municipal Stormwater Permit across two broad levels of responsibility. Copermittees have responsibility for the water quality impacts of urbanization within: (1) their jurisdiction and (2) their watershed(s). The Municipal Stormwater Permit reflects these two broad levels of responsibility, in that it requires implementation of a comprehensive Jurisdictional Runoff Management Plan (JRMPs) at the jurisdictional level and a Water Quality Improvement Plan (WQIP) at the watershed level.

b. City of Encinitas Jurisdictional Runoff Management Program

In accordance with the Municipal Stormwater Permit, the City produced a Jurisdictional Runoff Management Program (JRMP). The JRMP document outlines the City's approach to improving water quality in its creeks, lagoons, and the ocean through reducing discharges of pollutants to the municipal separate storm sewer system (MS4). As the owner and operator of a MS4, the City is subject to an NPDES Municipal Permit issued by the RWQCB. The permit requires the City to reduce pollutants in discharges from its storm drain system to water bodies.

The JRMP document serves as the City's foundational program management tool, capturing the developed process, procedure, and implementation strategies for various program elements. The purpose of the JRMP is to implement an integrated approach to reducing the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) standard, and to protect and improve the quality of water bodies in Encinitas. The JRMP document describes operational programs and activities developed to meet the requirements of Municipal Stormwater Permit.

c. Encinitas Stormwater Manual

In 2011, the Encinitas Stormwater Manual was developed based on the countywide model Standard Urban Stormwater Mitigation Plan (SUSMP) for the County of San Diego approved by the RWQCB in 2009. The Encinitas Stormwater Manual includes requirements for the control measures to reduce storm water pollutants to the maximum extent practicable for new development and redevelopment. It also addresses water surface elevation profiles, such as those affected by the Leucadia special flood area. Pursuant to the Encinitas Stormwater Manual, future development and redevelopment projects citywide are required to implement measures including source control, treatment control and hydromodification management as warranted.

The Encinitas Stormwater Manual establishes new development and significant redevelopment standards related to runoff quality and quantity in the City. The manual requires permanent BMPs, designed and installed to treat and control runoff, to remain functioning throughout the "use" phase of a project site. The Encinitas Stormwater Manual

policies are designed to ensure, to the maximum extent practicable, that development: (1) does not increase pollutant loads from a project site and (2) considers urban runoff flow rates and velocities. The manual identifies appropriate BMPs for certain designated project types to achieve this goal. Under the Encinitas Stormwater Manual, the City will approve each project's permanent BMPs as part of the development plan approval process for discretionary projects and prior to issuing permits for ministerial projects.

d. Construction Phase BMPs

Construction and grading activities have the potential to impact neighboring water bodies due to the presence of disturbed soils and building materials. It is important that construction sites take appropriate measures to prevent potential pollutants from entering the storm drain system. Therefore, an erosion control plan is required for all projects for which a grading or improvement plan is required. The Public Works Engineering Division uses a standard checklist to review the Erosion Control Plan submittals for consistency with the BMP requirements in the Storm Water Manual. Proposed BMPs are required to be appropriate to construction phases, and the City may require phased erosion control plans, usually for larger projects. When phased plans are required, separate sets of erosion control sheets are required for mass grading and precise grading. The erosion control plan is included as part of the overall grading or improvement plan submittal to Engineering, and a grading or improvement permit is not issued until the erosion control plan is approved. Construction sites within the City's jurisdiction are required to implement and maintain general site management BMPs and erosion and sediment control BMPs to reduce, retain, and manage pollutant discharges to the maximum extent practicable. The City emphasizes erosion control BMPs as the primary approach to reducing pollution in discharges from construction sites. The City requires that all implemented BMPs must be properly maintained until they are allowed to be removed.

e. Multi-Jurisdictional Hazard Mitigation Plan

In 2010, San Diego County and 18 local jurisdictions, including the City, adopted the Multi-Jurisdictional Hazard Mitigation Plan (MHMP). The MHMP is a countywide plan that identifies risks and ways to minimize damage by natural and manmade disasters. The MHMP is a comprehensive document that serves many purposes, including creating a decision tool for management, promoting compliance with State and Federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination. The MHMP includes potential mitigation actions related to flooding hazards.

f. General Plan/Local Coastal Program

The General Plan addresses multiple water quality and watershed protection principles. Included within the General Plan are a number of proactive policies that pertain to water pollution and land use decisions. Many of the policies directly specify preservation and acquisition of riparian corridors, wetlands and buffer zones providing important water quality benefits. The policies place limits on disturbances to natural bodies of water and

drainage systems caused by developments and strive to avoid developing in areas susceptible to erosion and sediment loss. The City implements the policies in the General Plan using a variety of resources including: the Jurisdictional Runoff Management Program (JRMP), Municipal Code, the Encinitas Stormwater Manual, and other various land use plans and permits.

Table 4.8-4 provides the specific policies included in the General Plan (1995) and Draft Cardiff-by-the-Sea Specific Plan (2008) for the protection of groundwater, flooding, and water quality.

Table 4.8-4 General Plan Policies Related to Hydrology and Water Quality	
Policy	Description
City of Encinitas General Plan Land Use Element	
Goal 2	The City should manage slow, orderly growth in accordance with a long- term plan which protects and enhances community values.
2.8	Development shall not be permitted where it will result in significant degradation of ground, surface, or ocean water quality, or where it will result in significant increased risk of sewage overflows, spills, or similar accidents. (Coastal Act/30231)
Goal 8	Environmentally and topographically sensitive and constrained areas within the City shall be preserved to the greatest extent possible to minimize the risks associated with development in these areas. (Coastal Act/30240/30253) Goal 8 amended 5111195 (Reso. 95-32)
8.2	Development within coastal and flood plain areas identified in the Land Use and Resource Management Elements must be limited, designed to minimize hazards associated with development in these areas, and to preserve area resources. Within the floodway, channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to necessary water supply projects, flood control projects where no other method for protecting existing public or private structures is feasible and where such protection is necessary for public safety or to protect existing development, and other development where the primary function is the improvement of fish and wildlife habitats. No development shall occur in the 100- year Floodplain that is not consistent and compatible with the associated flood hazard. Only uses which are safe and compatible with periodic flooding and inundation shall be considered, such as stables, plant nurseries, a minimum intrusion of open parking, some forms of agriculture, and open space preservation, as appropriate under zoning, and subject to applicable environmental review and consistency with other policies of this Plan. No grading or fill activity other than the minimum necessary to accommodate those uses found safe and compatible shall be allowed. Such grading shall not significantly redirect or impede flood flows or require floodway modifications.
City of Encinitas Local Coastal Program (from Land Use Element)	
Goal 2	The City should manage slow, orderly growth in accordance with a long- term plan which protects and enhances community values.
2.3	Growth will be managed in a manner that does not exceed the ability of the City, special districts and utilities to provide a desirable level of facilities and services. (Coastal Act/ 30250)
2.8	Development shall not be permitted where it will result in significant degradation of ground, surface, or ocean water quality, or where it will result in significant increased risk of sewage overflows, spills, or similar accidents.

Table 4.8-4 General Plan Policies Related to Hydrology and Water Quality	
Policy	Description
	Coastal Act/ 30231)
2.10	Development shall not be allowed prematurely, in that access, utilities, and services shall be available prior to allowing the development. Coastal Act/ 30252)
2.11	Incremental development of large properties shall not be permitted without a master plan and environmental analysis of the full potential development. (Coastal Act/30250)
Goal 8	Environmentally and topographically sensitive and constrained areas within the City shall be preserved to the greatest extent possible to minimize the risks associated with development in these areas. (Coastal Act/ 30240/ 30253) Goal 8 amended 5111195 (Reso. 95- 32)
8.2	Development within coastal and flood plain areas identified in the Land Use and Resource Management Elements must be limited, designed to minimize hazards associated with development in these areas, and to preserve area resources. Within the floodway, channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to necessary water supply projects, flood control projects where no other method for protecting existing public or private structures is feasible and where such protection is necessary for public safety or to protect existing development, and other development where the primary function is the improvement of fish and wildlife habitats. No development shall occur in the 100- year Floodplain that is not consistent and compatible with the associated flood hazard. Only uses which are safe and compatible with periodic flooding and inundation shall be considered, such as stables, plant nurseries, a minimum intrusion of open parking, some forms of agriculture, and open space preservation, as appropriate under zoning, and subject to applicable environmental review and consistency with other policies of this Plan. No grading or fill activity other than the minimum necessary to accommodate those uses found safe and compatible shall be allowed. Such grading shall not significantly redirect or impede flood flows or require floodway modifications.
8.10	Ecological Resource/ Open Space/ Parks is an Amended 1130191 category intended to be applied to both active and passive parklands; lagoons; wetland habitat areas and their adjacent buffers; and other areas of significant environmental quality or public resource value. Lands in the Ecological Resource/ Open Space/ Parks category, other than public parks, and similar areas for active recreation, will be limited to uses and activities related to habitat enhancement; educational and scientific nature study; passive recreation which will have no significant adverse impact on habitat values; and, aquaculture having no significant adverse effect or negative visual impact on natural processes or scenic quality. All areas possessing wetland resource values, including coastal salt marsh and freshwater marsh habitat types, shall be protected by appropriate buffers. Buffer zones sufficient to protect wetlands shall generally be minimum 100 feet in width, and buffer zones to protect riparian areas shall generally be minimum 50 feet in width, unless a use or development proposal demonstrates that a smaller buffer will protect the resources of the wetland/ riparian area based on site- specific information, including but not limited to, the type and size of the development and/ or proposed mitigation (such as planting of vegetation) which will also achieve the purposes of the buffer. The buffer should be measured landward from the wetland or riparian area. Maps and supplemental information submitted as part of the application should be used to specifically determine these boundaries. The

Table 4.8-4 General Plan Policies Related to Hydrology and Water Quality	
Policy	Description
	California Department of Fish and Game and the U. S. Fish and Wildlife Service shall be consulted in such buffer determinations and their comments shall be accorded great weight.
City of Encinitas General Plan Public Safety Element	
Goal 1	Public health and safety will be considered in future Land Use Planning (Coastal Act/ 30253)
1.1	Development and grading or filling in drainage courses, floodways and floodplains shall be prohibited except as provided by Land Use Element Policy 8. 2. An exception may be made upon the finding that strict application of this policy would preclude any reasonable use of property (one dwelling unit per legal parcel). Exceptions may also be made for development of circulation element roads; necessary water supply projects; flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development; developments where the primary function is the improvement of fish and wildlife habitat; and other vital public facilities, but only to the extent that no other feasible alternatives exist, and minimum disruption to the natural floodplain, floodway or drainage course is made. When flood/drainage improvements are warranted, require developers to mitigate flood hazards in those areas identified as being subject to periodic flooding prior to actual development.
Goal 2	The City of Encinitas will make an effort to minimize potential hazards to public health, safety, and welfare and to prevent the loss of life and damage to health and property resulting from both natural and [human-caused] phenomena.
2.6	Except as provided in Public Safety Policy 1.1, no development or filling shall be permitted within any 100- year floodplain.
City of Encinitas General Plan Resource Management Element	
Goal 1	The City will conserve, protect and enhance the water resources in the Planning Area. (Coastal Act/30231)
1.1	Require new development to utilize measures designed to conserve water in their construction.
1.6	Phase out the use of water softeners which utilize salt in the water-softening process to prevent continued degradation of the water. (Coastal Act/30231)
Goal 2	The City shall make sure every effort to improve ocean water quality. (Coastal Act/30231)
2.1	In that ocean water quality conditions are of utmost importance, the City shall aggressively pursue the elimination of all forms of potential unacceptable pollution that threatens marine of human health.
2.2	In that the San Eljio ocean wastewater outfall lies within the jurisdiction of the City and the Encina outfall lies north of the City, the City shall encourage the highest feasible level of treatment of said wastewater prior to entering the outfalls and continually encourage the reduction of volume of wastewater to said outfalls by this City and other jurisdictions.
2.3	To minimize harmful pollutants from entering the ocean environment from lagoons, streams, storm drains and other waterways containing potential contaminants, the City shall mandate the reduction or elimination of contaminants entering all such waterways; pursue measures to monitor the quality of such contaminated waterways, and pursue prosecution of intentional and grossly negligent polluters of such waterways.
SOURCE: City of Encinitas 1989, amended 2014.	

g. Municipal Code

Stormwater Management and Discharge Control Ordinance

Chapter 20.08 of the Municipal Code makes up the Stormwater Management and Discharge Control Ordinance. The purpose of this ordinance is to protect the health, safety and welfare of the public by regulating all discharges into the storm water conveyance system and the Waters of the State in order to preserve and enhance water quality.

Chapter 20.08 establishes the City's legal authority to enforce a wide spectrum of storm water and water quality related requirements.

Grading, Erosion and Sediment Control Ordinance

Chapter 23.24 of the Municipal Code makes up the Grading, Erosion and Sediment Control Ordinance. This ordinance establishes the minimum requirements for grading excavation and filling of land. The code provides the basis for City requirements regarding submittal of applicable project plans and schedules (including a grading plan, an interim and final erosion and sediment control plan, a landscape and irrigation plan and a work schedule); timing of grading operations; wet season work; erosion control systems; erosion control system maintenance; dry season work; and slope planting.

Floodplain Management Regulations

Chapter 23.40 of the Municipal Code contains the City's regulations pertaining to development within floodplains or special flood hazard areas. It is the purpose of this chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land within flood prone, mudslide (i.e., mudflow) or flood-related erosion areas.

Section 23.40.051 includes standards for construction in areas of special flood hazard. These standards pertain to anchoring of structures, use of flood resistant materials and methods, elevation, and storage of materials and equipment.

4.8.3 Significance Determination Thresholds

Consistent with Appendix G of the CEQA Guidelines, impacts related to hydrology and water quality would be significant if the HEU project would:

1. Violate any water quality standards or waste discharge requirements;
2. Substantially deplete ground water supplies or interfere substantially with ground water recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water 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);

3. 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 a substantial erosion or siltation on- or off-site;
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
5. 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;
6. Otherwise substantially degrade water quality;
7. Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;
8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
9. 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
10. Inundation by seiche, tsunami, or mudflow.

Due to overlap in the threshold issues and for clarity of analysis, the hydrology/water quality thresholds evaluated in Section 4.8.4 are grouped into the four issue headings of water quality, ground water, drainage pattern/runoff, and flooding/inundation.

4.8.4 Methodology

4.8.4.1 Sources

A review of secondary sources was conducted to determine potential hydrologic resources within the housing sites. The literature review included: (1) Final Existing Conditions Report (2010); (2) Flood Insurance Rate Maps (FEMA 2014); (3) California's Groundwater Bulletin 118 – San Elijo Valley Groundwater Basin (DWR 2004); Evaluation of the San Dieguito, San Elijo and San Pasqual Hydrologic Subareas for Reclaimed Water Use (Izbicki 1983); (4) the Impaired Water Bodies list (SWRCB 2015); (5) special flood hazard mapping provided by the City of Encinitas; and (6) Federal, State, and local regulations. No site-specific surveys were conducted; instead, analysis relied on the use of existing information. The evaluation of the potential for the HEU to cause a substantial adverse change in hydrology or water quality was based on Appendix G of the CEQA Guidelines. The evaluation of the potential for implementation of the GPU to cause a substantial adverse change in water resources and water quality was based on Appendix G of the CEQA Guidelines.

4.8.4.2 Future Project Implementation

As noted previously in this chapter, for housing sites located within or adjacent to an aquatic resource or occurring within a 100-year floodplain or special flood hazard area, the City of Encinitas would review project applications for compatibility, applicable requirements for hydrology and water quality, and require specific conditions as part of the approval process. Adoption of the HEU ~~floating~~new zone would not alter the City's adopted discretionary review process.

Redevelopment of any of the housing sites may occur with or without implementation of the HEU. The ~~floating~~new zone gives a property owner a choice whether to opt into the housing plan, or forgo doing so and retain their existing zoning rights. Depending on the category of the existing zoning, different levels of development or reconstruction activities are permitted on the housing sites.

The impact analysis below describes the type and magnitude of environmental impacts of future development on the housing sites and how such impacts would affect the existing environment. Future development has the potential to impact hydrology and water quality. The analysis in the following section identifies the significance of impacts and a mitigation framework for future projects. Subsequent "by right" development within the new ~~floating~~new zone district created through the HEU would not be subject to further CEQA review to analyze project-level impacts on hydrology and water quality,, unless otherwise noted. Compliance with development standards required for "by right" development as well as the mitigation framework identified in this PEIR would serve to minimize the potential for significant impacts associated with implementation of the HEU.

4.8.5 Issues 1 and 6: Water Quality

Impacts related to water quality would be significant if the project would:

- *Violate any water quality standards or waste discharge requirements or*
- *Otherwise substantially degrade water quality.*

4.8.5.1 Impacts

a. Housing Sites

The HEU does not propose the construction of new housing or other development; it provides capacity for future development consistent with State Housing Element Law. Future development of the housing sites would entail grading and other earth-moving activities during construction. Exposed soils could be eroded and deposited into the surrounding water bodies, increasing the amount of sediment and turbidity in these water bodies. Additionally, chemicals or fuels could accidentally spill and be released into receiving waters, which could adversely alter water chemistry.

Buildout of the housing sites could result in the generation of runoff pollutants such as sediments, oils and grease, heavy metals, pesticides, fertilizers, trash and debris, oxygen demanding substances, and bacteria and viruses, which are typical for residential and mixed uses. In addition, new development would result in greater vehicular use of roadways, which could potentially increase contaminants that would be carried in runoff and discharged into receiving waters. Therefore, nonpoint source pollutants would be the primary contributors to potential water quality degradation as a result of housing site buildout. Nonpoint source pollutants could be washed by rainwater from rooftops, landscaped areas, parking areas, and other impervious surfaces into the on-site drainage system.

All future development, including that on housing sites located in proximity to impaired water bodies in the project area (ALT-5, C-6, L-7, O-4, OE-7), would be required to comply with the City's Municipal Code (e.g., Chapter 20.08 and Chapter 23.24), all pertinent requirements of the City's JRMP, Encinitas Stormwater Manual, and Stormwater Standards Manual, NPDES General Construction Permit, as well as all regulations related to water quality. The General Construction Permit requires preparation and implementation of a SWPPP, which must include erosion and sediment control BMPs that would meet or exceed measures required by the NPDES General Permit, as well as BMPs that control hydrocarbons, trash and debris, and other potential construction-related pollutants. Therefore, adherence to the Municipal Code, the JRMP, Encinitas Stormwater Manual, and Stormwater Standards Manual, General Construction Permit, and General Plan policies (1.6, 2.1, 2.2, 2.3, 2.8, and 2.11) would ensure that impacts related to water quality would be less than significant.

b. Housing Strategy Summaries

Development of all housing sites within housing strategies 1 through 3 has the potential to increase the level of runoff and pollutants discharged to water bodies in the project area as described above. There would be no inherent differences in impacts among the housing strategies.

4.8.5.2 Significance of Impacts

While development of the housing sites has the potential to increase the amount of pollutants discharged into surface waters, all development would be subject to Federal, State, and local regulations aimed at controlling water quality impacts. Thus, substantial adverse water quality impacts would be avoided and impacts resulting from buildout of the HEU would be less than significant.

4.8.6 Issue 2: Groundwater

Impacts related to groundwater would be significant if the project would:

- *Substantially deplete ground water supplies or interfere substantially with ground water recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water 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).*

4.8.6.1 Impacts

a. Housing Sites

The HEU does not propose the construction of new housing or other development; it provides capacity for future development consistent with State Housing Element Law. The majority of the housing sites are covered by impervious surfaces in the existing condition. However, several sites (or portions thereof) are presently undeveloped (ALT-4, ALT-5, C-6, L-4, L-7, NE-3, O-2, O-4, O-5, O-6, OE-1, OE-2, and OE-7). Future development of vacant sites would result in an increase in impervious surfaces at those locations. Buildout of the HEU would allow for additional development, thereby decreasing the amount of infiltration of water into the groundwater basins with an associated reduction of ground water recharge. However, future development, including redevelopment, would be required to incorporate low impact development (LID) features that would minimize impervious area as much as feasible and promote water infiltration. In addition, the required installation of treatment control and hydromodification management facilities, would promote retention and infiltration of storm water on the project site. Sites subject to redevelopment would be required to adhere to new, more stringent water quality standards, thereby, resulting in reduced runoff, greater infiltration and improved water quality relative to the existing condition.

Potable water for future development would be obtained from either the San Dieguito Water District (serving Leucadia, Old Encinitas, Cardiff and portions of New Encinitas) or Olivenhain Municipal Water District (serving other areas of the City). According to the Urban Water Management Plans for each District (2010), neither uses groundwater for part of their potable supplies. Therefore, future development associated with buildout of the housing sites would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

b. Housing Strategy Summaries

Development of all housing sites within housing strategies 1 through 3 has the potential to increase impermeable surfaces and decrease groundwater discharge. There would be no inherent differences in impacts among the housing strategies.

4.8.6.2 Significance of Impacts

While future development of the housing sites has the potential to increase impervious surfaces and decrease groundwater infiltration, requirements for LID and BMPs would reduce impacts. Therefore, impacts on groundwater levels and groundwater recharge resulting from buildout of the housing sites would be less than significant.

4.8.7 Issues 3, 4, and 5: Drainage Pattern/Runoff

Impacts related to drainage and runoff would be significant if the project would:

- *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 a substantial erosion or siltation on- or off-site;*
- *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or*
- *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.*

4.8.7.1 Impacts

a. Housing Sites

The HEU does not propose the construction of new housing or other development; it provides capacity for future development consistent with State Housing Element Law. Buildout of the housing sites would not result in substantial changes to the overall drainage patterns within the City. Storm water runoff from housing sites would be collected within the existing storm water conveyance system and runoff would ultimately be discharged into the Pacific Ocean. The overall drainage area as well as the drainage characteristics/patterns in the post-buildout condition would be similar to existing conditions, although an increase in paved areas on previously undeveloped sites would result in an increase in impervious surfaces, thereby potentially increasing storm water runoff to the drainage systems. Runoff associated with new development is required to be controlled per the City's Grading, Erosion and Sediment Control Ordinance, so that it would not result in significant impacts to upstream or downstream properties. Any proposed storm drain system improvements for future development would also be required to be designed for the 100-year storm event so it would not result in flood hazards on surrounding lands, erosion or siltation, or exceed the capacity of the storm drain system. Since all future development would be required to adhere to General Plan policies and the City's Municipal Code, with existing regulations, impacts associated with buildout of the HEU would be less than significant.

b. Housing Strategy Summaries

Development of all housing sites within housing strategies 1 through 3 would be consistent with the drainage patterns in the City and handled through the storm drain system. There would be no inherent differences in impacts among the housing strategies.

4.8.7.2 Significance of Impacts

Future development would conform to applicable Federal, State, and City regulatory standards to effectively avoid and/or address potentially significant impacts related to hydrology; therefore, drainage and runoff impacts would be less than significant.

4.8.8 Issues 7, 8, 9, and 10: Flooding/Inundation

Impacts related to flooding and inundation would be significant if the project would:

- *Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;*
- *Place within a 100-year flood hazard area structures which would impede or redirect flood flows;*
- *Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or*
- *Result in inundation by seiche, tsunami, or mudflow.*

4.8.8.1 Impacts

a. Housing Sites

As noted above, portions of the City are within a FEMA 100-year flood zone, but none of the housing sites are within the FEMA 100-year flood zone. However, housing sites ALT-2, ALT-6, ALT-7, L-1, L-2, and OE-2 have been identified as occur within special 10-year and 100-year flood problem areas identified by the City. Although buildout of these housing sites has the potential to result in flooding issues related to mapped flood hazard areas, the City has implemented a policy for development in the flood problem areas that serves to reduce the flooding hazard of new development on surrounding properties. Future improvement projects must consider these areas during the design phase to ensure that the proposed development will provide an onsite floodwater storage capacity equal to the runoff displaced by the improvements in a 10-year storm event.

With regard to tsunami risk, several identified housing sites are near the Pacific Ocean, but not within a tsunami hazard zone (California Emergency Management Agency 2011). Furthermore, existing regulations, emergency management plans, and protective structures would enhance the structural integrity of coastal development, and Federal

emergency notification plans would assist people in affected areas in successful evacuation and avoidance of tsunamis. Thus, buildout of the housing sites would not result in impacts associated with inundation related to tsunamis.

As noted in 4.8.1.1, seiche and mudflow risk is low in the project area. The San Elijo Lagoon is a large contained body of water in the project area, but seiche would be unlikely to affect the southernmost housing sites given the distance between the lagoon and the sites. Although there are steep slopes throughout the project area, housing sites would be subject to constraints associated with unstable soils, similar to the remainder of the City. Grading activities can remove or lessen the effect of this condition. Thus, buildout of the housing sites would not result in impacts related to or to seiches or mudflows.

The primary concern related to inundation hazards is the three housing sites (C-6, O-2, and O-4), which are within a dam inundation area. These sites could be impacted by dam or levee failure (Impact HYD-1). To ensure public safety, the City requires that flood hazards be considered before development occurs and there are several policies in the General Plan (see Table 4.8-4) which address flood hazards. However, potential impacts associated with dam inundation are not specifically addressed through the current regulatory framework; therefore, impacts associated with dam inundation would be potentially significant for housing sites C-6, O-2 and O-4.

Overall, buildout of the housing sites would not result in flooding issues related to tsunamis, seiche, or mudflow; however, buildout would result in potentially significant impacts related to dam inundation specific to housing sites C-6, O-2, and O-4 and potentially significant impacts related to flood hazard areas at housing sites ALT-2, ALT-6, ALT-7, L-1, L-2, and OE-2.

b. Housing Strategy Summaries

Housing Strategy 1 – Ready Made (RM)

Development within housing strategy 1 (RM) has potential for impacts related to:

- Flood hazard areas on L-1 and L-2; and
- Dam failure on O-2.

Housing Strategy 2 – Build Your Own (BYO)

Development within housing strategy 2 (BYO) has potential to impact:

- Flood hazard areas on L-1 and OE-2; and
- Dam failure on O-2 and O-4.

Housing Strategy 3 – Modified Mixed-Use Places (MMUP)

Development within housing strategy 3 (MMUP) has potential to impact:

- Flood hazard areas on ALT-2, ALT-6, and ALT-7; and
- Dam failure on C-6, O-2 and O-4.

4.8.8.2 Significance of Impacts

Buildout of the housing sites would result in less than significant impacts relative to flooding associated with seiche, tsunami and mudflow.

Impacts associated with buildout of housing sites C-6, O-2, and O-4 would be potentially significant relative to dam inundation (Impact HYD-1). In addition, impacts associated with buildout of housing sites ALT-2, ALT-6, ALT-7, L-1, L-2, and OE-2 would be potentially significant relative to flooding (Impact HYD-1)

4.8.8.3 Mitigation Framework

HYD-1: Applications for future development of housing sites consistent with the ~~HEU floating~~ new zone program, wherein the City has determined a potential for flooding impacts, shall be reviewed by the City for compliance with applicable components of the City's Floodplain Management Regulations, specifically Section 23.40.051, which includes standards for construction in areas of special flood hazard. All future development on housing sites consistent with the ~~HEU floating~~ new zone program, located within mapped flood problem areas or dam inundation areas, shall be designed to reduce potential flooding hazards subject to the satisfaction of the City Engineer.

4.8.8.4 Significance After Mitigation

Impacts relative to flooding and dam inundation would be reduced to a level less than significant with mitigation framework HYD-1.