



In support of the
Program Environmental Impact Report (PEIR)
for the University Community Plan Update (CPU)

Hydrology and Water Quality Report Existing Conditions Analysis



June
2020

Final Draft

Prepared for:



Prepared by:



In association with:

DUDEK

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for the University Community Plan Update

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Prepared for

City of San Diego
Planning Department

Prepared by

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- Attachment A. FEMA Flood Insurance Rate Maps (FIRMs)
- Attachment B. Excerpts from City of San Diego Municipal Code
- Attachment C. Excerpts from City of San Diego General Plan

Table of Acronyms

AGR	Agricultural Water Supply
BFE	Base Flood Elevation
BIOL	Biological Habitats of Special Significance
BMP	Best Management Practice
CDFW	California Department of Fish and Wildlife
CE	Conservation Element
CEQA	California Environmental Quality Act
CLOMR	Conditional Letter of Map Revision
COLD	Cold Freshwater Habitat
COMM	Commercial and Sport Fishing
CPU	Community Plan Update
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
IDDE	Illicit Discharge Detection and Elimination
IGP	Industrial General Permit
IND	Industrial Service Supply
JURMP	Jurisdictional Urban Runoff Management Program
LID	Low Impact Development
LOMR	Letter of Map Revision
MAR	Marine/Coastal Habitat
MCAS	Marine Corps Air Station
MIGR	Migration of Aquatic Organisms
MUN	Municipal and Domestic Supply
NFIP	National Flood Insurance Program
NOI	Notice of Intent
PCB	Polychlorinated Biphenyl
PDP	Priority Development Project
PEIR	Program Environmental Impact Report
PF	Public Facilities
RARE	Rare, Threatened, and Endangered Species
RWQB	Regional Water Quality Board
SFHA	Special Flood Hazard Area
SHELL	Shellfish Harvesting
SPWN	Spawning, Reproduction, and/or Early Development
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
UCPA	University Community Planning Area
UCPU	University Community Plan Update
UCSD	University of California San Diego
USFWS	U.S. Fish and Wildlife Service
WDR	Wastewater Discharge Requirements
WPCP	Water Pollution Control Plan
WQIP	Water Quality Improvement Plan

1 INTRODUCTION

This report describes the hydrology, existing storm drainage, and storm water quality conditions in the University Community Planning Area (UCPA) in the City of San Diego. The planning area, which includes approximately 8,675 acres (13.5 square miles), is bounded on the north by Los Peñasquitos Lagoon and the Sorrento Valley, on the south by State Route 52, on the east by Marine Corps Air Station (MCAS) Miramar, and on the west by the Pacific Ocean and the community of La Jolla. A vicinity map is provided in Figure 1.

This hydrology and water quality report supports a Programmatic Environmental Impact Report (PEIR) for the University Community Plan Update (UCPU). The UCPU will update land-use policies to create a plan for future development and a long-term vision for the community.

Stormwater drainage, including local surface runoff and floodplains, is described in Section 2 of this report. Water quality, including the quality of local surface runoff and its receiving waters, is discussed in Section 3. Federal, State, and local regulations related to stormwater drainage, floodplain management, and stormwater quality are outlined in Section 4. Section 5 outlines the development constraints for the City-owned properties within the UCPA.

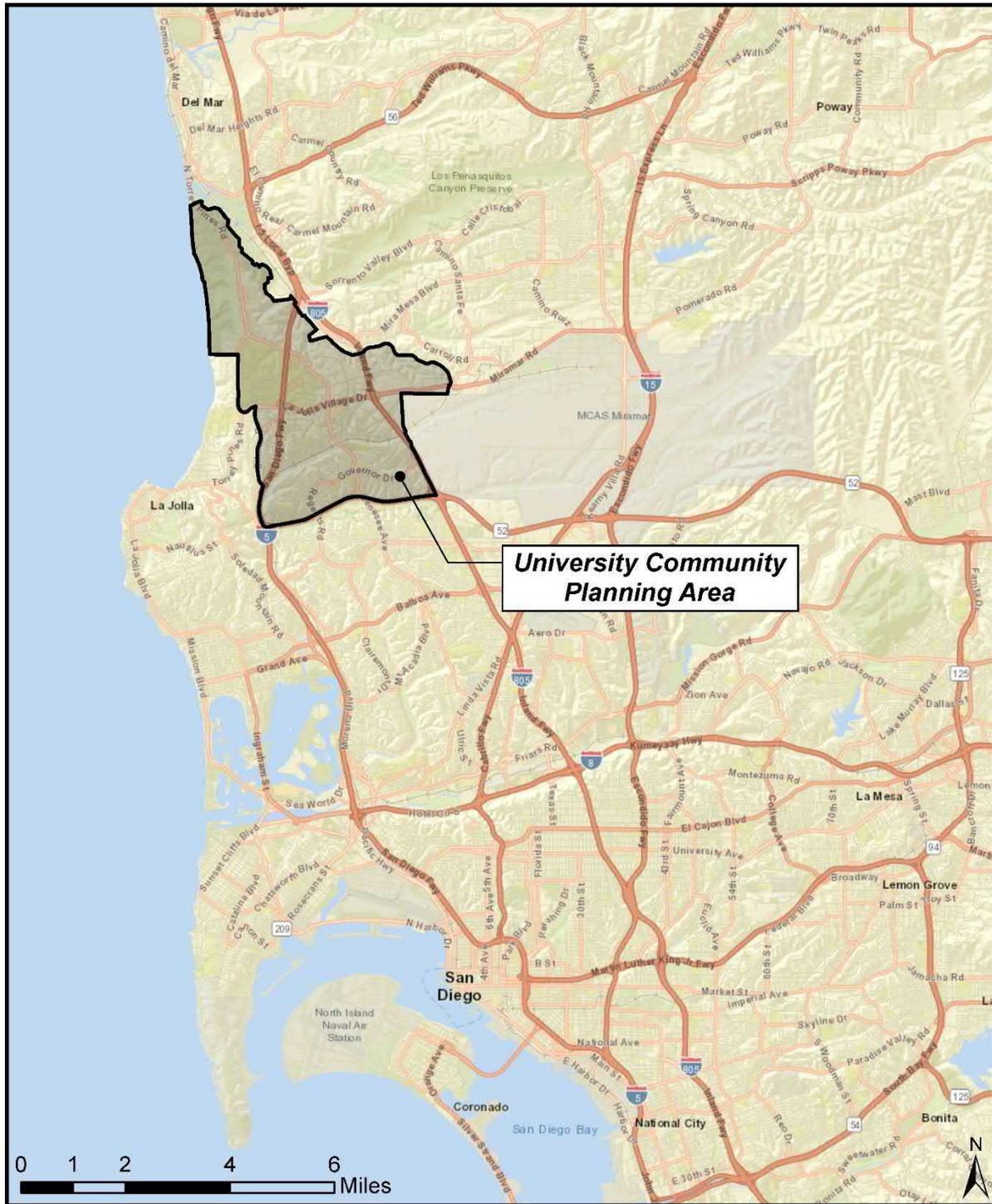


Figure 1 - Vicinity Map



1.1 Hydrologic Setting

The UCPA contains parts of three San Diego County Hydrologic Subareas: Scripps (Subarea #906.30), Miramar (Subarea #906.40), and Miramar Reservoir (Subarea #906.10), which are part of the larger Los Peñasquitos Hydrologic Unit (#906). Hydrologic subareas divide hydrologic units into smaller areas of relatively similar topography and land use. A map of the Los Peñasquitos Hydrologic Unit and subareas is shown in Figure 2.

Los Peñasquitos Creek Hydrologic Unit

The Los Peñasquitos Creek Hydrologic Unit is approximately 162 square miles in size and contains a large portion of the cities of San Diego, Poway, and a small portion of San Diego County unincorporated area. The drainage area consists of multiple large canyons, including Carmel Canyon, Los Peñasquitos Canyon, Carroll Canyon, Rose Canyon, San Clemente Canyon, and Tecolote Canyon. Carmel Creek and Carroll Canyon Creek merge with Los Peñasquitos Creek in Soledad Canyon downstream of I-5 and ultimately terminate in the Los Peñasquitos Lagoon. Rose Canyon and San Clemente Canyon merge near I-5 and ultimately feed into Mission Bay. Tecolote Canyon feeds directly into Mission Bay.

University Community Planning Area

The only major canyon within the community is Rose Canyon, which flows from east to west within the community before turning south towards Mission Bay as it approaches I-5. Carroll Canyon, which becomes Soledad Canyon/Sorrento Valley bounds the community to the north and San Clemente Canyon bounds the community to the south. Figure 3 shows the drainage patterns within the community, including major tributaries and storm drains. Adjacent communities are shown in Figure 4 along with USGS 40-foot contours.



Figure 2 - Hydrologic Unit Map





Figure 3 - River, Creek, & Storm Drain Map





Figure 4 - University Community Planning Area, Adjacent Communities, and USGS 40-Foot Contours



2 EXISTING DRAINAGE CONDITIONS

2.1 Local Surface Runoff Patterns

The UCPA is mostly developed with minimal opportunities for infiltration except for some undeveloped areas in the eastern portion of the UCPA near the Miramar National Cemetery, open space within U.C. San Diego grounds, and the Torrey Pines Golf Course in the northernmost section of the UCPA. In general, the northern section of the UCPA has more infiltration potential. In the southern section between I-5 and San Clemente Canyon, the development consists mostly of single-family residential with some scattered larger commercial buildings. The development north of I-5 consists of larger commercial/industrial and university buildings.

Storm water runoff originating in the UCPA is conveyed in a variety of directions through streets, gutters, cross gutters, gullies, open channels, and storm drain systems. The majority of the storm drain network (Figure 3) can be found in the southern portion of the UCPA, where residential drainage structures are conveyed to larger storm mains which contribute storm water to Rose and San Clemente Canyons.

The Torrey Pines Golf Course area west of Torrey Pines Park Road drains west towards the Pacific Ocean so it does not add any flow to the major drainage channels. East of Torrey Pines Park Road and north of Voigt Drive and Eastgate Mall drains towards Soledad Canyon/Sorrento Valley and empties into Los Peñasquitos Lagoon. South of Voigt Drive and Eastgate Mall drains towards Rose Canyon, and approximately half of the residential area between the Rose and San Clemente canyons drains into each canyon, respectively.

The only major drainage input into the UCPA is Rose Canyon Creek since Carroll Canyon Creek/Soledad Canyon and San Clemente Canyon Creek are outside the UCPA boundaries. The Rose Canyon Creek drainage basin runs through the moderately undeveloped Miramar Marine Corps Air Station (MCAS) before entering the UCPA. The Rose Canyon drainage area upstream of the UCPA is approximately 6.1 mi² in size and originates in the approximately 37 mi² Miramar hydrologic subarea (Figure 2).

Minimal surface drainage from adjacent communities is expected to impact the UCPA.

2.2 Floodplains

The three major drainage channels draining through (or directly adjacent to) the UCPA are Carroll Canyon Creek (which merges with Los Peñasquitos Creek in Sorrento Valley / Soledad Canyon), Rose Canyon Creek, and San Clemente Canyon Creek. Each creek has been studied and documented in the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) for San Diego County, California and Unincorporated Areas, most recently revised in December 2019 (FEMA, 2019). Note that the recent FIS revision date does not mean that these particular creeks were recently restudied; only that the overall FIS was reissued at that time.

Each water body studied by FEMA is mapped on one or more Flood Insurance Rate Maps (FIRMs). Attachment A includes copies of the FEMA FIRMs covering the UCPA as well as a figure showing the FEMA flood hazard areas (floodways, 100- and 500-year floodplains, and Letters

of Map Revision (LOMRs) within the UCPA). FEMA Flood Hazard Zones within the UCPA include Zone AE, Zone A, and Zone X. The term “floodplain” refers to the area that experiences flooding during a high flow event. The floodplain includes both actively flowing areas as well as areas that are more ponded and not actively flowing. The “floodway” is the portion of the floodplain—particularly the channel and adjacent areas—reserved to let the stronger-flowing floodwaters pass and not cause an unacceptable increase in flood elevations. Development in the FEMA floodway is severely restricted.

Zones AE and A denote Special Flood Hazard Areas (SFHA) that are inundated by the 100-year flood event (1% annual chance exceedance). Zone AE areas have been studied by detailed methods and contain base flood elevations (BFEs) and floodway extents (in most cases). Zone A areas have been studied by approximate methods and do not have mapped BFEs or established floodways. FEMA defines the BFE as the computed elevation to which the flood is anticipated to rise during the base (100-year) flood. The BFE is the minimum FEMA requirement for elevating or floodproofing structures; the City of San Diego requires a minimum of two feet above the BFE for the lowest floor of proposed structures within SFHAs. The relationship between the BFE and a structure’s elevation determines the flood insurance premium (FEMA). Most of the SFHA in the UCPA is mapped as AE, with small pockets of Zone A for tributaries.

Zone X (shaded) indicates a moderate flood hazard, often for areas inundated by the 500-year flood event (0.2% annual chance exceedance). It can also indicate an area protected by levees from the 100-year flood. Zone X (unshaded) indicates an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.

Rose Canyon Creek

The only riverine flooding source within the boundaries of the UCPA is Rose Canyon Creek. The portion of the Rose Canyon Creek watershed that drains through the UCPA (i.e., upstream of where it joins San Clemente Canyon) is approximately 13.6 mi², or roughly 37-percent of the entire Rose Canyon Creek watershed (37 mi²) which includes the San Clemente Canyon watershed (“watershed” refers to the area that drains to the creek).

Rose Canyon Creek flows west in its upper reaches before turning south above the SR-52 crossing and continues southward along I-5 to its mouth at Mission Bay. Upstream of SR-52, the floodplain is relatively narrow and consists almost entirely of undeveloped land except for railroad tracks and the Rose Canyon bike path. The lower reaches of Rose Canyon Creek consist of residential areas from the mouth to I-5, and commercial development upstream of I-5.

The Rose Canyon Creek watershed is relatively small, and most of the drainage area is located within MCAS Miramar, which is mostly undeveloped. This has allowed much of Rose Canyon Creek to remain in a relatively natural state except for concrete channels near the major transportation routes of I-805, SR-52, I-5, and West Mission Bay Drive.

Existing flood-control facilities on Rose Canyon Creek consist of approximately 900 feet of trapezoidal concrete channel under the interchange between I-5 and SR-52 and approximately 1,500 feet of trapezoidal concrete channel to the north (between creek mile 3.78 and mile 4.06). These two concrete channels were constructed and are being maintained by Caltrans.

There is minimal documentation of historical flooding for Rose Canyon Creek and San Clemente Canyon Creek. Since there are no streamgages within the watershed, the flood-frequency analysis in the San Diego County FIS was completed based on a comparison of recorded annual peak discharges in hydrologically similar watersheds. For Rose Canyon Creek, the FIS lists 100- and 500-year return period (1% and 0.2% annual chance exceedance) flows through the UCPA of 6,200 cfs and 13,900 cfs, respectively.

There is minimal risk to property within the UCPA except for the rail line that runs through Rose Canyon that is expected to be partially inundated during the 500-year flood. In addition, there is a tributary near Genesee Avenue that is mapped as Zone A and has the potential to flood the University City High School east of the road.

Provided below is a summary of locations in the UCPA that are within the 100-year floodplain of Rose Canyon Creek or tributaries:

- Railway in numerous locations:
 - In between I-805 & Nobel Drive
 - Adjacent to I-5 & La Jolla Colony Drive north of Gilman Drive
 - Adjacent to I-5 from Gilman Drive to where it joins San Clemente Canyon
- Private unpaved roads east of I-805
- University City High School
- Small section of Genesee Avenue at Luigi Terrace (near University City High School)
- Rose Canyon Bicycle Path

Provided below is a list of bridges and culverts on Rose Canyon Creek within the UCPA. All crossings are shown in Figure 5:

- I-805
- Multiple railway bridges and culverts connecting tributaries to Rose Canyon Creek
- Genesee Avenue
- SR-52
- SR-52 / I-5 on- and off-ramps

There are no FEMA-accredited levees in the Rose Canyon Creek watershed.



Figure 5 - Channel Structures in University Community Planning Area



Carroll Canyon Creek

Carroll Canyon Creek flows west, and after combining with Los Peñasquitos Creek, it becomes Soledad Canyon after it passes under I-805 near the northeastern corner of the UCPA. Carroll Canyon Creek drains an area of approximately 17.4 square miles.

Peak discharges for Carroll Canyon Creek were taken from the Los Peñasquitos Watershed Master Plan, Draft Final Technical Report (City of San Diego, 2018). At I-805, the Carroll Canyon Creek 100- and 50-yr return period events (1% and 2% annual chance exceedance) are 4,163 and 3,582 cfs, respectively.

Provided below is a list of locations in the UCPA that are within the FEMA 100-year floodplain of Carroll Canyon Creek:

- A small section of the railway near Nancy Ridge Drive is affected by a tributary of Carroll Canyon Creek.

Provided below is a list of bridges and culverts on Carroll Canyon Creek near the UCPA:

- Nancy Ridge Drive
- I-805

There are no FEMA-accredited levees on Carroll Canyon Creek.

Soledad Canyon / Sorrento Valley Channel

Los Peñasquitos Creek and Carroll Canyon Creek flow west through the northern portion of the City of San Diego, forming Soledad Canyon. Carmel Creek flows west, joining Soledad Canyon near its outlet to the Pacific Ocean, just south of the City of Del Mar. Soledad Canyon and its tributaries drain approximately 95 square miles. Downstream of I-805 to approximately 1-mile downstream of where Los Peñasquitos Creek enters, Sorrento Valley is highly developed with both commercial and industrial development as well as transportation infrastructure within the floodplain extents.

Peak discharges for Soledad Canyon were taken from the Los Peñasquitos Watershed Master Plan, Draft Final Technical Report (City of San Diego, 2018). Upstream of where it joins with Los Peñasquitos Creek, the Soledad Canyon 100- and 50-year return period events (1% and 2% annual chance exceedance) are 4,251 and 3,655 cfs, respectively.

Frequent flooding has occurred at multiple locations in Sorrento Valley due to sediment accumulation and undersized streams, causing damages and loss of revenues for businesses in the area. Common flood areas in Sorrento Valley are listed below:

- Intersection of Sorrento Valley Road and Carmel Mountain Road
- Roselle Street
- Industrial Park southwest of channel near Los Peñasquitos Creek

Provide below is a list of locations in the UCPA that are within the FEMA 100-year floodplain of Soledad Canyon:

- General Atomics industrial park near I-805 and I-5 interchange

- Multiple sections of Flintkote Avenue near Torrey Pines Road

Provided below is a list of bridges and culverts on Soledad Canyon within the UCPA:

- Multiple parking lot bridges in the Industrial Park south of Sorrento Valley Road near I-805
- Railway Bridge near Roselle Street
- Sorrento Valley Blvd
- I-5
- Roselle Street Pedestrian Bridge near I-5

There are no FEMA-accredited levees in Soledad Canyon.

San Clemente Canyon Creek

San Clemente Canyon Creek flows west through San Clemente Canyon Park. SR-52 parallels the creek from the I-805 interchange downstream to where it joins Rose Canyon Creek. San Clemente Canyon Creek and its tributaries drain approximately 20 square miles. The floodplain has an average width of 200 to 300 feet and, except for San Clemente Canyon Park, is undeveloped.

Peak discharges for San Clemente Canyon Creek were taken from the 1972 Hydrology for Flood Plain Information Studies, Rose and San Clemente Canyons (U.S. Department of the Army, Corps of Engineers, 1972). Upstream of where it joins Rose Canyon, the San Clemente Canyon Creek 100- and 500-year return period events (1% and 0.2% annual chance exceedance) are 6,900 and 16,000 cfs, respectively. There are no records of historical flooding along San Clemente Canyon Creek.

There are no locations in the UCPA that are within the 100-year floodplain of San Clemente Canyon Creek.

Below is a list of bridges and culverts on San Clemente Canyon Creek within or adjacent to the UCPA. All crossings are shown in Figure 5:

- I-805
- SR-52 on/off ramps to I-5 and Genesee Avenue
- Genesee Avenue
- Regents Road

There are no FEMA-accredited levees on San Clemente Canyon Creek.

3 EXISTING WATER QUALITY CONDITIONS

The Los Peñasquitos Lagoon and Mission Bay are the “receiving waters” for storm water runoff from the UCPA. The quality of storm water runoff from the UCPA impacts the health of the receiving waters. However, the UCPA contributes only a small portion of the total water to each receiving location.

The Los Peñasquitos Lagoon receives water from the entire Los Peñasquitos Creek watershed, and only a portion of the UCPA contributes water in that direction. The watershed includes other communities in the City of San Diego, as well as the City of Poway, and a small portion of unincorporated San Diego County. Mission Bay receives water not only from the Rose Canyon watershed, but from the much larger San Diego River watershed as well. The San Diego River watershed includes many other communities in the City of San Diego as well as other jurisdictions (El Cajon, La Mesa, Santee, and unincorporated San Diego County).

This section is divided into 1) local surface runoff water quality from the UCPA, and 2) watershed-wide water quality.

3.1 Local Surface Runoff Quality

The UCPA is mostly developed with minimal opportunities for infiltration except for some undeveloped areas in the eastern portion of the UCPA near the Miramar National Cemetery, open space within San Diego University grounds, and the Torrey Pines Golf Course in the northernmost section of the UCPA. In general, the northern section of the UCPA has more infiltration potential than the south.

Major Land Uses and Typical Pollutants

The major land use categories in the UCPA are open space park and preserve, single-family detached, multi-family residential, UCSD university buildings, a golf course, industrial parks, and transportation. Typical pollutants from these land uses include sediment, nutrients, heavy metals, organic compounds, trash and debris, oxygen-demanding substances, oil and grease, bacteria and viruses, and pesticides.

Storm Water Runoff

Since infiltration is minimal within the UCPA, much of the storm water runoff is conveyed directly to the receiving waters in streets, gutters, and storm drain systems. Pollutants in storm runoff originating from impervious surfaces in the UCPA are expected to be conveyed to the receiving waters as well. The only exception would be storm water runoff from industrial sites that have implemented best management practices (BMPs) required by the Industrial General Permit or individual waste discharge requirements (WDRs) issued by the California Regional Water Quality Control Board San Diego Region (SDRWQCB), or from development projects constructed since the City of San Diego adopted the Storm Water Standards Manual. The manual requires development projects classified as “Priority Development Projects” (PDPs) to include permanent post-construction best management practices (BMPs) that treat storm water runoff before it leaves the project.

Much of the existing development in the UCPA was established before the adoption of storm water regulations requiring protection and treatment of storm water runoff. Therefore, there are few existing BMPs to improve the quality of storm water runoff. All of the pollutants identified above are detrimental to the health and quality of the receiving waters. Pollution from storm water can be addressed by implementing a variety of BMPs depending on their sources. These BMPs can include source control, low impact development, and structural BMPs among others. Section 4 provides additional information regarding BMP implementation.

Certain pollutants are particularly significant because the receiving waters are known to be impacted by the pollutant (e.g., sediment load and bacteria in Los Peñasquitos Lagoon). The City of San Diego has been implementing programs to directly address these pollutants. Priority pollutants are identified below under Receiving Water Quality.

3.2 Receiving Water Quality

Under Section 303(d) of the Clean Water Act, states are required to list all impaired or threatened waters (e.g., stream/river segments and lakes) for which the required pollution controls are not sufficient to attain or maintain water quality standards. States are then required to develop an action plan based on a Total Maximum Daily Load (TMDL) to improve water quality for each impaired or threatened site. A TMDL is a quantitative assessment of water quality problems, and it represents the maximum amount of the pollutant that a waterbody can receive and still maintain the applicable water quality standards. Priority is given based on the severity of the pollution and the sensitivity of the waters' beneficial uses to the pollutants, among other factors.

Figure 6 provides a map showing the 303(d)-listed water bodies within and nearby the UCPA. Based on the current list (SWRCB, 2016), the receiving waters in, or downstream, of the UCPA that are listed as impaired include:

- Los Peñasquitos Lagoon
 - The main pollutant/stressor to the natural function of the lagoon is caused by sedimentation/siltation, with the majority of sediment coming from the Carroll Canyon Creek watershed.
- Los Peñasquitos Creek
 - The main pollutants/stressors in the creek are benthic community effects, phosphates, total dissolved solids, and toxicity.
- Carroll Canyon Creek & Tributaries
 - The main pollutants/stressors in the creek are benthic community effects and toxicity.
- Rose Canyon Creek
 - The main pollutants/stressors in the creek are benthic community effects, selenium, and toxicity.
- Mission Bay
 - The main pollutants/stressors at the mouth of Rose Canyon Creek are eutrophic effects and lead.
 - The main pollutants/stressors in the wider bay are mercury and Polychlorinated Biphenyls (PCBs).

TMDLs have been established for the sedimentation occurring in the Los Peñasquitos Lagoon, as well as the phosphates and total dissolved solids in Los Peñasquitos Creek. TMDLs have not yet been established for the other pollutants and stressors identified above.

Beneficial Uses of Receiving Waters

Beneficial uses are the uses of water necessary for the survival or wellbeing of humans, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals of humankind. Water quality objectives and beneficial uses are found in the Basin Plan.

Beneficial Uses for Los Peñasquitos Lagoon

Based on the Basin Plan, Los Peñasquitos Lagoon is classified as a Coastal Water. The following beneficial uses have been identified: Contact Water Recreation (REC-1), Non-contact Water Recreation (REC-2), Biological Habitats of Special Significance (BIOL), Estuarine Habitat (EST), Wildlife Habitat (WILD), Rare, Threatened, and Endangered Species (RARE), Marine Habitat (MAR), Migration of Aquatic Organisms (MIGR), and Spawning, Reproduction, and/or Early Development (SPWN).

Beneficial Uses for Los Peñasquitos Creek

Based on the Basin Plan, the following beneficial uses for Los Peñasquitos Creek have been identified: Agricultural Supply (AGR), Contact Water Recreation (REC-1), Non-contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), and Wildlife Habitat (WILD). Industrial Service Supply (IND) is a potential beneficial use. These inland surface waters are excluded from the Municipal and Domestic Supply (MUN) beneficial use.

Beneficial Uses for Carroll Canyon Creek

Based on the Basin Plan, the following beneficial uses for Carroll Canyon Creek have been identified: Agricultural Supply (AGR), Non-contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Wildlife Habitat (WILD), and Rare, Threatened, and Endangered Species (RARE). Industrial Service Supply (IND) and Contact Water Recreation (REC-1) are potential beneficial uses. These inland surface waters are excluded from the Municipal and Domestic Supply (MUN) beneficial use.

Beneficial Uses for Rose Canyon Creek

Based on the Basin Plan, the following beneficial uses for Rose Canyon Creek have been identified: Contact Water Recreation (REC-1), Non-contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD). Industrial Service Supply (IND) is a potential beneficial use. These inland surface waters are excluded from the Municipal and Domestic Supply (MUN) beneficial use.

Beneficial Uses for San Clemente Canyon Creek

Based on the Basin Plan, the following beneficial uses for Carroll Canyon Creek have been identified: Contact Water Recreation (REC-1), Non-contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Wildlife Habitat (WILD), Rare,

Threatened, and Endangered Species (RARE), Spawning, reproduction, and/or early development (SPWN). Industrial Service Supply (IND) is a potential beneficial use. These inland surface waters are excluded from the Municipal and Domestic Supply (MUN) beneficial use.

Beneficial Uses for Mission Bay

Based on the Basin Plan, Mission Bay is classified as a Coastal Water. The following beneficial uses have been identified: Industrial Service Supply (IND), Contact Water Recreation (REC-1), Non-contact Water Recreation (REC-2), Commercial and sport fishing (COMM), Biological Habitats of Special Significance (BIOL), Estuarine Habitat (EST), Wildlife Habitat (WILD), Rare, Threatened, and Endangered Species (RARE), Marine Habitat (MAR), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), and Shellfish Harvesting (SHELL).

Water Quality Improvement Plan for the Los Peñasquitos Creek Watershed

The Cities of San Diego, Del Mar, and Poway, as well as other state and local agencies, have collectively developed a Water Quality Improvement Plan for the Los Peñasquitos Creek Watershed (“Los Pen WQIP”; AMEC Environmental & Infrastructure, 2015). The Los Pen WQIP implements the Federal Clean Water Act’s objectives to protect, preserve, enhance, and restore water quality for beneficial recreational, wildlife, and other uses. Goals and strategies to correct impairments in the water quality of urban runoff waters were identified through a process of evaluation, monitoring, and reporting. The highest priority water quality conditions identified in the Los Pen WQIP are freshwater discharges during dry weather, transport of sediment from upstream sources (current and historical) during rain events, and bacteria accumulations at Torrey Pine State Beach near the Los Peñasquitos Lagoon mouth. The Los Pen WQIP 6-step plan to address impairments in the quality of urban runoff waters is described below:

1. Determine the priority and highest priority water quality conditions that pose the highest threat to water quality in the affected water bodies in the watershed management area (e.g. a creek or bay) based on evidence showing that a water body is being polluted by runoff from the municipal storm sewer system.
2. Identify the sources of pollution of the highest priority water quality conditions.
3. Formulate goals, strategies, and schedules to address the highest priority water quality conditions. As part of this step, the City of San Diego estimated the projected funding required to implement the strategies needed to achieve the identified goals.
4. Provide ongoing monitoring and assessment to evaluate the overall progress made in the watershed management area, including success in meeting the goals identified for the highest priority water quality conditions.
5. Update the Los Pen WQIP as needed through an Adaptive Management Process, which can entail adjustments to goals and strategies, as needed, to increase effectiveness.
6. Report on the findings of the assessments, along with any adjustments to the Los Pen WQIP.

Water Quality Improvement Plan for the San Diego River

The Cities of San Diego, El Cajon, La Mesa, and Santee as well as the County of San Diego, Caltrans, and other agencies within the San Diego River watershed have collectively developed

a Water Quality Improvement Plan for the San Diego River watershed (Larry Walker Associates et al., 2016, "San Diego River WQIP"). As part of the development of the San Diego River WQIP, the agencies prepared an assessment of the impacts of storm drain discharges on receiving water quality that considers discharge prohibitions, available storm drain outfall data, locations, and discharge characteristics at storm drain outfalls to receiving waters. The highest priority water quality condition identified for the San Diego River watershed is bacteria, in both dry weather and wet weather conditions. Other priority water quality conditions include nitrogen and phosphorus, total dissolved solids, eutrophic conditions, and index of biological integrity in dry weather conditions. The San Diego River WQIP 5-phase plan to address impairments in the quality of urban runoff waters is described below:

1. Identify priority and highest priority water quality conditions.
2. Identify numeric goals for bacteria in the watershed.
3. Identify potential sources and develop implementation strategies to achieve the numeric goals.
4. Develop a monitoring and assessment program to evaluate the progress of implemented strategies toward achieving the goals.
5. Assess progress periodically through the adaptive management process.

Groundwater

Groundwater is defined as subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. Groundwater bearing formations sufficiently permeable to transmit and yield significant quantities of water are called aquifers. A groundwater basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers.

The principal groundwater basins in the San Diego Region are small and shallow. Only a small portion of the Region is underlain by permeable geologic formations that can accept, transmit and yield appreciable quantities of groundwater. In many parts of the Region, usable groundwater occurs outside of the principal groundwater basins. There are groundwater-bearing geologic formations in the Region that do not meet the definition of an aquifer. Accordingly, the term "groundwater" for basin planning and regulatory purposes includes all subsurface waters that occur in fully saturated zones within soils, and other geologic formations. Subsurface waters are considered groundwater even if the waters do not occur in an aquifer or an identified groundwater basin.

Most of the groundwater in the Region have been extensively developed; therefore, the availability of potential future uses of groundwater resources is limited. Further development of groundwater resources would probably necessitate groundwater recharge programs to maintain adequate groundwater table elevations.

The UCPA University Community does not lie within an area of appreciable permeable geologic formations, nor does it significantly contribute recharge to any major groundwater basin in San Diego Region.



Figure 6 - 303(d) Listed Water Bodies in and near University Community Planning Area



4 REGULATIONS, POLICIES, AND PROGRAMS

This section discusses the existing policies and regulations that apply to drainage and water quality in the City of San Diego's Land Development Code. All development projects within the UCPA will be subject to the requirements and design criteria within the Land Development Code and the City of San Diego's Land Development Manual, which establishes the development standards and guidelines used in the review of new development applications. Drainage, floodplain management, and storm water runoff management requirements applicable to all development projects are discussed below.

Because the same policies and regulations apply throughout the City, much of this section includes text prepared for other recent community plan updates for the City of San Diego, e.g., the San Ysidro Community Plan Update (Helix Environmental Planning, 2016) and the Mission Valley Community Plan Update (RICK Engineering, 2016).

The regulations and policies for development within the City of San Diego comply with federal and state guidelines set forth by the Clean Water Act, National Flood Insurance Program, and the Porter-Cologne Water Quality Control Act, which established the California Regional Water Quality Control Boards (RWQCBs)—the San Diego Basin is designated as RWQCB Region #9.

Clean Water Act

The Federal Clean Water Act protects the nation's waters, including lakes, rivers, streams, creeks, aquifers, and coastal areas. The Clean Water Act establishes the basic guidelines for regulating pollutant discharges into the waters of the US and requires that states adopt water quality standards to protect public health, improve the quality of water resources, and ensure implementation of the Clean Water Act. Section 401 requires that any new development involving construction or operation of a facility which may result in the discharge of any pollutant must obtain certification from the state.

Section 402 establishes regulations under the National Pollutant Discharge Elimination System (NPDES) to control direct storm water discharges. In California, the State Water Resources Control Board (SWRCB) administers the NPDES permitting programs and is responsible for developing waste discharge requirements. The San Diego RWQCB is also responsible for developing waste discharge requirements specific to its jurisdiction.

Water Quality Control Plan for the San Diego Basin (Region 9)

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 is composed of 11 major Hydrologic Units, 54 Hydrologic Areas, and 147 Hydrologic Sub Areas, extending from Laguna Beach south to the U.S.-Mexico border. Drainage from higher elevations in the east flow to the west, ultimately into the Pacific Ocean. The San Diego Basin RWQCB prepared the Basin Plan, which defines existing and potential beneficial uses and water quality objectives for coastal waters, groundwater, surface waters, imported surface waters, and reclaimed waters in the basin. Water quality objectives seek to protect the most sensitive beneficial uses designated for a water body.

4.1 Drainage

According to San Diego Municipal Code Chapter 14, Article 2, Division 2, Storm Water Runoff and Drainage Regulations, drainage regulations apply to all development in the City of San Diego, whether or not a permit or other approval is required.

Drainage Design Manual

Drainage design policies and procedures for the City of San Diego are given in the City's Drainage Design Manual (City of San Diego, 2017). The manual provides a guide for designing drainage and drainage-related facilities for developments within the city. Development projects in the UCPA are required to adhere to these criteria.

The basic objectives in the Drainage Design Manual are to “collect, transmit and discharge drainage in a manner to promote public safety and provide for low maintenance by:

1. Providing for public health and safety
2. Preventing property damage
3. Calculating the quantity and frequency of storm runoff
4. Determining the natural points of concentration and discharge and other hydraulic controls
5. Determining the necessity for protection from floating trash and from debris moving underwater
6. Determining the requirements for energy dissipation and slope protection
7. Analyzing the deleterious effects of corrosive soils and waters on storm drain and structures
8. Minimizing scour and siltation of natural streambeds, canyons, and lagoons
9. Preventing the diversion of drainage
10. Comparing and coordinating proposed design with existing structures and systems handling the same flows
11. Coordinating with other agencies the proposed designs for facilities
12. Providing access for maintenance operations
13. Providing for removal of detrimental amounts of subsurface water
14. Designing the most efficient drainage facilities consistent with good drainage practices and considering economic considerations, ease, and economy of maintenance, safety, legal obligations, and aesthetics.”

Development standards and guidelines to meet the objectives listed above are provided in the Drainage Design Manual. Development project applications must include a drainage study that calculates the amount of runoff expected and demonstrates how the project design adheres to the Drainage Design Manual requirements. The City of San Diego will be responsible for reviewing hydrologic and hydraulic studies and design features for conformance to the Drainage Design Manual for every map or permit for which development approval is sought from the City.

4.2 Floodplain Management

National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is a Federal program enabling property owners in participating communities to purchase flood insurance. In support of the NFIP, FEMA identifies special flood hazard areas (SFHA) throughout the U.S. and its territories by producing Flood Insurance Rate Maps (FIRMs). Several types of flood hazards are commonly identified on these maps. One of these areas is the SFHA or high-risk floodplain area defined above as any land that would be flooded by the 100-year event (the flood with a 1% chance of occurring in any given year), also known as the base flood. Development may take place within the SFHA if the proposed development complies with local floodplain management ordinances, which must meet or exceed the minimum Federal requirements.

The City of San Diego is a participating Community in the NFIP. Therefore, the City is responsible for adopting a floodplain management ordinance that meets or exceeds minimum requirements to reduce future flood losses. The City has adopted Development Regulations for special flood hazard areas in San Diego Municipal Code Sections 143.0145 and 143.0146. Excerpt of these policies and regulations are included in Attachment B. If new development is proposed within one of the SFHA Zones, these existing regulations will apply:

- Within the FEMA Floodway (the floodway is the hatched portion of Zone AE shown on the FIRM Panels in Attachment A): The regulations set limitations on land uses, structures, and channelization or other alteration of the river or creek, and require passage of the base flood. In general, development in floodways (e.g., new road crossings) must be offset by improvements or modifications to enable the passage of the base flood with increasing flood elevations.
- Within the Floodplain Fringe (the floodplain fringe is the non-hatched portion of 100-year floodplain shown on the FIRM Panels in Attachment A): Permanent structures and fill for permanent structures, roads, and other development are allowed if certain conditions are met.

The City of San Diego is responsible for reviewing development project designs for conformance to the floodplain management regulations.

The special flood hazard areas within the UCPA are discussed in more detail in Section 2.2 (Floodplains) and are shown in Attachment A.

4.3 Storm Water Quality

The City of San Diego is a Copermittee under the Municipal Separate Storm Water Permit (MS4 Order No. R9-2013-0001 as amended by Order No. R9-2015-001 and Order No. R9-2015-0100) issued by the California Regional Water Quality Control Board, San Diego Region. As a Copermittee, the City of San Diego must implement several storm water management programs, including programs designed to control storm water discharges from development projects both during construction and post-construction. The following discussion describes the General Construction Permit, the Municipal Storm Water Permit, and the City of San Diego's Storm Water Standards Manual's guidelines on construction measures and

permanent, post-construction measures (best management practices or “BMPs”) that are required for development projects and must be considered from the start of project planning.

General Construction Permit

During the construction phase, excluding regular maintenance activities performed to restore the original line, grade, or capacity of the facility, any project that disturbs 1 acre or greater in size, or that disturbs less than 1 acre in size but is part of a larger common plan of development, will be subject to the requirements of the General Construction Permit, or a future SWRCB Order re-issuing the General Construction Permit. The General Construction Permit was adopted by the SWRCB on September 2, 2009, and is due to be reissued. The permit was amended by Order No. 2010-0014-DWQ and then again by Order No. 2012-0006-DWQ. For coverage by the General Construction Permit, the project owner is required to submit to the SWRCB a Notice of Intent (NOI) to comply with the General Construction Permit, and develop and implement a Storm Water Pollution Prevention Plan (SWPPP) describing best management practices (BMPs) to be used during and after construction to prevent the discharge of sediment and other pollutants in storm water runoff from the project.

Projects less than one acre in size, and not part of a larger common plan of development, are not subject to the requirements of the General Construction Permit. However, in the City of San Diego, construction storm water requirements apply to all new development activities based on the City of San Diego’s Storm Water Management and Discharge Control Ordinance (San Diego Municipal Code Section 43.03, et. seq.). Projects less than one acre are required to have a Water Pollution Control Plan (WPCP), which identifies the pollution prevention measures that will be taken.

Municipal Storm Water Permit

The SDRWQCB issues the Municipal Storm Water Permit in order to establish the conditions under which pollutants can be discharged from the storm drain system to local streams, coastal lagoons, and the ocean. The Municipal Storm Water Permit implements requirements of the Clean Water Act and Federal NPDES stormwater regulations. The Permit is typically scheduled to be renewed every 5 years. The 2013 MS4 permit (Order No. R9-2013-0001) was adopted by SDRWQCB on May 8, 2013, and became effective on June 27, 2013 (SDRWQCB, 2013). This order was amended by the adoption of Order No. R9-2015-0001 on February 11, 2015 and of Order No. R9-2015-0100 on November 18, 2015.

The City of San Diego is a Co-Permittee under the Municipal Storm Water Permit. As a Co-Permittee, the City of San Diego must implement several storm water management programs, including programs designed to control storm water discharges from new development projects. Specific Sections of the Municipal Storm Water Permit that will affect design and construction of development projects include Section D.1, Development Planning Component, and D.2, Construction Component. These titles refer to required components of the City of San Diego’s Jurisdictional Urban Runoff Management Program (JURMP), which is one of the programs that must be implemented by the City of San Diego under the Municipal Storm Water Permit. The City of San Diego implements the requirements through their JURMP and Storm Water Standards Manual. See City of San Diego Storm Water Standards discussed below. In addition, Section H of the Municipal Permit, Total Maximum Daily Loads, provides requirements for TMDLs. The City of San Diego will also implement these requirements

through their Storm Water Standards Manual, and these requirements will affect design of permanent post-construction BMPs.

Storm Water Standards Manual

The City of San Diego's current Storm Water Standards Manual is dated October 1, 2018, and is incorporated in the Land Development Manual as Appendix O. The Storm Water Standards Manual provides information to development applicants on how to comply with the permanent and construction storm water quality requirements in the City of San Diego. The Storm Water Standards Manual is separated into 3 distinct sections that dictate the considerations and requirements for controlling discharges of pollutants in storm water associated with construction and permanent phases of development projects. Each manual indicates the applicability of the regulations to particular project types and the procedural steps to comply with the regulations:

- Part 1: BMP Design Manual – For Permanent Site Design, Storm Water Treatment, and Hydromodification Management [complies with the Regional Municipal Separate Storm Sewer Systems (MS4) Permit regulating post-construction storm water discharges onsite]
- Part 2: Construction BMP Standards [complies with the Regional MS4 Permit and the CGP regulating construction-phase storm water discharges]
- Part 3: Offsite Storm Water Alternative Compliance Program for Water Quality and Hydromodification Control [complies with the Regional MS4 Permit regulating post-construction storm water discharges offsite]

The following are significant updates to storm water requirements of the MS4 Permit compared to the 2007 MS4 Permit and 2011 Countywide Model SUSMP:

- Priority Development Project (PDP) categories have been updated, and the minimum threshold of impervious area to qualify as a PDP has been reduced.
- Many of the low impact development (LID) requirements for site design that were applicable only to PDPs under the 2007 MS4 Permit are applicable to all projects (Standard Projects and PDPs) under the MS4 Permit.

Permanent, Post-Construction, and Hydromodification BMP Requirements

According to the Storm Water Standards Manual, all development projects must include site design and source control BMPs. Certain projects that meet size thresholds defined in the Municipal Storm Water Permit are considered "priority development projects" (PDPs) (size threshold is typically 10,000 square feet of new impervious area for new development projects or 5,000 square feet of newly created and/or replaced impervious area for redevelopment projects, but may be lower, e.g., as low as 2,500 square feet, for some land uses or locations). All PDPs must implement structural BMPs for pollutant control in addition to the required site design and source control BMPs. Some PDPs must also implement structural BMPs for flow control (control of hydromodification, or erosion of receiving waters downstream of the project) depending on the receiving water that the project drains to.

Site design requirements are qualitative requirements that apply to the layout and design of all development project sites. Site design performance standards define minimum

requirements for how a site must incorporate low impact development (LID) BMPs, including the location of BMPs and the use of integrated site design practices. The following site design practices must be implemented at all development projects, where applicable and technically feasible:

1. Maintenance or restoration of natural storage reservoirs and drainage corridors (including topographic depressions, areas of permeable soils, natural swales, and ephemeral and intermittent streams)
2. Buffer zones for natural water bodies (where buffer zones are technically infeasible, require project applicant to include other buffers such as trees, access restrictions, etc.)
3. Conservation of natural areas within the project footprint including existing trees, other vegetation, and soils
4. Construction of streets, sidewalks, or parking lot aisles to the minimum widths necessary, provided public safety is not compromised
5. Minimization of the impervious footprint of the project
6. Minimization of soil compaction to landscaped areas
7. Disconnection of impervious surfaces through distributed pervious areas
8. Landscaped or other pervious areas designed and constructed to effectively receive and infiltrate, retain and/or treat runoff from impervious areas, before discharging to the MS4
9. Small collection strategies located at, or as close as possible to, the source (i.e. the point where storm water initially meets the ground) to minimize the transport of runoff and pollutants to the MS4 and receiving waters
10. Use of permeable materials for projects with low traffic areas and appropriate soil conditions
11. Landscaping with native or drought-tolerant species;
12. Harvesting and using precipitation.

Source control BMPs are features that must be implemented to address specific sources of pollutants. The following source control BMPs must be implemented at all development projects where applicable and feasible:

1. Prevention of illicit discharges into the MS4;
2. Storm drain system stenciling or signage;
3. Protection of outdoor material storage areas from rainfall, run-on, runoff, and wind dispersal;
4. Protection of materials stored in outdoor work areas from rainfall, run-on, runoff, and wind dispersal;
5. Protection of trash storage areas from rainfall, run-on, runoff, and wind dispersal;
6. Use of any additional BMPs determined to be necessary by the City to minimize pollutant generation at each project.

Structural BMPs for pollutant control are permanent features that are designed to remove pollutants from storm water by measures such as retention, biofiltration, and/or flow-thru treatment by filtration or other pollutant removal mechanism. All PDPs must include structural BMPs for pollutant control. The standard for pollutant control is the retention of storm water

(interception, storage, infiltration, evaporation/evapotranspiration, or onsite usage). All PDPs must determine the feasibility to retain storm water onsite. If retention is infeasible, biofiltration of storm water runoff is required. If biofiltration is infeasible, storm water runoff must be treated by flow-through BMPs (e.g., filtration BMPs), and the project must implement an offsite structural BMP to retain or biofilter storm water in another location in addition to implementing the onsite flow-thru treatment measures.

Structural BMPs for flow control (control of hydromodification) are permanent features that store runoff and control the outflow to mimic pre-development flow rates for a range of storm events. Structural BMPs for flow control are typically larger than structural BMPs for pollutant control and will dictate design elements in locations where downstream channels are susceptible to erosion from increases in storm water runoff discharge rates and durations.

In the UCPA, storm water discharges are directed to the Pacific Ocean, Carroll Canyon, Soledad Canyon, Rose Canyon, or San Clemente Canyon. The only receiving water receiving a hydromodification exemption is the Pacific Ocean. However, if storm water is discharged to any other unlined channel before reaching the Pacific Ocean, structural BMP requirements for flow control will apply.

BMP Requirements During Construction

During the construction or demolition phase, any project that results in land surface disturbances of one acre or greater, or results in land surface disturbances of less than one acre but is part of a larger common plan of development, will be subject to the requirements of the Construction General Permit. Projects less than one acre in size and not part of a larger common plan of development are not subject to the requirements of the Construction General Permit. However, the City of San Diego has construction storm water requirements that apply to all development activities, including projects less than one acre in size. Projects greater than one acre are required to prepare and implement a Construction Storm Water Pollution Prevention Plan (SWPPP) which identifies the pollution prevention measures that will be implemented during construction. Projects less than one acre are required to prepare and implement a Water Pollution Control Plan (WPCP) which identifies the pollution prevention measures that will be implemented during construction. The City of San Diego's Storm Water Standards Manual provides guidance for compliance with these requirements and minimum BMPs to prevent discharges of pollutants associated with construction activity.

Based on the Storm Water Standards Manual, the major construction BMP categories are:

1. Project Planning
2. Good Site Management "Housekeeping", including Waste Management
3. Non-Storm Water Management
4. Erosion Control
5. Sediment Control
6. Run-on and Run-off Control; and
7. Active/Passive Sediment Treatment Systems, where applicable.

Offsite Storm Water Alternative Compliance Program

This program, developed by the City of San Diego to allow mitigation of PDP storm water impacts through implementation of offsite structural BMPs, allows for offsite control of water quality and hydromodification impacts, provides design options and flexibility in the case of site infeasibility, and provides the potential for more effective regional storm water control solutions to improve watershed-scale water quality. The City has the discretion to allow PDPs to transfer onsite storm water control obligations to an offsite project under specified conditions. This following describes the process and requirements that PDPs must follow to qualify for consideration under the program:

- **Phase 1:** The first phase of program implementation allows consideration of applicant implemented projects. In this initial phase, the project applicant implements an offsite alternative compliance project and is fully responsible for the project's design, construction, operation, and long-term maintenance. Phase 1 projects would be designed to directly offset PDP impacts. No credit trading and/or banking will be allowed in the Phase 1 program.
- **Phase 2:** The second phase of the program allows PDP applicants and/or independent entities to implement, fund, or partially fund an offsite alternative compliance project. Phase 2 participation is provided through either an in-lieu fee or a credit system. An in-lieu fee system allows project proponents to provide direct payments for funding of water quality and/or hydromodification control projects. A credit system allows for the exchange of credits between PDPs and credit-generating projects implemented by the City or private entities. For example, a project proponent that can treat a greater amount of area than required would potentially generate excess credits. These credits could then be purchased by other project applicants in the watershed. Phase 2 is dependent on the development of a credit system, which requires approval by the San Diego Regional Water Quality.

The City of San Diego will be responsible for reviewing development project designs for conformance to the storm water management regulations described above for every map or permit for which development approval is sought from the City. Implementation of these requirements is one element of the City of San Diego's compliance with TMDL requirements and strategies for improving water quality under the Los Peñasquitos Creek WQIP.

4.4 Other Permits

In addition to the requirements described above, other permits may apply to specific activities or project sites.

Industrial Storm Water Permit

Industrial facilities are subject to the requirements of the Industrial General Permit (IGP). The Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ (SWRCB, 2014) implements the federally required storm water regulations for industrial activities discharging to waters of the United States. The IGP regulates discharges associated with 10 federally defined categories of industrial activities and will apply to the operation of future industrial development. The IGP requires the

implementation of storm water management measures and development of a Storm Water Pollution Prevention Plan (SWPPP).

Alterations to Channels

Any alterations to Carroll Canyon Creek, Rose Canyon Creek, San Clemente Canyon Creek, Soledad Canyon, or other channels would require permits issued at many levels from Federal, state, and local agencies including Section 404 (of the Clean Water Act) Permit from the U.S. Army Corps of Engineers, Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW), Section 401 Water Quality Certification from the SDRWQCB, and in some cases, a Coastal Development Permit from the California Coastal Commission. A Section 10 consultation with the U.S. Fish and Wildlife Service (USFWS) may also be required to address potential impacts to species covered by the Endangered Species Act. Finally, documentation and review under the California Environmental Quality Act (CEQA) would be required.

Individual Waste Discharge Requirements

Some existing dischargers require individual waste discharge requirements for discharge to navigable waters (Mission Bay). Whether individual waste discharge requirements will be needed for development projects depends on the specific type and location of the project.

4.5 Other Programs

There are additional programs with regulations or guidelines affecting urban runoff management and floodplain management in the UCPA.

City of San Diego General Plan

The City of San Diego General Plan (City of San Diego, 2008; amended 2015, 2018) presents goals and policies for storm water infrastructure in the “Public Facilities, Services, and Safety Element (PF)” section of the Plan, and for floodplain management and urban runoff management in the “Conservation Element (CE)” section of the Plan. Relevant excerpts from the General Plan are included in Attachment C.

Los Peñasquitos Water Quality Improvement Plan (WQIP)

The Los Peñasquitos Creek WQIP identifies strategies that the City can implement to improve water quality in the watershed. The highest priority goals for the Los Pen WQIP are as follows:

- Maintain water quality to protect creeks and beaches from pollution.
- Reduce bacteria levels at the shoreline near Torrey Pines State Beach (by FY 2021 for dry weather and by FY 2031 for wet weather flows).
- Reduce sediment inputs and freshwater discharges to the Los Peñasquitos Lagoon by FY 2035, to allow significant restoration of the Los Peñasquitos Lagoon.

For development projects, compliance with the City of San Diego’s Storm Water Standards Manual provides consistency with WQIP strategies. For some development projects, if onsite compliance with permanent, post-construction structural BMP requirements for retention or biofiltration of runoff is not feasible, offsite alternative compliance will be required.

Under the regulatory framework outlined by the Los Pen WQIP, there are two general areas of storm water management responsibilities:

1. Jurisdictional inspection and oversight (such as education, enforcement, and other Illicit Discharge Detection and Elimination (IDDE) activities), as described in the Jurisdictional Runoff Management Programs (JRMPs) in the MS4 Permit:
2. Control of pollutant discharges. Note that pollutant discharges from agricultural and industrial land uses, Federal lands, Caltrans and other state facilities, and Phase II storm water permittees, are not regulated by the Copermitees.

5 DEVELOPMENT CONSTRAINTS FOR CITY-OWNED PROPERTIES

Figure 7 shows City-owned parcels within the UCPA. Many of the City-owned parcels lie in the canyons and steeper drainage areas in the area and are within the special flood hazard areas (SFHAs) identified by the FEMA flood maps (see Attachment A).

5.1 Floodplain/Floodway

Per NFIP regulations, the floodway portion of the SFHA must be reserved to allow passage of the 100-year flood. Land uses are restricted and development in floodways (e.g., road crossings) needs to be offset by improvements or modifications to not adversely impact the flood-carrying capacity of the creek. Within the floodplain fringe (i.e., the portion of the SFHA outside the floodway), permanent structures and fill for permanent structures, roads, and other development are allowed if certain conditions are met to protect them from flooding.

5.2 FEMA Map Revisions

The City of San Diego may require approval of a Conditional Letter of Map Revision (CLOMR) from FEMA before construction or development begins within any Special Flood Hazard Area (SFHA). If the hydrologic and hydraulic analysis and floodplain mapping for the CLOMR is approved by FEMA, this conditional letter informs the public that when the project is completed, it will qualify for a LOMR (Letter of Map Revision).

A LOMR will still be required to officially change the NFIP map. The study for the development project should provide Base Flood Elevations (BFEs), floodway delineation, and inclusion of other data needed to ensure that the proposed project, and any other neighboring sites will be reasonably safe from flooding. The City of San Diego also has regulations to ensure that the buildings are elevated above the BFE.

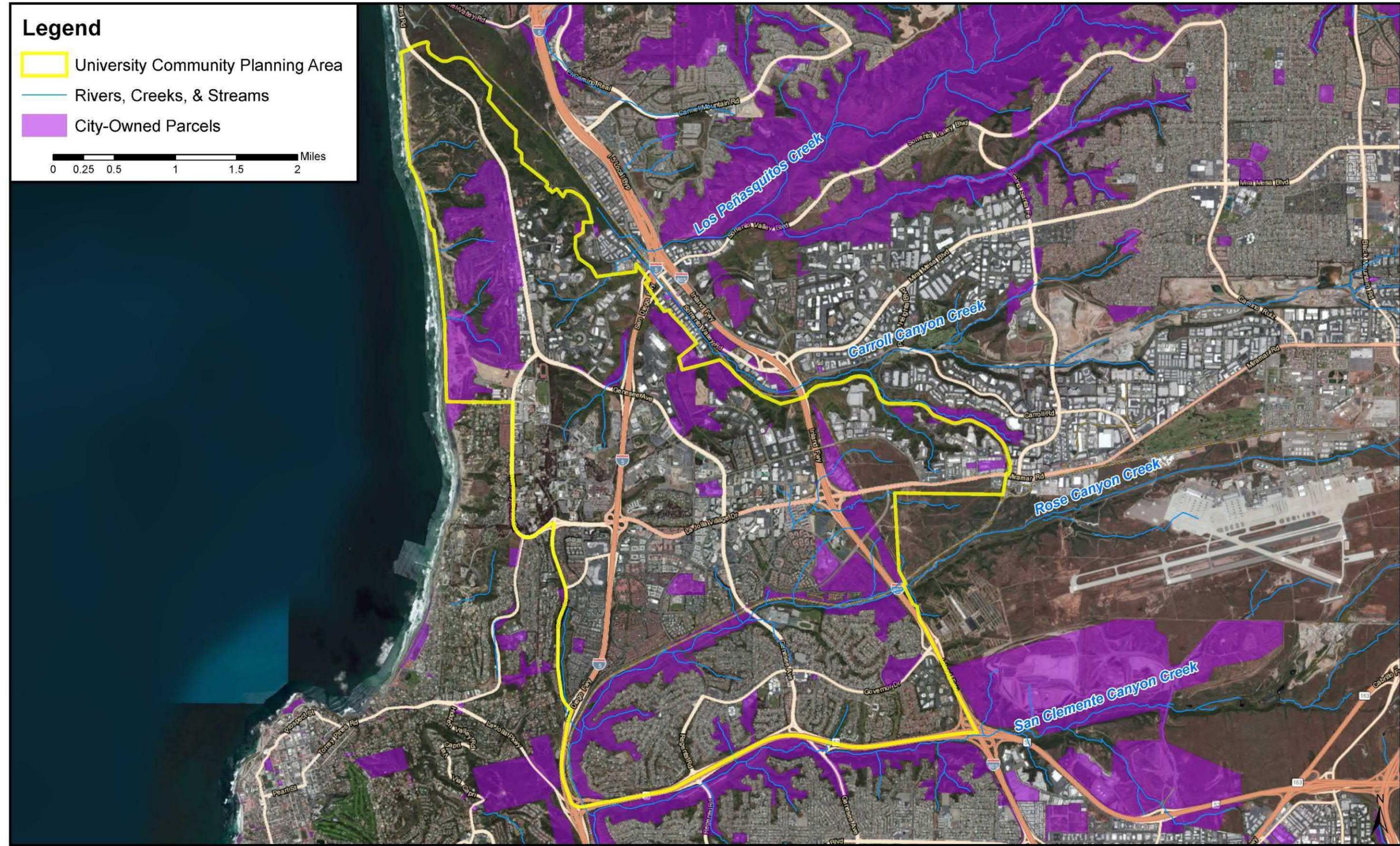


Figure 7 - City-Owned Parcels within University Community Planning Area





Figure 8 - Storm Water Channels in the City of San Diego Master Storm Water System Maintenance Program (MMP)



6 REFERENCES

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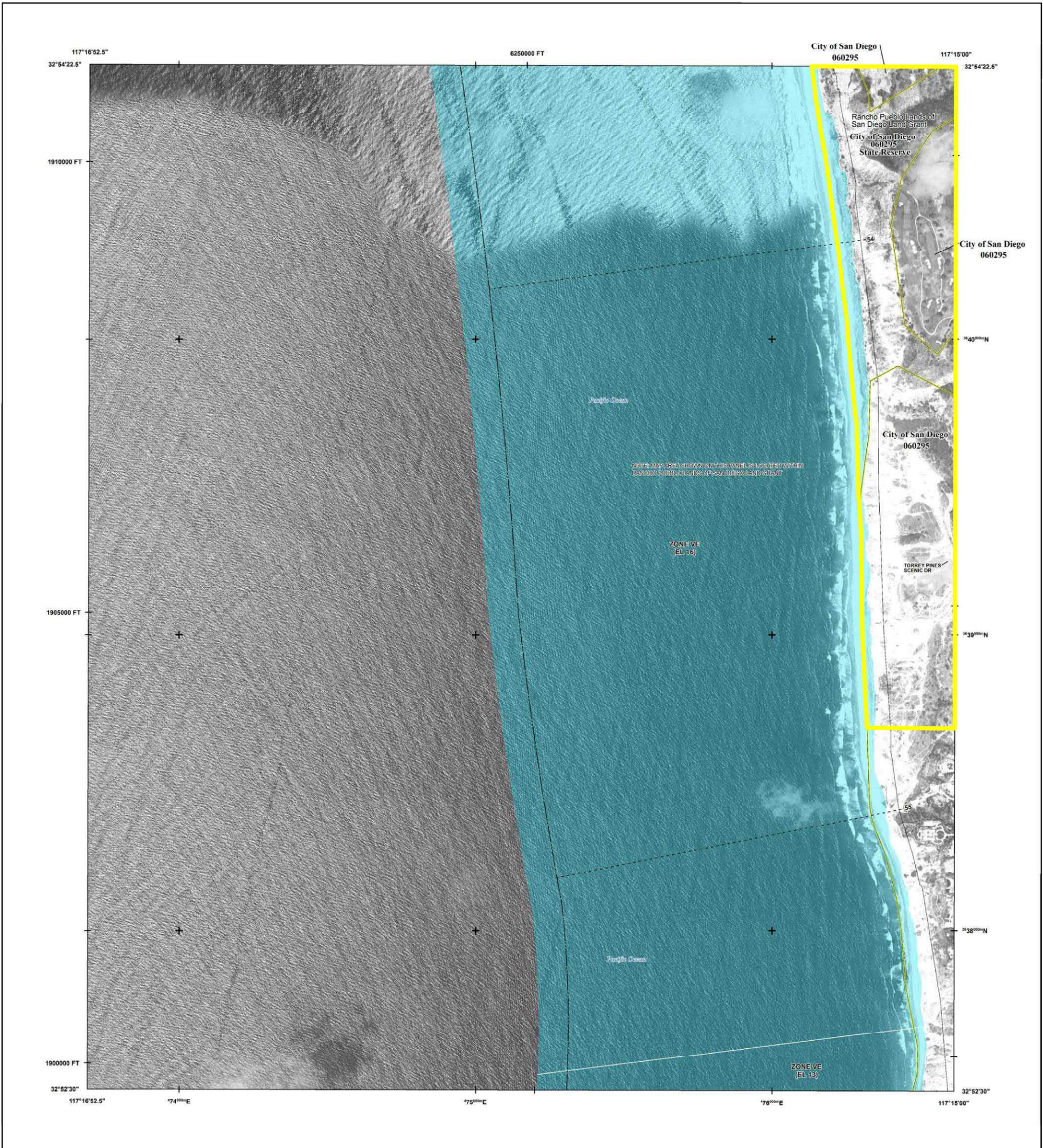
SWRCB (2014). Order NPDES No. CAS000001 – National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities.

SWRCB (2016). 303(d) List of Impaired Water Bodies. California Environmental Protection Agency, State Water Resources Control Board (SWRCB). Accessed April 2020.

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ATTACHMENT A

FEMA Flood Insurance Rate Maps (FIRMs)



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT. THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
OTHER AREAS OF FLOOD HAZARD	Area with Reduced Flood Risk due to Levee Sea Nntas Zone X
	Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard Zone X
	Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2927) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

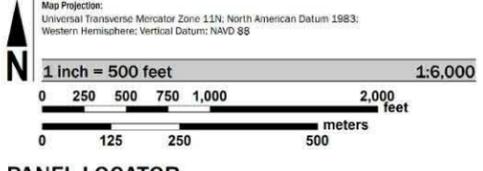
For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

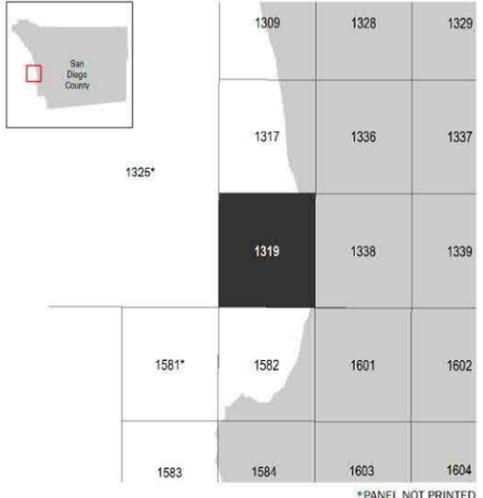
Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency, Department of Agriculture imagery was flown in 2016 and was produced with a 1-meter ground sample distance.

Coastal Base Flood Elevations shown on the map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Coastal flood elevations are also provided in the Coastal Transect Parameters table in the FIS Report for this jurisdiction. Elevations shown in the Coastal Transect Parameters table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

SCALE



PANEL LOCATOR



National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA
and Incorporated Areas

PANEL 1319 OF 2375

Panel Contains:
COMMUNITY: SAN DIEGO, CITY OF
NUMBER: 060295
PANEL: 1319
SUFFIX: H

VERSION NUMBER: 2.3.3.3
MAP NUMBER: 06073C1319H
MAP REVISED: DECEMBER 20, 2019

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was NAD83, GRS 1980 spheroid. Differences in datum, spheroid, projection, or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
 NGA, NINGS12
 National Geodetic Survey
 OSMC-3, #6202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

To obtain current elevation, description, and/or location information for beach marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1:24,000 from aerial photography dated 2009.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

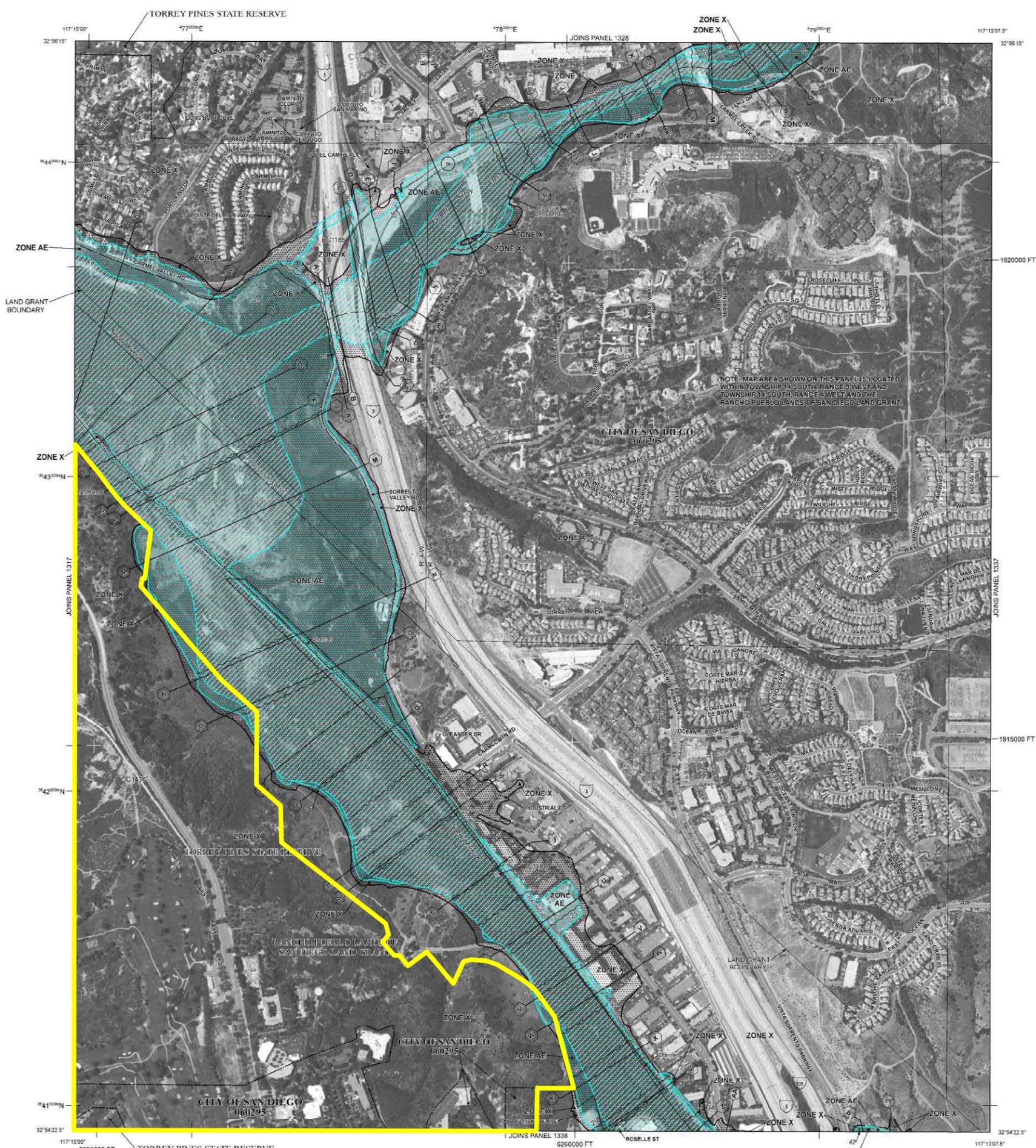
Contact the **FEMA Map Service Center** at 1-877-FEMA-MAP (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-368-0620 and its website at <http://msc.fema.gov/>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip/>.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined to be inoperable. Areas of Special Flood Hazard formerly protected from the 1% annual chance or greater flood.

ZONE AV Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood, areas of 1% annual chance flood with wave depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OTPA)

CBRS areas and OTPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
 0.2% annual chance floodplain boundary
 Flood insurance boundary
 Zone D boundary
 CBRS and OPA boundary
 Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
 Base Flood Elevation line and value, elevation in feet
 Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

 Cross section line
 Transect line
 67°07'30", 32°22'30"
 4750000E
 6000000 FT
 DX5510,
 M 11.5
 Over Mile

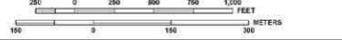
MAP REPOSITORIES
 Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
 June 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 May 16, 2012 - to update surge levels, to add beach and road names, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-626-6620.


MAP SCALE 1" = 500'


NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1336G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 1336 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	992295	1336	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
 06073C1336G

MAP REVISED
 MAY 16, 2012


 Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was NAD83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

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 National Geodetic Survey
 OSMC-3, #6202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1:24,000 from aerial photography dated 2009.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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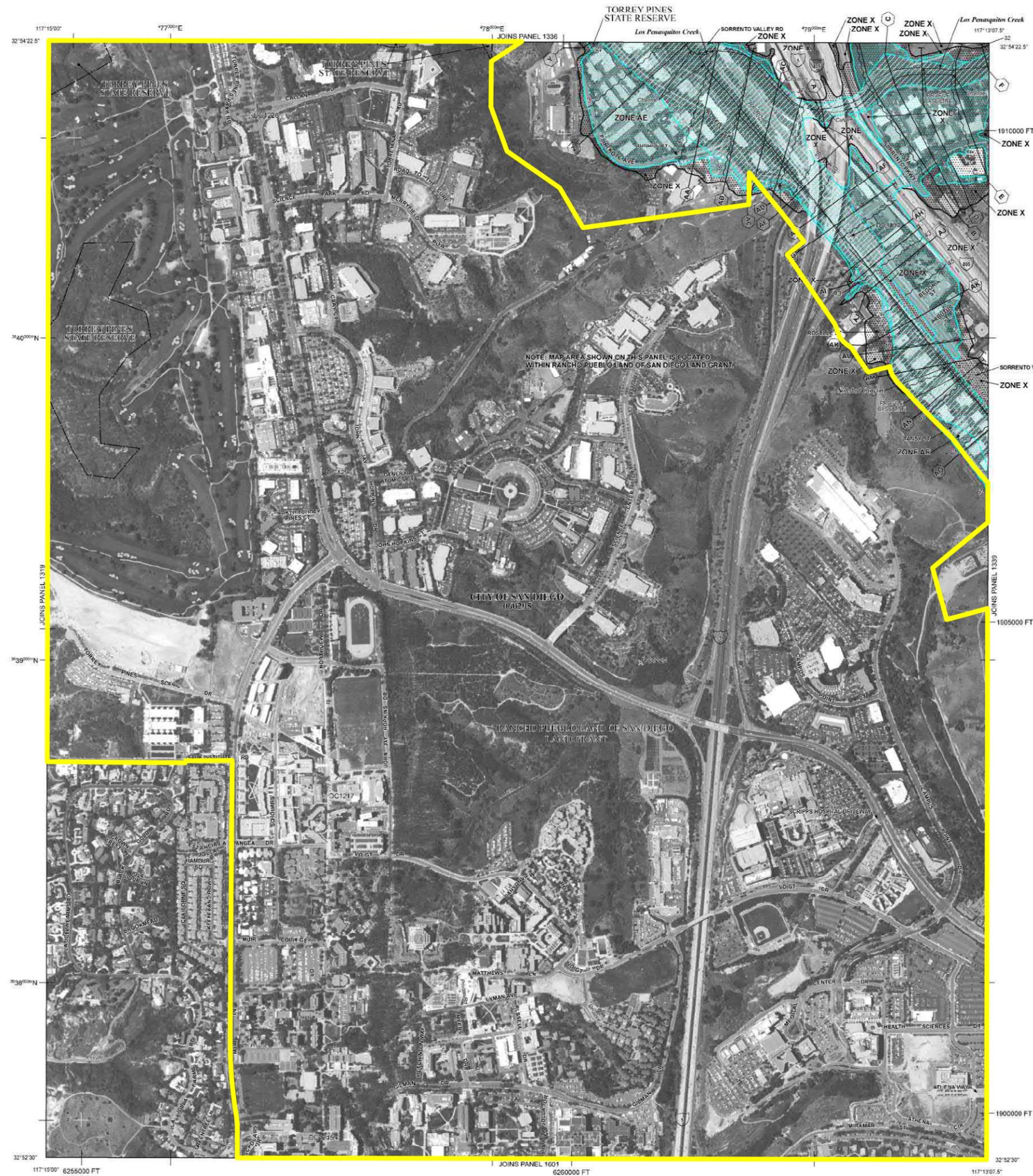
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The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFLA.

Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, ARR, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE ARR** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OTPA)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

 Cross section line

 Transect line

67°07'30" 32°22'30"

475000E

600000 FT

DX5510

1:61.5

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP

June 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

May 16, 2012 - to update surge levels, to add V and VE flood zones, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1338G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 1338 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	060295	1338	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06073C1338G

MAP REVISED
MAY 16, 2012



Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.1 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was NAD83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
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 National Geodetic Survey
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 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
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To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

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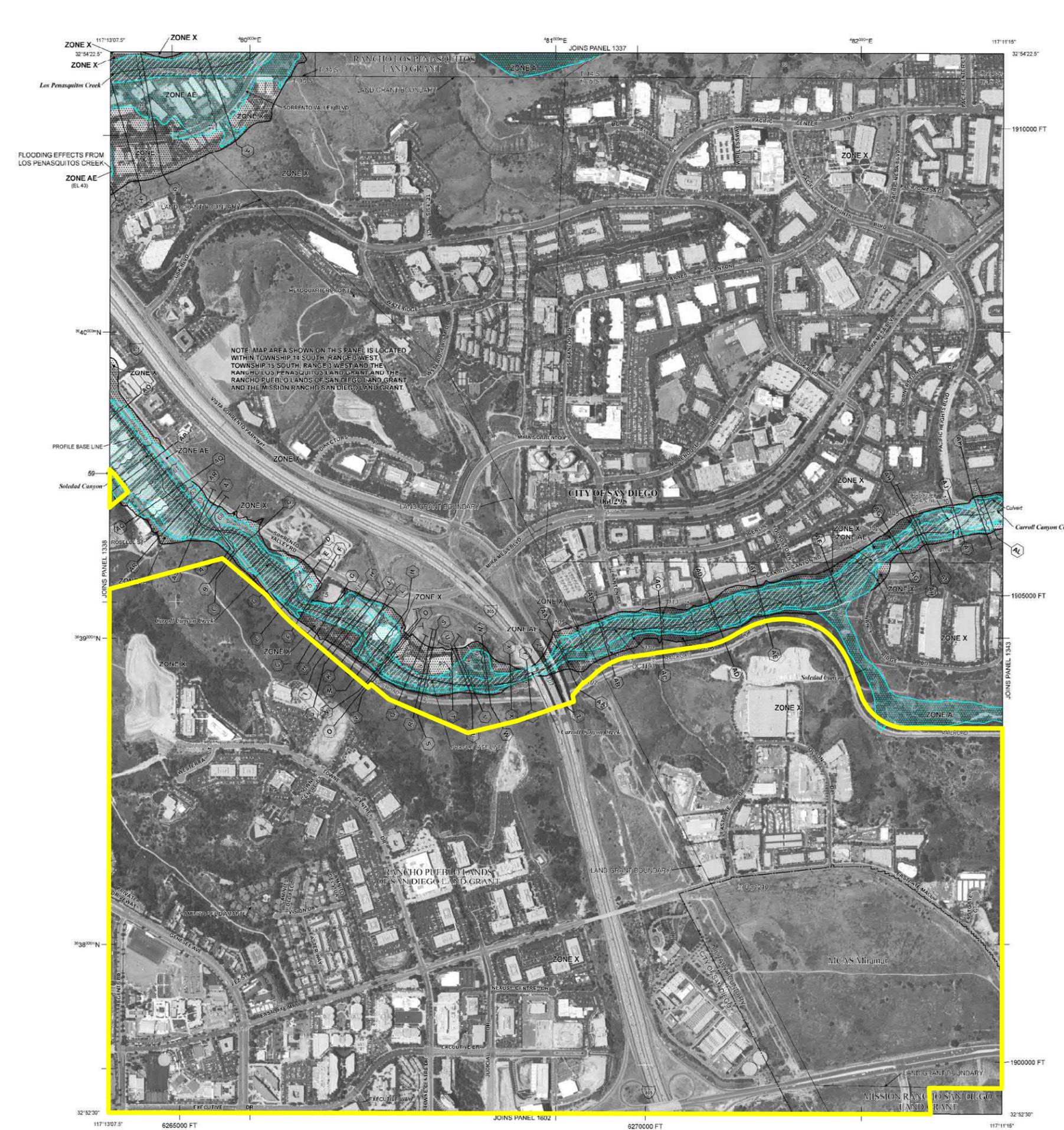
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The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFLA.

Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AV** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OTAs)

CBRS areas and OTAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- Zone D boundary
- CBRS and OTA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator and ticks, zone 11

5000-foot grid values; California State Plane coordinate system, Zone VI (FIPSZONE = 406), Lambert projection

Search mark (see explanation in Notes to Users section of this FIRM panel)

Scale

MAP REPOSITORIES
 Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
 June 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 May 16, 2012 - to update water levels, to add water level road returns, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

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MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1339G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1339 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	90295	1339	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06073C1339G

MAP REVISED
MAY 16, 2012



Federal Emergency Management Agency

NOTES TO USERS

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NGS Information Services
 NGA, NGS12
 National Geodetic Survey
 OSMC-3, #6202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1:24,000 from aerial photography dated 2009.

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Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

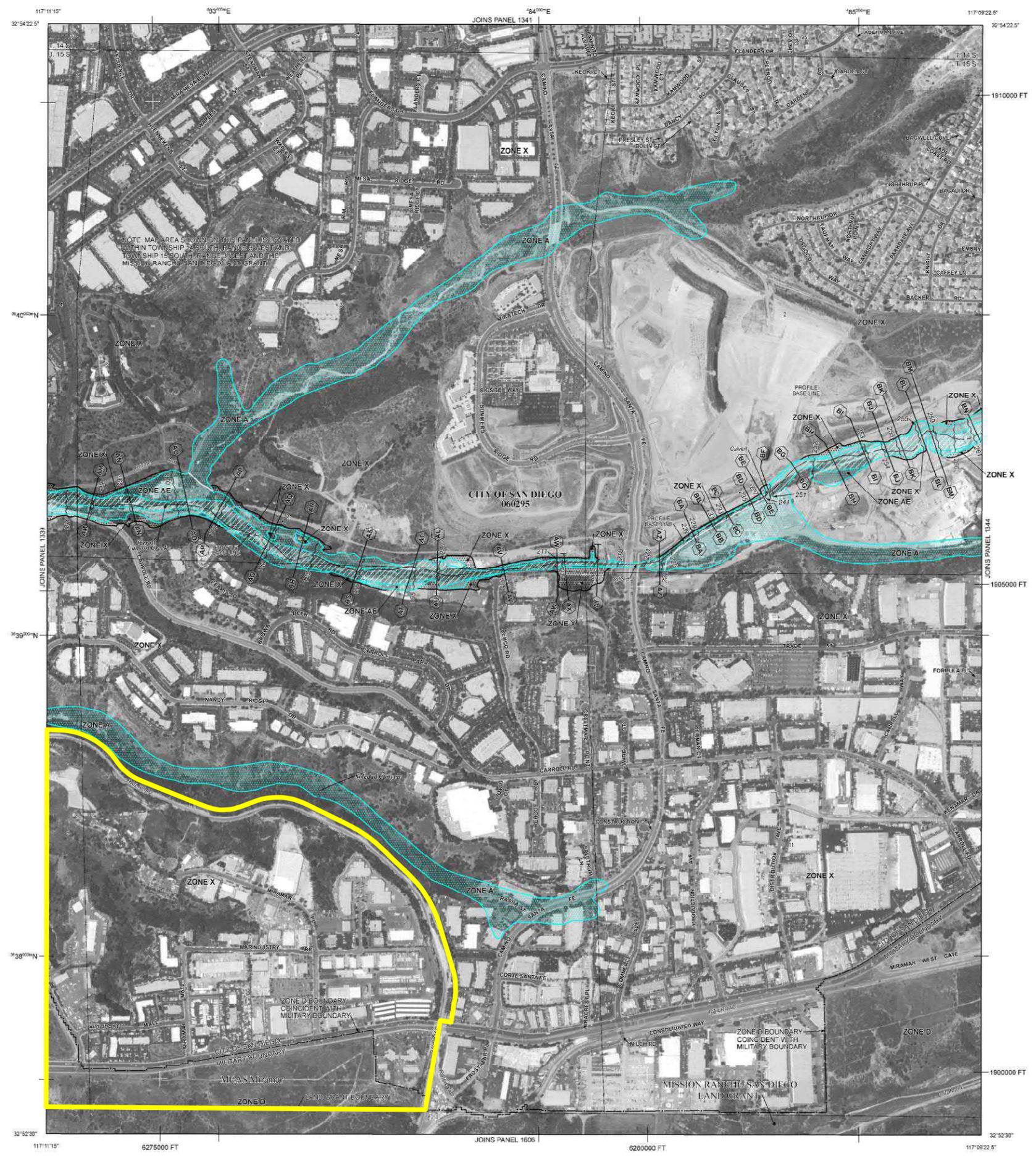
Contact the **FEMA Map Service Center** at 1-877-FEMA MAP (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-368-0620 and its website at <http://msc.fema.gov/>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip/>.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFLA.

Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE ARH Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OTAs)

CBRS areas and OTAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
 0.2% annual chance floodplain boundary
 Floodway boundary
 Zone D boundary
 CBRS and OTA boundary
 Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
 Base Flood Elevation line and value; elevation in feet
 Base Flood Elevation value where uniform within zone; elevation in feet

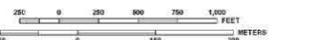
* Referenced to the North American Vertical Datum of 1988

 Cross section line
 Transect line
 67°07'30" 32°22'30"
 4750000E
 6000000 FT
 DX5610
 1:50,000
 MAP REPOSITORIES
 Refer to Map Repositories list on Map Index
 EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
 June 19, 1997
 EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 May 16, 2012 - to update insurance levels, to add newly insured areas, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-626-6620.

MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1343G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1343 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	060295	1343	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 06073C1343G

MAP REVISED MAY 16, 2012



Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was NAD83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zone used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
 NGA, NINGS 12
 National Geodetic Survey
 OSMC-3, #6202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

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Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, ARH, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE ARH Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

Map Symbols:

- Circle with A: Cross section line
- Circle with B: Transect line
- Circle with 25: Geographic coordinates
- Circle with 600000: Scale
- Circle with DX5610: Datum
- Circle with M 1.5: Scale

MAP REPOSITORIES
 Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
 June 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 May 16, 2012 - to update inaccurate levels, to add Venice and local rivers, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-626-6620.

MAP SCALE 1" = 500'

MAP SCALE 1" = 500'

MAP SCALE 1" = 500'

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1601G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1601 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	060295	1601	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 06073C1601G

MAP REVISED MAY 16, 2012

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was NAD83, GRS 1980 spheroid. Differences in datum, spheroid projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

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 National Geodetic Survey
 OSMC-3, #6202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

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Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being protected to provide protection from the 1% annual chance or greater flood.
- ZONE AV** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood, areas of 1% annual chance flood with wave depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Area Zones
- Search mark (see explanation in Notes to Users section of this FIRM panel)
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

 Cross section line

 Transect line

67°07'30" 32°22'30"

675000E
 6000000 FT
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 1:50,000

MAP REPOSITORIES
 Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
 June 19, 1997

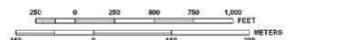
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 May 16, 2012 - to update surge levels, to add Vents and road returns, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1602G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 1602 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	060295	1602	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
 06073C1602G

MAP REVISED
 MAY 16, 2012

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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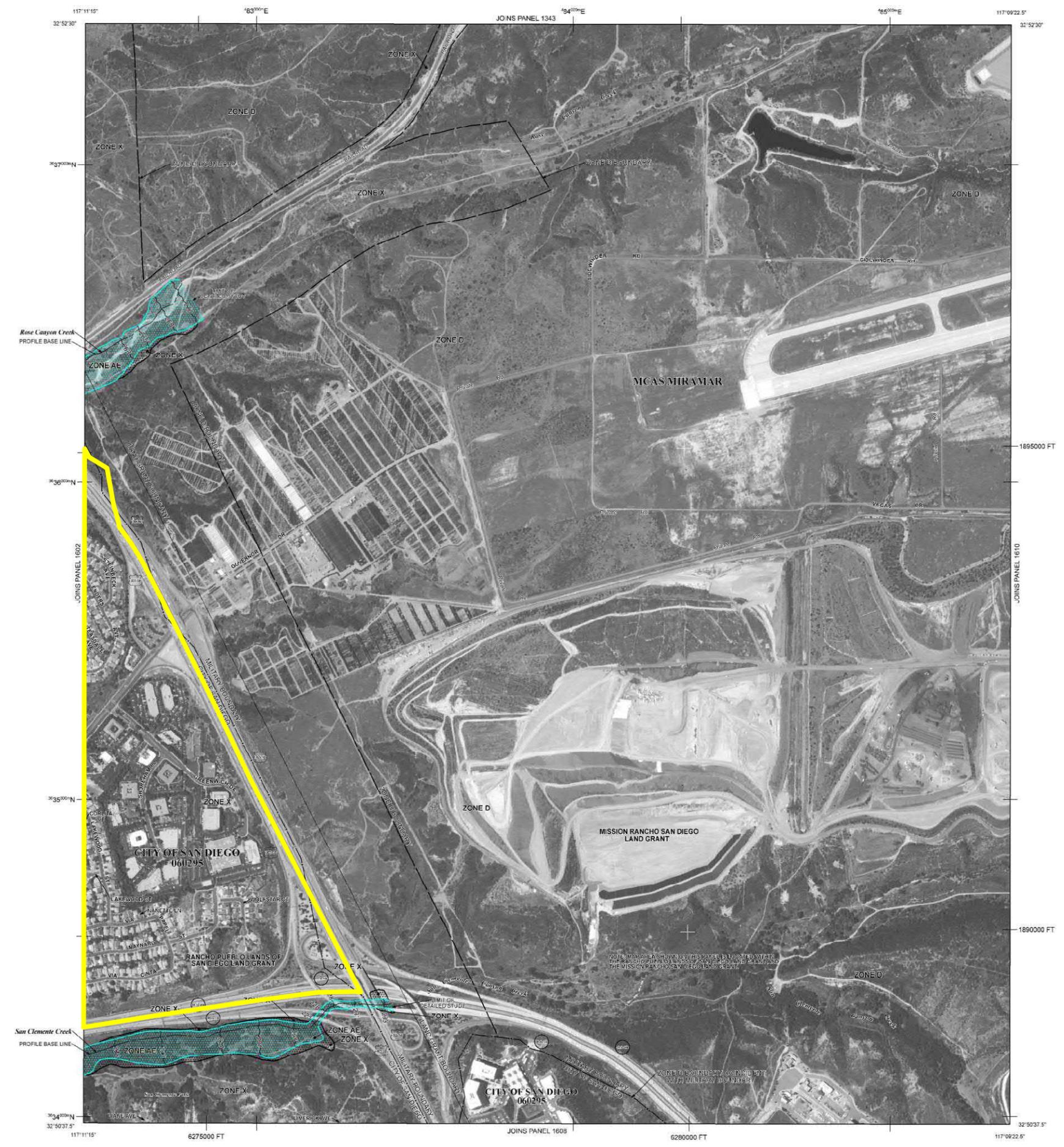
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The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AV** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

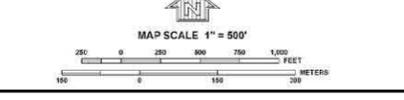
MAP REPOSITORIES
 Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
 June 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 May 16, 2012 - to update waterway levels, to add roads and road names, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-626-6620.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1606G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 1606 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	060295	1606	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
 06073C1606G

MAP REVISED
 MAY 16, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was NAD83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
 NJAA, NINGS12
 National Geodetic Survey
 OSMC-3, #6202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

To obtain current elevation, description, and/or location information for search marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1:24,000 from aerial photography dated 2009.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

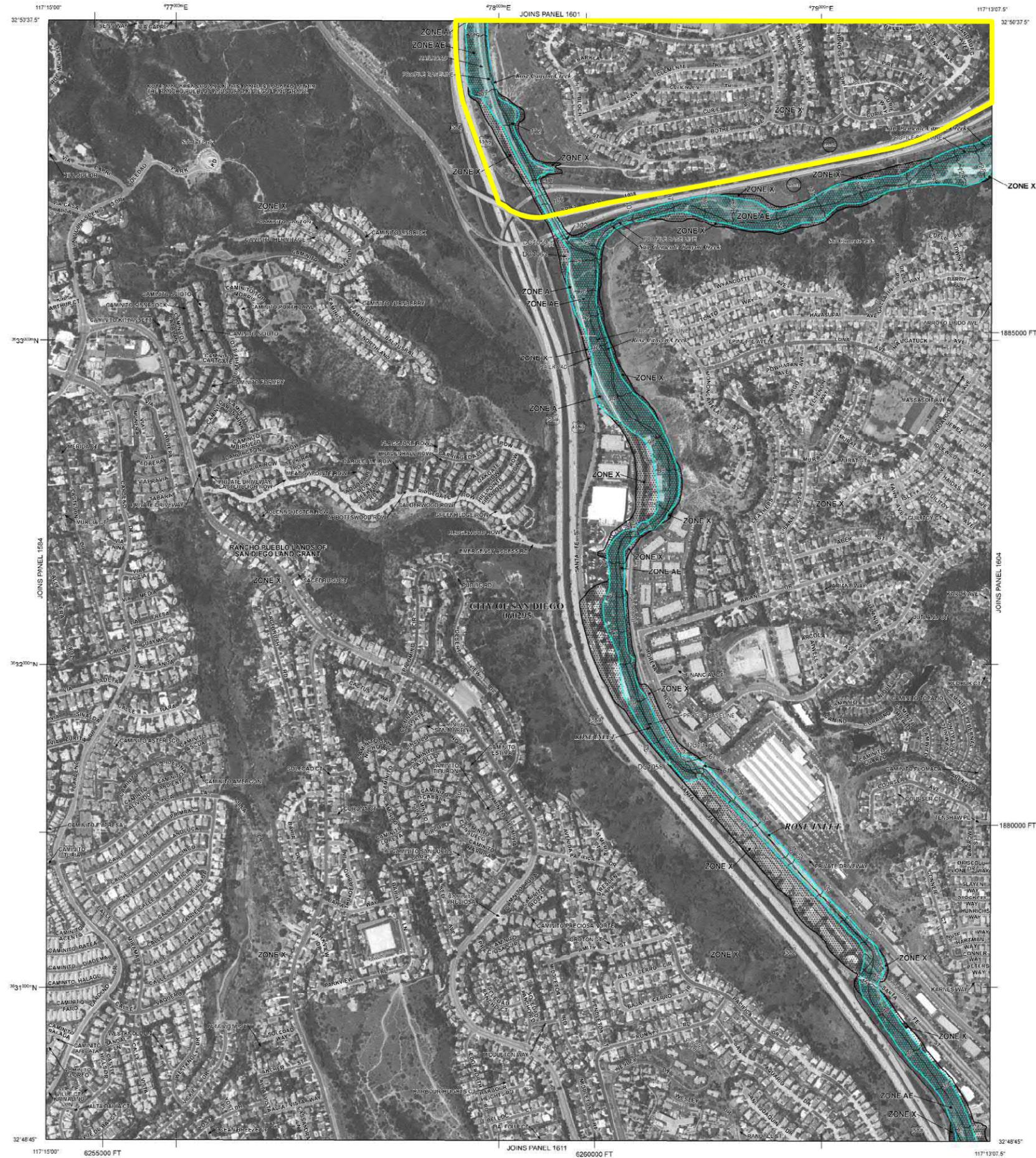
Contact the **FEMA Map Service Center** at 1-877-FEMA MAP (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-368-0620 and its website at <http://msc.fema.gov/>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/info/>.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFLA.

Legend

 University Community



LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
- The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, ARH, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
 - ZONE AE** Base Flood Elevations determined.
 - ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
 - ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
 - ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being protected to provide protection from the 1% annual chance or greater flood.
 - ZONE ARH** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
 - ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
 - ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood, areas of 1% annual chance flood with wave depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
 - ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OTAs)**
- CBRS areas and OTAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary
 - 0.2% annual chance floodplain boundary
 - Floodway boundary
 - Zone D boundary
 - CBRS and OPA boundary
 - Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
 - Base Flood Elevation line and value; elevation in feet
 - Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

 Cross section line

 Transect line

67°07'30" 32°22'30"

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator and ticks, zone 11

5000-foot grid values; California State Plane coordinate system, Zone VI (FIPSZONE = 406), Lambert projection

Search mark (see explanation in Notes to Users section of this FIRM panel)

600000 FT

DX5510

Scale Mile

MAP REPOSITORIES
 Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
 June 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 May 16, 2012 - to update minimum levels, to add V and VE zones, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1603G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1603 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	060295	1603	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 06073C1603G

MAP REVISED MAY 16, 2012



Federal Emergency Management Agency

NOTES TO USERS

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The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Legend

 University Community



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood, areas of 1% annual chance flood with wave depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OTPA)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- OTPA and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

 Cross section line

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Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator and ticks, zone 11

5000-foot grid values; California State Plane coordinate system, Zone VI (FIPSZONE = 406), Lambert projection

Search mark (see explanation in Notes to Users section of this FIRM panel)

 Scale bar

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP

June 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

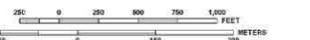
May 16, 2012 - to update community limits, to add basins and flood reserves, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1604G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1604 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO, CITY OF	060295	1604	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 06073C1604G

MAP REVISED MAY 16, 2012



Federal Emergency Management Agency

ATTACHMENT B

Excerpts from City of San Diego Municipal Code

§142.0133 Slope Gradient

- (a) All constructed slopes shall be designed for proper stability considering both geological and soil properties.
- (b) Cut and *fill* slopes not greater than 8 feet in height shall not exceed a gradient of 66 percent (1-½ horizontal feet to 1 vertical foot).
- (c) Cut and *fill* slopes greater than 8 feet in height shall not exceed a gradient of 50 percent (2 horizontal feet to 1 vertical foot).
- (d) Where extraordinary conditions exist to the extent that compliance with the standards of this Section would be infeasible, the City Engineer, or the Building Official pursuant to Section 129.0104(a)(15), may authorize cut and *fill* slopes on property not owned, controlled or maintained by the City to be steeper than those specified in Section 142.0133(b) and (c). All such slopes within or adjacent to a public right-of-way must be approved by the City Engineer. A determination that such steeper slopes are warranted shall be based upon the required *geotechnical report* that clearly demonstrates that the steeper slope will be stable and not endanger the public health, safety, and welfare. Such slopes shall be revegetated in accordance with a plan prepared by a landscape architect authorized to prepare landscape plans by the California Business and Profession Code.

(Amended 1-9-2001 by O-18910 N.S.; effective 8-8-2001.)

(Amended 7-31-2012 by O-20187 N.S.; effective 8-30-2012.)

§142.0134 Retaining Walls

Retaining walls shall comply with the height limits and construction material requirements in Chapter 14 Article 2, Division 3 (Fence Regulations).

(Retitled from “Retaining Walls and Structurally Enhanced Fill” and amended 1-9-2001 by O-18910 N.S.; effective 8-8-2001.)

§142.0135 Grading Within the *Special Flood Hazard Area*

Grading within the *Special Flood Hazard Area* shall comply with Chapter 14, Article 2, Division 2 (Drainage Regulations) and Chapter 14, Article 3, Division 1 (Environmentally Sensitive Lands Regulations).

(Amended 4-22-2002 by O-19051 N.S.; effective 10-8-2002.)

Article 2: General Development Regulations

Division 2: Storm Water Runoff and Drainage Regulations

*(Retitled from "Drainage Regulations" on 9-10-2001 by O-18977 N.S.;
effective 10-10-2001 outside the Coastal Overlay Zone;
effective 11-16-2001 within the Coastal Overlay Zone.)*

§142.0201 Purpose of Drainage Regulations

The purpose of this division is to regulate the *development* of, and impacts to, drainage facilities, to limit water quality impacts from *development*, to minimize hazards due to *flooding* while minimizing the need for construction of *flood* control facilities, to minimize impacts to *environmentally sensitive lands*, to implement the provisions of federal and state regulations, and to protect the public health, safety, and welfare.

(Amended 9-10-2001 by O-18977 N.S.; effective 10-10-2001 outside the Coastal Overlay Zone; effective 11-16-2001 within the Coastal Overlay Zone.)

§142.0202 When Drainage Regulations Apply

This division shall apply to all *development* in the City, whether or not a permit or other approval is required.

(Added 12-9-1997 by O-18451 N.S.; effective 1-1-2000.)

§142.0210 Construction Standards

All storm water runoff control, drainage, and *flood* control facilities shall be constructed in accordance with standards established in the Land Development Manual, the Standard Specifications for Public Works, and any City-adopted supplements.

(Amended 9-10-2001 by O-18977 N.S.; effective 10-10-2001 outside the Coastal Overlay Zone; effective 11-16-2001 within the Coastal Overlay Zone.)

EDITORS NOTE: The Land Development Manual includes:

- Coastal Bluffs and Beaches Guidelines
- Biology Guidelines
- Historical Resources Guidelines
- Submittal Requirements for Deviations within the Coastal Overlay Zone

See RR-292248 for the Coastal Bluffs and Beaches Guidelines of the Land

Development Code; RR-292249 for the Biology Guidelines of the Land Development Code; RR-292250 for the Historical Resources Guidelines of the Land Development Code; RR-292251 for the Submittal Requirements for Deviations within the Coastal Overlay Zone of the Land Development Code.

§142.0220 Storm Water Runoff Control

- (a) All *development* shall comply with Municipal Code Chapter 4, Article 3, Division 3 (Stormwater Management and Discharge Control).
- (b) All *development* shall be conducted to prevent erosion and stop sediment and pollutants from leaving the property to the maximum extent practicable. The property owner is responsible to implement and maintain temporary and permanent erosion, sedimentation, and water pollution control measures to the satisfaction of the City Manager, whether or not such measures are a part of approved plans. The property owner shall install, monitor, maintain, and revise these measures, as appropriate, to ensure their effectiveness. Controls shall include the following measures that address the *development's* potential erosion, sedimentation, and water pollution impacts.
 - (1) Erosion prevention.
 - (2) Sediment control.
 - (3) Phased *grading*.

(Retitled from "Stormwater Management and Discharge Control" and amended 9-10-2001 by O-18977 N.S.; effective 10-10-2001 outside the Coastal Overlay Zone; effective 11-16-2001 within the Coastal Overlay Zone.)

§142.0230 Development Within the Special Flood Hazard Area

All *development* within a *Special Flood Hazard Area* shall comply with Chapter 14, Article 3, Division 1 (Environmentally Sensitive Lands Regulations).
(Amended 4-22-2002 by O-19051 N.S.; effective 10-8-2002.)

- (i) Where erosion control measures are proposed to encroach upon or affect any portion of property owned by The City of San Diego or other public agency, or on lands subject to the public trust, the *applicant* shall provide written permission from the City Manager or public property owner before approval of any *development permit*. Documentation of this approval shall be recorded with the conditions of *development permit* approval. When an erosion control device encroaches directly on or otherwise affects State tidelands or publicly-owned property, the property owner shall be required to compensate for the use of public property and to mitigate the impacts of the protective device on the public beach.
- (j) Mitigation for impacts on State tidelands or public beach may include, but not be limited to, a mitigation fee to be used for beach and sand replenishment within the littoral cell of the project. The fee shall be roughly proportional to the value of the beach area lost as a result of the protective device and shall be deposited in the City of San Diego Beach Sand Mitigation Fund held by the San Diego Association of Governments.

(Added 12-9-1997 by O-18451 N.S.; amended 10-18-1999 by O-18691 N.S.; effective 1-1-2000.)

(Amended 11-28-2005 by O-19444 N.S.; effective 2-9-2006.)

EDITORS NOTE: The Land Development Manual includes:

Coastal Bluffs and Beaches Guidelines

Biology Guidelines

Historical Resources Guidelines

Submittal Requirements for Deviations within the Coastal Overlay Zone

See RR-292248 for the Coastal Bluffs and Beaches Guidelines of the Land Development Code; RR-292249 for the Biology Guidelines of the Land Development Code; RR-292250 for the Historical Resources Guidelines of the Land Development Code; RR-292251 for the Submittal Requirements for Deviations within the Coastal Overlay Zone of the Land Development Code.

§143.0145 Development Regulations for Special Flood Hazard Areas

- (a) Purpose and Intent.
 - (1) The Legislature of the State of California has conferred upon local governments the authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry, including regulations governing *development* within *Special Flood Hazard Areas*.

- (2) It is the intent of the City that these regulations shall not create liability on the part of the City, any officer or employee of the City, or the Federal Emergency Management Agency (FEMA), for any *flood* damages that result from reliance on this chapter or any associated administrative decision lawfully made.
 - (3) These regulations are not intended to repeal, abrogate, or impair any existing ordinances, easements, covenants, or deed restrictions. However, where these regulations conflict or overlap with another ordinance, easement, covenant, or deed restriction, the more stringent shall prevail.
- (b) *Special Flood Hazard Areas* within the City of San Diego are established in accordance with the report titled “*Flood Insurance Study, San Diego County, California*,” dated June 16, 1999 and the accompanying *Flood Insurance Rate Maps (FIRM)*, published by FEMA, on file in the office of the City Clerk as Document Nos. 18910-1 and 18910-2, including any supplements, amendments, and revisions which are properly promulgated by FEMA or the Federal Insurance Administrator.
 - (c) For the purpose of sections 143.0145 and 143.0146, the City Engineer is the designated Floodplain Administrator and shall administer, implement, and enforce these regulations.
 - (d) The degree of *flood* protection required by this section 143.0145 and section 143.0146 is based on scientific and engineering considerations, and is considered reasonable for regulatory purposes. Larger *floods* can and will occur on rare occasions. It is possible that increased *flood* heights may result from man-made or natural causes. This section 143.0145 and section 143.0146 do not imply that land outside a *Special Flood Hazard Area* or uses permitted within such areas will be free from *flooding* or *flood* damages.
 - (e) The Floodplain Management FEMA Definitions in the Land Development Manual Appendix S apply to the provisions of this section 143.0145 and section 143.0146. For purposes of this section 143.0145 and section 143.0146, if there is a conflict between the definitions in Appendix S and any other definitions in the San Diego Municipal Code, the definitions in Appendix S shall apply.
 - (f) The following development regulations and all other applicable requirements and regulations of FEMA apply to all *development* proposing to encroach into a *Special Flood Hazard Area*, including both the *floodway* and *flood fringe* areas, or that does not qualify for an exemption pursuant to section 143.0110(c).

(g) *Floodways*

- (1) Within the *floodway* portion of a *premises*, development regulations are as set forth for the OF zone, pursuant to Section 131.0231.
- (2) *Structures* associated with any allowed use shall comply with the following requirements:
 - (A) *Structures* shall not be attached to a foundation, in order to readily move them in case of *flood*; and
 - (B) *Structures* shall be removed upon imminence of *flooding*, as predicted by the National Weather Service or local public weather broadcast. If a *structure* is not removed and *flooding* occurs, the retrieval or salvage of the *structure* and repair of any damage caused by the *structure* shall be the responsibility of the owner.
- (3) *Channelization* or other substantial alteration of rivers or streams shall be limited to that necessary for the following:
 - (A) Essential public service projects, where no other feasible construction method or alternative project location exists; and
 - (B) *Flood* control projects, where no other feasible method for protecting existing public or private *development* exists and where such protection is necessary for public safety.
 - (C) Projects where the primary function is the improvement of fish and wildlife habitat.
- (4) *Development* in *floodways* shall be offset by improvements or modifications to enable the passage of a *base flood*, in accordance with the FEMA standards and regulations provided in Section 143.0146.
- (5) *Development* that involves *channelization* or other substantial alteration of rivers or streams is subject to the following requirements.
 - (A) All requirements and relevant recommendations of hydrological studies for the watershed of the affected stream, as approved by the City Engineer, shall be incorporated into the project design and mitigation measures. These requirements include erosional characteristics, flow velocities, volume, sediment transport, and maintenance of hydrology.
 - (B) The channel shall be designed to ensure that the following occur:
 - (i) Stream scour is minimized;

- (ii) Erosion protection is provided;
 - (iii) Water flow velocities are maintained as specified by the City Engineer;
 - (iv) There are neither significant increases nor contributions to downstream bank erosion and sedimentation of *sensitive biological resources*; acceptable techniques to control stream sediment include planting riparian vegetation in and near the stream and detention or retention basins;
 - (v) Wildlife habitat and corridors are maintained;
 - (vi) Resource management criteria are implemented consistent with applicable *land use plans*; and
 - (vii) Groundwater recharge capability is maintained or improved.
- (C) Channels that accommodate a *base flood* shall do so without increasing the water surface elevation more than one foot at any point from the level of a nonconfined *base flood* in the natural undeveloped floodplain. Channels may accommodate less than a *base flood* (low-flow channels), but shall be designed and constructed in accordance with FEMA regulations.
- (D) All artificial channels shall consist of natural bottoms and sides and shall be designed and sized to accommodate existing and proposed riparian vegetation and other natural or proposed constraints. Where maintenance is proposed or required to keep vegetation at existing levels compatible with the design capacity of the channel, a responsible party shall be identified and a maintenance and monitoring process shall be established to the satisfaction of the City Engineer.
- (6) *Development* shall not significantly adversely affect existing *sensitive biological resources* on-site or off-site.
- (7) Within the Coastal Overlay Zone, no *structure* or portion thereof shall be erected, constructed, converted, established, altered, or enlarged, or no landform alteration *grading*, placement, or removal of vegetation, except that related to a pre-*FIRM* historic and ongoing agricultural operation, or land division shall be permitted, provided:

- (A) Parking lots, new roadways and roadway expansions shall be allowed only where indicated on an adopted *Local Coastal Program land use plan*.
 - (B) *Floodway* encroachments for utility and transportation crossings shall be offset by improvements or modifications to enable the passage of the *base flood*, in accordance with the FEMA standards and regulations provided in Section 143.0146.
- (h) *Flood Fringe*. The applicable development regulations are those in the underlying zone, subject to the following supplemental regulations:
- (1) Within the *flood fringe* of a *Special Flood Hazard Area*, permanent *structures* and *fill* for permanent *structures*, roads, and other *development* are allowed only if the following conditions are met:
 - (A) The *development* or *fill* will not significantly adversely affect existing *sensitive biological resources* on-site or off-site;
 - (B) The *development* is capable of withstanding *flooding* and does not require or cause the construction of off-site *flood* protective works including artificial *flood* channels, revetments, and levees nor will it cause adverse impacts related to *flooding* of properties located upstream or downstream, nor will it increase or expand a (*FIRM*) Zone A;
 - (C) *Grading* and *filling* are limited to the minimum amount necessary to accommodate the proposed *development*, harm to the environmental values of the floodplain is minimized including peak flow storage capacity, and *wetlands* hydrology is maintained;
 - (D) The *development* neither significantly increases nor contributes to downstream bank erosion and sedimentation nor causes an increase in *flood* flow velocities or volume; and
 - (E) There will be no significant adverse water quality impacts to downstream wetlands, lagoons or other *sensitive biological resources*, and the *development* is in compliance with the requirements and regulations of the National Pollution Discharge Elimination System Permit, as implemented by the City of San Diego.

- (F) The design of the *development* incorporates the findings and recommendations of both a site specific and coastal watershed hydrologic study.
- (2) All *development* that involves *fill*, *channelization*, or other alteration of a *Special Flood Hazard Area* is subject to the requirements for *channelization* in Section 143.0145(e)(5) and with FEMA regulations.

(Amended 4-22-2002 by O-19051 N.S.; effective 10-8-2002.)

(Amended 11-13-08 by O-19805 N.S.; effective 12-13-2008.)

(Amended 1-8-2020 by O-21162 N.S.; effective 2-9-2020.)

[Editors Note: Amendments as adopted by O-21162 N.S. will not apply within the Coastal Overlay Zone until the California Coastal Commission certifies it as a Local Coastal Program Amendment.

Click the link to view the Strikeout Ordinance highlighting changes to prior language http://docs.sandiego.gov/municode_strikeout_ord/O-21162-SO.pdf]

§143.0146 Supplemental Regulations for Special Flood Hazard Areas

All proposed *development* in a *Special Flood Hazard Area*, including *substantial improvements*, is subject to the following requirements and all other applicable requirements and regulations of FEMA. The *applicant* for each *development* project, including applicants for *substantial improvement* projects, shall obtain the federal and state permits required by 44 C. F. R. § 60.3(a)(1), as may be amended.

- (a) *Development* and Permit Review
 - (1) Where *base flood elevation* data has not been provided by the *Flood Insurance Study*, the City Engineer shall obtain, review, and utilize *base flood elevation* and *floodway* data available from federal or state sources, or require submittal of such data from the *applicant*. The City Engineer shall make interpretations, where needed, as to the location of the boundaries of the areas of the *Special Flood Hazard Area*, based on the best available engineering or scientific information.
 - (2) Proposed *development* in a *Special Flood Hazard Area* shall not adversely affect the *flood* carrying capacity of areas where *base flood elevations* have been determined but the *floodway* has not been designated. “Adversely affect” as used in this section means that the cumulative effect of the proposed *development*, when combined with all other existing and anticipated *development*, will not increase the water surface elevation of the *base flood* more than one foot at any point.

- (3) In all cases where a watercourse is to be altered the City Engineer shall do the following:
 - (A) Notify affected, adjacent communities and the California Department of Water Resources of any proposed alteration or relocation of a watercourse and submit evidence of the notice to the Federal Insurance Administration;
 - (B) Require that the *flood* carrying capacity of the altered or relocated portion of the watercourse is maintained; and
 - (C) Secure and maintain for public inspection and availability the *certifications*, appeals, and variances required by these regulations.
 - (4) The *applicant* shall grant a flowage easement to the City for that portion of the property within a *floodway*.
 - (5) Appropriate agreements shall be secured between the *applicant* and the City to assure participation by the *applicant* or any successor in interest in financing of future *flood* control works.
 - (6) *Development* in a *Special Flood Hazard Area* shall not increase or expand a *FIRM* Zone A.
 - (7) In all *floodways*, any *encroachment*, including *fill*, new construction, significant modifications, and other *development* is prohibited unless *certification* by a registered professional engineer is provided demonstrating that *encroachments* will not result in any increase in *flood* levels during the occurrence of the *base flood* discharge except as allowed under Code of Federal Regulations Title 44, Chapter 1, Part 60.3(c)(13).
 - (8) The *applicant* shall obtain, keep, and make available for inspection by the City Engineer the following *certifications*:
 - (A) *certification* required for *lowest floor* elevations; and
 - (B) *certification* required for elevation or *floodproofing* of nonresidential *structures*.
- (b) Standards for *Subdivisions*
- (1) All preliminary *subdivision* proposals shall identify the *Special Flood Hazard Area* and the elevation of the *base flood*.

- (2) All final *subdivision maps* shall provide the elevation of proposed *structures* and pads. If the site is *filled* above the *base flood elevation*, the *lowest floor*, including *basement*, shall be certified to be 2 feet above the *base flood elevation* by a registered professional engineer or surveyor, and the *certification* shall be provided to the City Engineer.
- (3) All *subdivisions* shall be designed to minimize *flood* damage.
- (4) All *subdivisions* shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize *flood* damage.
- (5) All *subdivisions* shall provide adequate drainage to reduce exposure to *flood* hazards.
- (6) The final map shall bear the notation “Subject to Inundation” for those portions of the property with a *grade* lower than 2 feet above the *base flood elevation*.

(c) Standards of Construction

In all *Special Flood Hazard Areas*, the following standards apply for all *development*.

- (1) All permitted, permanent *structures* and other significant improvements shall be anchored to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
- (2) All permitted permanent *structures* and other significant improvements shall be constructed with materials and utility equipment resistant to *flood* damage.
- (3) Construction methods and practices that minimize *flood* damage shall be used.
- (4) All electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be designed and located to prevent water from entering or accumulating within the equipment components during conditions of *flooding*.

- (5) *Breakaway walls* shall be certified by a registered engineer or architect to meet all applicable FEMA requirements. The *certification* shall be provided to the City Engineer before final inspection approval.
- (6) New construction or *substantial improvement* of any *structure* shall have the *lowest floor*, including *basement*, elevated at least 2 feet above the *base flood elevation*. Upon completion of the *development*, the elevation of the *lowest floor*, including *basement*, shall be certified by a registered professional engineer or surveyor to be properly elevated. The *certification* shall be provided to the City Engineer before final inspection approval. The City Engineer reserves the right to require a preliminary *certification* before foundation inspection approval.
- (7) New construction or *substantial improvement* of any *structure* in *FIRM Zone AH or AO* shall have the *lowest floor*, including *basement*, elevated above the highest adjacent *grade* at least 2 feet higher than the depth number specified on the *FIRM*, or at least 4 feet if no depth number is specified. Upon the completion of the *structure* the elevation of the *lowest floor*, including *basement*, shall be certified by a registered professional engineer or surveyor, to be properly elevated. The *certification* shall be provided to the City Engineer before final inspection approval. The City Engineer may require a preliminary *certification* before foundation inspection approval.
- (8) Permitted nonresidential construction shall either be elevated as required by Section 143.0146(c)(6) or (7) or, together with attendant utility and sanitary facilities, meet the flood proofing requirements of FEMA. *Certification* by a registered professional engineer or architect that such requirements are met shall be provided to the City Engineer before final inspection approval. The City Engineer may require a preliminary *certification* before foundation inspection approval.
- (9) Fully enclosed areas below the *lowest floor* that are subject to *flooding* shall be certified by a registered professional engineer or architect that they comply with the flood proofing requirements of FEMA. The *certification* shall be provided to the City Engineer before final inspection approval.

- (10) Within *FIRM* Zones AH or AO, new construction and *substantial improvements* of any *structure* shall be constructed so that there are adequate drainage paths around *structures* on slopes to guide *flood* waters around and away from proposed *structures*.
- (11) All new construction and *substantial improvements* of *structures* with fully enclosed areas below the *lowest floor*, excluding *basements*, that are usable solely for parking of vehicles, building access, or storage, and which are subject to *flooding*, shall be designed to automatically equalize hydrostatic *flood* forces on exterior walls by allowing for the entry and exit of floodwater as required by 44 C. F. R. § 60.3(c)(5), as may be amended. Designs for meeting this requirement must be *certified* by a registered professional engineer or architect, or meet or exceed the following minimum criteria:
 - (i) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to *flooding* shall be provided;
 - (ii) The bottom of all openings shall be no higher than one foot above *grade*; and
 - (iii) Openings may be equipped with screens, louvers, valves or other coverings or devices provided that they permit the automatic entry and exit of floodwater.

(d) Standards for *Manufactured Homes*

All new and replacement *manufactured homes* and additions to *manufactured homes* are subject to the following regulations.

- (1) The *lowest floor* shall be elevated at least 2 feet above the *base flood elevation*.
- (2) *Manufactured homes* shall be securely anchored to a permanent foundation system to resist flotation, collapse, or lateral movement.
- (3) A registered engineer or architect must certify that the conditions of this subsection have been met. The *certification* shall be provided to the City Engineer before final inspection approval.

- (4) Within *Special Flood Hazard Areas*, the placement or installation of *manufactured homes* shall comply with the standards for coastal high hazard areas in section 143.0146(g).

(e) Standards for Utilities

Certification shall be provided to the City Engineer before final inspection approval that the following requirements have been met.

- (1) All new and replacement water supply and sanitary sewage systems shall be designed to minimize or eliminate infiltration of *flood* waters into the system and discharge from systems into *flood* waters.
- (2) On-site waste disposal systems shall be located and designed to avoid impairment to them or contamination from them during *flooding*.

(f) Standards for Recreational Vehicles

- (1) A recreational vehicle, as defined by FEMA and used in this Section, is a vehicle built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light-duty truck and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.
- (2) All recreational vehicles placed in *Special Flood Hazard Areas* shall comply with one of the following:
 - (A) Be on the site for fewer than 180 consecutive days; or
 - (B) Be fully licensed with the state and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or
 - (C) Meet the standards for *manufactured homes* in Section 143.0146(d).

(g) Standards for Coastal High Hazard Area

- (1) A coastal high hazard area is an area of special *flood* hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms. It is subject to high velocity waters, including coastal and tidal inundation. The area is designated on a *FIRM Zone* V1-30, VE, or V.
- (2) Within coastal high hazard areas, *FIRM Zones* V1-30, VE, and V, the following standards shall apply:
 - (A) All new *development*, including *substantial improvement* to an existing *structure*, shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the bottom of the lowest horizontal structural member of the *lowest floor* (excluding the pilings or columns) is elevated to or about the *base flood* level. The pile or column foundation and *structure* attached thereto shall be anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the *base flood*. Wind loading values used shall be those required by applicable state or local building standards.
 - (B) All new *development* shall be located on the landward side of the reach of mean high tide.
 - (C) All new *development* and any *substantial improvement* to an existing *structure* shall have the space below the *lowest floor* free of obstructions or constructed with breakaway walls. Such enclosed space shall be used solely for parking of vehicles, building access or storage.
 - (D) *Fill* shall not be used for structural support of buildings.
 - (E) Man-made alteration of sand dunes which would increase potential *flood* damage is prohibited.
 - (F) The *applicant* for any new *development* shall provide the following records to the satisfaction of the City Engineer:

- (i) Certification by a registered engineer or architect that a proposed *structure* complies with Section 143.0146(g); and
 - (ii) Plans that identify the elevation (in relation to mean sea level) of the bottom of the lowest horizontal structural member of the *lowest floor* (excluding pilings or columns) of all new *structures* and any *substantial improvements* to existing *structures*, and whether such *structures* contain a *basement*.
- (h) The City Engineer shall notify the San Diego District Offices of the Coastal Commission of any pending changes to the adopted Flood Insurance Rate Maps affecting property within the Coastal Overlay Zone when the City Engineer receives notification of such potential changes. The City Engineer shall notify the Commission staff when *coastal development* within the City of San Diego's Coastal Development Permit jurisdiction would require processing a change to the FIRM maps. The City Engineer shall ensure that the Commission's District Office has the most current effective Flood Insurance Rate Maps approved by FEMA by forwarding any revised maps affecting the Coastal Overlay Zone within thirty working days of the City Engineer's receipt.
- (i) If a *development* changes the *base flood* elevations due to physical alterations, the permit *applicant* shall be required to submit technical or scientific data to FEMA for a Letter of Map Revision (LOMR) within 6 months of information becoming available or project completion, whichever comes first.

(Amended 4-22-2002 by O-19051 N.S.; effective 10-8-2002.)

(Amended 8-4-2011 by O-20081 N.S.; effective 10-6-2011.)

(Amended 4-5-2016 by O-20634 N.S.; effective 5-5-2016.)

(Amended 1-8-2020 by O-21162 N.S.; effective 2-9-2020.)

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ATTACHMENT C

Excerpts from City of San Diego General Plan



G. Storm Water Infrastructure

Goals

- ◆ Protection of beneficial water resources through pollution prevention and interception efforts.
- ◆ A storm water conveyance system that effectively reduces pollutants in urban runoff and storm water to the maximum extent practicable.

Discussion

The City's storm water pollution prevention efforts and conveyance system strive to protect the quality of our recreational waters and potable water resources as mandated by the federal Clean Water Act of 1972 and the San Diego Regional Water Quality Control Board. The City also maintains compliance with the Water Quality Control Plan for the San Diego Region 9 also referred to as the Basin Plan, and with storm water permits. These functions require a multi-faceted approach that couples infrastructure improvements and maintenance, water quality monitoring, source identification of pollutants, land use planning policies and regulations, and pollution prevention activities such as education, code enforcement, outreach, public advocacy, and training. Additional discussion on Urban Runoff Management, Section E, is included in the Conservation Element.



City of San Diego storm drain

The City has more than 39,000 storm drain structures and over 900 miles of storm drain pipes and channels serving approximately 237 square miles of urbanized development. Many storm water infrastructure projects do not have the opportunity to affect site design or implement other means to keep pollutants from entering storm drain flows. Therefore, prevention through education, outreach, code enforcement, and other efforts continues to be the most effective method of protecting water resources. Secondly, capital improvement investments in storm water structures (curbs, gutters, inlets, catch basins, pipes, and others) determined through Best Management Practices (BMP) are critical in order to reduce pollutant loading to acceptable levels. Public projects should be evaluated for their impact on the storm drain conveyance system and



incorporate storm water quality and conveyance structures during the design process. Similarly, private development will mitigate the impacts of its development on the storm water conveyance system while overall system monitoring including the identification of needs is also performed by the City.

In addition to capital investments in storm water structures, operations and maintenance are equally critical to ensure governmental compliance and clean water resources. Furthermore, state regulations require that the City keep track of storm water structure locations and maintenance via inspections, and in some cases, collection and/or reporting of storm water quality monitoring data. The storm drain fee and other sources of funds are instrumental in ensuring compliance with legal mandates and maintaining storm water prevention and conveyance functions.

The Municipal Storm Sewer System Permit (MS4 Permit), issued by the San Diego Regional Water Quality Control Board (RWQCB), requires all development and redevelopment projects to implement storm water source control and site design practices to minimize the generation of pollutants. Additionally, the MS4 Permit requires new development and significant redevelopment projects that exceed certain size threshold to implement Structural Storm Water Best Management Practices (Structural BMPs) to reduce pollutant in storm water runoff and control runoff volume.

The MS4 Permit is re-issued every five years, typically imposing more stringent requirements on a wider range of development. These requirements are adopted in the City's Land development Manual; Storm Water Standards Manual and apply to both private development and public improvements. There is an increased reliance on Low Impact Development (LID) strategies to meet the MS4 Permit requirements and TMDL as well. Examples of LID techniques are bioretention cells, green roofs, porous pavement, infiltration basins and biofiltration planters.

Policies

- PF-G.1. Ensure that all storm water conveyance systems, structures, and maintenance practices are consistent with federal Clean Water Act and California Regional Water Quality Control Board NPDES Permit standards.
- PF-G.2. Install infrastructure that includes components to capture, minimize, and/or prevent pollutants in urban runoff from reaching receiving waters and potable water supplies.



- PF-G.3. Meet and preferably exceed regulatory mandates to protect water quality in a cost-effective manner monitored through performance measures.
- PF-G.4. Develop and employ a strategic plan for the City's watersheds to foster a comprehensive approach to storm water infrastructure improvements.
- PF-G.5. Identify and implement BMPs for projects that repair, replace, extend or otherwise affect the storm water conveyance system. These projects should also include design considerations for maintenance, inspection, and, as applicable, water quality monitoring.
- PF-G.6. Identify partnerships and collaborative efforts to sponsor and coordinate pollution prevention BMPs that benefit storm water infrastructure maintenance and improvements.



Conservation Element

The City's parks, open space, trails and pedestrian linkages are part of an integrated system that connect with regional and state resources and provide opportunities for residents and visitors to experience San Diego's open spaces. The Recreation Element describes the attributes of designated and dedicated park and open space lands for the provision of outdoor recreation. Some important open space areas are not preserved as dedicated park land, but are protected through regulations or other private property restrictions such as conservation or open space easements.

Open space that is designated in community plans and other land use plans is an important component of the open space system because of its value in protecting natural landforms, defining community boundaries, providing natural linkages between communities, providing visually appealing open spaces, and protecting habitat and biological systems of community importance that are not otherwise included in the MHPA.

Policies

- CE-B.1. Protect and conserve the landforms, canyon lands, and open spaces that: define the City's urban form; provide public views/vistas; serve as core biological areas and wildlife linkages; are wetlands habitats; provide buffers within and between communities; or provide outdoor recreational opportunities.
- Utilize Environmental Growth Funds and pursue additional funding for the acquisition and management of MHPA and other important community open space lands.
 - Support the preservation of rural lands and open spaces throughout the region.
 - Protect urban canyons and other important community open spaces including those that have been designated in community plans for the many benefits they offer locally, and regionally as part of a collective citywide open space system (see also Recreation Element, Sections C and F; Urban Design Element, Section A).
 - Minimize or avoid impacts to canyons and other environmentally sensitive lands, by relocating sewer infrastructure out of these areas where possible, minimizing construction of new sewer access roads into these areas, and redirecting of sewage discharge away from canyons and other environmentally sensitive lands.
 - Encourage the removal of invasive plant species and the planting of native plants near open space preserves.
 - Pursue formal dedication of existing and future open space areas throughout the City, especially in core biological resource areas of the City's adopted MSCP Subarea Plan.
 - Require sensitive design, construction, relocation, and maintenance of trails to optimize public access and resource conservation.
- CE-B.2. Apply the appropriate zoning and Environmentally Sensitive Lands (ESL) regulations to limit development of floodplains, sensitive biological areas including wetlands, steep hillsides, canyons, and coastal lands.



- a. Manage watersheds and regulate floodplains to reduce disruption of natural systems, including the flow of sand to the beaches. Where possible and practical, restore water filtration, flood and erosion control, biodiversity and sand replenishment benefits.
 - b. Limit grading and alterations of steep hillsides, cliffs and shoreline to prevent increased erosion and landform impacts.
- CE-B.3. Use natural landforms and features as integrating elements in project design to complement and accentuate the City's form (see also Urban Design Element, Section A).
- CE-B.4. Limit and control runoff, sedimentation, and erosion both during and after construction activity.
- CE-B.5. Maximize the incorporation of trails and greenways linking local and regional open space and recreation areas into the planning and development review processes.
- CE-B.6. Provide an appropriate defensible space between open space and urban areas through the management of brush, the use of transitional landscaping, and the design of structures (see also Urban Design Element, Policy UD-A.3.o). Continue to implement a citywide brush management system.



THE CITY OF SAN DIEGO General Plan

Conservation Element

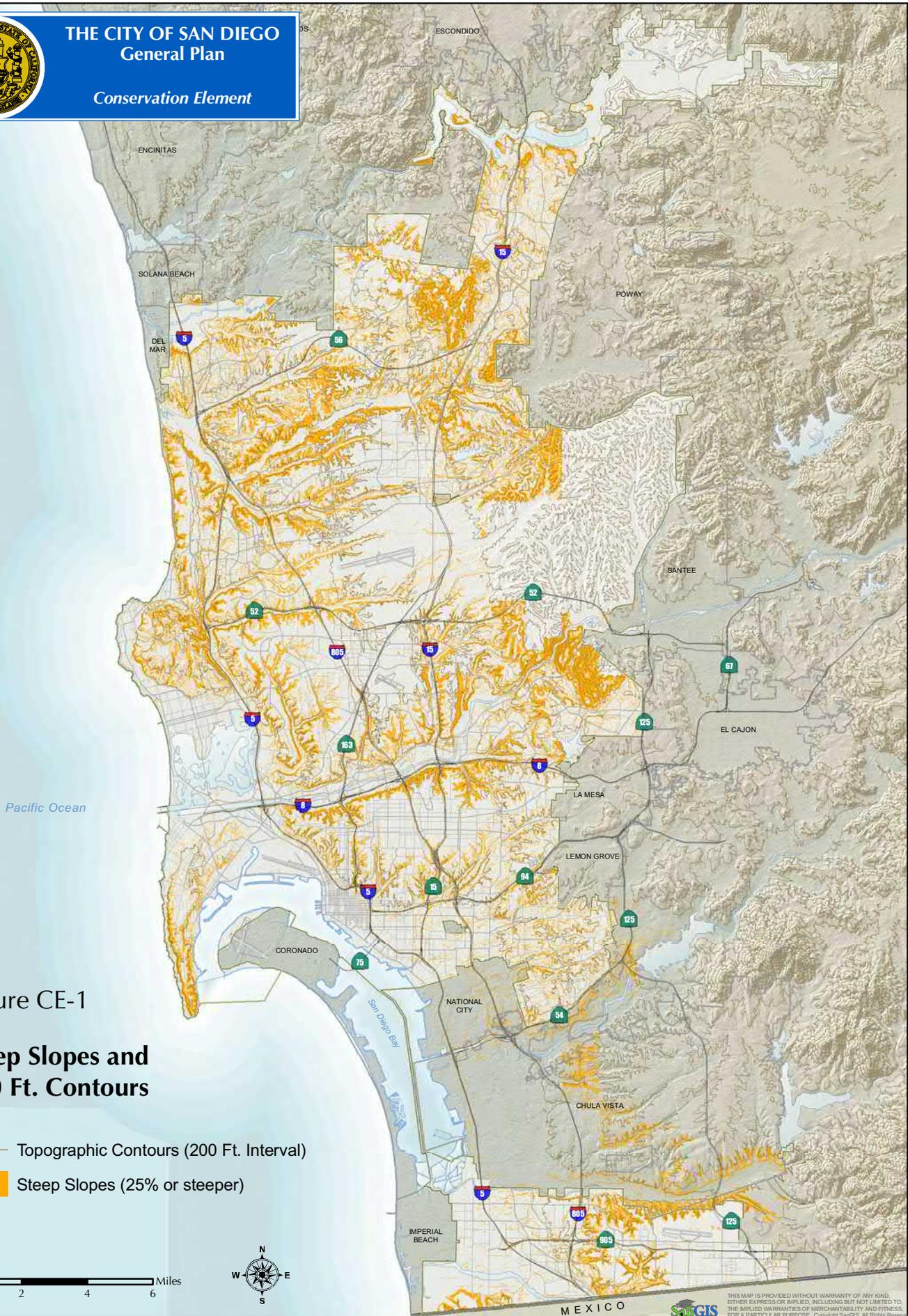


Figure CE-1

Step Slopes and 200 Ft. Contours

-  Topographic Contours (200 Ft. Interval)
-  Steep Slopes (25% or steeper)

0 1 2 4 6 Miles



MEXICO



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E. Urban Runoff Management Goals

- ◆ Protection and restoration of water bodies, including reservoirs, coastal waters, creeks, bays, and wetlands.
- ◆ Preservation of natural attributes of both the floodplain and floodway without endangering life and property.

Discussion

When water runoff from rainfall or human activities flows across impervious urban areas it picks up a host of pollutants in its path, such as: trash, debris, organic waste, pesticides, bacteria, viruses, oil, grease, sediments, nutrients, metals, and toxic chemicals. This runoff is a major source of water pollution as it enters storm drain systems, untreated, and is directed to our creeks, bays, wetlands, beaches, and open spaces. The diverse origins and types of runoff pollution make it very difficult to treat, so pollution prevention is the key to a successful urban runoff program. There are five major river systems within or partially within the City: San Dieguito; San Diego; Sweetwater; Otay; and Tijuana Rivers. Due mainly to the dry climate and local impounding reservoirs, most of these are normally dry except during periods of abnormally heavy rainfall. In addition to these rivers, there are also numerous canyons and creeks which drain uplands areas, ultimately reaching the ocean.

Watersheds are areas in which water, sediment, and dissolved materials flow to a common outlet. What happens in one part of the watershed can affect the quality and quantity of water supply. Open space areas and permeable surfaces are important to ensuring water quality. When storm water (or other urban water runoff) passes over these areas and surfaces, some of it is absorbed into the ground and cleansed by natural filtration processes. Maintaining water quality is important to public health, wildlife, and economic prosperity, and is a requirement of the federal Clean Water Act. As runoff increases in developed areas, water quality preservation and runoff management requires protection of key open space areas and permeable surfaces within watersheds (see Figure CE-4, San Diego County Watersheds).

The Clean Water Act of 1972 (CWA) is the cornerstone of surface water quality protection in the United States. The CWA employs a variety of regulatory and nonregulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the integrity of the nation's waters so they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

In the early decades of the Act's implementation, efforts focused on regulating discharges from traditional "point-source" facilities, such as municipal sewage plants and industrial facilities, with little attention paid to runoff from streets, construction sites, farms, and other "wet-weather" sources. Starting in the late 1980s, efforts to address polluted runoff have increased significantly. Evolution of CWA programs over the last decade has also included a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones.



THE CITY OF SAN DIEGO
General Plan

Conservation Element

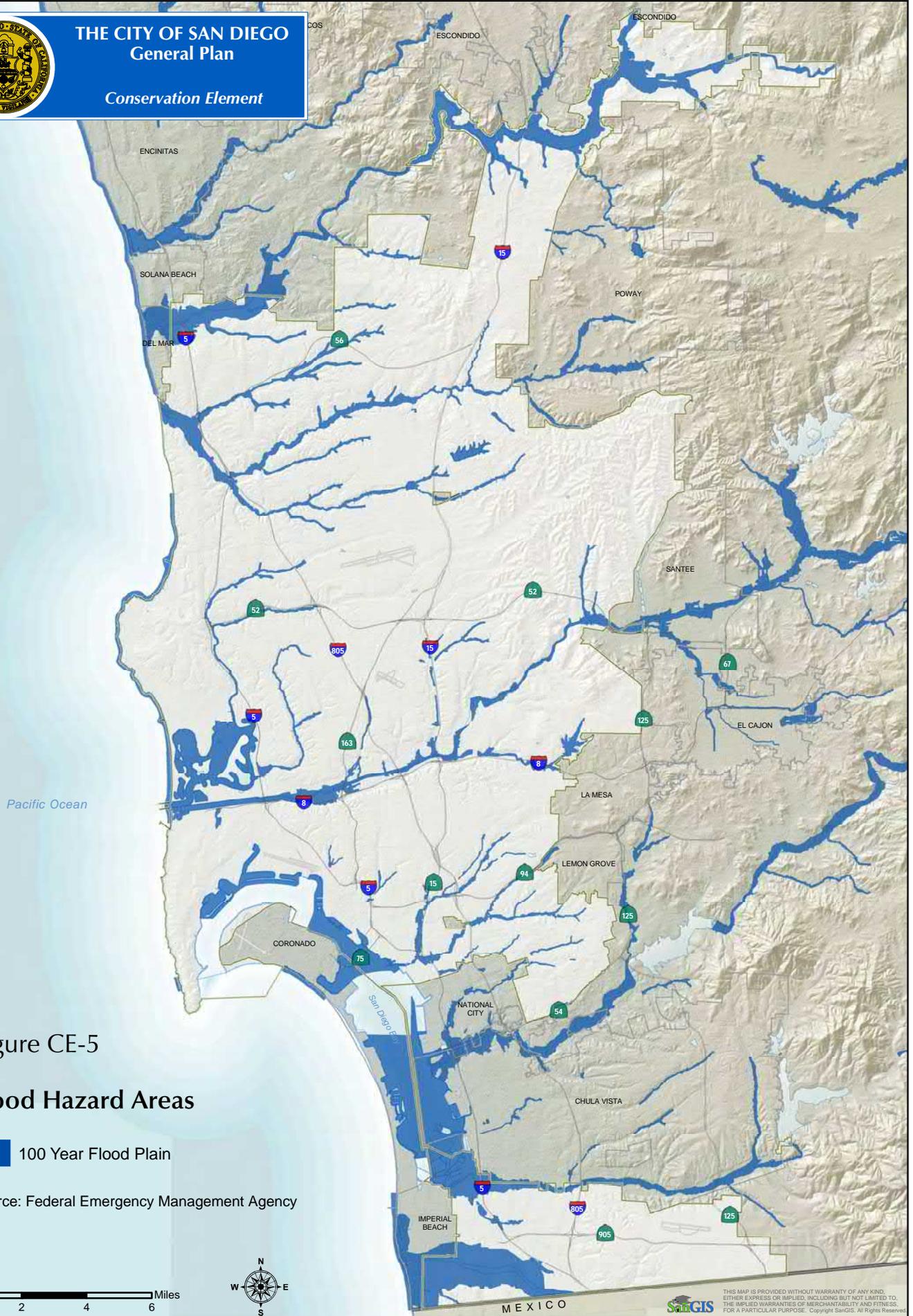


Figure CE-5

Flood Hazard Areas

 100 Year Flood Plain

Source: Federal Emergency Management Agency





The City's storm water pollution prevention efforts include watershed management, Best Management Practices (BMP) development/implementation, planning and development measures, public education, employee training, water quality monitoring, source identification, and code enforcement components. Storm Water BMPs are specific management practices designed to prevent pollutants from entering storm water and urban runoff. These efforts are documented in the City's annual Urban Runoff Management Plan (URMP). This plan is a requirement of the City's municipal storm water National Pollutant Discharge Elimination System (NPDES) Permit. The permit is issued by the Regional Water Quality Control Board, San Diego Region, in response to the Clean Water Act.

In addition to the water quality impacts from storm water runoff, heavy storms periodically cause flooding damage. San Diego's semi-arid climate makes it more susceptible to flooding because of local soil and vegetation characteristics. While the City's numerous canyons and valleys comprise an efficient natural drainage system that results in a low ratio of floodplain area to total land area, there are areas that experience flooding during heavy rains, such as in the case of the San Diego River Valley. Figure CE-5, the Flood Hazard Areas map, depicts the 100-year floodplains, which are areas subject to major flooding. Flood control has been addressed in the City both through engineered flood control channels as well as floodplain and open space zones that significantly restricts development and protects the public from flood hazards.

The City of San Diego enacted the Storm Water management and Discharge Control Ordinance in 1993. This ordinance prohibits pollutants from entering the storm water conveyance system. The City has also amended grading and drainage regulations to better control storm water pollution from sediments, erosion, and construction materials during construction and during permanent use of developed sites.



Planted areas and grass swales can serve to treat adjacent impervious areas.



The following policies address land development practices for erosion control, decreased use of impervious surfaces, and design that captures or reduces runoff from development sites. The policies also provide a summary of the City's overall water quality protection policies.

Policies

- CE-E.1. Continue to develop and implement public education programs.
- a. Involve the public in addressing runoff problems associated with development and raising awareness of how an individual's activities contribute to runoff pollution.
 - b. Work with local businesses and developers to provide information and incentives for the implementation of Best Management Practices for pollution prevention and control.
 - c. Implement watershed awareness and water quality educational programs for City staff, community planning groups, the general public, and other appropriate groups.
- CE-E.2. Apply water quality protection measures to land development projects early in the process-during project design, permitting, construction, and operations-in order to minimize the quantity of runoff generated on-site, the disruption of natural water flows and the contamination of storm water runoff.
- a. Increase on-site infiltration, and preserve, restore or incorporate natural drainage systems into site design.
 - b. Direct concentrated drainage flows away from the MHPA and open space areas. If not possible, drainage should be directed into sedimentation basins, grassy swales or mechanical trapping devices prior to draining into the MHPA or open space areas.
 - c. Reduce the amount of impervious surfaces through selection of materials, site planning, and street design where possible.
 - d. Increase the use of vegetation in drainage design.
 - e. Maintain landscape design standards that minimize the use of pesticides and herbicides.
 - f. Avoid development of areas particularly susceptible to erosion and sediment loss (e.g., steep slopes) and, where impacts are unavoidable, enforce regulations that minimize their impacts.
 - g. Apply land use, site development, and zoning regulations that limit impacts on, and protect the natural integrity of topography, drainage systems, and water bodies.
 - h. Enforce maintenance requirements in development permit conditions.



Conservation Element

- CE-E.3. Require contractors to comply with accepted storm water pollution prevention planning practices for all projects.
- a. Minimize the amount of graded land surface exposed to erosion and enforce erosion control ordinances.
 - b. Continue routine inspection practices to check for proper erosion control methods and housekeeping practices during construction.
- CE-E.4. Continue to participate in the development and implementation of Watershed Management Plans for water quality and habitat protection.
- CE-E.5. Assure that City departments continue to use "Best Practice" procedures so that water quality objectives are routinely implemented.
- a. Incorporate water quality objectives into existing regular safety inspections.
 - b. Follow Best Management Practices and hold training sessions to ensure that employees are familiar with those practices.
 - c. Educate City employees on sources and impacts of pollutants on urban runoff and actions that can be taken to reduce these sources.
 - d. Ensure that contractors used by the City are aware of and implement urban runoff control programs.
 - e. Serve as an example to the community-at-large.
- CE-E.6. Continue to encourage "Pollution Control" measures to promote the proper collection and disposal of pollutants at the source, rather than allowing them to enter the storm drain system.
- a. Promote the provision of used oil recycling and/or hazardous waste recycling facilities and drop-off locations.
 - b. Review plans for new development and redevelopment for connections to the storm drain system.
 - c. Follow up on complaints of illegal discharges and accidental spills to storm drains, waterways, and canyons.
- CE-E.7. Manage floodplains to address their multi-purpose use, including natural drainage, habitat preservation, and open space and passive recreation, while also protecting public health and safety.