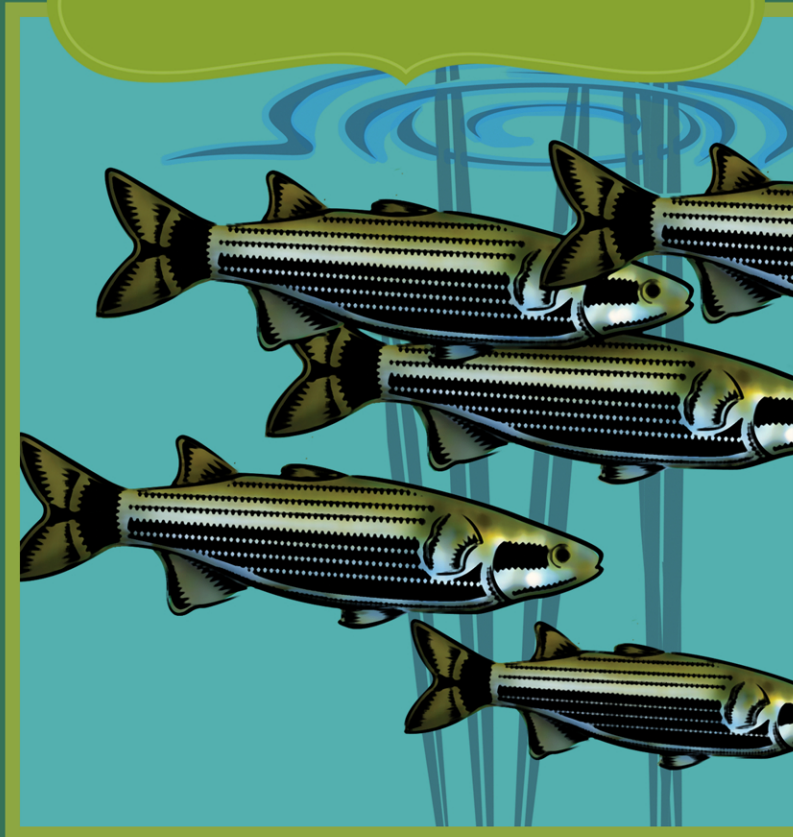


LOS CERRITOS WETLANDS CONCEPTUAL RESTORATION PLAN



WATERSHED IMPACTS REPORT

Prepared for:
**Los Cerritos
Wetlands Authority**

100 North Old San Gabriel Canyon Road
Azusa, CA 91702

and



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3780 Kilroy Airport Way, Suite 600
Long Beach, CA 90806

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February 2012

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February 10, 2012

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1. INTRODUCTION

1.1 BACKGROUND

The Los Cerritos Wetlands Conceptual Restoration Plan is being conducted for the Los Cerritos Wetlands Authority (LCWA) to identify feasible, cost-effect, and ecologically beneficial restoration alternatives for the Los Cerritos Wetlands Complex. The potential wetlands area is comprised of approximately 500 acres for potential wetlands restoration located adjacent to the historical Los Cerritos Wetlands and San Gabriel River Estuary. A conceptual restoration plan is being developed for 200-acres owned by the LCWA and City of Long Beach restore tidal exchange within the Los Cerritos Wetlands Complex. The Los Cerritos Wetlands Complex is comprised of parcels that have been identified for inclusion in the restoration plan, as shown in Figure 1.1. These wetland parcels are situated along the Los Cerritos Channel, Alamitos Bay, and San Gabriel River Estuary.

Watersheds or drainage areas into each wetland parcel were determined based on prior watershed assessments or storm drain drainage maps. The two major sources of runoff into the Los Cerritos Wetlands Complex are the San Gabriel River (LCWA Phase 1 parcel) and the Los Cerritos Channel (LCW Partners parcel). The watersheds for the other wetland parcels were determined from storm drain maps from the City of Long Beach and Seal Beach. The overall watershed area for the Los Cerritos Wetlands Complex is shown in Figure 1.2.

The wetland parcel watersheds were determined for the wetland parcels identified in the Los Cerritos Wetlands Conceptual Restoration Plan request for proposals (RFP), as listed below.

- LCWA Phase 1
- LCWA Phase 2
- Los Alamitos Retarding Basin
- Gum Grove Park
- State Lands Commission
- LA County DWP
- Hellman
- Bryant Properties
- City of Long Beach Properties
- LCW Partners



Source: Moffatt & Nichol

Figure 1.1 Los Cerritos Wetlands Complex Wetland Parcels

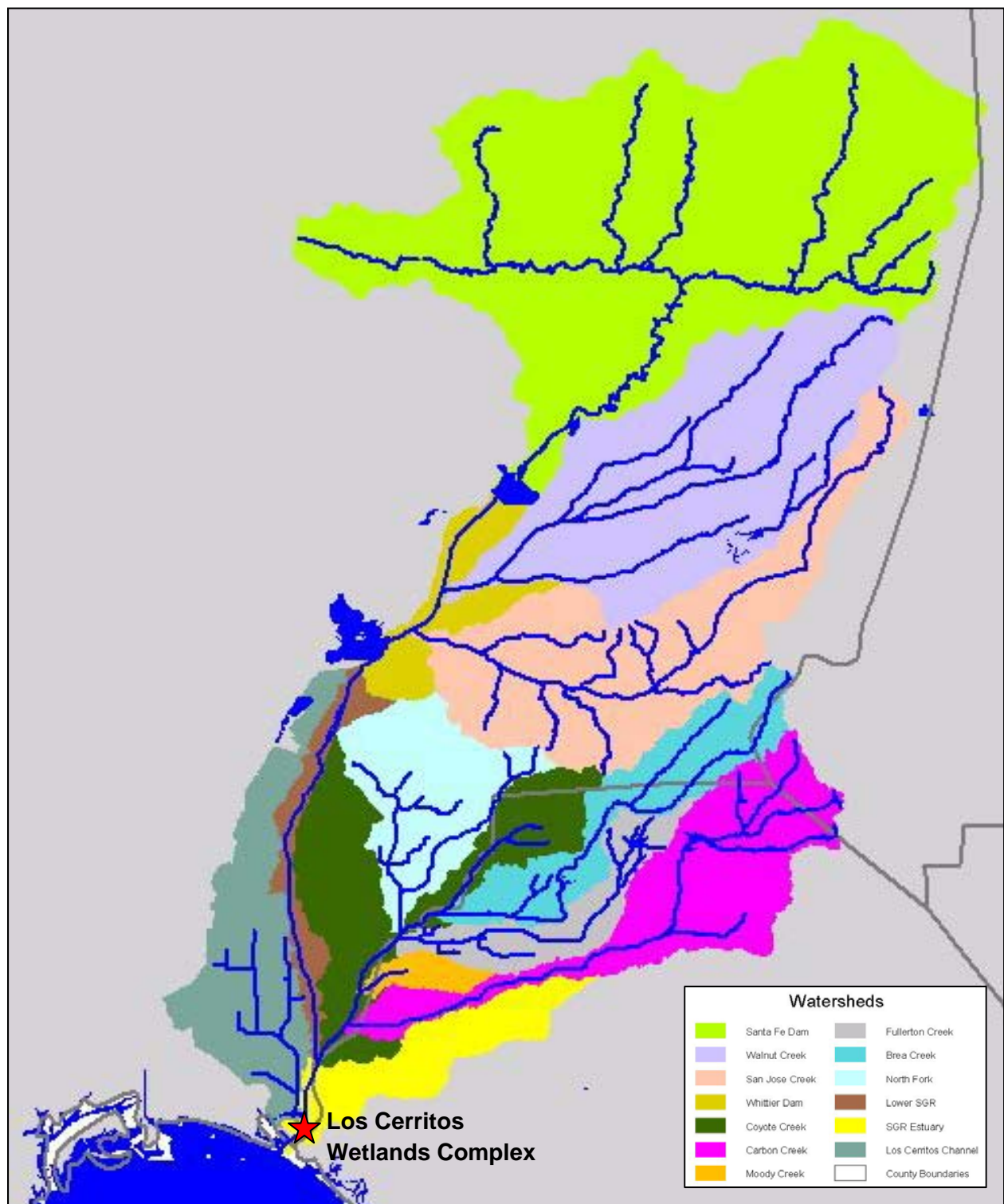


Figure 1.2 Los Cerritos Wetlands Complex Watersheds

Since the RFP, two additional parcels were added – Alamitos Bay Partners and Loynes, LLC parcels. However, the major drainage areas to the Alamitos Bay Partners and Loynes, LLC parcels would be similar to the LCW Partners parcel; hence, watershed areas for these two parcels were not identified separately.

1.2 PURPOSE

Understanding of the hydrologic processes that may affect the Los Cerritos Wetlands is a crucial component in assessing the feasibility of restoring the wetlands. Watershed conditions that may impact the wetlands were assessed as part of Task 4 in the Los Cerritos Wetlands Conceptual Restoration Plan Scope of Work. The purpose of this Watershed Impacts Report is to characterize upstream activities impacting the wetlands, as well as identifying existing or future activities that have the potential to affect or impede the restoration of the Los Cerritos Wetlands Complex. As outlined in the scope of work, watershed impacts to the wetlands were assessed based on the following objectives:

- Define local drainage areas and storm water sources for each wetland parcel
- Define existing hydrologic and hydraulic connections between the rivers and wetlands
- Identify pollutant sources within the watersheds based on available information (e.g., water quality monitoring data, land use information, and pollutant source assessments)
- Review planned water quality improvement efforts within the watershed to evaluate anticipated long-term water quality improvements
- Prepare a watershed impacts report summarizing the assessment of watershed activities

This report summarizes the assessments of watershed activities that could affect the restoration of the Los Cerritos Wetlands. Each section of this report summarizes the watershed activities for each wetland parcel. The following items are discussed for each wetlands parcel:

Parcel Description: Describes the wetland parcel location within the Los Cerritos Wetlands Complex and current activities within the wetland parcel.

Watershed Description: This section provides a summary of the drainage area, potential storm water sources, and general characteristics including major hydrologic features, land uses, and jurisdictions for the watersheds draining into the wetland parcel.

Watershed Activities: Activities in each watershed are discussed pertaining to existing or on-going pollutant sources, water quality monitoring, or watershed management plans. Information on watershed activities were obtained from National Pollutant Discharge Elimination System (NPDES) permits, TMDL activities, storm water monitoring programs,

regional water quality monitoring programs, watershed management plans, watershed studies, and other related activities that may affect the hydrologic or water quality conditions of watershed discharges to the wetlands.

Prior Pollutant Source Assessments: This section provides a review of prior assessments on water quality and pollutant sources for each of the watersheds discharging into the wetland parcels.

Water Quality Improvement Projects: In this section, planned water quality improvement efforts in each watershed are summarized and future watershed activities or projects that may affect watershed hydrologic conditions or pollutant sources to the wetland parcels are identified.

Watershed Impacts: This section identifies potential watershed impacts to each wetland parcel based on the information reviewed in previous sections on watershed activities, pollutant sources and water quality improvement projects.

2. LCWA PHASE 1

2.1 PARCEL DESCRIPTION

The LCWA Phase parcel is made up of two separate parcels known as the main parcel and separate parcel. The LCWA Phase 1 main parcel straddles the San Gabriel River Estuary between Westminster Avenue and Alamitos Bay. This parcel is surrounded by the City of Long Beach Properties parcel, Bryant Properties parcel, the Haynes Cooling Channel, and the City of Los Angeles Department of Water and Power (LADWP) parcel. This parcel overlaps with the prior 2005 Los Cerritos Wetlands Conceptual Restoration Plan (California Earth Corps 2005) Phase I restoration concept, which included the previously named Upper and Lower Bryant areas. The current LCWA Phase 1 main parcel now includes portions of the previous Upper Bryant area on the western bank of the SGR and the previous Lower Bryant area on the eastern bank of the SGR. The LCWA Phase 1 main parcel corresponds to subareas 26a, 26b, and 27 in the City of Long Beach Southeast Area Development and Improvement Plan (SEADIP). In the SEADIP, subareas 26a and 26b areas are zoned as a business park with office, commercial, and light industrial uses with designations for wetlands by the developers, while subarea 27 has solely been designated for wetlands restoration (City of Long Beach 2006).

To the north of the main parcel, the LCWA Phase 1 separate parcel is separated by the Bryant Properties parcel. This parcel, which was previously called the OTD/Edison parcel, is now owned by the LCWA. The LCWA Phase 1 separate parcel is a 5.11-acre site located at the northeast corner of Studebaker Road and 2nd Street in the City of Long Beach. This separate parcel, which was previously owned by Southern California Edison (SCE), is situated adjacent to the Alamitos Generating Station. Prior uses of this parcel included offices, maintenance of equipments, storage for 55-gallon drums, an aboveground storage tank, a lay-down area for industrial equipment (LCWA 2010).

2.2 WATERSHED DESCRIPTION

As shown in Figure 2.1, the major drainage areas to the LCWA Phase 1 main parcel include the San Gabriel River (SGR) Watershed and the SGR Estuary Watershed. The SGR runs about 58 miles from the San Gabriel Mountains towards the Pacific Ocean with a drainage area of approximately 689 square miles (mi²) (LARWQCB 2000a). The SGR Watershed covers portions of Los Angeles and Orange Counties.

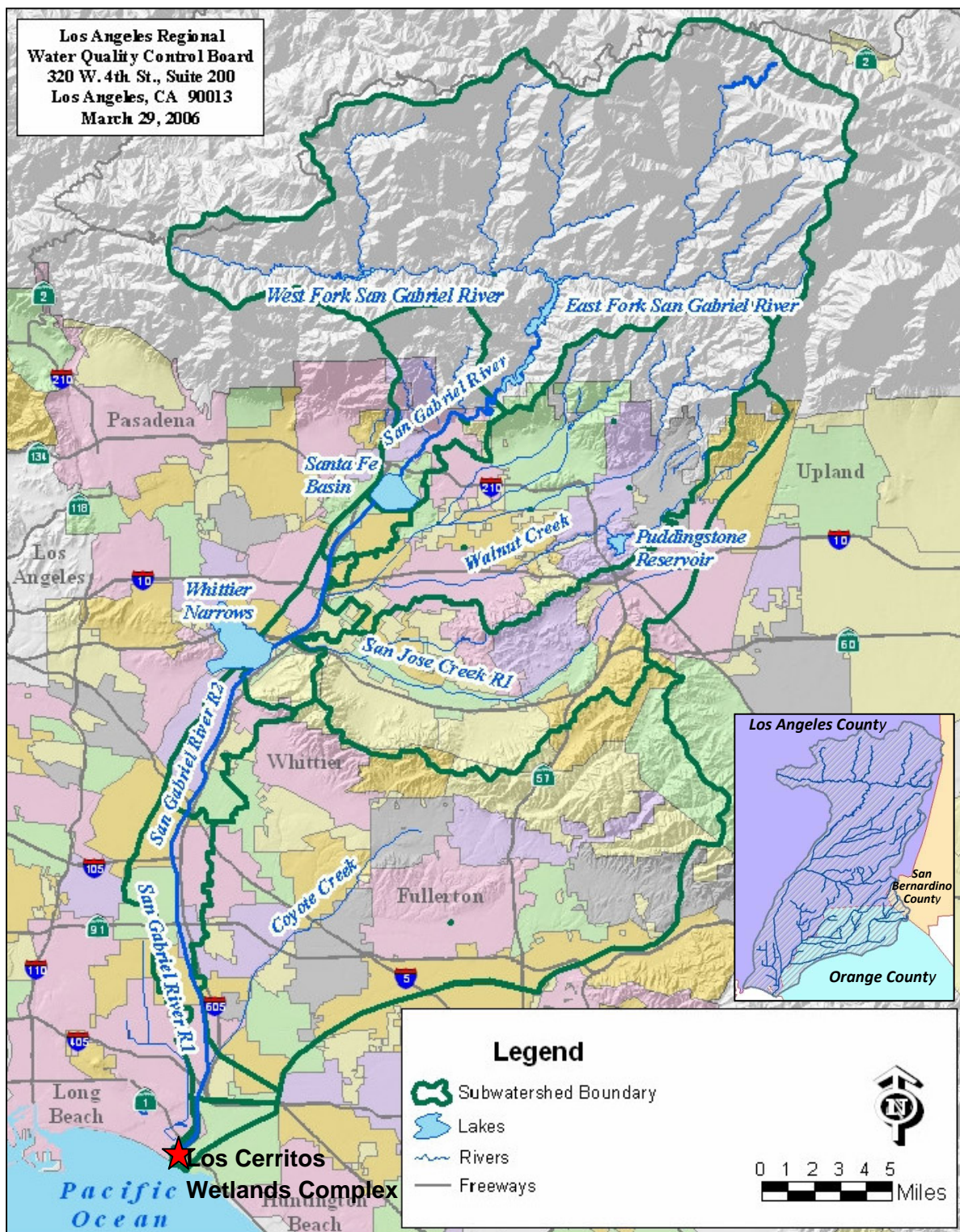


Figure 2.1 San Gabriel River and Estuary Watershed

Flows through the SGR and Estuary Watersheds have been drastically altered primarily for flood protection purposes. Flood control structures within the watershed are shown in Figure 2.2. The upper SGR Watershed extends from the San Gabriel Mountains through the Santa Fe Dam and Whittier Narrows Dam including Walnut Creek and San Jose Creek. The lower SGR Watershed continues from the Whittier Narrows Dam until reaching tidal influence just south of Willow Street. Major tributaries in the lower SGR are the Coyote Creek, Carbon Creek, and Fullerton Creek. There is no additional drainage area to the LCWA Phase 1 separate parcel.

Details of the LCWA Phase 1 main parcel drainage area are provided below.

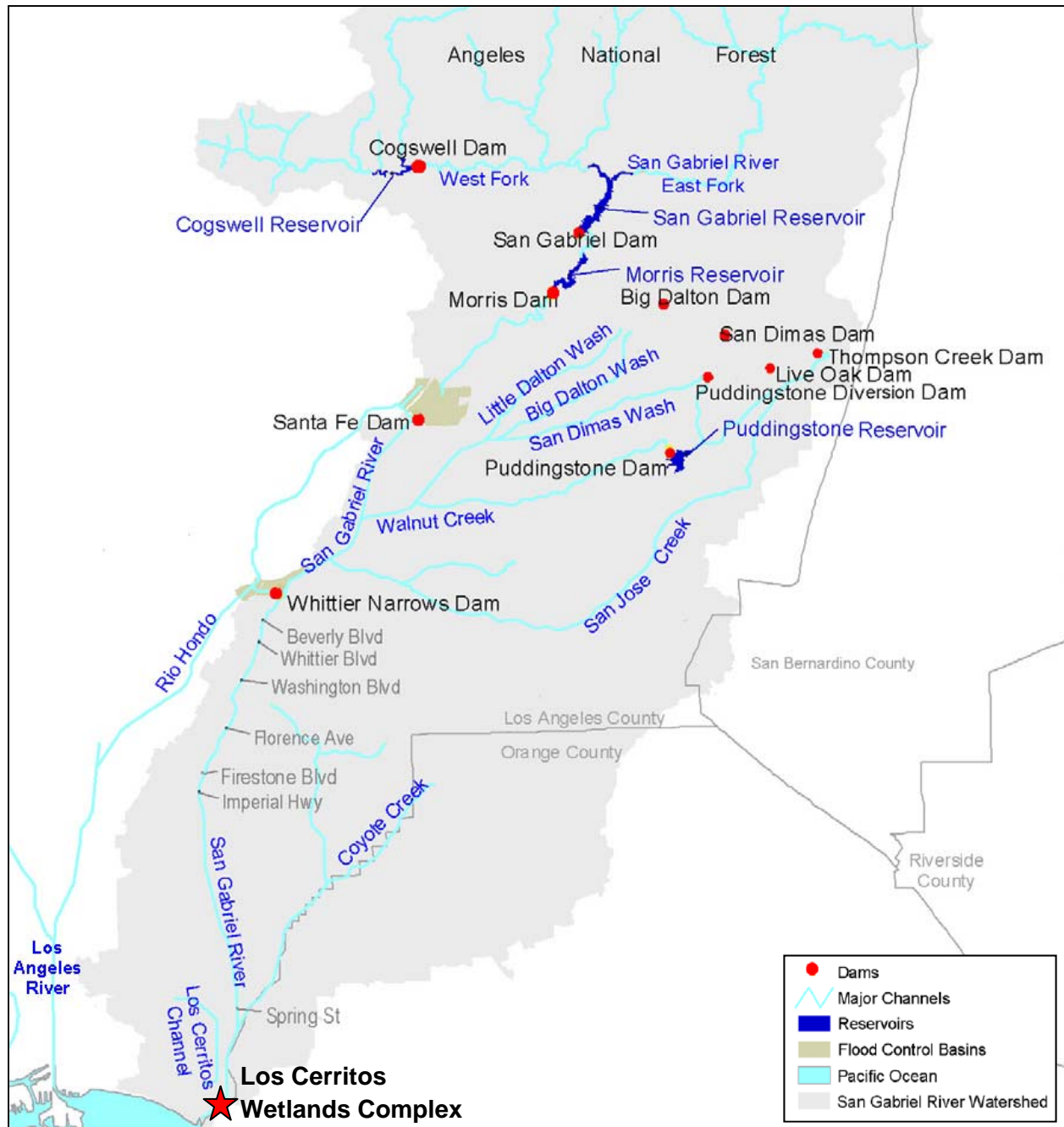
2.2.1 Upper SGR Watershed

The upper SGR Watershed above the Whittier Narrows Dam has several flood control structures, spreading grounds, and two major tributaries – Walnut Creek and San Jose Creek. This area is located in Los Angeles County and is within the jurisdiction of Los Angeles Regional Water Quality Control Board.

The area above the Santa Fe Dam is mostly undisturbed riparian and woodland habitat as part of the Angeles National Forest with areas of heavy recreational use. Cities in this portion of the watershed include Azusa, Duarte, Glendora, and Irwindale. This section of the SGR above Santa Fe Dam has several reservoirs and dams for water conservation or flood control purposes including the Cogswell Dam, San Gabriel Dam, and Morris Dam operated by the Los Angeles County Department of Public Works (LACDPW). The Santa Fe Reservoir and Dam were constructed for flood control purposes by the U.S. Army Corps of Engineers (USACE). LACDPW operates the Santa Fe Reservoir Spreading Grounds through an easement with USACE.

The SGR between Santa Fe Dam and Whittier Narrows Dam is a soft-bottom channel with riprap sides. This portion of the upper SGR Watershed includes the cities of Arcadia, Baldwin Park, El Monte, Industry, Irwindale, La Puente, Pico Rivera, South El Monte, and Whittier. Below Santa Fe Dam the Rio Honda, a tributary of the SGR, branches off towards the Whittier Narrows Reservoir.

Walnut and San Jose Creeks join the SGR below the Santa Fe Dam. The Walnut Creek drainage area includes the Big Dalton Wash and Puddingstone Reservoir. Cities within the Walnut Creek drainage area include the Cities of Azusa, Baldwin Park, Claremont, Covina, Glendora, Industry, Irwindale, La Puente, La Verne, Pomona, San Dimas, Walnut, and West Covina. San Jose Creek including tributaries – South Fork, Diamond Bar Creek, and Puente Creek have dry weather flows are dominated by tertiary-treated effluent. Cities within the San Jose Creek drainage area are the Cities of Claremont, Diamond Bar, Industry, La Habra Heights, La Puente, La Verne, Pomona, San Dimas, Walnut, West Covina, and Whittier.



Source: LACDPW 2006b

Figure 2.2 San Gabriel River Flood Control Structures

The Whittier Narrows Reservoir and Dam was constructed and operated by USACE for flood control and water conservation purposes. The Whittier Narrows Reservoir receives flows from both the Rio Hondo and SGR. Excess water from the Rio Hondo is released to the Los Angeles River, while excess flows from the SGR are released from Whittier Dam, which offers greater than a 100-year flood protection along the SGR below the dam.

2.2.2 Lower SGR Watershed

Lower SGR

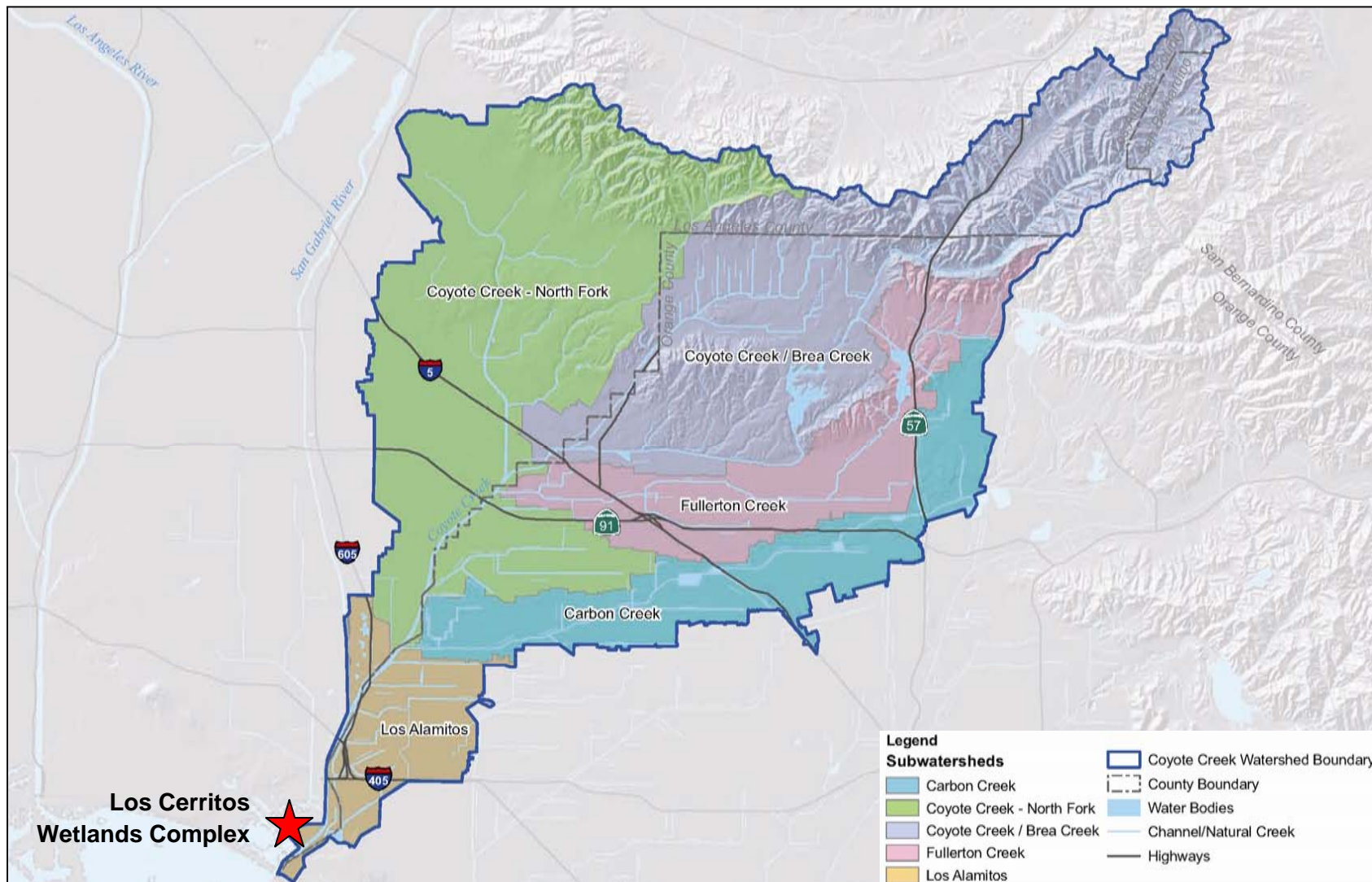
The lower SGR can be divided into two segments: Reach 1 – the concrete-lined channel, and Reach 2 – the unlined portions of the river used for groundwater recharge.

The lower SGR Reach 1 is a concrete-line channel that extends from Firestone Boulevard to the SGR Estuary where it becomes an earth-bottom channel. Cities within the drainage area of Reach 1 are Artesia, Bellflower, Cerritos, Downey, Garden Grove, Lakewood, Long Beach, Los Alamitos, Norwalk, Paramount, Santa Fe Springs, and Seal Beach.

Below the Whittier Narrows Dam, the Rio Hondo and SGR Reach 2 are unlined and connected among three spreading grounds – Rio Hondo Coastal Basin Spreading Grounds, San Gabriel River Coastal Basin Spreading Grounds, and Montebello Forebay. The drainage area of Reach 2 includes the Cities of Downey, Industry, Pico Rivera, Santa Fe Springs, and Whittier.

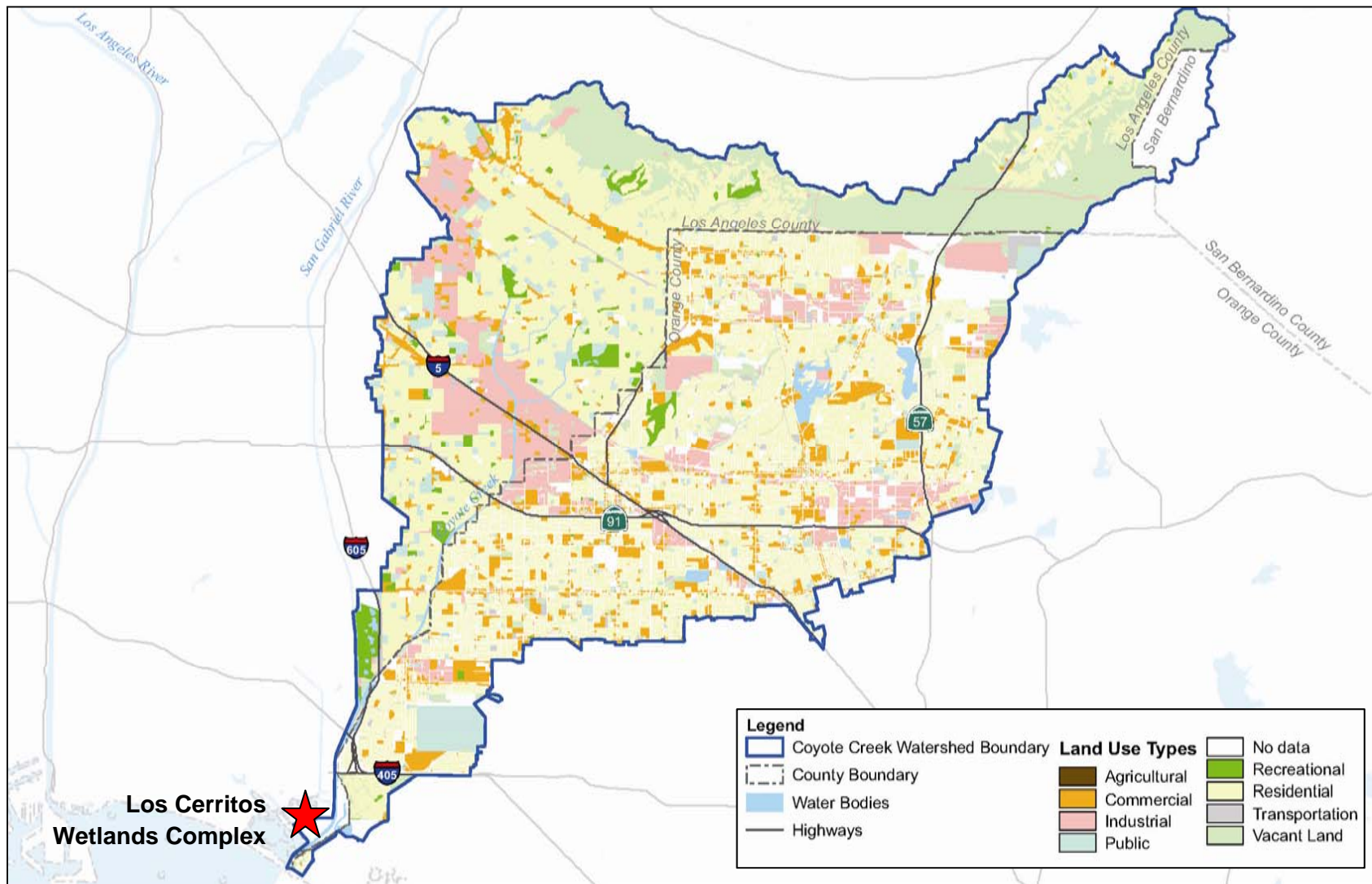
Coyote Creek

The concrete-lined Coyote Creek flows along the Los Angeles/Orange County line and joins the SGR above tidal influence. The Coyote Creek and SGR Estuary Watersheds are shown in Figure 2.3. The Coyote Creek Watershed is approximately 165 mi² of urban residential, commercial, and industrial land uses, as shown in Figure 2.4. Major tributaries include North Fork, Brea Creek, Fullerton Creek, Moody Creek and Carbon Creek, which are typically concrete and riprap channels. About 86 mi² of the Coyote Creek Watershed along with the Carbon Creek Watershed is located in Orange County and is under the jurisdiction of the Santa Ana Regional Water Quality Control Board, while the portion of the Coyote Creek drainage area within the City of Long Beach (Los Angeles County) is under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A small portion of the upper Coyote Creek Watershed lies within San Bernardino County (Orange County 2007). Cities within the Coyote Creek Watershed include the Cities of Anaheim, Artesia, Brea, Buena Park, Cerritos, Chino Hills, Cypress, Diamond Bar, Fullerton, Garden Grove, Hacienda Heights, Hawaiian Gardens, La Habra, La Habra Heights, La Mirada, La Palma, Lakewood, Long Beach, Los Alamitos, Norwalk, Placentia, Santa Fe Springs, Whittier, and Yorba Linda.



Source: Orange County 2007

Figure 2.3 Coyote Creek and San Gabriel River Estuary Watersheds



Source: Orange County 2007

Figure 2.4 Coyote Creek and San Gabriel River Estuary Land Uses

USACE has three flood control dams - Fullerton Dam, Brea Dam, and Carbon Canyon Dam, in the watershed. The Fullerton Dam is an earth-filled embankment constructed in 1941 and controls flows from a 5-mi² drainage area of Fullerton Creek. Downstream of the dam, the creek travels about 11 miles before joining Coyote Creek with channel capacities between 500 and 7,500 cfs (USACE 2002). The Fullerton Dam was constructed by USACE and is managed by Orange County.

Brea Dam is also an earth-filled embankment that was constructed in 1942 along Brea Creek that controls a drainage area of 22 mi². The maximum discharge from the dam is 27,000 cfs (Orange County 2011).

The Carbon Canyon Dam is an earthen dam constructed in 1961 by USACE. Orange County is responsible for operation and maintenance of the Carbon Canyon Channel, Carbon Creek Channel, and Carbon Canyon Diversion Channel. The drainage area for this dam is 19 mi² with a maximum discharge of 36,800 cfs (Orange County 2011). Flows above the Carbon Canyon Dam drain to the Carbon Canyon Channel and the Santa Ana River and are not a part of the SGR Watershed. Below the dam, Carbon Creek is comprised of areas with concrete, composite, earthen, and rip rap with a 25-year storm capacity (Orange County 2007). There are also six detention basins along Carbon Creek used for groundwater recharge and flood control.

SGR Estuary

The SGR Estuary is approximately 3.4 miles with a soft-bottom and riprap sides that empties into San Pedro Bay adjacent to the Alamitos Bay entrance. The estuary is located on the border between Los Angeles and Orange Counties. The SGR Estuary is part of the LARWQCB Los Cerritos/Alamitos Bay Watershed Management Area and the SARWQCB Anaheim Bay, Huntington Harbour, and Bolsa Chica Watershed Management Area. Discharges to the estuary include the SGR Watershed, Coyote Creek, cooling water from two power plants, and local runoff.

2.3 WATERSHED ACTIVITIES

2.3.1 TMDLs

The Clean Water Act Section 303(d) list of impaired water bodies identifies surface waters that are impaired by pollutants, preventing the designated beneficial uses of the water bodies or waters that are not meeting established water quality standards even after pollution control measures have been put in place. The development of a Total Maximum Daily Load (TMDL) is required for all 303(d) listed water bodies. A TMDL limits the discharge of pollutants in order to meet designated beneficial uses and water quality standards. States are required to

develop implementation plans to carry out the TMDL, which are typically enforced through National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements (WDRs).

The 2008 303(d) listed water bodies in the SGR Watershed and SGR Estuary Watershed are provided in Table 2.1 (LARWQCB 2009d). The table includes the name of the water body, pollutant, and anticipated completion of the corresponding TMDL. Completed TMDLs are for trash in the SGR, East Fork and Legg Lake within the upper SGR Watershed. EPA has promulgated metal TMDLs for dry weather selenium in San Jose Creek Reach 1, wet weather lead in the SGR Reach 2, wet weather copper, lead, and zinc in Coyote Creek, and dry weather copper in the SGR Estuary. No data were available to assess the water quality conditions in the upper SGR, Walnut Creek, and wet weather conditions in the lower SGR Reach 1 and the SGR Estuary (EPA 2007).

Table 2.1 2008 303(d) Impaired Waters in the San Gabriel River Watershed

WATERSHED	NAME OF WATER BODY	POLLUTANT (ANTICIPATED TMDL)
Upper SGR Watershed	Crystal Lake (SGR North Fork)	Organic enrichment/low dissolved oxygen (1/1/2019)
	El Dorado Lakes	Algae (1/1/2019) Ammonia (1/1/2019) Copper (1/1/2019) Eutrophic (1/1/2019) Lead (1/1/2019) Mercury (tissue) (1/1/2019) pH (1/1/2019)
	Puddingstone Reservoir	Chlordane (tissue) (1/1/2019) DDT (tissue) (1/1/2019) Mercury (tissue) (1/1/2019) Organic enrichment/low dissolved oxygen (1/1/2019) PCBs (tissue) (1/1/2019)
	Legg Lake	Ammonia (1/1/2019) Copper (1/1/2019) Lead (1/1/2019) Odor (1/1/2019) Trash (completed 2/27/08) pH (1/1/2019)
	Walnut Creek Wash	Benthic-macroinvertebrate bioassessments (1/1/2021) Indicator bacteria (1/1/2021) pH (1/1/2007)
	Santa Fe Dam Park Lake	Copper (1/1/2019) Lead (1/1/2019) pH (1/1/2019)
	Sawpit Creek	Bis(2ethylhexyl)phthalate/DEHP (1/1/2019) Fecal coliform (1/1/2019)
	San Jose Creek Reach 1 (Temple St to SG confluence)	Ammonia Coliform bacteria (1/1/2009) Total dissolved solids (1/1/2021) Toxicity (1/1/2007) pH (1/1/2021)
	San Jose Creek Reach 2 (I-10 at White Ave to Temple St)	Coliform bacteria (1/1/2019)
	SGR, East Fork	Trash (Completed 1/1/1999, amended 5/25/2000)
	SGR Reach 3 (Ramona to Whittier Narrows Dam)	Indicator bacteria (1/1/2021)

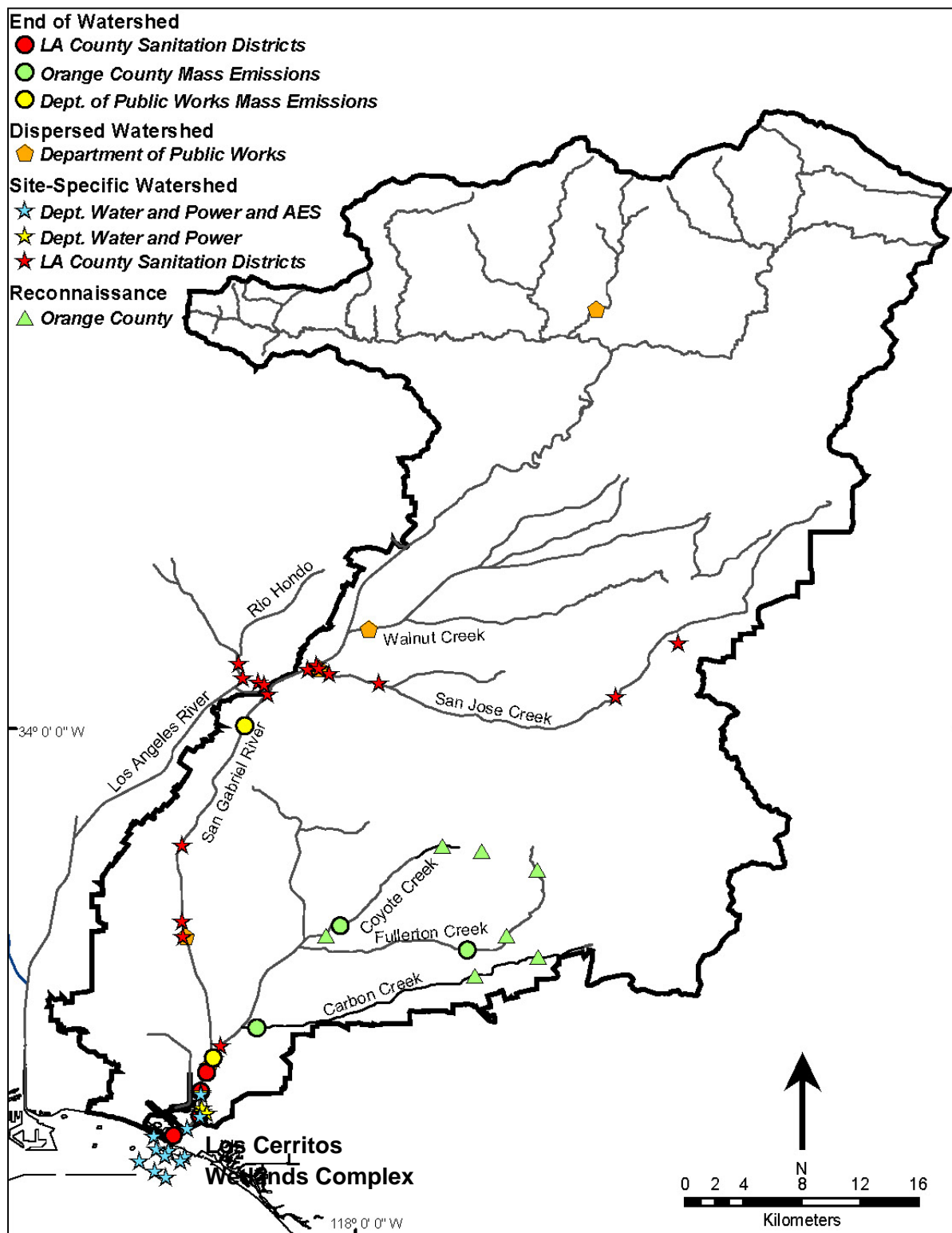
WATERSHED	NAME OF WATER BODY	POLLUTANT (ANTICIPATED TMDL)
Lower SGR Water	SGR Reach 2 (Whittier Narrows Dam to Firestone Blvd)	Coliform bacteria (1/1/2011) Cyanide (1/1/2021) Lead (Completed 3/27/07)
	SGR Reach 1 (Firestone Blvd to Estuary)	Coliform bacteria (1/1/2019) pH (1/1/2009)
	Coyote Creek	Ammonia Copper, dissolved (completed 3/27/07) Diazinon (1/1/2019) Indicator bacteria (1/1/2009) Lead (completed 3/27/07) pH (1/1/2019) Toxicity (1/1/2008)
	Coyote Creek, North Fork	Indicator bacteria (1/1/2021) Selenium (1/1/2021)
San Gabriel River Estuary	San Gabriel River Estuary	Copper (Completed 3/27/2007) Dioxin (1/1/2021) Nickel (1/1/2021) Dissolved Oxygen (1/1/2021)

Source: LARWQCB 2009d

2.3.2 NPDES Discharges

The National Pollutant Discharge Elimination System (NPDES) regulates point source discharges to surface waters from three types of sources: municipal separate storm sewer systems (MS4s), construction activities, and industrial activities. The number of NPDES permits issued by the LARWQCB within the SGR and Estuary Watersheds and the number of permits issued by the SARWQCB in the Coyote Creek and SGR Estuary Watersheds are summarized in Table 2.2 (EPA 2007). The MS4 permits are for Los Angeles County, City of Long Beach, Orange County, and the statewide permit for Caltrans. Statewide general permits have also been issued for industrial and construction activities. The number of permits for industrial and construction activities in Table 2.2 indicates the number of facilities enrolled under the statewide permits. Individual NPDES permits are issued to publicly owned treatment works (POTWs) and major industrial discharges with a yearly average flow over 0.1 MGD. There are five POTWs in the SGR Watershed and two major NPDES discharges in the SGR Estuary Watershed. General NPDES discharges cover other categories of point sources such as construction dewatering, non-process wastes water, petroleum fuel cleanup sites, VOC cleanup sites, hydrostatic test water, and potable water. The total number of active permits shown in Table 2.2 can vary as the number of active permits continually change, particularly the number of facilities enrolled under the statewide industrial and construction permits since these types of discharges are typically temporary.

NPDES permits also specify monitoring and reporting requirements. Monitoring locations within the SGR Watershed are shown in Figure 2.5.



Source: LACSD 2006

Figure 2.5 San Gabriel River Watershed Monitoring Locations

Table 2.2 NPDES Discharges in the San Gabriel River and Estuary Watersheds

TYPE	LARWQCB NPDES DISCHARGERS	SARWQCB NPDES DISCHARGERS*
Municipal MS4	2	2
Caltrans MS4	1	1
Industrial	589	207
Construction	344	184
POTWs	5	--
Major NPDES	2	--
Minor NPDES	8	2
General NPDES	53	5

*Source: EPA 2007

Los Angeles County MS4 Permit

Storm water discharges in Los Angeles County are regulated through the LARWQCB Order No. 01-182 and NPDES permit CAS004001 (LARWQCB 2011). This permit covers the Los Angeles County Flood Control District, County of Los Angeles, and 84 incorporated cities. LACDPW coordinates with all permittees to submit the unified annual storm water report, which documents activities conducted for permit compliance including a compilation of the individual annual reports, six watershed-wide assessments, and the annual storm water monitoring report. The watershed-wide assessments are based on six watershed management areas (WMAs), including the San Gabriel River WMA and are conducted by the watershed management committees made up of representatives from the permittees (e.g., San Gabriel River Watershed Management Area Committee).

The LACDPW conducts annual monitoring of storm water throughout the county in order to assess compliance with the NPDES permit, measure effectiveness of storm water quality management plans (SQMPs), to assess impacts of urban runoff to receiving waters, and to characterize storm water discharges. The county program has two components –core monitoring (mass emission, water column toxicity, tributary, shoreline, and trash monitoring) and region monitoring (estuary sampling, bioassessment, and special studies). Two mass emission monitoring stations are located in the SGR Watershed, which have been monitored since the 1990 municipal storm water permit. These stations are located at Coyote Creek below Spring St (S13) and SGR below San Gabriel River Parkway (S14), and both stations coincide with the LACDPW flow gages (F354-R and F263C-R). In 2009, the regional

bioassessment monitoring incorporated three monitoring programs: San Gabriel River Regional Monitoring Program (SGRRMP), Los Angeles River Watershed-Wide Monitoring Program (LARWMP), and Stormwater Monitoring Coalition Regional Watershed Monitoring Program. Eight bioassessment sites were within the SGR Watershed, six sites in the upper SGR Watershed, and two sites in the lower SGR Watershed.

City of Long Beach MS4 Permit

The City of Long Beach has a separate MS4 permit from Los Angeles County, NPDES permit No. CAS004003, Order No. R4-99-060 (LARWQCB 1999). To fulfill permit requirements, the city conducts annual monitoring of storm water, including dry and wet weather monitoring at mass emission stations, receiving water quality monitoring, and special studies. The City of Long Beach has one pump station that discharges into the SGR and four pump stations that discharges to Coyote Creek (SD14 County Square, SD15 Imperial Estates, SD16 Wardlow North, SD17 Wardlow South). No mass emission stations or receiving water monitoring stations are located within the SGR Watershed. Receiving water sampling is conducted within Alamitos Bay, Marine Stadium, and Los Cerritos Channel.

Orange County MS4 Permit

Storm water discharges in the County of Orange, Orange County Flood Control District and the Incorporated cities of Orange County within the Santa Ana Region are regulated by NPDES permit CAS618030, Order No. R8-2009-0030 as amended by Order No. R8-2010-0062 (SARWQCB 2010). The storm water management plan is outlined in the 2007 Drainage Area Management Plan (DAMP), which coordinates permittees' efforts in permit compliance and evaluates storm water impacts on receiving waters.

Water quality monitoring is coordinated among the Orange County MS4 permittees, which is reported annually in the Program Effectiveness Assessment (PEA). NPDES monitoring requirements include mass emission, estuary/wetland, bacteriological/pathogen, bioassessment, dry weather, and TMDL/303(d) waterbody monitoring. Mass emission stations in the Coyote Creek drainage area include Coyote Creek (CCBA01), Fullerton Creek (FULA03), and Carbon Creek (CARB01). Dry weather monitoring includes several sites within the Coyote Creek or SGR Estuary drainage area – ANACIT@B01 in Anaheim, BRRC@I-90 in Brea, BPDSA01 and BPARA01 in Buena Park, FULB01@SCO and FULA03S05 in Fullerton (Fullerton Creek), LHA01P10 and LHRPLP in La Habra, LAFPS@A01 in Los Alamitos, and SB1EA and SBMD@C01 in Seal Beach, which discharge into the San Gabriel River. An additional dry weather randomly selected site is located at the Lincoln stormdrain at Coyote Creek (CYB00P01). In addition, Orange County monitors flows along Fullerton Creek at Richman Avenue (Station No. 2) in the City of Fullerton.

Caltrans MS4 Permit

The State of California, Department of Transportation (Caltrans) has a statewide NPDES permit (State Board Order No. 99-06-DWQ) that regulates discharges from Caltrans highways, properties, facilities, and activities throughout the state. No monitoring locations are located within the SGR Watershed.

Individual NPDES Permits

The County Sanitation Districts of Los Angeles County operates five water reclamation plants (WRP); three in the upper SGR Watershed – Pomona, San Jose, and Whittier Narrows Water Reclamation Plants and two in the lower SGR Watershed – Los Coyotes and Long Beach Water Reclamation Plants. Individual NPDES permits specify limits for discharges from the WRPs including compliance with Basin Plan water quality objectives. Treatment systems of the water reclamation plants have been modified to meet these water quality objectives. For example, nitrification/denitrification (NDN) modifications to the water reclamation plants were completed to reduce the amount of ammonia discharged and to comply with revisions to the Basin Plan ammonia water quality objectives. The NDN modifications involved the retrofitting of the activated sludge treatment units, which were completed in 2003. Two additional major NPDES discharges occur in the SGR Estuary from the Alamitos and Haynes Generating Stations. A summary of these major NPDES discharges are provided in Table 2.3. Descriptions of each facility provided below are based on the NPDES permit, waste discharge requirements (WDRs), or monitoring and reporting program information. In general, NPDES permits require monitoring of discharge effluent and receiving waters, shown previously in Figure 2.5.

Table 2.3 Major NPDES Discharges in the San Gabriel River and Estuary Watersheds

WATERSHED	NPDES DISCHARGE FACILITY	ORDER No. NPDES No.	DESIGN CAPACITY (MGD)
Upper SGR	Pomona WRP	R4-2009-0076 CA0053619	15
	San Jose WRP	R4-2009-0078 CA0053911	100
	Whittier Narrows WRP	R4-2009-0077 CA0053716	15
Lower SGR	Los Coyotes WRP	R4-2007-0048 CA0054011	37.5
	Long Beach WRP	R4-2007-0047 CA0054119	25

Estuary	Alamitos GS	00-082 CA0001139	1,283
	Haynes GS	R4-2004-0089 CA0000353	1,014

The Pomona Water Reclamation Plant is a 15-MGD plant that treats municipal and industrial wastewater and discharges to the South Fork tributary of San Jose Creek with an average discharge of 1.89-MGD in 2002. Additionally, treated effluent is recycled for irrigation, industrial uses, or groundwater recharge with an average of 7.14-MGD in 2002 (LARWQCB 2004b). NDN modifications at the Pomona Water Reclamation Plant were completed on June 11, 2003. The receiving waters are monitored to meet permit requirements at three locations (RSW-001D, RSW-002D, and RSW-003D) for various constituents monthly, quarterly, or semiannually and a TMDL wet weather monitoring station (RSW-004D) (LARWQCB 2009a).

The San Jose Water Reclamation Plant is comprised of two separate units (East and West WRP) with a combined design capacity of 100-MGD for treatment of municipal and industrial wastewater. The average discharge to the SGR and San Jose creek was 83-MGD in 2002 through three discharge points. The first discharges to the concrete-lined portion of the lower SGR near Firestone Blvd and includes diversion to spreading grounds. The second discharges to San Jose Creek and is used for groundwater recharge at Rio Hondo and the San Gabriel River Coastal Basin Spreading Grounds. The third discharges to the upper SGR and is also used for the Rio Hondo and San Gabriel River Coastal Basin Spreading Grounds. Completion of the NDN modifications at the San Jose WRP was finished on June 12, 2003. There are eight receiving water monitoring locations along the SGR (RSW-001, RSW-002, RSW-003, RSW-004, RSW-005, RSW-006, RSW-007, and RSW-008), three bioassessment monitoring stations (RSW-001-A, RSW-004-A, and FSW-005), and a TMDL wet weather monitoring station (RSW-008) (LARWQCB 2009b)

The Whittier Narrows Water Reclamation Plant has a design capacity of 15-MGD and discharges to the SGR upstream from the Whittier Narrows Dam and typically is used at the San Gabriel River Coastal Basin Spreading Grounds. Nearly all of the treated effluent is recycled with an average discharge rate of 7.53-MGD (LARWQCB 2002c). NDN modifications to the Whittier Narrows WRP were completed by September 2003. The receiving waters are monitored at six locations that include two locations along the Rio Hondo (RSW-001, RSW-002, RSW-003, RSW-004, RSW-005, and RSW-006) and a TMDL wet weather monitoring station (RSW-007) (LARWQCB 2009c).

The Los Coyotes Water Reclamation Plant, which has a design capacity of 37.5-MGD, discharges into the SGR near the Artesia Freeway with an average discharge of 36.25-MGD. Approximately 12% of the treated effluent is recycled for irrigation purposes (LARWQCB

2002b). Flow data taken from December 2010 to July 2011 indicated an average daily discharge of approximately 22 MGD from December 2010 to April 2011, which decreased in about 17 MDG from April 2011 to July 2011 due to an increase in recycling of water during summer months. The Los Coyotes WRP completed the NDN modifications in June 2003. Three locations along the SGR are monitored in the receiving waters (RSW-001, RSW-002, and RSW-003). Monitoring requirements also include three bioassessment stations (RSW-001, RSW-002, and RSW-004) and a TMDL wet and dry weather monitoring station (RSW-005) (LARWQCB 2007b).

The Long Beach Water Reclamation Plant with a design capacity of 25-MGD discharges into Coyote Creek upstream from the confluence with the lower SGR. In 2000, this plant discharged 15.75-MGD on average and recycles about 16% of the treated effluent for irrigation purposes (LARWQCB 2002a). More recently, daily discharge flow data between November 2010 and July 2011 showed a typical daily discharge of approximately 15 MGD that decreased to about 10 MGD during the summer months. NDN modifications at the Long Beach WRP were operation from September 2003. Permit requirements include monitoring of four locations along Coyote Creek (RSW-001, RSW-002, RSW-002A, and RSW-007), four locations within the SGR Estuary (RSW-003, RSW-004, RSW-005, and RSW-006), and a TMDL wet and dry weather monitoring location (RSW-007) (LARWQCB 2007a).

The Alamitos Generating Station, operated by AES Alamitos, LLC, is located between the Los Cerritos Channel and the western bank of the SGR, north of 2nd Street (Westminster Ave) in the City of Long Beach (Los Angeles County). The generating station draws cooling water from two intake canals that branch off the Los Cerritos Channel and discharge into the SGR approximately 2,000 ft north of 2nd Street /Westminster Avenue via three outfalls. This generating station is permitted to discharge up to 1,282.8-MGD of wastewater that consists primarily of once-through cooling water with additional pretreated wastes from sanitary wastes and wastes from three retention basins. The Alamitos Generating Station discharged an average of 583-MGD between 2000 and 2004. Receiving water monitoring requirements include nine offshore locations and three estuary locations with benthic and trawling stations coinciding with the offshore and estuary locations (LARWQCB 2000b). NPDES monitoring data for temperature is provided in Table 2.4 based on monitoring data between 2000 and 2004.

Table 2.4 Temperatures for Alamitos Generating Station NPDES Monitoring Locations

SEASON	PARAMETER	SURFACE	BOTTOM
Winter	Minimum Temperature °F (°C)	58.2 (14.5)	56.3 (13.5)
	Average Temperature °F (°C)	62.1 (16.7)	58.3 (14.6)

	Maximum Temperature °F (°C)	74.2 (23.5)	61.9 (16.6)
Summer	Minimum Temperature °F (°C)	65.3 (18.5)	57.1 (13.9)
	Average Temperature °F (°C)	70.4 (21.3)	64.6 (18.1)
	Maximum Temperature °F (°C)	81.3 (27.4)	71.2 (21.8)

*Source: AES 2005
Data from 2000-2004*

The Haynes Generating Station is located on the eastern bank of the SGR, north of 2nd Street (Westminster Ave) in the City of Long Beach (Los Angeles County). It is operated by the City of Los Angeles Department of Water and Power (LADWP). This station intakes water from the eastern corner of the Long Beach Marina in Alamitos Bay that is conveyed beneath the SGR to the Haynes Cooling Channel on the east bank of the SGR, where cooling water for the power plant is drawn. The plant then discharges through six outfalls along the eastern bank of the SGR, about 984 ft north of 2nd Street /Westminster Avenue. The Haynes Generating Station is permitted to discharge up to 1,014-MGD of once-through cooling water and low-volume wastes and had an average discharge of 761-MGD from 2000 to 2004. Receiving water monitoring requirements are the same as the Alamitos Generating Station, which includes nine offshore locations and three estuary locations with benthic and trawling stations coinciding with the offshore and estuary locations (LARWQCB 2004a).

2.3.3 Surface Water Ambient Monitoring Program

The Surface Water Ambient Monitoring Program (SWAMP) is a statewide monitoring program being conducted by the California Regional Water Quality Control Boards to provide information on the status of coastal waters. Data collected are being used in conjunction with other large-scale monitoring programs such as California's Nonpoint Source Program (NPS), US EPA Environmental Monitoring and Assessment Program (EMAP), Southern California Bight Monitoring. As part of the SWAMP, monitoring of the SGR Watershed occurred once in the summer of 2005 at 30 random stations, coinciding with the first year of the SGRRMP (described below). Bioassessment, water column toxicity, and water column chemistry were conducted to provide a watershed-wide assessment of water quality conditions. Bioaccumulation sampling in fish tissue were also conducted at three locations (SGR Estuary, Puddingstone Reservoir, and Legg Lake). Four locations were also sampled by the LARWQCB in the Los Cerritos Channel and Wetlands (SWAMP 2006). Sample locations included the Los Cerritos Channel, Long Beach Marina, Los Cerritos Channel Wetlands, and mouth of the San Gabriel River Estuary. A summary of the SGR Watershed SWAMP data is part of the SGRRMP 2005 Annual Report.

2.3.4 San Gabriel River Regional Monitoring Program

The San Gabriel River Regional Monitoring Program (SGRRMP) is a watershed scale monitoring program to assess the water quality within the SGR Watershed. This collaboration among various public agencies and nonprofit groups is managed by the Council for Watershed Health (originally named the Los Angeles and San Gabriel River Watershed Council) and is designed to address water quality trends. This program also meets the NPDES permit requirements to participate in a watershed-wide monitoring program for County Sanitation Districts of Los Angeles County (LACSD), Alamitos Generating Station, and Haynes Generating Station. The regional monitoring enables a more complete assessment of watershed conditions as compared to current permit-required monitoring for NPDES discharges and augments other larger-scale monitoring programs (SWAMP, EMAP, and Bight Monitoring). The SGRRMP is a five-year monitoring effort started in 2005 that will be followed up with a state of the watershed report. Over the 2005-2009 monitoring period, a total of 69 sites have been monitored (29 in 2005 and 10 in each year from 2006 to 2009). Monitoring locations for the SGRRMP are shown in Figure 2.6. These monitoring locations were overlapped with other monitoring by various agencies (SCCWRP, LACDPW, SWAMP, EPA, and LACSD) for aquatic chemistry, invertebrate IBI, toxicity, and CRAM (LASGRWC 2009).

2.3.5 Stormwater Monitoring Coalition

The Stormwater Monitoring Coalition (SMC) was initiated in 2009 to assess the condition of streams in southern California watersheds by sampling water chemistry, toxicity, physical habitat, and benthic macroinvertebrates over a five-year period. Sampling is coordinated among the SMC member agencies as well as the state-wide SWAMP. Data are collected as part of other on-going monitoring programs resulting in 134 sites in 15 watersheds, including the SGR Watershed (SCCWRP 2011).

2.3.6 Other Monitoring

Within the SGR Watershed, USGS monitors flow at 36 locations, and the LACDPW operates 16 flow monitoring locations with five of the stations co-operated by USGS and LACDPW. Two USGS stations (11090700 and 11090500) and one LACDPW station (F354-R) are located within the Coyote Creek Watershed.

USGS gages: Brea Creek below Brea Dam (11088500), Carbon Creek below Carbon Dam (11075720), and Fullerton Creek below Fullerton Dam (11089500).

2.3.7 Joint Powers Authorities

Watershed Conservation Authority

In 2003, the Watershed Conservation Authority was created as a joint powers entity between the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) and Los Angeles County Flood Control District (LACFCD). This partnership supports joint projects between the RMC and LACFCD to provide open space, habitat restoration, and watershed improvement project in the SGR and lower Los Angeles River Watershed. Plans that have been or are being developed in the SGR Watershed include the Azusa River Wilderness Park in the San Gabriel Canyon, Duck Farm along the SGR in La Puente, Walnut Creek Habitat & Open Space Project, and the Whittier Narrows Recreation Area Master Plan.

San Gabriel River Discovery Center

The San Gabriel River Discovery Center (SGRDC) is a joint powers authority created in 2006 among the Central Basin Municipal Water District, Los Angeles County Department of Parks and Recreation, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, and the Upper San Gabriel Valley Municipal Water District. This facility will replace an existing facility located within the Whittier Narrows flood control basin and recreation area to educate and emphasize the importance of water resources and natural values of the SGR Watershed.

Los Cerritos Wetlands Authority

The Los Cerritos Wetlands Authority is a joint powers agreement of the RMC, State Coastal Conservancy, City of Long Beach, and City of Seal Beach created in 2006. This authority was formed to provide a comprehensive program of acquisition, protection, conservation, restoration, and environmental enhancement of the Los Cerritos Wetlands. Partners in this endeavor are the Los Cerritos Wetland Stewards, Save Our Beach, El Dorado Audubon, California State University Long Beach, and Signal Hill Petroleum.

Los Angeles Gateway Region Integrated Regional Water Management Plan

Cities in the Los Angeles Gateway Region (Gateway Region) have formed an official joint powers authority (JPA) to establish an integrated regional water management plan (IRWMP). The Los Angeles Gateway Region JPA was formed through a directive of the Gateway Cities Council of Governments (COG). Currently there are 14 entities within the SGR Watershed that have signed the joint powers authority – the Cities of Long Beach, Signal Hill, Lakewood, Cerritos, Bellflower, Paramount, Norwalk, Downey, South Gate, Vernon, Pico Rivera, Santa Fe Springs, and Whittier and SEWC, which is a JPA of potable water purveyors. The goal of the LA Gateway Region IRWMP JPA is to facilitate the development of a collaborative water management portfolio to address issues shared by the gateway cities (Gateway Region IRWMP Authority 2009). Recent projects include the securing of federal support to meet the Los Angeles River Trash TMDL and formalizing an agreement to act as the Fiduciary Agent for the Los Cerritos Channel metals TMDL implementation plan. LA Gateway Region IRWMP JPA has also initiated a program to retrofit all catch basins with catch basin inserts (linear connector pipe screens) in Gateway cities.

2.3.8 Watershed Plans

Greater Los Angeles County Integrated Regional Water Management Plan

The Integrated Regional Water Management Plan (IRWMP) for the Greater Los Angeles County Region is to direct sustainable management of water resources for the next 20 years. The IRWMP is intended to identify a set of solutions to reduce dependence on imported water, cleanup groundwater and storm water, improve in-stream water quality, improve habitat, add parks and open space, and develop funding sources to comply with TMDLs. The IRWMP is defined by a Leadership Committee, which is chaired by the Los Angeles County Flood Control District (LACFCD) and five subregional steering committees, all representatives of agency, state, or local stakeholders. The Greater Los Angeles County area for this plan is comprised of five subregions: Lower San Gabriel and Los Angeles Rivers Watersheds, North Santa Monica Bay Watersheds, South Bay Watersheds, Upper Los Angeles River Watershed, and Upper SGR and Rio Hondo Watersheds. The Upper SGR and Rio Hondo Watersheds encompass the SGR Watershed above the Whittier Narrows

Dam, while the Lower San Gabriel and Los Angeles Rivers Watersheds include the lower SGR Watershed below the Whittier Narrows Dam as well as the area within Orange County and the Los Cerritos and Alamitos Bay watershed management area. Stakeholders in each subregion were asked to submit projects, resulting in 1,521 projects with 212 projects within the Lower San Gabriel and Los Angeles River Watersheds and 433 projects located in the Upper San Gabriel River and Rio Hondo Watersheds. Thirteen priority projects were submitted for Proposition 50 funding. Priority projects within the upper SGR Watershed include Morris Dam Water Supply Enhancement Project and San Gabriel Valley Riparian Habitat Arundo Removal Project. In the lower SGR Watershed, projects included the Central Basin Southeast Water Reliability Project, San Gabriel Valley Riparian Habitat Arundo Removal Project, and the Whittier Narrow Water Reclamation Plant UV Disinfection Facilities (Leadership Committee 2006).

North Orange County Watershed Management Area Integrated Regional Water Management Plan

In 2003, water quality programs in Orange County were consolidated to provide a more efficient method of managing water resources. The previous eleven watersheds in Orange County are now grouped into three Watershed Management Areas: North, Central, and South. The North Orange County (NOC) Watershed Management Area includes the SGR-Coyote Creek Watershed. As a result, the NOC Integrated Regional Watershed Management Plan (IRWM) provides a framework to facilitate collaborations among municipalities and agencies to achieve more comprehensive and cost effective solutions to meet the county's water resources needs. The overall goals, objectives, and priorities were developed through stakeholder forums. Specific projects were identified from stakeholders including projects in Coyote and Carbon Creek Watersheds. Types of projects include creation of wetlands, sewer line improvements, reconstruction of storm drains, creek restoration, and flood protection projects (Orange County 2011).

San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Open Space Plan

The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC), in conjunction with the Santa Monica Mountains Conservancy (SMMC), developed a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers called Common Ground. The RMC and SMMC were established under the California Resources Agency to preserve open space and habitat. Fifty four (54) out of 68 cities have adopted this plan as well as Los Angeles County. This plan supports and informs planning efforts throughout the watershed including subwatershed plans and future plans for parks, open space, and bike trails and encourages cities to incorporate the guiding principles into their local plans. Based on the guiding principles, specific projects will be identified and evaluated for potential funding sources. Additional plans to be developed are the Rivers Parkway Plan,

Tributary Plans, Trails and Bike Paths Plan, Mountains, Foothills and Hills Plans, Habitat Conservation Plan, Historic and Cultural Landscape Survey, and Monitoring and Assessment Plan. As part of the plan, related projects are tracked and shared with other agencies; in 2002 a total of 73 existing or proposed projects were identified. RMC has established a Working Group and five subcommittees to recommend implementation of plans and concepts in the Common Ground plan (RMC 2002). The RMC is also involved in the Coyote Creek Bikeway Master Plan.

Green Visions

The Green Visions Plan for the 21st Century Southern California is a joint venture by the Lower Los Angeles and San Gabriel Rivers and Mountains Conservancy (RMC), Santa Monica Mountains Conservancy (SMMC), Baldwin Hills Conservancy (BHC), and California State Coastal Conservancy (SCC) to develop a comprehensive region wide plan for habitat conservation, water protection, and recreational opportunities in southern California. The project area includes portions of Ventura, Los Angeles, and Orange Counties. Efforts in the SGR Watershed included a watershed health assessment and nutrient loading assessment based on a watershed model. The watershed assessment documents watershed and hydrologic features with GIS data sets with summaries of flood control structures, flow monitoring stations, and ground water recharge efforts (Green Visions 2008). Storm water flows and nutrient sources to the SGR were assessed to gain an understanding of the spatial-temporal variability over the SGR Watershed. Results were used to identify parts of the watershed and times of the year to focus on water quality issues (Green Visions 2009).

Rio Hondo Watershed Management Plan

The Rio Hondo Watershed Management Plan was conducted through a Proposition 13 grant to the San Gabriel Valley Council of Governments with cooperation from RMC, LAWQCB, and LACDPW. This plan provides the framework for cities, public agencies, and other stakeholders to work together in developing a healthy watershed through watershed improvement strategies and proposed projects. The Rio Hondo Watershed is situated in between the Los Angeles and San Gabriel Rivers (SGVCG 2004).

San Gabriel River Corridor Master Plan

The San Gabriel River Corridor Master Plan was developed by the LACDPW to integrate habitat, recreation, open space, flood control, water supply, and economic development along the SGR (LACDPW 2006a). The master plan serves as a long-term plan with multi-objective and multi-user perspective developed from various stakeholders including cities, public agencies, water groups, and community and environmental groups. Goals include identifying priorities, providing guidance, and coordinating multiple goals of the various jurisdictions and stakeholders that share the river. The SGR Corridor Master Plan focuses

on the West Fork in the upper SGR and the main stem of the SGR between Cogswell Dam to the Pacific Ocean. One hundred thirty four (134) individual projects were integrated to goals of the master Plan. In the upper SGR Watershed above the Whittier Narrows Dam, a total of 76 projects were identified. A total of 58 projects were specified in lower SGR Watershed, including 17 projects within the SGR Estuary. Many of the projects identified include watershed management plans and projects described within this section of the report.

Coyote Creek-San Gabriel River Watershed Master Plan

Orange County will be preparing a watershed master plan for the Coyote Creek-San Gabriel River Watershed as part of the NPDES permit requirements issued by the SARWQCB. The permit requires the permittees to develop watershed master plans (WMPs) to integrate water quality, hydromodification, water supply, and habitat considerations in each watershed. The WMPs will also integrate all other related programs such as the storm water program, TMDL processes, and the Nutrient and Selenium Management Program (NSMP). As of November 2010, the Orange County permittees are planning on preparing maps for the Coyote Creek-San Gabriel River Watershed to identify areas susceptible to hydromodifications (e.g., downstream erosion, impacts on riparian and aquatic habitats, or areas for storm water infiltration is possible).

San Gabriel Watershed and Mountains Special Resource Study

The National Park Service is conducting a special resource study, which is anticipated to be released in the summer of 2011 but has not been released when this report is being prepared. The study will identify natural resources and explore options to protect these resources. The study area includes portions of the upper SGR Watershed north of the City of Santa Fe Springs and Angeles National Forest.

Upper San Gabriel River Watershed Management Plan

The San Gabriel Regional Mountains Conservancy has prepared the Upper San Gabriel River Watershed Management Plan with a grant by the LARWQCB. This management plan covers the SGR Watershed above the Whittier Narrows Dam, including Walnut and Jose Creeks.

Emerald Necklace Plan

The Emerald Necklace Park Network is a vision for a 17-mile loop of parks and greenways along the Rio Hondo and SGR. This effort is being led by Amigo de Los Rio, a non-profit organization, and is supported by the Emerald Necklace Coalition, which is comprised of 37 agencies.

San Gabriel River Watershed Non-Point Source Pollution Reduction Program

The Upper San Gabriel Valley Municipal Water District is conducting non-point source (NPS) management efforts in the upper SGR Watershed and implementing an existing trash TMDL. Items include trash reduction, streambank stabilization, replacement of septic systems with composting toilets, and public outreach.

Coyote Creek Watershed Management Plan

Orange County, along with USACE and LACDPW, developed the Coyote Creek Watershed Management Plan, which is a part of the USACE Coyote Creek-Lower San Gabriel River Watershed Feasibility Study. This project was funded through several grants, including Proposition 13 and 40 grants. The Coyote Creek Watershed Management Plan provides a framework for improving watershed management practice and serves as a user guide for green redevelopment in hopes of influencing future watershed-friendly designs. Stakeholder participation in the development of this plan was conducted through the Coyote Creek Watershed Council that coordinated and facilitated public meetings. The study area for the Coyote Creek Watershed Management Plan covers the Coyote Creek Watershed, including the Carbon Creek Watershed and the lower SGR Watershed and Estuary Watershed that lies within Orange County.

Coyote Creek-Lower San Gabriel River Watershed Feasibility Study

The USACE is conducting a feasibility study to develop a rehabilitation plan and identify projects for ecosystem restoration, recreation, water quality improvement, and flood control improvement. The reconnaissance study and project management plan (PMP) for the feasibility study have been completed (USACE 2002). USACE is in the process of conducting a hydrology study for the Coyote Creek-Lower SGR Watershed to define baseline conditions.

2.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

2.4.1 Water Quality Assessments

State of the Watershed

In 2000, the LARWQCB conducted a qualitative review of SGR water quality data from the LARWQCB, LACDPW, and the County Sanitation Districts of Los Angeles County (LARWQCB 2000a). In general, nutrient concentrations are higher downstream of POTW discharges. An abrupt increase in bacteria levels occurs at the concrete-lined portion of the SGR, where there are more storm drains. Metals concentrations were higher in the lower watershed and generally not detected in the upper watershed. However, this evaluation of

nutrient levels in the SGR was made prior to the NDN modifications made to the WRPs. The most recent evaluation of water quality conditions was based on the San Gabriel River Regional Monitoring Program described below.

Dry Weather Water Quality in the SGR Watershed

The Southern California Coastal Water Research Project (SCCWRP) conducted a study to characterize the pattern and magnitude of storm drain and water reclamation plant (WRP) inputs to the SGR. Two dry weather surveys were conducted in 2002 and 2003 to collect flow, metals, bacteria, and nutrient data from WRPs, storm drains, and in-stream locations. The data showed that storm drains were the primary source for bacteria and metals, while WRPs are the primary source of nutrients (SCCWRP 2004). The dry weather surveys were conducted prior to the WRP NDN modifications, which would reduced ammonia nitrogen discharged to the SGR. The most recent evaluation of water quality conditions was based on the San Gabriel River Regional Monitoring Program described below.

Toxicity in the SGR

The Southern California Coastal Water Research Project (SCCWRP), in conjunction with the Los Angeles County Sanitation Districts, U.S. Environmental Protection Agency, and Los Angeles Regional Water Quality Control Board, conducted a study to evaluate the impacts of pollutants on aquatic life in the lower SGR Watershed based on water toxicity (SCCWRP 2006). Goals of the study included assessing the magnitude of toxicity, determining if there are seasonal changes to toxicity, identifying sources of toxicity, and comparing toxicity to prior studies. For the study, dry and wet weather toxicity samples were taken in the lower SGR Watershed, including Coyote Creek, over an 18-month period in 2005 and 2006. Major findings include:

- Toxicity was not widespread in the lower SGR Watershed and no toxicity was observed during wet weather conditions. Toxicity was only observed in Coyote Creek under dry weather conditions, which was intermittent over the sampling period.
- The lack of toxicity shows improvement in water quality since toxicity tests 14 years ago that is attributed to improvements in discharges from water reclamation plants.
- The lack of toxicity is consistent with other recent studies conducted between 2003 and 2006. While improvements have been observed along the main stem of the SGR, Coyote Creek still shows signs of toxicity.

San Gabriel River Regional Monitoring Program

The San Gabriel River Regional Monitoring Program (SGRRMP) is a five-year watershed scale monitoring program (LASGRWC 2009) that was designed to answer five specific questions about the SGR Watershed as follows:

1. What is the condition of streams in the watershed?
2. Are conditions at areas of unique interest getting better or worse?
3. Are receiving waters near discharges meeting water quality objectives?
4. Is it safe to swim?
5. Are locally caught fish safe to eat?

General findings regarding the SGR Watershed included the following:

- Water quality and biotic conditions in the upper watershed were better than conditions in the lower watershed.
- Overall, few exceedances of the dry weather basin plan objectives were found with no exceedances for dissolved metal and organophosphorus pesticides and pyrethroids were nearly always below method detection limits. Bacteria concentrations were also generally below federal and state water quality objectives.
- Toxicity was infrequent with no discernable spatial pattern.
- Although the nutrient and metal levels were elevated in the lower watershed, levels rarely exceeded basin plan water quality objectives and did not strongly correlate with the biotic condition.
- No clear temporal trend was found in the water chemistry results or benthic macroinvertebrates (BMI) community index of biological integrity (IBI) scores.
- Swimming was relatively safe in the upper SGR Watershed during summer months.
- Fish tissue levels were generally found to warrant limited consumption, but contaminant levels were generally lower than fish from other parts of California.

San Gabriel River Estuary

The U.S. Geological Survey (USGS) and SCCWRP coordinated a water quality study of the San Gabriel River Estuary due to concerns of the cooling water discharges to the estuary. USGS conducted a field data collection program to collect hydrodynamic data along the estuary, evaluate exchange processes within the estuary, and provide field data for model calibration and validation (USGS 2007). SCCWRP developed a three-dimensional hydrodynamic model of the SGR Estuary to provide an understanding of the exchange processes between the estuary and ocean, circulation patterns in the estuary, residence times within the estuary, and impacts of runoff and cooling water discharges to the estuary (SCCWRP 2007). Findings from the field data collection program and estuary modeling included the following:

- Under dry weather conditions, flows within the estuary are dominated by cooling water discharges.
- Under dry weather conditions, flows upstream from the cooling discharges are vertically stratified, while downstream the water column is vertically mixed.

- Residence times are less than 20 hours with cooling water discharges and between 50 and 70 hours without cooling water discharges.

2.4.2 Pollutant Source Assessments

TMDL Metal Assessments

Metal loadings from the major NPDES discharges (POTWs and generating stations) were determined for the SGR metals TMDL, as summarized in Table 2.5. The metal loadings from the five POTWs were determined to be 1,800 kg/yr for copper, 1,500 kg/yr for lead, and 11,000 kg/yr for zinc. However, most flows within the upper SGR watershed are utilized for recharge, so metal loadings from the SGR Watershed to the SGR Estuary are more likely to be attributed to the Los Coyote and Long Beach water reclamation plants. The combined loading from the Alamitos and Haynes Generating Stations to the SGR Estuary were estimated to be 20,000 kg/yr of copper, 2,700 kg/yr of lead, and 56,000 kg/yr of zinc and are considerably higher than the contribution from the POTWs. During dry weather, discharges from the Alamitos and Haynes Generating Stations dominate flows within the SGR Estuary (EPA 2007).

Table 2.5 Estimated Metal Loadings from Major NPDES Discharges in the San Gabriel River and Estuary Watersheds

WATERSHED	NPDES DISCHARGE FACILITY	COPPER (KG/YR)	LEAD (KG/YR)	ZINC (KG/YR)
Upper SGR	Pomona WRP	33	30	250
	San Jose WRP	1,045	666	6,569
	Whittier Narrows WRP	114	79	854
Lower SGR	Los Coyotes WRP	401	495	3,319
	Long Beach WRP	188	207	1,341
Estuary	Alamitos GS	4,473	921	26,496
	Haynes GS	15,475	1,790	29,126

Source: EPA 2007

Wet weather loadings were also reported in the SGR metals TMDL source assessment based on storm water monitoring by LACDPW at the SGR Reach 2 and Coyote Creek, as provided in Table 2.6. The monitored wet weather average loadings at the SGR Reach 2 were determined to be 286 kg/yr, 172 kg/yr, 1,868 kg/yr for copper, lead, and zinc,

respectively. The monitored wet weather average loadings for Coyote Creek were 898 kg/yr for copper, 644 kg/yr for lead, and 5,573 kg/yr for zinc (EPA 2007). These loading estimates were based on monitored storm events between 1997-98 and 2003-04 wet seasons. However, these loading estimates represent only a portion of the annual wet weather loadings since only a portion of the storm events are monitored each year and the monitoring locations do not account for the entire watershed.

Table 2.6 LACDPW Monitored Wet Weather Metal Loadings in the San Gabriel River

LOCATION	COPPER (KG)	LEAD (KG)	ZINC (KG)
SGR Reach 2	286	172	1,868
Coyote Creek	898	644	5,573

Source: EPA 2007

Average monitored loadings from 1997-2004

For the TMDL, wet weather metal loadings were determined based on a watershed model of the SGR Watershed. The SGR Watershed Model hydrology calibration was based on LACDPW and USGS flow data between 1990 and 2002; water quality calibration was based on LACDPW data at SGR Reach 2 and Coyote Creek. The SGR Watershed Model was used to determine the load duration curves based on model-predicted loadings from October 1990 to September 2003 (EPA 2007).

Trash Assessment

Debris loads from the San Gabriel River were estimated as part a conceptual design for a debris collection system to reduce the debris load enters the ocean from the SGR. The debris loads were determined for four locations within the SGR, as summarized in Table 2.7. The estimated annual debris loads were determined based on debris quantities collected for the Los Angeles River. (City of Seal Beach 2002)

Table 2.7 Estimated Debris Loads for San Gabriel River

LOCATION	ESTIMATED DEBRIS LOAD (CY/YR)
SGR above confluence with Coyote Creek	500 – 1,500

Coyote Creek above confluence with SGR	2,200 – 7,500
Coyote, North Fork, and Fullerton Creek confluence	1,100 – 3,700
SGR near mouth	3,000 – 10,000

Source: City of Seal Beach 2002

2.5 WATER QUALITY IMPROVEMENT PROJECTS

2.5.1 Greater Los Angeles County IRWMP

- San Gabriel Valley Riparian Habitat Arundo Removal Project
- Morris Dam Water Supply
- Whittier Narrows WRP UV
- 445 projects identified in the upper SGR and Rio Hondo Watersheds
- 212 projects identified in the lower SGR and LAR Watersheds

2.5.2 LA Gateway Region IRWMP JPA

The LA Gateway Region IRWMP JPA recently secured federal support to meet the Los Angeles River Trash TMDL and formalized an agreement to act as the Fiduciary Agent for the Los Cerritos Channel metals TMDL implementation plan. LA Gateway Region IRWMP JPA has also initiated a program to retrofit all catch basins with catch basin inserts (linear connector pipe screens) in the Gateway cities.

2.5.3 Confluence to Coast: Lower San Gabriel Regional BMP & Ecosystem Restoration

The Confluence to Coast Project has a potential for regional water quality, flood control, ecosystem restoration, and recreational opportunities for the SGR Watershed. A feasibility analysis is required before this project can happen. The project features include: Los Cerritos Wetlands restoration; Los Alamitos Creek restoration; retrofit of the Rossmoor and Los Alamitos flood control basins; greenway corridor along the SGR and connecting the Los Cerritos Wetlands and Seal Beach Wildlife Refuge to the El Dorado Regional Park, Puente-Chino Hills, and San Gabriel Mountains; future SGR floodplain restoration feasibility study. This project is identified in the Greater Los Angeles County IRWMP being conducted by Orange County and USACE for a series of treatment wetlands and wet weather retention basins to treat storm water and low flows from the Coyote Creek Watershed, thus providing clean water to the newly restored Los Cerritos Wetlands.

2.5.4 CWA Section 316(b)

The federal Clean Water Act (CWA) Section 316(b) requires cooling water intake structures to use the best technology available to protect aquatic life. The California State Water Resource Control Board has adopted the Once-Through Cooling Water Policy on the use of coastal and estuarine waters for power plant cooling. The policy, which became effective on October 1, 2010, establishes technology-based standards to implement the CWA Section 316(b) in order to reduce harmful effects associated with cooling water intake structures on aquatic life. Closed-cycle wet cooling has been selected as the best technology available. The 19 facilities with once-through cooling (OTC) systems are required to reduce seawater use by 93% by either reduce intake flow and velocity (Track 1) or reduce impacts to aquatic life by other means (Track 2). As a result of the policy, two power plants have ceased operation, while other facilities are planning to modernize the power plant equipment to air cooling systems, evaporative cooling towers, or other alternative controls. The Alamitos and Haynes Generating Stations are required to comply with the OTC Policy and reduce the intake of seawater. The significant reduction or elimination of the seawater intake from these generating stations will drastically reduce the associated discharges to the San Gabriel River.

The Alamitos Generating Station has a compliance date of December 31, 2020. AES Alamitos plans to follow Track 1 of the OTC Policy by replacing the six existing units with either simple-cycle or combined-cycle gas turbine generating facilities. The type of cooling system has not been determined yet, but three alternatives are being considered – air-cooled condensers, confidential cooling technology, and closed-cycle mechanical draft cooling tower using reclaimed/recycled water (AES 2011).

The Haynes Generating Station has a compliance date of December 31, 2013 for units 5 and 6 and a compliance date of December 31, 2029 for units 1, 2, and 8. LADWP plans to follow Track 1 and replace the OTC units to dry or wet closed cycle cooling, thus eliminating seawater intake. Units 5 and 6 for the Haynes Generating Station will be replaced with six, 100-MW simple cycle gas turbines with dry cooling for inter-stage cooling. Repowering of units 5 and 6 began in April 2011 with completion anticipated by June 1, 2013. Replacement of units 1, 2, and 8 will be either a dry or wet closed cycle cooling system (LADWP 2011).

2.6 WATERSHED IMPACTS

Watershed activities within the San Gabriel River and Estuary Watersheds discussed above will likely improve the overall water quality within the SGR in the future. Significant resources are being dedicated by various agencies for watershed management plans, water quality improvement projects, and pollutant reductions. Currently, many programs are being implemented to improve water quality in the SGR. Future efforts to comply with impending

TMDLs and OTC Policy will likely result in improvements in water quality. Upon compliance with the OTC Policy, the NPDES discharges from the Alamitos and Haynes Generating Stations will ultimately be significantly reduced or eliminated. It can be anticipated that the long-term watershed impacts to the LCWA Phase 1 parcel be the same or improve over time.

3. LCWA PHASE 2

3.1 PARCEL DESCRIPTION

The LCWA Phase 2 parcel is a 100-acre parcel located in the City of Seal Beach and County of Orange. This parcel, as shown in Figure 1.1, is bordered by the Haynes Cooling Channel to the west, Hellman parcel to the north, Seal Beach Boulevard to the east, and Marina Hill community of Seal Beach and Gum Grove Park parcel to the south. Restoration of this parcel has previously been evaluated based on the Hellman Ranch Wetlands Conceptual Feasibility Study and referred to as the 100-acre deed restricted area on Hellman Ranch (SCC 2007). The LCWA Phase 2 parcel contains remnants of historical oil field activities and received fill from the U.S. Army Corps of Engineers (USACE) construction of the San Gabriel River flood control levees in the 1960's resulting in higher elevations. An existing tidal channel runs through the parcel and connects with the San Gabriel River via a culvert with a flap gate allowing some tidal exchange and resulting in approximately 23.2 – 27 acres of wetlands, which are considered “degraded” or “severely degraded” (SCC 2007).

3.2 WATERSHED DESCRIPTION

Due to the placement of fill from the construction of the San Gabriel River flood control levees, the LCWA Phase 2 parcel and the Hellman parcel are higher in elevation than adjacent sites (C 2007). Hence, this wetland parcel only receives direct runoff along the south border from Gum Grove Park. The Marina Hill community also along the south edge of the LCWA Phase 2 parcel ultimately drains into the San Gabriel River. The Gum Grove Park drainage area is located within the City of Seal Beach and County of Orange. This area is within the jurisdiction of the Santa Ana Regional Water Quality Control Board and the Anaheim Bay, Huntington Harbour, and Bolsa Chica Watershed Management Area. Since the LCWA Phase 2 parcel includes a hydraulic connection with San Gabriel River, this parcel would indirectly have the potential to receive watershed loadings from the San Gabriel River Watershed and San Gabriel River Estuary.

3.3 WATERSHED ACTIVITIES

The LCWA Phase 2 parcel currently does not receive significant runoff from any known sources.

3.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

The LCWA Phase 2 parcel currently receives minimal tidal exchange with the San Gabriel River Estuary. This parcel has the potential to receive watershed loadings from the San Gabriel River Watershed and San Gabriel River Estuary Watershed. Pollutant source assessments from the San Gabriel River Watershed and San Gabriel River Estuary Watershed are provided in Section 2.0.

3.5 WATER QUALITY IMPROVEMENT PROJECTS

The LCWA Phase 2 parcel currently receives minimal tidal exchange with the San Gabriel River Estuary. This parcel has the potential to receive watershed loadings from the San Gabriel River Watershed and San Gabriel River Estuary Watershed. Water quality improvement projects within the San Gabriel River Watershed and San Gabriel River Estuary Watershed are discussed in Section 2.0.

3.6 WATERSHED IMPACTS

Currently, the LCWA Phase 2 parcel receives minimal tidal exchange with the San Gabriel River Estuary and runoff from the Gum Grove Park drainage area. The proposed restoration of the LCWA Phase 2 parcel would likely increase tidal exchange with the San Gabriel River Estuary. Watershed impacts associated with the San Gabriel River Watershed and San Gabriel River Estuary Watershed are summarized in Section 2.0. Watershed impacts associated with the Gum Grove Park are provided separately in Section 5.0.

4. LOS ALAMITOS RETARDING BASIN

4.1 PARCEL DESCRIPTION

The Los Alamitos Retarding Basin parcel (LARB), is located on the east side of the Haynes Cooling Channel and south of 2nd Street/Westminster Avenue adjacent to the Boeing International Facility. The LARB, which is operated by the Orange County Flood Control District, is a depressed basin covering approximately 30 acres.

The LARB is primarily within the boundaries of the City of Seal Beach and Orange County under the jurisdiction of the Santa Regional Water Quality Control Board. However, the northwest corner of the retention basin lies within the City of Long Beach and Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. This area of the parcel corresponds to subareas 28 in the City of Long Beach Southeast Area Development and Improvement Plan (SEADIP). In the SEADIP, subarea 28 is owned by Orange County (City of Long Beach 2006).

The Los Alamitos Pump Station, which is located in the northwest corner of the LARB in the City of Long Beach, is used to pump excess storm water out of the LARB and into the SGR Estuary. The discharge into the SGR Estuary is regulated by the LARWQCB order R4-2008-0032 and NPDES No. CAG994004, CI-9325 issued to the Orange County Flood Control District (OCFCD).

4.2 WATERSHED DESCRIPTION

The drainage area to the LARB parcel is approximately 5,340 acres along the Los Alamitos Channel (City of Seal Beach 2008). The drainage area is comprised of two areas, one area that drains into the Rossmoor Retarding Basin (RRB) and the drainage area in between the RRB and LARB. The approximately drainage area based on the OCFCD drainage maps is shown in Figure 4.1. Excess flows into the RRB are pumped into the SGR or continue downstream in the Los Alamitos Channel and into the LARB.

The RRB is located along the eastern bank of the SGR near the confluence with Coyote Creek. The RRB drainage area is located in the City of Los Alamitos, south of the Carbon Creek Watershed. Other storm drains include the Rossmoor Storm Channel (C01S02), which receives runoff from a portion of the Joint Forces Training Base (JFTB) Los Alamitos, and three additional storm drains along Katella Avenue (C01S05, C01P02, and C01P03).

The LARB has a drainage area of approximately 3,584 acres in the Cities of Los Alamitos and Seal Beach as well as other unincorporated or privately owned areas. Storm drains convey runoff from the LARB drainage area. The LARB also receives runoff from two communities adjacent to the site, the Island Village and Pacific Gateway Business Center (City of Seal Beach 2008).

Runoff to the LARB is conveyed via OCFCD storm drains including the Los Alamitos Channel (Facility No. C01), Federal Channel (Facility No. C01S06), Kempton Storm Channel (Facility No. C01S01), Montecito Storm Channel (Facility No. C01S03), and Bixby Storm Channel (Facility No. C01S04). The Los Alamitos Channel is a concrete-lined channel that runs from the Rossmoor Retarding Basin in the City of Alamitos south into the City of Seal Beach in College Park West community, past the Leisure World Retirement Community, and terminating at the LARB. The drainage area of the College Park West community covers 52 acres of low density residential land uses (City of Seal Beach 2008).

The Kempton, Montecito, and Bixby Storm Channels join the Los Alamitos Channel. The Kempton Storm Channel has a drainage area of 288 acre mostly within the unincorporated Orange County area of Rossmoor. The Montecito Storm Channel receives flows from a drainage area of 402 acres that includes the Rossmoor Commercial Center and the unincorporated area of Rossmoor. The 248-acre drainage area for the Bixby Storm Channel, which joins the Montecito Storm Channel, includes about 121 acres of low density residential area within the City of Los Alamitos and about 13 acres with the City of Seal Beach (City of Seal Beach 2008).

The Federal Storm Channel has a drainage area of 2,345 acres of which about 40% of this area is the Joint Forces Training Base (JFTB) Los Alamitos. Runoff from 1,444 acres that includes the College Park East, Old Ranch Towne Center, Centex Residential Development, also drains into the Old Ranch Golf Course in the City of Seal Beach, where the golf course is utilized as the retention basin. The Federal Storm Channel starts at the golf course and runs through the Leisure World Retirement Community and joins the Los Alamitos Channel just prior to the LARB (City of Seal Beach 2008).

The U.S. Naval Weapons Station comprises the majority of the City of Seal Beach, covering 5,256 acres, including the Seal Beach National Wildlife Refuge encompassing Anaheim Bay. Most of this area drains into Anaheim Bay.

4.3 WATERSHED ACTIVITIES

A new pump station is being constructed at the Los Alamitos Pump Station to increase the discharge capacity to the SGR from 444 cfs to 800 cfs, thus accommodating the 100-year storm event and reducing flooding in the surrounding area (City of Seal Beach 2008).

4.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

There are no known pollutant source assessments that were conducted for the LARB watershed.

4.5 WATER QUALITY IMPROVEMENT PROJECTS

There are no known water quality improvement projects with the LARB watershed.

4.6 WATERSHED IMPACTS

The LARB parcel currently receives runoff from primarily urban land uses. Watershed impacts attributed to runoff water quality to the LARB parcel are anticipated to be similar to existing conditions. Changes in runoff volume may occur due to modifications of the pump stations at the RRB and LARB.

5. GUM GROVE PARK

5.1 PARCEL DESCRIPTION

Gum Grove Park is located adjacent to the south edge of the LCWA Phase 2 parcel, in the City of Seal Beach. This 14.9-acre park contains an urban forest of eucalyptus trees and a hiking trail. Public access to the park is located along Seal Beach Boulevard as a result of the Hellman Ranch Specific Plan (City of Seal Beach 2003).

5.2 WATERSHED DESCRIPTION

The drainage area into Gum Grove Park is 23-acres in the City of Seal Beach and County of Orange. This area is within the jurisdiction of the Santa Ana Regional Water Quality Control Board and the Anaheim Bay, Huntington Harbour, and Bolsa Chica Watershed Management Area.

The Gum Grove Park drainage area receives runoff from an entirely low density residential area in the northern portion of the Marina Hill community, as shown in Figure 5.1. The Gum Grove Park drainage area drains into two sump locations along Crestview Avenue, which convey runoff into Gum Grove Park via two 18-inch RCP storm drains. Runoff flows through Gum Grove Park and the LCWA Phase 2 parcel into the Haynes Cooling Channel and San Gabriel River.

5.3 WATERSHED ACTIVITIES

The City of Seal Beach has a storm water pollution prevention ordinance and participates in the Orange County Storm Water Program. Based on the City of Seal Beach Master Plan of Drainage (2008), the city storm drains are sufficient to convey the 25-year flood with a peak flow of 47 cfs and a 10-year peak flood flow of 38.4 cfs. No improvements are being planned for this drainage area.

5.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

There are no known pollutant source assessments that were conducted for the Gum Grove Park watershed.

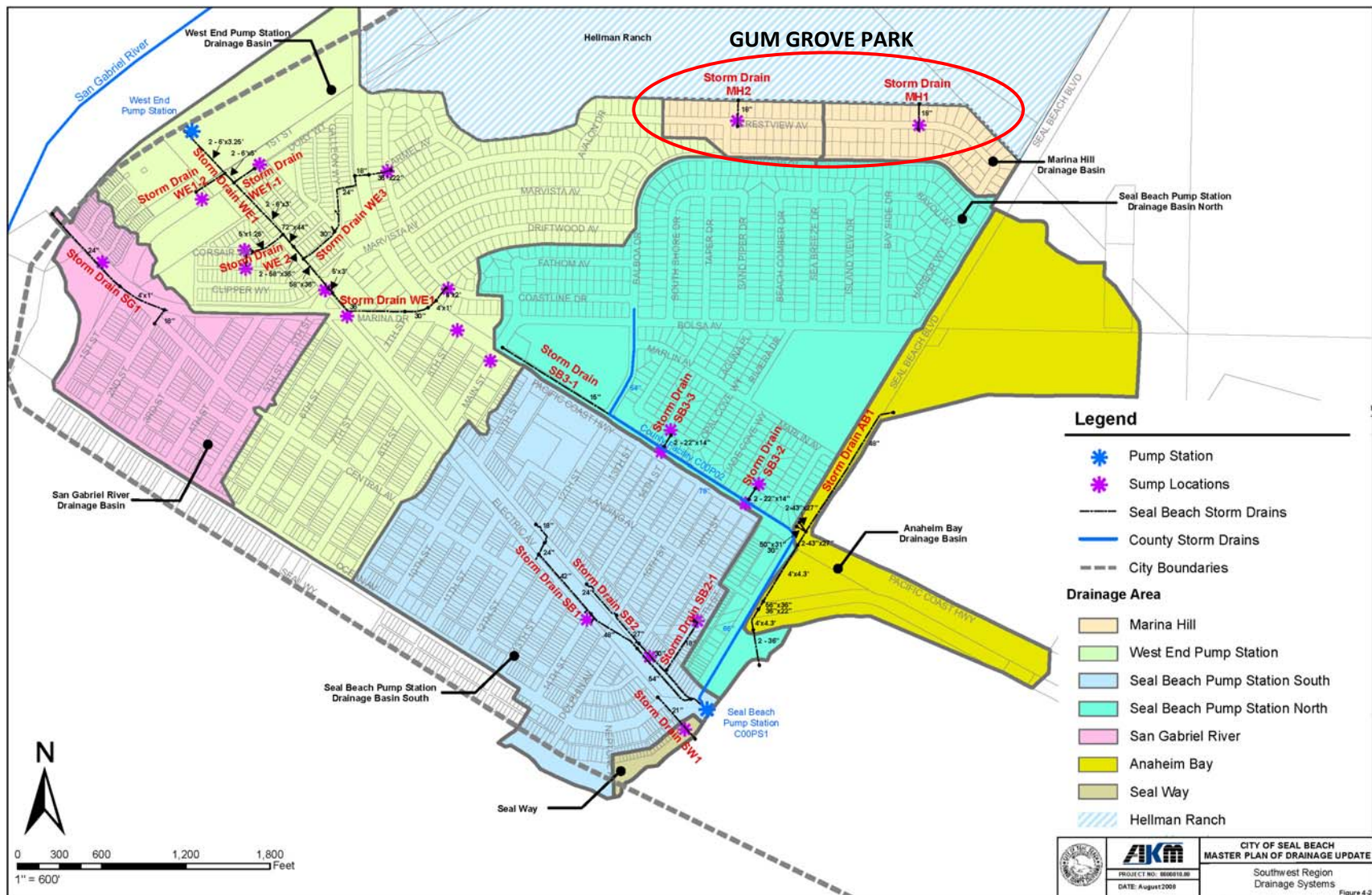


Figure 5.1 Gum Grove Park Drainage Area

Source: City of Seal Beach 2008

5.5 WATER QUALITY IMPROVEMENT PROJECTS

There are no known water quality improvement projects with the Gum Grove Park watershed.

5.6 WATERSHED IMPACTS

The Gum Grove Park parcel currently receives runoff from a low density residential area in the northern portion of the Marina Hill community in the City of Seal Beach. Watershed impacts attributed to runoff water quality to the Gum Grove Park parcel are anticipated to be similar to existing conditions.

6. STATE LANDS COMMISSION

6.1 PARCEL DESCRIPTION

The State Lands Commission parcel is a 5-acre site situated at the intersection of First Street and Pacific Coast Highway in the City of Seal Beach. This parcel, owned by the California State Lands Commission (SLC), is surrounded by the Pacific Coast Highway, LADWP parcel, and LCWA Phase 2 parcel. Currently, the LCWA is working on an access agreement for right of entry into the State Lands Commission parcel (APN 043-160-47). This parcel was included in the prior 2005 Los Cerritos Wetlands Conceptual Restoration Plan Phase I restoration concept (California Earth Corps 2005).

6.2 WATERSHED DESCRIPTION

The State Lands Commission parcel is not considered a part of the City of Seal Beach West End Drainage Area. This parcel does not receive significant runoff from any known source.

6.3 WATERSHED ACTIVITIES

The State Lands Commission parcel does not receive significant runoff from any known sources.

6.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

There are no known pollutant source assessments that were conducted for the State Lands Commission watershed.

6.5 WATER QUALITY IMPROVEMENT PROJECTS

There are no water quality improvement projects with the State Lands Commission watershed.

6.6 WATERSHED IMPACTS

No watershed impacts were determined for the State Lands Commission parcel.

7. LADWP

7.1 PARCEL DESCRIPTION

The Los Angeles City Department of Water and Power owns the LADWP parcel. This parcel is located on the eastern banks of the SGR Estuary, upstream from Pacific Coast Highway, adjacent to the Haynes Cooling Channel and LCWA Phase 1 parcel. This parcel has been identified for access to the LCWA Phase 1 parcel.

The LADWP parcel is located in the City of Seal Beach, which considers this area valuable for visitor-serving and open space land uses. The City of Seal Beach has designated a land-use specific plan, which defines a land use development plan and general development standards for this area. Visitor-serving uses are limited to the northern portion of the LADWP parcel. Permitted uses include a maximum 150-room hotel with conference facilities, restaurants, and retail/service uses. The lower portion of the LADWP parcel is designated for open space with potential uses for public parks, greenbelts, bike and nature trails, and other passive recreation uses (City of Seal Beach 2003).

7.2 WATERSHED DESCRIPTION

Currently, the LADWP parcel does not receive any direct runoff.

7.3 WATERSHED ACTIVITIES

The LADWP parcel does not receive significant runoff from any known sources.

7.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

There have been no pollutant source assessments conducted for the LADWP watershed.

7.5 WATER QUALITY IMPROVEMENT PROJECTS

There are no water quality improvement projects with the LADWP watershed.

7.6 WATERSHED IMPACTS

Currently, the LADWP parcel does receive any direct runoff. Hence, no watershed impacts were identified for the LADWP parcel. However, restoration alternative may alter watershed sources to the LADWP parcel.

8. HELLMAN

8.1 PARCEL DESCRIPTION

The Hellman parcel, as shown in Figure 1.1, is located in the City of Seal Beach and County of Orange. This parcel is bordered by the Haynes Cooling Channel to the west, Orange County Retention Basin parcel to the north, Seal Beach Boulevard to the east, and LCWA Phase 2 parcel to the south.

8.2 WATERSHED DESCRIPTION

The Hellman Ranch contains remnants of historical oil field activities and received fill from the U.S. Army Corps of Engineers (USACE) construction of the San Gabriel River flood control levees in the 1960's resulting in higher elevations. Due to the placement of fill, the LCWA Phase 2 parcel and the Hellman parcel are higher in elevation than adjacent sites (SCC 2007). Hence, the Hellman Ranch parcel does not receive any direct runoff. This area is within the jurisdiction of the Santa Ana Regional Water Quality Control Board and the Anaheim Bay, Huntington Harbour, and Bolsa Chica Watershed Management Area.

8.3 WATERSHED ACTIVITIES

The Hellman Ranch Tank Farm Replacement Program was conducted to replace and relocate an existing tank farm, which is located on a 1.6-acre site in the southwest portion of the Hellman Ranch parcel. These facilities have been relocated to a 0.53-acre site in the central portion of the Hellman Ranch parcel, thus moving oil production related facilities farther away from the wetlands area.

8.3.1 City of Seal Beach – Hellman Specific Plan

The Hellman Specific Plan was an Ordinance adopted in 1987 by the City of Seal Beach for a zoning district specifically for the Hellman Ranch area. The specific plan refines planning considerations for the Hellman area from the City of Seal Beach general plan.

8.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

There have been no pollutant source assessments conducted for the Hellman watershed.

8.5 WATER QUALITY IMPROVEMENT PROJECTS

There are no water quality improvement projects with the Hellman watershed.

8.6 WATERSHED IMPACTS

Currently, the Hellman parcel does not receive any direct runoff. Hence, no watershed impacts were identified for the Hellman parcel. The proposed restoration of the Hellman parcel may increase tidal exchange with the San Gabriel River Estuary. If this is the case, this parcel would indirectly have the potential to receive watershed loadings from the San Gabriel River Watershed and San Gabriel River Estuary.

9. BRYANT PROPERTIES

9.1 PARCEL DESCRIPTION

The Bryant Properties parcel with a total area of 13.87 acres is comprised of two separate parcels. The Bryant Properties - West parcel is located south of 2nd Street/Westminster Avenue and west of the SGR and separates the LCWA Phase 1 main and separate parcels. This parcel is zoned as a business park (office, commercial, and light industrial) in the Southeast Area Development and Improvement Plan (SEADIP) subarea 26b (City of Long Beach 2006). The Bryant Properties - East parcel is located in between the LCWA Phase 1 main parcel and the Haynes Cooling Channel, south of 2nd Street/Westminster Avenue, along the eastern bank of the SGR. This parcel is zoned to be used entire for wetlands restoration in the Southeast Area Development and Improvement Plan (SEADIP) subarea 27 (City of Long Beach 2006).

9.2 WATERSHED DESCRIPTION

The Bryant Properties parcel does not receive any known sources of runoff.

9.3 WATERSHED ACTIVITIES

The Bryant Properties parcel does not receive significant runoff from any known sources.

9.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

There have been no pollutant source assessments conducted for the Bryant Properties watershed.

9.5 WATER QUALITY IMPROVEMENT PROJECTS

There are no water quality improvement projects with the Bryant Properties watershed.

9.6 WATERSHED IMPACTS

Currently, the Bryant Properties parcel does receive any direct runoff. Hence, no watershed impacts were identified for the Bryant Properties parcel. However, restoration alternative may alter watershed sources to the Bryant Properties parcel.

10. CITY OF LONG BEACH

10.1 PARCEL DESCRIPTION

The City of Long Beach parcel is located in between the LCWA Phase 1 and Bryant Property parcels and the Marketplace Shopping Center along Shopkeeper Road and south of the LCW Partners parcel and 2nd Street/Westminster Avenue. This parcel, commonly known as Marketplace Marsh, is 33.77-acre area with existing wetlands and was obtained by the City of Long Beach through a land swap with the private property owners. The City of Long Beach parcel is zoned as a business park (office, commercial, and light industrial) in the Southeast Area Development and Improvement Plan (SEADIP) subarea 25 (City of Long Beach 2006).

A jurisdictional delineation report (JDR) was prepared for the LCWA to assess the existing wetlands area in the parcel. The JDR determined there is approximately 21.8 acres of potential jurisdictional waters of the U.S. and State. The total wetlands area is comprised of 19.9 acres of potential jurisdictional waters of the U.S. with vegetated wetlands and 1.9 acres of potential jurisdictional waters of the State. Habitat types included mulefat scrub, southern coastal brackish marsh, southern coastal salt marsh, southern willow scrub, and disturbed wetlands (LCWA 2011).

10.2 WATERSHED DESCRIPTION

The drainage area to the City of Long Beach parcel includes the Marketplace Shopping Center located in between Pacific Coast Highway and the wetland parcel. Runoff from the drainage area is conveyed via storm drains, as shown in Figure 10.1. This drainage area is within the City of Long Beach, Los Angeles County under the jurisdiction of the LARWQCB. Based on the Southeast Area Development and Improvement Plan (SEADIP) for the City of Long Beach, the drainage area entirely encompasses subarea 18 with portions of subarea 25. Subarea 18 is zoned for commercial uses and is fully developed. Subarea 25 is the same zoning as the wetland parcel for business park uses (City of Long Beach 2006).

10.3 WATERSHED ACTIVITIES

The City of Long parcel receives runoff from a commercial area – Marketplace Shopping Center.

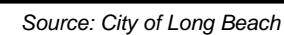


Figure 10.1 City of Long Beach Properties Drainage Area

10.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

There are no known pollutant source assessments that were conducted for the City of Long Beach parcel watershed.

10.5 WATER QUALITY IMPROVEMENT PROJECTS

There are no known water quality improvement projects with the City of Long Beach parcel watershed.

10.6 WATERSHED IMPACTS

The City of Long Beach parcel currently receives runoff from a shopping area. Existing watershed impacts could be associated with typical pollutants from commercial areas. No changes are anticipated in the future.

11. LCW PARTNERS

11.1 PARCEL DESCRIPTION

The LCW Partners parcel is comprised of four separate areas. The LCW Partners main parcel is located at the northwest end of the Los Cerritos Wetlands Complex in the City of Long Beach. The parcel lies north of 2nd Street/Westminster Avenue, west of Studebaker Road and the Alamitos Generating Station, and south of the Los Cerritos Channel. This parcel was previously referred to as the Upper Bixby area and Steam Shovel Slough in the previous LCW conceptual restoration plan. The main parcel corresponds to subareas 11a and 33 in the City of Long Beach Southeast Area Development and Improvement Plan (SEADIP) (City of Long Beach 2006). In the SEADIP, subarea 11a is zoned for residential uses; while subarea 33 is designated to 96.1 acres of wetlands.

In addition to the main parcel, three smaller areas are also considered a part of the LCW Partners parcel. Two of the areas are located along the eastern bank of the Los Cerritos Channel at Loynes Drive. The watersheds for these two areas are considered to be the same as the main parcel since these areas are along the Los Cerritos Channel. The fourth area is located along the western bank of the SGR adjacent to the Marketplace Shopping Center. This area does not receive a significant source of runoff.

11.2 WATERSHED DESCRIPTION

The primary drainage area to the LCW Partners parcel is the Los Cerritos Channel Watershed. This concrete-lined channel runs through the cities of Long Beach, Lakewood, Bellflower, Paramount, Downey, Signal Hill, and Cerritos. The Los Cerritos Channel Watershed is under the jurisdiction of the LARWQCB and is a part of the Los Cerritos and Alamitos Bay Watershed Management Area, as shown in Figure 11.1. The fresh water portion of the channel above Anaheim Road has a drainage area of 27.67 mi² with almost all urban land uses. Land uses within the fresh water portion of the Los Cerritos Channel Watershed are shown in Figure 11.2 and summarized in Table 11.1.

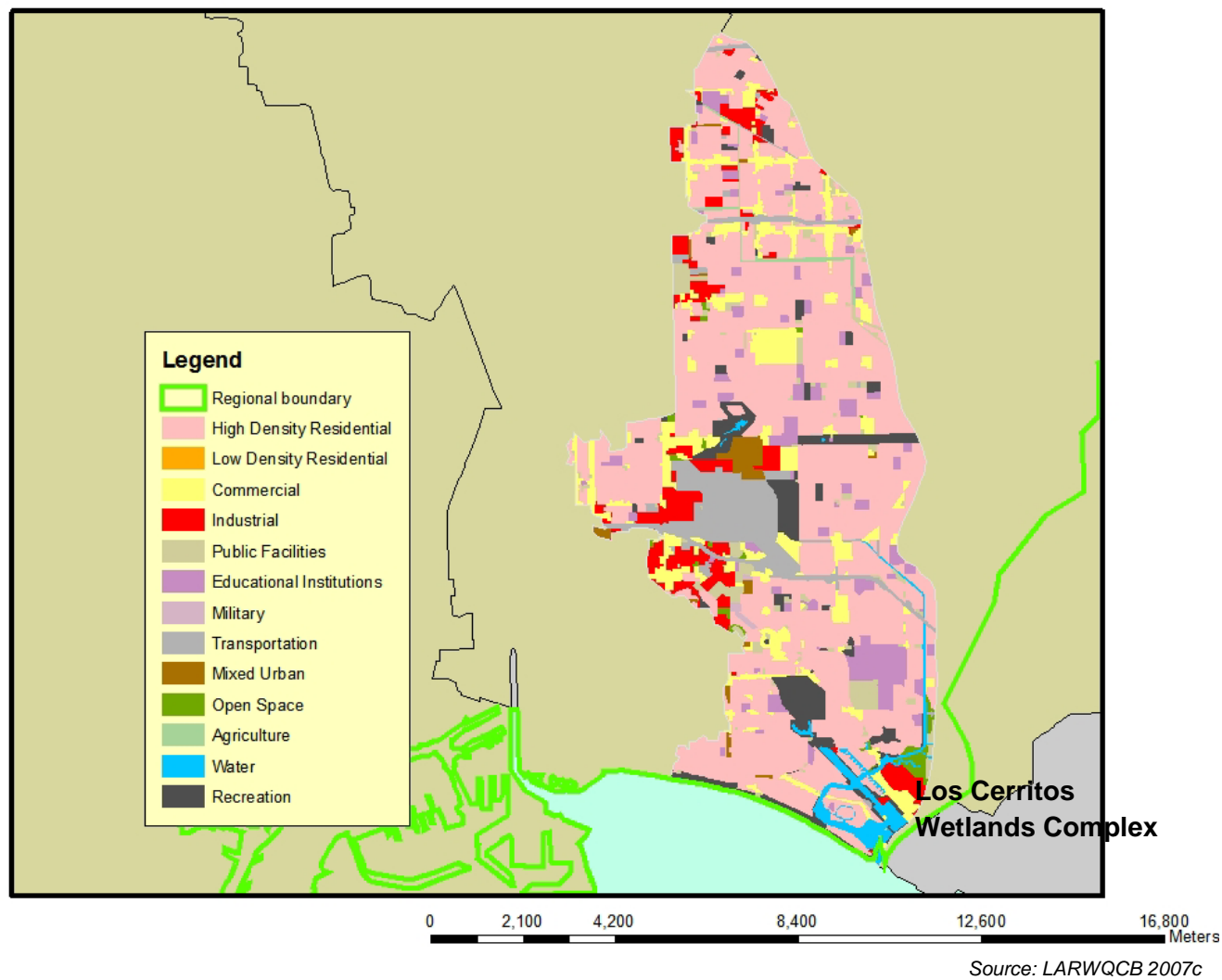
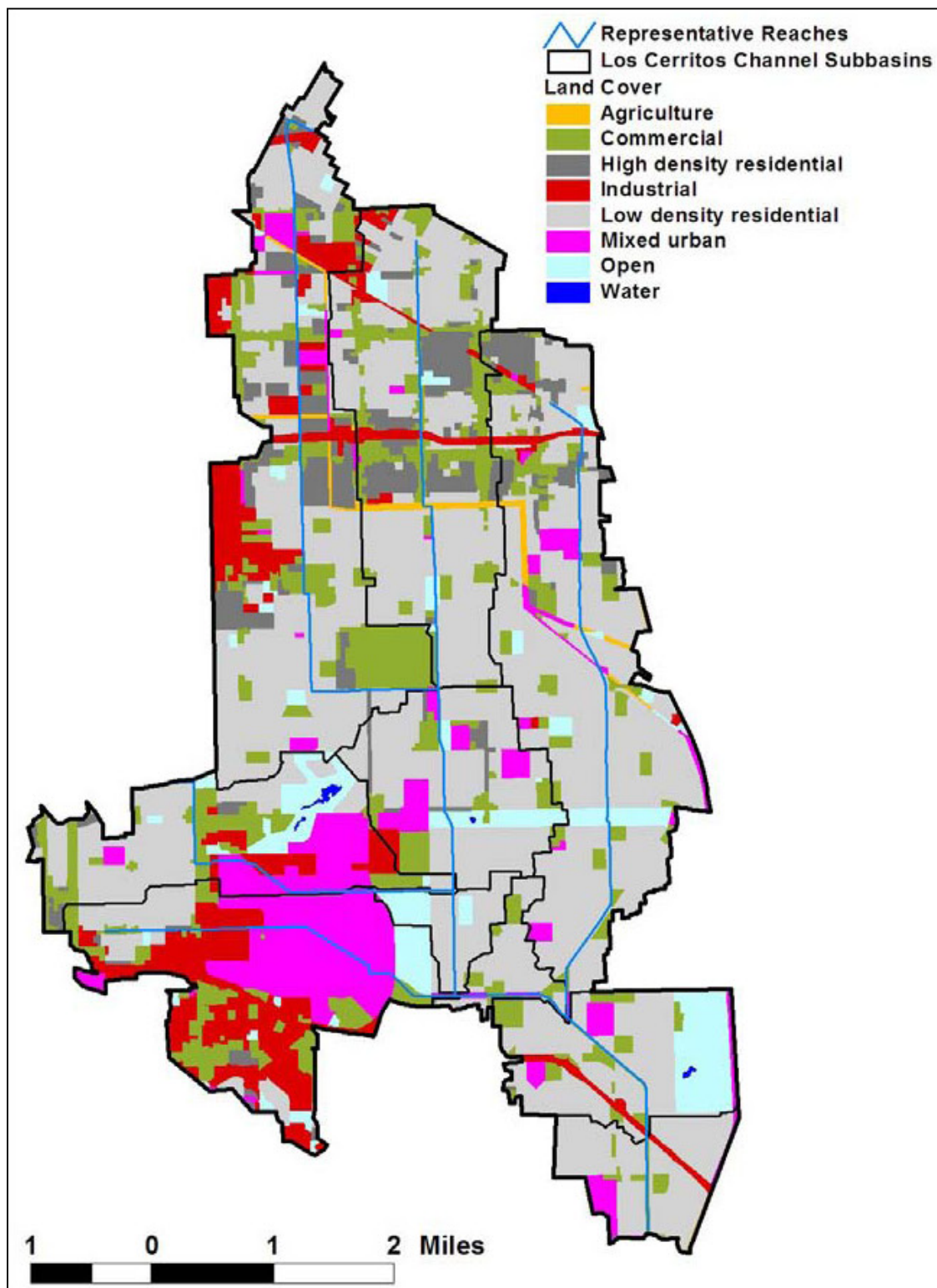


Figure 11.1 Los Cerritos and Alamos Bay Watershed Management Area



Source: EPA 2010

Figure 11.2 Los Cerritos Channel Fresh Water Watershed Land Uses

Table 11.1 Los Cerritos Channel Fresh Water Watershed Land Uses

LAND USE	ACRES	PERCENT OF WATERSHED
Agriculture	137.1	0.8%
Commercial	2,668.6	15.1%
High Density Residential	1,228.5	6.9%
Industrial	1,615.0	9.1%
Low Density Residential	9,278.9	52.4%
Mixed Urban	1,665.8	9.4%
Open Space	1,097.9	6.2%
Water	18.9	0.1%
Total	17,710.7	100%

Source: EPA 2010

The channel is tidally influenced from Anaheim Road to Marine Stadium where the channel joins Alamitos Bay. Flow through the tidally influence Los Cerritos Channel is dominated by the operation of the Alamitos Generating Station, which causes water from Alamitos Bay to be drawn up the Los Cerritos Channel (AES Alamitos 2005).

11.3 WATERSHED ACTIVITIES

11.3.1 TMDLs

The channel is listed under the 303(d) list for ammonia, phthalate, chlordane, metals, coliform bacteria, and trash from nonpoint or unknown sources. The 2008 303(d) impairments for the Los Cerritos Channel are provided in Table 11.2 (LARWQCB 2009d). The table lists the pollutant causing the impairment and the anticipated completion of the corresponding TMDL. EPA has promulgated metal TMDLs for the fresh water portion of the Los Cerritos Channel. Metal TMDLs were specified for copper during dry weather and copper, lead, and zinc for wet weather conditions. Impairments from metals were established based on data from the City of Long Beach storm water monitoring program and Kinnetics Laboratories collected in the vicinity of Stearns Street. No data were reviewed from the estuarine portion of the channel (EPA 2010).

Table 11.2 2008 303(d) Impairments in the Los Cerritos Channel Watershed

IMPAIRMENT	ANTICIPATED TMDL COMPLETION
Ammonia	1/1/2019
Bis(2ethylhexyl)phthalate (DEHP)	1/1/2019
Chlordane (sediment)	1/1/2019
Coliform bacteria	1/1/2019
Metals – copper, lead, and zinc	EPA Completed 2010
Trash	--

Source: LARWQCB 2009d

11.3.2 NPDES Discharges

The NPDES regulates point source discharges to surface waters from three types of sources: municipal separate storm sewer systems (MS4s), construction activities, and industrial activities. A total of 68 NPDES permits have been issued by the LARWQCB within the Los Cerritos Channel Fresh Water Watershed as summarized in Table 11.3 (EPA 2010). The MS4 permits are for Los Angeles County, City of Long Beach, and the statewide permit for Caltrans. Statewide general permits have also been issued for industrial and construction activities. The number of industrial and construction permits indicated in Table 11.3 refers to the number of facilities enrolled under the statewide permits. There are no major NPDES discharges or POTWs within the Los Cerritos Channel Watershed. The two minor NPDES permits are for intermittent wet weather discharges. General NPDES discharges cover other categories of point sources such as construction dewatering, non-process wastes water, petroleum fuel cleanup sites, VOC cleanup sites, hydrostatic test water, and potable water.

Table 11.3 NPDES Discharges in the Los Cerritos Channel Fresh Water Watershed

TYPE	NUMBER OF PERMITS
Municipal MS4	2
Caltrans MS4	1
Industrial	44
Construction	23
POTWs	--
Major NPDES	--
Minor NPDES	2
General NPDES	7

Los Angeles County MS4 Permit

Storm water discharges in Los Angeles County are regulated through the LARWQCB Order No. 01-182 and NPDES permit CAS004001 (LARWQCB 2011). This permit covers the Los Angeles County Flood Control District, County of Los Angeles, and 84 incorporated cities. LACDPW coordinates with all permittees to submit the unified annual storm water report, which documents activities conducted for permit compliance including a compilation of the individual annual reports, six watershed-wide assessments, and the annual storm water monitoring report. The watershed-wide assessments are based on six watershed management areas (WMAs) including the Los Cerritos and Alamitos Bay WMA.

The LACDPW conducts annual monitoring of storm water throughout the county in order to assess compliance with the NPDES permit, measure effectiveness of storm water quality management plans (SQMPs), to assess impacts of urban runoff to receiving waters, and to characterize storm water discharges. The county program has two components –core and region monitoring. No LACDPW storm water monitoring locations were located within the Los Cerritos Channel Watershed.

City of Long Beach MS4 Permit

The City of Long is permitted under NPDES permit No. CAS004003, Order No. R4-99-060 issued June 30, 1999 (LARWQCB 1999). To fulfill permit requirements, the city conducts annual storm water monitoring includes monitoring at mass emission stations, receiving water quality monitoring, and special studies.

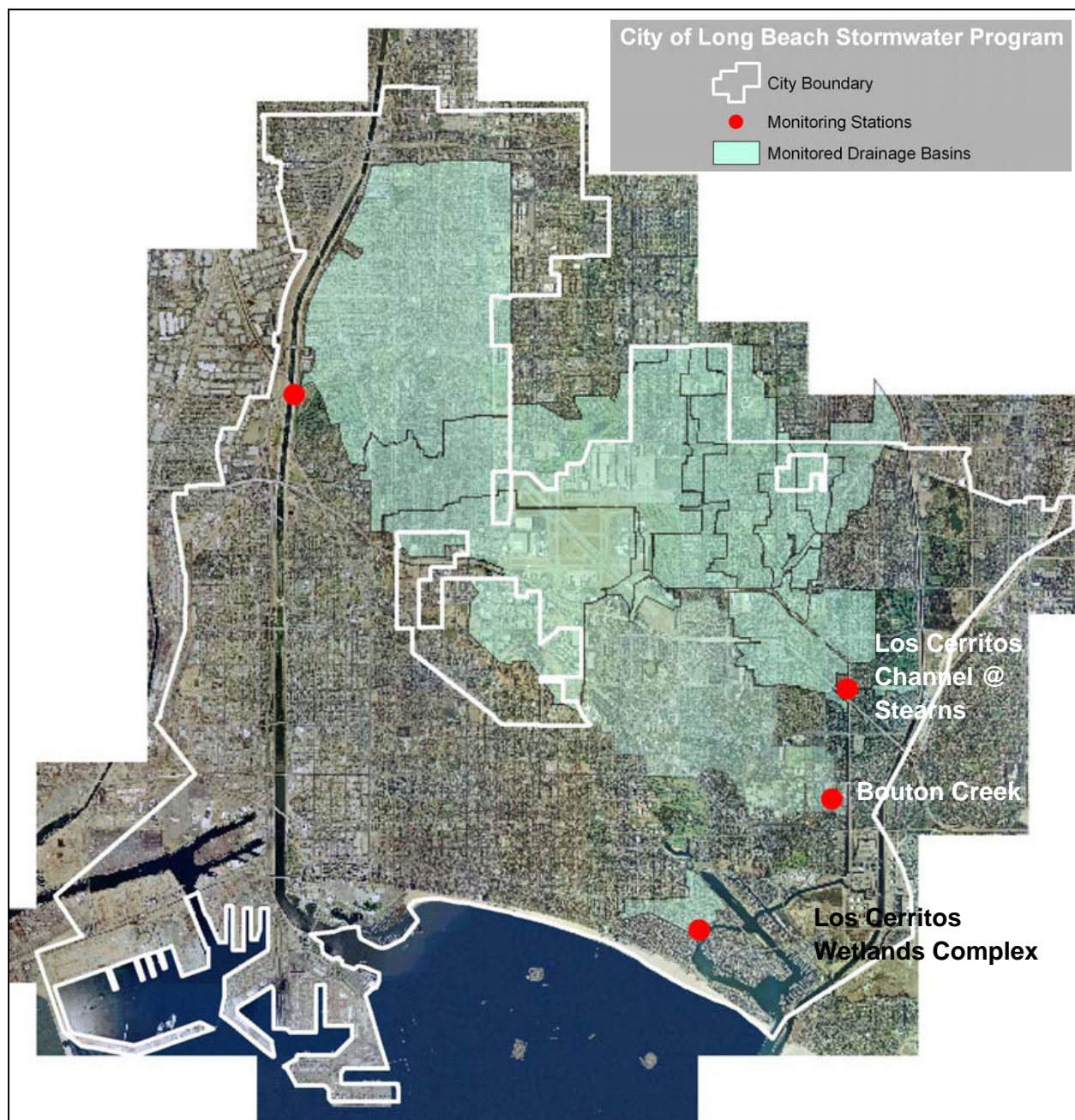
There are two mass emission stations are monitored for dry and wet weather conditions within the Los Cerritos Channel Watershed, as shown in Figure 11.3. One mass emission station is located in the fresh water portion of the Los Cerritos Channel at Stearns Street. The drainage area for the Los Cerritos Channel monitoring station within the City of Long Beach is approximately 12 mi² with portions of Signal Hill and Lakewood. The other mass emission station is located at the downstream end of Bouton Creek, which discharges into the tidally influenced portion of the Los Cerritos Channel in between Anaheim Road and 7th Street. The drainage area for this mass emission station is 3.53 mi². Annual monitoring at each mass emission station includes grab and composites samples for at least two dry weather and two wet weather events. Monitoring includes general measurements for flow, temperature, conductivity, pH, dissolved oxygen, nutrients, and TSS. Additional measurements are conducted for chemical analysis and toxicity testing. Grab samples are used to measure bacteria, total petroleum hydrocarbons (TPH), and oil and grease (City of Long Beach 2007).

Receiving water sampling program is conducted annually within Alamitos Bay, Marine Stadium, and Los Cerritos Channel to define the spatial extent of storm water plumes and evaluate toxicity and water quality characteristics of the storm water plumes. The spatial extent of storm water plumes are measured based on salinity, temperature, turbidity, pH, and dissolved oxygen profiles. Water quality grab samples are taken from the surface of the receiving waters to determine water quality characteristics. In addition, four water quality grab samples were taken during the 2006-2007 monitoring period (City of Long Beach 2007).

A special study is being recommended to investigate and identify the cause of elevated concentration of dissolved copper in dry weather flows within the Los Cerritos Channel. The City of Long Beach has one pump station (SD9 Atherton Street).

Caltrans MS4 Permit

The State of California, Department of Transportation (Caltrans) has a statewide NPDES permit (State Board Order No. 99-06-DWQ) that regulates discharges from the Caltrans highways, properties, facilities, and activities throughout the state. No monitoring locations are located within the Los Cerritos Channel Watershed.



Source: City of Long Beach 2007

Figure 11.3 City of Long Beach Mass Emission Stations and Drainage Areas

Individual NPDES Permits

The Alamitos Generating Station is operated by AES Alamitos, LLC and is located between the Los Cerritos Channel and the western bank of the SGR, north of 2nd Street (Westminster Ave) in the City of Long Beach and Los Angeles County. The generating station draws ocean cooling water from two intake canals that branch off the Los Cerritos Channel and discharges into the SGR approximately 2,000 ft north of 2nd Street /Westminster Avenue via three outfalls. The Alamitos Generating Station is permitted to discharge up to 1,282.8-MGD of wastewater that consists primarily of once-through cooling water with additional pretreated wastes from sanitary wastes, and wastes from three retention basins. The Alamitos Generating Station discharged an average of 583-MGD between 2000 and 2004. NPDES monitoring requirements include an intake cooling water monitoring program, which requires semi-annual monitoring of metals (LARWQCB 2000b).

AES Alamitos also monitors intake cooling waters for temperature, as summarized in Table 11.4. Additional monitoring of waters near the intake channels was conducted in June - July 2004. Average water temperatures ranged from 67.6 °F (19.8 °C) to 71.6 °F (22.0 °C) (AES 2005).

Table 11.4 Alamitos Generating Station Intake Water Temperatures

MONTH	SURFACE WATER TEMPERATURE (°F)
January	58.2
February	59.8
March	62.0
April	64.5
May	67.8
June	70.2
July	69.1
August	68.3
September	67.3
October	65.4
November	61.6
December	58.0

Source: AES 2007

11.3.3 Surface Water Ambient Monitoring Program

The Surface Water Ambient Monitoring Program (SWAMP) is a statewide monitoring program being conducted by the California Regional Water Quality Control Boards to provide information on the status of coastal waters. Data collected are being used in conjunction with other large-scale monitoring programs such as California's Nonpoint Source Program (NPS), US EPA Environmental Monitoring and Assessment Program (EMAP), Southern California Bight Monitoring. As part of the SWAMP, four locations were also sampled in the Los Cerritos Channel and Wetlands (SWAMP 2006).

11.4 PRIOR POLLUTANT SOURCE ASSESSMENTS

11.4.1 Water Quality Assessments

NPDES Water Quality Assessment

The City of Long Beach conducts annual NPDES monitoring of storm water and receiving waters. Two NPDES mass emission stations are located within the Los Cerritos Channel Watershed. The following water quality trends were identified over the eight year NPDES monitoring period (City of Long Beach 2007).

- Dry weather water quality is generally consistent over the eight year monitoring period with relatively low concentrations of suspended particles and metal concentrations, which are predominantly in the dissolved form.
- Copper is the primary constituent of concern for dry weather discharges with the highest dry weather copper concentrations observed at the Los Cerritos Channel mass emission station.
- Dissolved concentrations of cadmium, copper, and nickel do not vary substantially between wet and dry weather conditions. Dissolved zinc and lead are typically higher during wet weather conditions.
- Total copper, lead, and zinc are typically higher during wet weather conditions.
- Organophosphate pesticide levels of chlorpyrifos and diazinon have decreased to below detection levels and currently do not exhibit toxicity in bioassay tests.
- Pollutant event mean concentrations (EMCs) continue to show a large range in variability.
- Toxicity to sea urchins was greater during wet weather conditions, while toxicity to water fleas showed greater toxicity during dry weather conditions.
- Toxicity to sea urchins shows a slight increase, while toxicity to water fleas indicates a decrease in toxicity over a four year monitoring period.
- Toxicity has been correlated with increased concentrations of dissolved metals, hardness, TSS, TDS, and TOC.

- Surface within the storm water plume is generally cooler and more turbid compared to deeper ambient waters. The storm water plume is dominated by TSS and total metals.
- Storm water plumes in Alamitos Bay have consistently shown little evidence of toxicity

San Gabriel River Regional Monitoring Program

As part of the SGR Region Monitoring Program (SGRRMP), the California Rapid Assessment Method (CRAM) was conducted for the existing 776-acre Los Cerritos Wetlands and was used to evaluate ecological conditions of wetlands. The existing Los Cerritos Wetlands had an overall CRAM score of 63, which is lower than the state-wide average of 75 for estuarine wetlands (SGRRMP 2009).

11.4.2 Pollutant Source Assessments

TMDL Metal Assessments

Dry weather copper loadings from the fresh water portion of the Los Cerritos Channel Watershed were estimated as part of the TMDL development. Based on monitoring data at Stearns Street, dry weather copper loadings were estimated for copper, lead, and zinc, as shown in Table 11.5 (EPA 2010).

Table 11.5 Dry Weather Loadings for Los Cerritos Channel Fresh Water Watershed

METAL	DRY WEATHER LOADING (LB/DAY)
Total Copper	0.225
Dissolved Copper	0.159
Total Lead	0.043
Dissolved Lead	0.015
Total Zinc	0.481
Dissolved Zinc	0.222

Source: EPA 2010

As part of the TMDL development, wet weather metal loadings were estimated for the fresh water portion of the Los Cerritos Channel Watershed. Measured wet weather loadings were compared to modeled annual loadings for total copper, lead, and zinc, as summarized in Table 11.6. Modeled annual metal loading rates by land use for the Los Cerritos Channel

Watershed are provided in Table 11.7. Based on the modeled loadings, high density residential land use has the highest contribution of lead, while industrial land use has the highest contribution for copper and zinc.

Table 11.6 Wet Weather Metal Loadings for Los Cerritos Channel Fresh Water Watershed

METAL	MEASURED LOADING (LB/DAY)	MODELED LOADING (LB/DAY)
Total Copper	72	65
Total Lead	78	49
Total Zinc	705	528

Source: EPA 2010

Table 11.7 Modeled Annual Loadings for Los Cerritos Channel Fresh Water Watershed by Land Use

LAND USE	COPPER (LB/ACRE/DAY)	LEAD (LB/ACRE/DAY)	ZINC (LB/ACRE/DAY)
Agriculture	3.170	5.283E-9	1.321E-7
Commercial	7.094	7.094E-2	7.236E-1
High Density Residential	7.970	1.063E-1	9.963E-1
Industrial	8.182	4.091E-2	1.091
Low Density Residential	4.250	2.834E-2	1.700E-1
Mixed Urban	4.081	1.275E-2	2.551E-1
Open Space	8.031	5.354E-8	1.338E-6

Source: EPA 2010

Trash Assessment

Trash loadings from the Los Cerritos Channel were estimated based on trash collection at the Zedler Marsh as summarized in Table 11.8.

Table 11.8 Trash Collection at Zedler Marsh

DATE	TRASH COLLECTION (LBS)	DATE	TRASH COLLECTION (LBS)
Sep 09	100	Sep 10	108
Oct 09	55.5	Oct 10	70
Nov 09	217	Nov 10	21
Dec 09	160.5	Dec 10	103
Jan 10	43	Jan 11	152
Feb 10	33	Feb 11	46
Mar 10	144	Mar 11	50
Apr 10	100	Apr 11	31
May 10	57	May 11	35
Jun 10	110	Jun 11	40
Jul 10	80	Jul 11	100
Aug 10	110	Aug 11	38

Source: Tidal Influence

11.5 WATER QUALITY IMPROVEMENT PROJECTS

11.5.1 City of Long Beach Trash Control

The City of Long Beach conducts trash reduction activities as part of the Storm Water Management Program. The city owns and maintains 3,872 catch basins and 23 pump stations, which are routinely cleaned to remove trash and debris. Additional trash control measures being conducted by the City of Long Beach include trash BMPs and trash control programs. The city is planning to install BMPs to reduce trash and debris in the Los Cerritos Channel. A debris excluder and outfall pipe screen would be installed on all city-owned catch basins that convey runoff to the Los Cerritos Channel, as shown in Figure 11.4. The Los Cerritos Channel Treatment Train Project will reduce trash, debris, and green waste. Trash control programs include litter receptacles, neighborhood cleanup assistance, household recycling (i.e., curbside recycling), greenwaste disposal, special collection for large items, used oil recycling, household hazardous waste collection and trash collection on

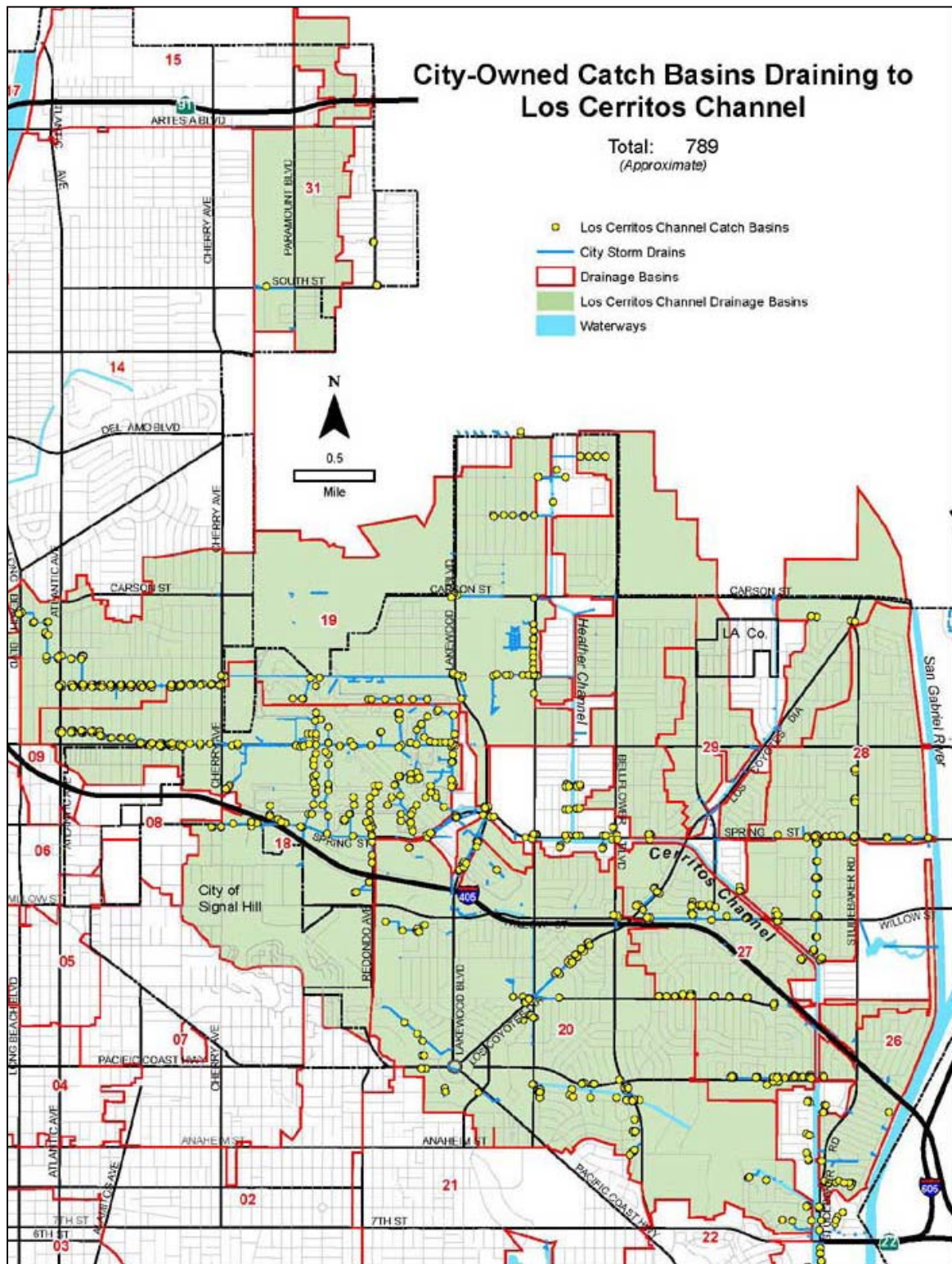
the beach and along water bodies. The City of Long Beach has been conducting a Litter Abatement and Awareness Campaign program since 2005. An estimated four tons of trash and debris were collected at the Los Cerritos Wetlands (City of Long Beach 2008).

11.5.2 CWA Section 316(b)

The federal Clean Water Act (CWA) Section 316(b) requires cooling water intake structures to use the best technology available to protect aquatic life. The California State Water Resource Control Board has adopted the Once-Through Cooling Water Policy on the use of coastal and estuarine waters for power plant cooling. The policy, which became effective on October 1, 2010, establishes technology-based standards to implement the CWA Section 316(b) in order to reduce harmful effects associated with cooling water intake structures on aquatic life. Closed-cycle wet cooling has been selected as the best technology available. The 19 facilities with once-through cooling (OTC) systems are required to reduce seawater use by 93% by either reduce intake flow and velocity or reduce impacts to aquatic life by other means. As a result of the policy, two power plants have ceased operation, while other facilities are planning to modernize the power plant equipment to air cooling systems, evaporative cooling towers, or other alternative controls. The Alamitos Generating Station has a compliance date of December 31, 2020. The significant reduction or elimination of the water intake from the Los Cerritos Channel will likely alter existing circulation patterns in Alamitos Bay.

11.6 WATERSHED IMPACTS

Watershed impacts to the LCW Partners main parcel are primarily associated with pollutants identified in the 303(d) impairments. Water quality improvement projects, impending TMDLs, and compliance with the OTC Policy will likely contribute to the improvement in water quality over time. In particular, the City of Long Beach efforts to reduce trash will result in an overall reduction in trash from the Los Cerritos Channel. In addition, compliance with the OTC Policy from the Alamitos Generating Stations will significantly reduce or eliminate seawater intake and change the circulation patterns within the Los Cerritos Channel.



Source: City of Long Beach 2008

Figure 11.4 Los Cerritos Channel Watershed City of Long Beach Catch Basins

12. SUMMARY OF WATERSHED IMPACTS

The Los Cerritos Wetlands Conceptual Restoration Plan is being conducted to develop restoration alternatives to restore tidal exchange within the wetlands. Watershed activities that may affect the Los Cerritos Wetlands were evaluated as a component in assessing the feasibility of restoring the wetlands. Existing watershed discharges (i.e., runoff) may affect the hydrologic processes within the wetlands that include contributing sources of fresh water and pollutants to the wetlands. Watershed impacts were identified to characterize upstream activities impacting the wetlands, as well as identifying existing or future activities that may affect or impede the restoration of the Los Cerritos Wetlands Complex.

The restoration area is comprised of ten parcels situated along the Los Cerritos Channel, Alamitos Bay, and San Gabriel River Estuary that have been identified for inclusion in the restoration plan. General watershed descriptions for each wetland parcel including drainage area, potential storm water sources, and other characteristics including major hydrologic features, land uses, and jurisdictions were summarized. A summary of the watersheds draining into each of the wetland parcels is provided in Table 12.1.

Table 12.1 Summary of Wetland Parcel Watersheds

WETLAND PARCEL	WATERSHED DESCRIPTION	APPROXIMATE DRAINAGE AREA (mi ²)
LCWA Phase 1 – Main	San Gabriel River Watershed including Coyote Creek and SGR Estuary	689
LCWA Phase 1 – Separate	None	0.0
LCWA Phase 2	Receives runoff from Gum Grove Park and hydraulically connected to San Gabriel River	--
Los Alamitos Retarding Basin	Los Alamitos Channel	5.6
Gum Grove Park	Low density residential area in the northern portion of the Marina Hill	0.036
State Lands Commission	None	0.0
LADWP	None	0.0
Hellman	None	0.0
Bryant Properties	None	0.0
City of Long Beach	Marketplace Shopping Center	0.028
LCW Partners	Los Cerritos Channel	30

Watershed impacts were identified to characterize upstream activities that may impact the wetlands restoration. Available information for each wetland parcel watershed was reviewed to determine water quality conditions of runoff from each watershed. Potential watershed impacts were assessed based on watershed activities, pollutant source assessments, and water quality improvement projects.

Watershed activities in each watershed are discussed pertaining to existing or on-going pollutant sources, water quality monitoring, or watershed management plans. Information on watershed activities were obtained from National Pollutant Discharge Elimination System (NPDES) permits, TMDL activities, storm water monitoring programs, regional water quality monitoring programs, watershed management plans, watershed studies, and other related activities that may affect the hydrologic or water quality conditions of watershed discharges to the wetlands. A summary of the watershed activities for each wetland parcels is provided in Table 12.2.

Table 12.2 Summary of Watershed Activities

WETLAND PARCEL	WATERSHED ACTIVITIES
LCWA Phase 1 – Main	<ul style="list-style-type: none"> • TMDLs • 1,408 NPDES permits including 5 POTWs and 2 power generation stations • 3 regional monitoring programs • 4 joint powers authorities • 13 watershed plans
LCWA Phase 1 – Separate	None
LCWA Phase 2	<ul style="list-style-type: none"> • Same as Gum Grove Park and San Gabriel River
Los Alamitos Retarding Basin	<ul style="list-style-type: none"> • Urban land uses • Increase capacity of Los Alamitos pump station
Gum Grove Park	<ul style="list-style-type: none"> • Low density residential activities
State Lands Commission	None
LADWP	None
Hellman	None
Bryant Properties	None
City of Long Beach	<ul style="list-style-type: none"> • Commercial activities
LCW Partners	<ul style="list-style-type: none"> • TMDLs • 79 NPDES permits • SWAMP monitoring • City of Long Beach storm water monitoring

Information from prior water quality and pollutant source assessments was reviewed to identify general water quality conditions of watershed discharges and potential pollutant sources to the planned wetland parcels. Water quality assessments included regional monitoring programs and watershed studies. Pollutant source assessments include TMDL source assessments and pollutant loading studies (measured or modeled). Table 12.3 summarizes the results for the pollutant source assessments for each wetland parcels.

Table 12.3 Summary of Pollutant Source Assessments

WETLAND PARCEL	POLLUTANT SOURCE ASSESSMENTS
LCWA Phase 1 – Main	<ul style="list-style-type: none"> • Major NPDES metal loadings • Monitored wet weather metal loadings • Modeled load duration curves • Trash assessment
LCWA Phase 1 – Separate	None
LCWA Phase 2	<ul style="list-style-type: none"> • Same as Gum Grove Park and San Gabriel River
Los Alamitos Retarding Basin	None
Gum Grove Park	None
State Lands Commission	None
LADWP	None
Hellman	None
Bryant Properties	None
City of Long Beach	None
LCW Partners	<ul style="list-style-type: none"> • NPDES water quality assessment • San Gabriel River Regional Monitoring Program • TMDL metal loadings, measured and modeled from Los Cerritos Channel fresh water • Trash assessment

Planned water quality improvement projects in each watershed are summarized in Table 12.4. Future watershed activities or projects that may affect watershed hydrologic conditions or pollutant sources were identified for each watershed. These projects may have long-term impacts on hydraulic or water quality conditions within the wetlands.

Table 12.4 Summary of Water Quality Improvement Projects

WETLAND PARCEL	WATER QUALITY IMPROVEMENT PROJECTS
LCWA Phase 1 – Main	<ul style="list-style-type: none"> • Greater Los Angeles County IRWMP • LA Gateway Region IRWMP JPA • Confluence to Coast Project • CWA Section 316(b) compliance
LCWA Phase 1 – Separate	None
LCWA Phase 2	<ul style="list-style-type: none"> • Same as Gum Grove Park and San Gabriel River
Los Alamitos Retarding Basin	<ul style="list-style-type: none"> • Increase capacity of Los Alamitos pump station
Gum Grove Park	None
State Lands Commission	None
LADWP	None
Hellman	None
Bryant Properties	None
City of Long Beach	None
LCW Partners	<ul style="list-style-type: none"> • City of Long trash control programs including catch basin BMPs • CWA Section 316(b) compliance

Watershed impacts were identified to characterize upstream activities affecting the wetlands and existing or future activities that have the potential to affect the restoration of the Los Cerritos Wetlands Complex. Water quality concerns and watershed impacts to the wetland parcels are summarized in Table 12.5. The watershed impacts were determined based on existing watershed areas. Future restoration activities may increase tidal exchange with San Gabriel River Estuary, Los Cerritos Channel, or Alamitos Bay, thereby altering the watershed area of the wetlands area. However, due to watershed activities within the major watersheds (San Gabriel River and Estuary and Los Cerritos Channel), long-term water quality improvements in watershed runoff are anticipated from watershed management plans and TMDL compliance. In addition, the CWA Section 316(b) compliance will significantly reduce or eliminate power generating station intake and discharge into the SGR estuary. There is potential for long-term changes to hydraulic and hydrologic conditions within the Los Cerritos Wetlands Complex.

Table 12.5 Summary of Watershed Impacts

WETLAND PARCEL	WATER QUALITY CONCERNS	WATERSHED IMPACTS
LCWA Phase 1 – Main	<ul style="list-style-type: none"> Metals Bacteria Ammonia Toxicity Diazinon Dioxin Trash 	<ul style="list-style-type: none"> Overall water quality from SGR watershed expected to be improved due to significant resources being dedicated for watershed management plan and water quality improvement projects Long-term improvement in water quality expected due to TMDL development and compliance CWA Section 316(b) compliance will significantly reduce or eliminate power generating station intake and discharge into the SGR estuary
LCWA Phase 1 – Separate	None	None
LCWA Phase 2	<ul style="list-style-type: none"> Same as Gum Grove Park and San Gabriel River 	<ul style="list-style-type: none"> Same as Gum Grove Park and San Gabriel River
Los Alamitos Retarding Basin	<ul style="list-style-type: none"> Urban runoff 	<ul style="list-style-type: none"> Increase capacity of Los Alamitos pump station will reduce flooding in watershed and may increase discharge to San Gabriel River
Gum Grove Park	<ul style="list-style-type: none"> Urban runoff 	<ul style="list-style-type: none"> No anticipated changes
State Lands Commission	None	None
LADWP	None	None
Hellman	None	None
Bryant Properties	None	None
City of Long Beach	<ul style="list-style-type: none"> Urban runoff 	<ul style="list-style-type: none"> No anticipated changes
LCW Partners	<ul style="list-style-type: none"> Ammonia DEHP Chlordane Bacteria Metals Trash 	<ul style="list-style-type: none"> Reduction in trash anticipated due to planned City of Long Beach catch basin BMPs Long-term improvement in water quality expected due to TMDL development and compliance CWA Section 316(b) compliance will significantly reduce or eliminate power generating station intake from Los Cerritos Channel

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