One Water LA

LA Sanitation & Environment, City of Los Angeles

LADWP

ONE WATER LA 2040 PLAN

VOLUME 3

Stormwater & Urban Runoff Facilities Plan

FINAL DRAFT | APRIL 2018

One Water LA

CITY OF LOS ANGELES

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READER GUIDE

SUMMARY OF ONE WATER LA

The One Water LA 2040 Plan (Plan) takes a holistic and collaborative approach to consider all of the City's water resources from surface water, groundwater, potable water, wastewater, recycled water, dry-weather runoff, and stormwater as "One Water." The Plan also identifies multi-departmental and multi-agency integration opportunities to manage water in a more efficient, cost effective, and sustainable manner. The Plan represents the City's continued and improved commitment to proactively manage all its water resources and implement innovative solutions, driven by the Sustainable City pLAn. The Plan will help guide strategic decisions for integrated water projects, programs, and policies within the City.

PLAN ORGANIZATION

The One Water LA 2040 Plan consists of the following ten volumes:

- VOLUME 1 - Summary Report
- VOLUME 2 - Wastewater Facilities Plan
- VOLUME 3 - Stormwater and Urban Runoff Facilities Plan
- VOLUME 4 - LA River Flow Study
- VOLUME 5 - Integration Opportunities Analysis Details
- VOLUME 6 - Climate Risk & Resilience Assessment for Wastewater and Stormwater Infrastructure
- VOLUME 7 - Implementation Strategy Supporting Documents
- VOLUME 8 - Technical Support Materials
- VOLUME 9 - Stakeholder Engagement Materials
- VOLUME 10 - Programmatic Environmental Impact Report

The information presented in this Stormwater and Urban Runoff Facilities Plan (Volume 3) is also summarized in Chapter 8 of the Summary Report (Volume 1). In addition, supporting documents of the information presented herein are included in:

- TM 1.2 - Existing Flow Conditions (Volume 8)
- TM 2.1 - Future Flow Conditions (Volume 8)
- TM 4.1 - Funding Strategies (Volume 7)
- TM 5.2 - Future Concepts Development (Volume 5)
- TM 5.5 - Climate Risk & Resilience Assessment for Wastewater and Stormwater Infrastructure (Volume 6)
- TM 12.4 - LA River Flow Study (Volume 4)
- TM 13.1 - Policies and Programs (Volume 7)
- Informational Stakeholder Meeting materials presented on 5/11/2017 (Volume 9)

VOLUME 3 OVERVIEW & ORGANIZATION

An overview of information presented in this volume is provided in the table below.

Chapter No. and Name		Content Overview
ES	Executive Summary	Executive summary to the entire volume that focuses on key findings, conclusions, and recommendations/strategies.
1	Introduction	Provides an introduction to the Stormwater & Urban Runoff Facilities Plan.
2	Regulatory Background	Provides information on the regulatory context in which the City's stormwater is managed.
3	Stormwater and Dry Weather Runoff Flows	Provides a brief overview of the historical demands placed on the City's stormwater system based on summarized model results.
4	Existing Stormwater System	Discusses the existing stormwater collection system components and the management issues that are involved in having multiple agencies owning/managing different components of the system.
5	Operations and Maintenance	Provides a brief overview of the City's operations and maintenance (O&M) protocols for stormwater infrastructure.
6	Integrated Stormwater Management Analysis	Introduces the integrated approach to stormwater management that the City is implementing.
7	Stormwater Improvement Program	Describes a near-term and long-term SIP for projects based on the integrated approach discussed in Chapter 6.
8	Financial Strategy	Identifies funding opportunities for projects.
9	Conclusions and Recommendations	Summary of the conclusions and recommendations presented in the Stormwater and Urban Runoff Facilities Plan.
Appendices A – I		Provides references, a glossary, figures and lists of existing and planned stormwater projects, and projections of stormwater capture

CITY OF LOS ANGELES

VOLUME 3: STORMWATER AND URBAN RUNOFF FACILITIES PLAN

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LIST OF ABBREVIATIONS

Abbreviation	Description
ac	acre
AF	acre-feet
AFY	acre-feet per year
AOC	Administrative Oversight Committee
APR	annual percentage rate
ARBOR	Area with Restoration Benefits and Opportunities for Revitalization
ASBS	Areas of Special Biological Significance
ASCE	American Society of Civil Engineers
Basin Study	Los Angeles Basin Stormwater Conservation Study
BC	Ballona Creek
BMPs	Best Management Practices
BOD	biochemical oxygen demand
BPAs	Basin Plan Amendments
BWRP	Burbank Water Reclamation Plant
Caltrans	California Department of Transportation
CalRecycle	Department of Recycling and Recovery
CAO	City Administrative Officer
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CB	Central Basin
CDBG	Community Development Block Grant
CHSRA	California High Speed Rail Authority
CIP	Capital Improvement Plan
City	City of Los Angeles
CMP	corrugated metal pipe
CREAT	Climate Resilience Evaluation and Awareness Tool
CRS	Community Rating System
CSA	California Sustainability alliance
CSDPR	California State Department of Parks and Recreation
CWA	Clean Water Act
CWP	Center for Watershed Protection
CWSRF	Clean Water State Revolving Fund
DC	Dominguez Channel
DCTWRP	Donald C. Tillman Water Reclamation Plant
DO	dissolved oxygen
DPH	Department of Public Health
EMS	Environmental Management System
EPA	Environmental Protection Agency
ESC	Environmental Significance Category
ET	evapotranspiration

Abbreviation	Description
EWMP	Enhanced Watershed Management Program
Facilities Plan	Stormwater and Urban Runoff Facility Plan
FEMA	Federal Emergency Management Agency
FIRMs	flood insurance rate maps
FMP	Floodplain Management Plan
FRM	Flood Risk Management
GIS	Geographic Information System
gpcd	gallons per capita per day
gpm	gallons per minute
GPR	Green Project Reserve
GSI	Green Stormwater Infrastructure
HB	Hollywood Basin
HUD	Housing and Urban Development
HWRP	Hyperion Water Reclamation Plant
IC/ID	illicit connection/illicit discharge
IGP	Statewide Industrial General Permit for Stormwater Discharges
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resources Plan
IRWD	Irvine Ranch Water District
IRWMP	Integrated Regional Water Management Plan
IWR	Integrated Water Resources
J2/3	Jurisdictions 2 and 3
J7	Jurisdiction 7
LABOE	Los Angeles Bureau of Engineering
LABSS	Los Angeles Bureau of Street Services
LACDPH	Los Angeles County Department of Public Health
LACDPR	Los Angeles County Department of Recreation and Parks
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation District
LADBS	Los Angeles Department of Building Safety
LADCP	Los Angeles Department of City Planning
LADOT	Los Angeles Department of Transportation
LADPW	Los Angeles Department of Public Works
LADWP	Los Angeles Department of Water and Power
LAGSD	Los Angeles Department of General Services
LAGWRP	Los Angeles-Glendale Water Reclamation Plant
LARAP	Los Angeles Department of Recreation and Parks
LARWQCB	Los Angeles Regional Water Quality Control Board
LASAN	Los Angeles Sanitation
LAUSD	Los Angeles Unified School District
LAWA	Los Angeles World Airports

Abbreviation	Description
LEED	Leadership in Energy and Environmental Design
LFD	low flow diversion
LID	low impact development
LSPC	Load Simulation Program
MAR	marine habitat
MCMs	minimal control measures
MdR	Marina del Rey
Metro	Metropolitan Transportation Authority
Metropolitan	Metropolitan Water District of Southern California
MG	million gallons
mg/L	milligrams per liter
MGY	million gallons per year
mi	miles
MICLA	Municipal Improvement Corporation of Los Angeles
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MS4	municipal separate storm sewer system
MUN	Municipal and Domestic Supply
N/A	not applicable
NCB	North Central Basin
NFIP	National Flood Insurance Program
NGO	non-government organization
NIS	nature-inspired system
NPDES	National Pollutant Discharge Elimination System
NRC	National Research Council
NRDC	Natural Resources Defense Council
NSFHAs	non-special flood hazard areas
O&M	operations and maintenance
P3	Public/Private Partnerships
PACE	Property Assessed Clean Energy
PAYGO	Pay-As-You-Go
PIPP	Public Information and Participation Program
POLA	Port of Los Angeles
ppm	parts per million
Precip.	Precipitation
PROW	Public Right-of-Way
QA/QC	quality assurance/quality control
RAA	Reasonable Assurance Analysis
REC-1	Water Contact Recreation
RWLs	receiving water limitations
RWQCBs	Regional Water Quality Control Boards
SCADA	supervisory control and data acquisition
SCMP	Stormwater Capture Master Plan

Abbreviation	Description
SDWA	Safe Drinking Water Act
SFB	San Fernando Basin
SFHAs	special flood hazard areas
SIP	Stormwater Improvement Program
SMB	Santa Monica Bay
SMB J2/3	Santa Monica Bay Jurisdictions 2 and 3
SMB J7	Santa Monica Bay Jurisdiction 7
SMB WMA	Santa Monica Bay Watershed Management Area
SMBBB	Santa Monica Bay Beaches Bacteria
SOD	sediment oxygen demand
SOP	Standard Operating Procedure
SPAC	Stormwater Pollution Abatement Charge
sq ft	square feet
SUSMP	Standard Urban Stormwater Mitigation Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TBD	to be determined
TDS	total dissolved solids
TM	Technical Memorandum
TMDL	total maximum daily load
ULAR	Upper Los Angeles River
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
WBPC	Water Body Pollutant Combination
WCB	West Coast Basin
WDRs	Waste Discharge Requirements
WIFIA	Water Infrastructure Finance and Innovation Act
WIIN	Water Infrastructure Improvement for the Nation Act
WLA	waste load allocation
WMP	Watershed Management Programs
WPD	Watershed Protection Division
WQ	Water Quality
WQBELs	water quality-based effluent limits
WQCMPUR	Water Quality Compliance Master Plan for Urban Runoff
WRD	Water Replenishment District
WRP	water reclamation plant
WS	Water Supply

EXECUTIVE SUMMARY

This Chapter provides a summary of the Stormwater and Urban Runoff Facilities Plan (SWFP), which is included in Volume 3 of the One Water LA 2040 Plan (Plan). The SWFP describes the City of Los Angeles' (City) existing stormwater infrastructure and relevant policies, plans, and programs, as well as the recommendations for the integration of stormwater infrastructure facility management in the City by 2040. Both existing system and future system improvements are combined in a comprehensive Stormwater Improvement Program (SIP), which is documented in detail in the SWFP and summarized at the end of this chapter.

This section of the Plan first describes the purpose of the SWFP and the basis of planning. Subsequently, the existing stormwater infrastructure is discussed, followed by a methodology for identifying and selecting stormwater infrastructure projects, and the prioritized stormwater improvement program to guide the City with implementation of the large number of stormwater projects to meet compliance deadlines, mitigate flood risks, and achieve water supply benefits.

ES.1 INTRODUCTION

Stormwater and urban runoff infrastructure is the set of infrastructure needed to convey or collect wet weather and dry weather runoff into, within, and throughout the City, collectively working to manage the risks of floods, meet water quality requirements, and provide local water supply. As the City seeks to expand its stormwater infrastructure network that was initiated in 1915, they are leading the way as one of the most proactive cities in the nation with regards to stormwater quality protection and enhancement.

Building on significant previous and currently existing stormwater infrastructure planning efforts, the SWFP evaluates various types of studies, plans, projects, and programs seeking to integrate efforts using a "Three-Legged-Stool" approach integrating water quality, water supply, and flood control. As illustrated on Figure ES.1, the stormwater component of the One Water LA 2040 Plan comprehensively considers the following:

- **Water Quality Improvement –** These projects improve the health of local watersheds by reducing impervious cover, restoring ecosystems, decreasing pollutants in the waterways, and providing environmental and habitat benefits. Stormwater improvement projects intended to improve the quality of a downstream waterbody are typically driven by regulations such as TMDLs and/or 303(d) listings.
- **Water Supply Augmentation –** These projects capture runoff to help offset potable water use through direct use projects. They also increase water supply through

groundwater augmentation and capture and use wet-weather/dry-weather runoff to offset potable water demand and/or enhance environmental and habitat conditions.

- **Flood Risk Mitigation –** These projects protect life and safety and mitigate local flood impacts. Stormwater improvement projects intended to reduce flood risks are typically driven by asset-specific needs, such as whether an asset is located near a known or anticipated area of flooding; insufficient capacity; asset deterioration or expiration of useful life based on age; and known or anticipated impacts from sea level or groundwater rise.

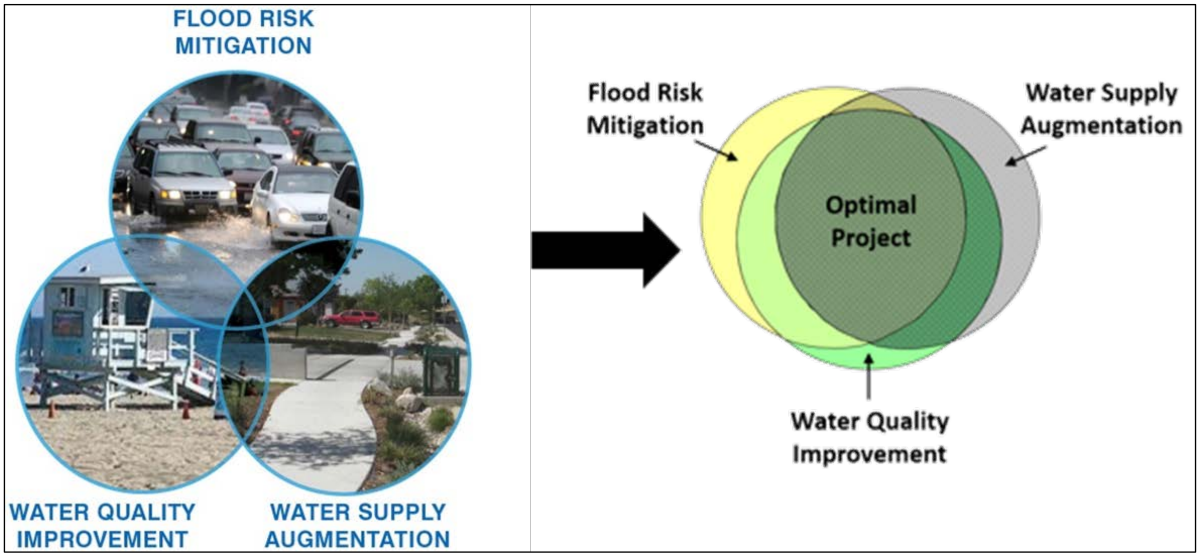

Figure ES.1 Illustration of the "Three-Legged Stool" Stormwater Planning

By integrating these efforts, the City's stormwater infrastructure needs, and requirements over the next 25 years are selected and includes the SIP that selects future infrastructure projects based on a variety of benefits achieved for the City.

The objectives of the SWFP are to:

1. Review and summarize the City's stormwater infrastructure and relevant polices, plans, and programs – past, present, and future;
2. Integrate various aspects of stormwater components and find implementation opportunities that assist with flood protection, water quality benefits, and/or water supply benefits and enhancements with all City departments and regional entities;
3. Provide a methodology for identifying and selecting stormwater infrastructure projects. Among numerous other factors, this methodology will consider results from the Climate Risk and Resilience Assessment for Wastewater and Stormwater Infrastructure (One Water TM No. 5.5; see Volume 6), which identified stormwater infrastructure at risk of failure or loss of efficiency due to anticipated climate change scenarios and proposed corresponding climate resiliency infrastructure projects;

4. Make recommendations for the integration of stormwater infrastructure facility management in the City by 2040 by building on existing plans and studies, developing integrated management processes for decision making and selection of projects, and leveraging resources;
5. Develop a prioritized SIP to guide the City with the implementation of the large number of stormwater projects to meet total maximum daily load (TMDL) compliance deadlines, mitigate flood risks, and achieve water supply benefits; and
6. Help achieve the Mayor's stormwater capture goal of 150,000 acre-feet per year (AFY) by 2035 as defined in the Sustainable City pLAn.

In addition to an Executive Summary, the SWFP is divided into nine Chapters and contains nine appendices. The Chapters of the SWFP are as follows:

1. Chapter 1 – Introduction
2. Chapter 2 – Regulatory Background
3. Chapter 3 – Stormwater and Dry Weather Runoff Flows
4. Chapter 4 – Existing Stormwater System
5. Chapter 5 – Operations and Maintenance
6. Chapter 6 – Integrated Stormwater Management Analysis
7. Chapter 7 – Stormwater Improvement Program
8. Chapter 8 – Financial Strategy
9. Chapter 9 – Conclusions and Recommendations

ES.2 REGULATORY BACKGROUND

Stormwater and urban runoff within the City are subject to a myriad of regulations, directives, and policies. Federal and State agencies set water quality goals and targets for runoff discharges in an effort to protect receiving waters, while also setting goals and targets for the use of runoff to benefit local water supply. In response, the City has developed master plans, ordinances, directives, and other documents to implement these goals and targets at the local level.

Chapter 2 of the SWFP summarizes the Federal, State, and local regulations and guidelines related to water quality, water supply, and flood mitigation that are applicable to the City. These regulations and guidelines, along with various regional planning efforts, are foundational to the development of the City's long term stormwater management strategy.

ES.2.1 Water Quality Regulations

Among other regulations and guidance focusing on water quality improvement, the City was one of the first in the nation to develop green streets standard plans and to initiate and incorporate low impact development (LID) requirements into new development and redevelopment projects. In parallel with the development of the City's LID program, the City passed the Proposition O – Clean Water Bond in October 2004, authorizing $500 million of general obligation bonds for projects to prevent and remove pollutants from regional waterways and the ocean, consequently protecting public safety while meeting federal Clean Water Act (CWA) regulations. More recently, the City completed a Stormwater Capture Master Plan (SCMP), five Enhanced Watershed Management Programs (EWMP), and one Watershed Management Program (WMP), which included detailed water quality modeling for all City watersheds to demonstrate reasonable assurance of compliance with applicable water quality standards within the region. In addition, the Public Right-of-Way Green Stormwater Infrastructure (PROW GSI) Program is slotted to be a groundbreaking "Green Streets" policy. With streamlined implementation procedures and emphasis on areas of greatest environmental need, it may be the first of its kind on the West Coast, if not nationwide.

ES.2.2 City of LA Water Supply Directives

In addition to the LA Green Building Code, which includes both mandatory and voluntary measures relative to local water supply, two executive directives from the Mayor were issued that directly affect water supply:

- Executive Directive Number 5, which seeks to reduce potable water use and imported potable water demand, and created an integrated strategy to increase local water supply; and
- Executive Directive Number 7, which directed City departments to implement the goals of the Sustainable City pLAn.

ES.2.3 Flood Risk Management

The City is generally responsible for the mitigation efforts of flood events with a 10-year or less return period (Los Angeles Bureau of Engineering [LABOE], 1986). Regional, state, and federal agencies, including U.S. Army Corps of Engineers (USACE) and Los Angeles County Flood Control District (LACFCD), design stormwater facilities for a much larger range of flood events, generally ranging from the 10-year flood event to the 100-year flood event.[1]

[1] For example, LACFCD's Hydraulic Design Manual (LACFCD, 1982) sets a minimum design storm frequency of 10-years for applicable drains, and the USACE's Los Angeles River Ecosystem Restoration Feasibility Study (USACE, 2015), commonly known as the ARBOR Study, shows that portions of the LA River have capacity above the 100-year flow rate.

Los Angeles Department of Public Works (LADPW), LACFCD, and the USACE all share responsibility in managing local flood risks in the City. Inter-agency cooperation is assumed based on existing and future requirements, regulations, and Memorandums of Understanding (MOU) with respect to financing, constructing, and operating and maintaining flood control projects described herein.

Given the rapidly evolving nature of stormwater management within the City, stormwater and dry weather runoff flows are expected to change significantly over the next 25 years, thereby influencing and affecting infrastructure needs in this timeframe. The SWFP relies on previous hydrologic modeling results to provide the context for existing demands being placed on the City's storm drain system.

ES.3 STORMWATER AND DRY WEATHER RUNOFF FLOW DEFINITIONS

For the purpose of the SWFP, the stormwater and dry weather runoff are defined as coming from five main sources:

- **Precipitation:** Precipitation which falls over the City;
- **Upstream Run On:** Flows that enter the City from tributary watersheds;
- **Groundwater Upwelling:** Groundwater that seeps into the Municipal Separate Storm Sewer System (MS4) or surface waterbodies due to rising groundwater levels;
- **WRP Discharges:** Discharge from a WRP to the MS4.
- **Irrigation and Incidental Flow:** Irrigation applied within the City and other incidental flow. Although these flows are most often associated with dry weather flows, they are also considered for stormwater runoff since they influence soil moisture, basin storage volumes, recharge volumes, and evapotranspiration.

Combining the efforts from the three major agencies that operate and maintain the stormwater infrastructure system, including both green and grey infrastructure, outflows are defined in the following way:

- **Discharge to Streams/Rivers/Channels:** Runoff that reaches streams, rivers, or channels. Some of this water is infiltrated, evapotranspired, or diverted.
- **Discharge to the Ocean:** Runoff that reaches the ocean.
- **Water Supply & Quality Benefits (Capture and Use/Potable Water Offsets):** Runoff that is captured and stored for use on-site, most often after being diverted from the MS4, which includes streets, drains, and other conveyances.

- **Water Supply & Quality Benefits (Environmental and Habitat):** Runoff that passively infiltrates into the ground through permeable surfaces, such as green infrastructure. These are in areas of the City where there is no groundwater aquifer connectivity for the City or other regional pumpers to directly benefit from this water for water supply.
- **Water Supply & Quality Benefits (Groundwater Recharge/Direct Water Supply):** Runoff that is infiltrated into the City's groundwater aquifers via mid-size regional or large regional projects, such as drywells, infiltration basins, or spreading basins.
- **Evapotranspiration:** Runoff that is consumptively used by plants or evaporated directly.

ES.3.1 Watershed Management Area Overview

In Los Angeles Department of Water and Power (LADWP)'s recently completed SCMP, the areas tributary to the City were divided into 17 subwatersheds (15 of which contain City area). A hydrologic model was completed that simulates stormwater inflow and outflow according to the subwatershed as defined by the SCMP. For the purposes of the One Water LA 2040 Plan, the SCMP subwatersheds and the corresponding hydrological model outputs were combined to match the four Watershed Management Areas (WMA) adopted from the recently completed EWMPs, which include:

- Ballona Creek (BC)
- Dominquez Channel (DC)
- Santa Monica Bay (SMB), including Marina del Rey (MdR), Santa Monica Bay Jurisdictions 2 and 3 (J2/3), and Santa Monica Bay Jurisdiction 7 (J7) subwatersheds.
- Upper Los Angeles River (ULAR)

Figure ES.2 shows the four WMAs along with the SCMP subwatersheds. Based on the model runs completed for the SCMP, the WMP/EWMPs, and a cross check of project metrics, the existing distribution of average annual flows in the City were analyzed based on historical rainfall records and existing development conditions.

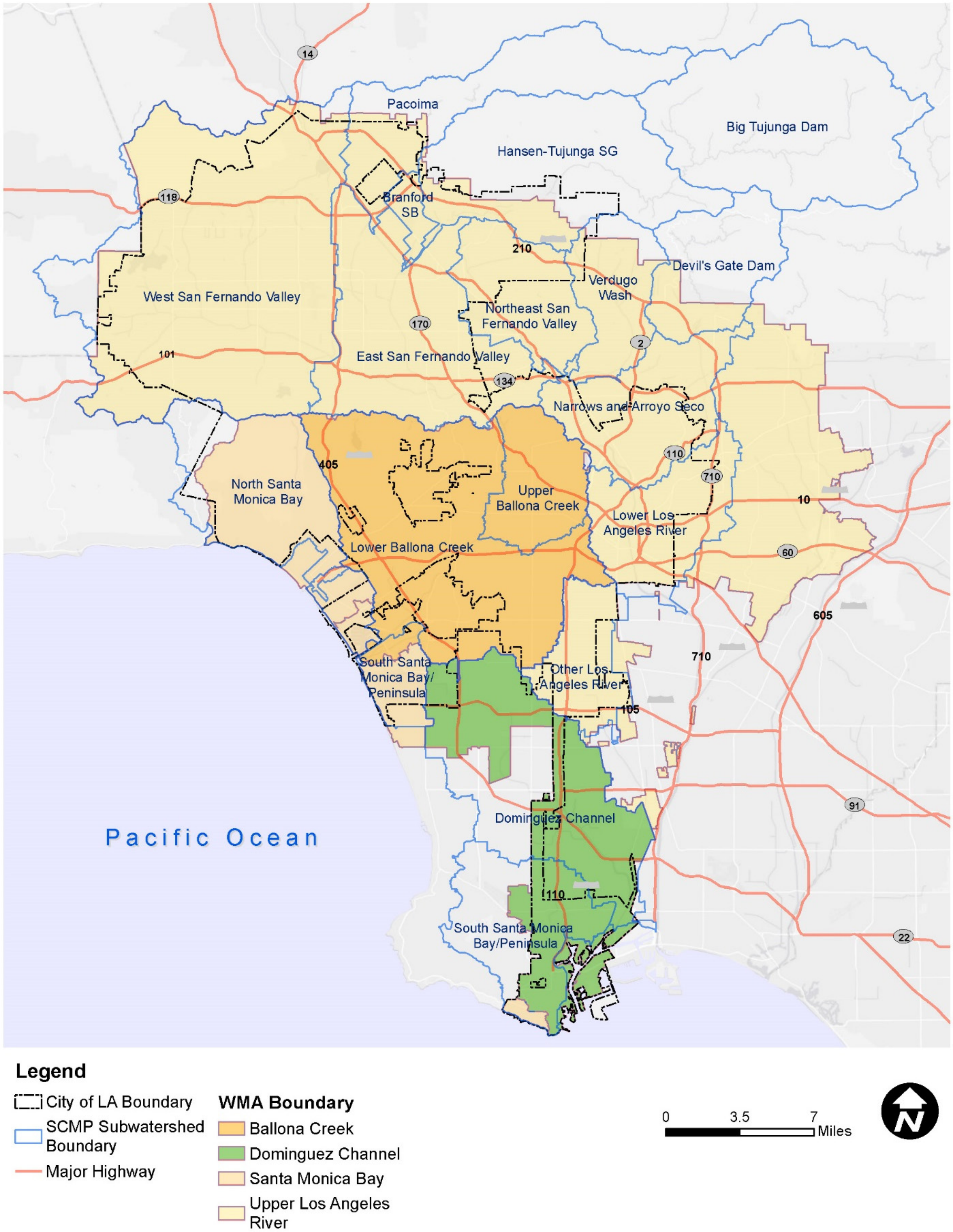

Figure ES.2 - WMA Boundaries and SCMP Subwatersheds within the City of LA
One Water LA 2040 Plan
Stormwater and Urban Runoff Facilities Plan

One Water LA

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ES.3.2 Estimated Stormwater Flows

A summary of the hydrologic model results by WMP/EWMP watershed are shown in Table ES.1. For the modeled existing condition, approximately 764 million gallons (MG) of total inflow to the City is estimated to occur per day, on average. Of this inflow, approximately 380 MG of runoff is estimated to make its way to receiving water channels and streams. After accounting for losses and diversions from these streams and channels, approximately 353 MG (46 percent of the total inflow) is estimated to discharge from the storm drain system into the ocean. 353 MG (46 percent of the total inflow) is either evaporated from the City or is infiltrated into unusable aquifers, and approximately 58 MG (8 percent of the total inflow) is infiltrated through permeable areas or in centralized spreading grounds.

The stormwater flow estimates presented below reflect existing conditions and are based on model runs completed for the SCMP, the WMP/EWMPs, and a cross check of project metrics. As shown, it is estimated that approximately 92,000 AFY of stormwater is captured for direct use, environmental and habitat supply, and groundwater recharge. The Sustainable City pLAn has set a goal to increase this to 150,000 AFY by year 2035. Hence, this equates to an increase of 58,000 AFY (63 percent) compared to current conditions. The recommended SIP presented in the SWFP (Volume 3) as well as the long-term integration opportunities presented in Chapter 6 of this report are intended to collectively achieve this goal.

Over the next 25 years, additional distributed, regional, and centralized infiltration Best Management Practices (BMPs) will be implemented in areas conducive to recharge, provided funding is available. In addition, other infiltration BMPs, along with capture and use BMPs, will be implemented in areas where recharge is not conducive, which will reduce runoff and potable water demand and provide water resource benefits other than groundwater recharge. Although the direct impacts of such efforts have yet to be quantified in terms of stormwater flow rates within the MS4 network, the City estimated an average annual capture volume of 29,000 MG of stormwater for the average storm year based on the implementation of all EWMP-defined BMPs.

Table ES.1 Distribution of Average Daily and Annual Stormwater Flows
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Watershed Area			Ballona Creek		Dominguez Channel		Santa Monica Bay[2]		Upper Los Angeles River		City Total	
Average Daily and Annual Flows			(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)
Inflow		Precipitation	84	94,100	12	13,400	36	40,300	234	262,100	366	409,900
Inflow		Runoff from Upstream of City	10	11,200	20	22,400	3	3,400	102	114,300	135	151,300
Inflow		Irrigation	43	48,200	8	9,000	13	14,600	156	174,700	220	246,500
Inflow		WRP Discharge[3]	0	0	0	0	0	0	39	43,700	39	43,700
Inflow		Groundwater Upwelling	0	0	0	0	0	0	4	4,500	4	4,500
Inflow		**Total Inflow**	137	153,500	40	44,800	52	58,300	535	599,300	764	855,900
Outflows	Discharge	To Streams/ Rivers/Channels	59	66,100	29	32,500	16	17,900	276	309,200	380	425,700
Outflows	Discharge	To Ocean[1]	59	66,100	27	30,200	17	18,900	250	279,900	353	395,100
Outflows	Water Supply & Quality Benefits	Capture & Use	0	0	0	0	0	100	0	100	0	200
Outflows	Water Supply & Quality Benefits	Environmental & Habitat	8	9,000	2	2,300	4	4,600	10	11,300	24	27,200
Outflows	Water Supply & Quality Benefits	Groundwater Recharge	3	3,400	0	0	0	0	55	61,600	58	65,000
Outflows		Evapotranspiration	67	75,000	11	12,300	31	34,700	220	246,400	329	368,400
Outflows		**Total Outflow**	137	153,500	40	44,800	52	58,300	535	599,300	764	855,900

Notes:

(1) Discharge to ocean does not include discharge diverted from channels, rivers, or streams. The total outflow is computed based on discharge to streams and channels only.
(2) Although a separate watershed management effort was completed for SMB J2/3, SMB J7, and MdR, these three watersheds have been merged together as "Santa Monica Bay Watershed Management Area" for this Facility Plan.
(3) Discharges from the Hyperion and Terminal Island WRPs were not included since these two WRPs directly discharge into the ocean.

Abbreviations:

mgd = million gallons per day; AFY = acre-feet per year; WRP = water reclamation plant

ES.3.3 Historical Dry Weather Runoff

Due to the significant spatial variation in the quantity of dry weather runoff throughout the City, high-resolution modeling efforts have not been undertaken to quantify such flows. Rather, where available, historical monitoring records are relied upon to understand urban runoff flows within the City's MS4. Dry weather flows within the City include incidental urban runoff, WRP discharges, and groundwater upwelling.

Throughout the City, low flow diversions (LFD) have been installed to divert runoff flows from the storm drain for treatment or storage. In most cases, all dry weather flows within the storm drain upstream of a LFD are diverted to the sanitary sewer and conveyed to a WRP for treatment. LFDs can also operate during wet weather events to improve water quality during storm events by capturing a portion of stormwater runoff for treatment to the WRPs. To-date, LASAN owns and operates 21 LFDs. In average, LASAN-owned LFDs divert approximately 1,500 AFY of dry weather runoff to the HWRP.

An additional 42 LFDs have been identified as part of this Plan to increase capture of dry weather runoff in strategic locations. It is estimated that the addition of these LFDs can increase dry weather diversion by 6,000 AFY. Supporting analysis can be found in Chapter 3 (Volume 3).

ES.4 EXISTING STORMWATER SYSTEM

The stormwater infrastructure network within the City is a complex system of streets, catch basins, pipes, channels, basins, pump stations, and other infrastructure that work collectively to manage stormwater and urban runoff. It can be generally grouped into grey and green infrastructure, where grey infrastructure is defined as the conveyances historically developed to provide flood protection, and green infrastructure are composed of the "nature-inspired" and mechanical systems developed to mimic natural processes.

ES.4.1 Key Players: Roles and Responsibilities

LADPW, LACFCD, and USACE are three primary agencies that have historically been responsible for the design, construction, and maintenance of the City's stormwater infrastructure. In addition, there are over twenty City, County, State, and Federal agencies that, since the 1990s or later, have been incorporating green stormwater infrastructure projects, Capital Improvement Plans (CIPs), and management decisions into their activities to help the City comply with stormwater regulations. A select list of key agencies within the City that are involved with stormwater planning is summarized alphabetically by governance level in Table ES.2. It can be concluded that stormwater planning involves a large number of agencies, requiring extensive coordination and collaboration.

Table ES.2 Select List of Key Agencies Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

City of LA Departments		LA County	State	Federal	Other
LADPW	Transportation	Public Works	Caltrans	USACE	Metropolitan Water District of Southern California
LADWP	General Services	LACFCD	High Speed Rail Authority	Federal Emergency Management Agency	Water Replenishment District of Southern California
Recreation and Parks	LA World Airports	Parks and Recreation	Parks and Recreation		Private Owners
City Planning	Port of LA	Sanitation District			Developers
Building Safety	LA Zoo	Metro			
LA Unified School District	LARiverWorks				

ES.4.2 Existing System Overview

The stormwater infrastructure system within the City works collectively to provide multiple benefits to the public at-large and includes both grey and green infrastructure. Table ES.3 provides a comprehensive summary of the City's existing grey infrastructure. Figures showing locations of grey infrastructure within the City are presented in Appendix C of the SWFP (see Volume 3).

Table ES.3 Identified Existing Grey Infrastructure in City of LA Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

	Infrastructure Ownership by O&M Agency						
Infrastructure Type	City of LA	LA County	Caltrans	USACE	Private Developer	Unknown	Total
Storm Drain Length (mi)	1,215	619	153	<1	21	284	2,605
Open Channel Length (mi)	57	123	3	20	1	27	269
No. of Lift Stations	11	5	0	0	0	0	16
No. of LFDs	14	28	0	0	0	0	42
No. of Debris Basins	85	138	0	0	0	0	223
No. of Dams	0	1(1)	0	3(2)	0	0	4

Notes:
(1) Pacoima Dam
(2) Lopez Dam, Hansen Dam, Sepulveda Dam
Abbreviation:
mi = miles

As summarized in Table ES.3, there are approximately 2,500 miles of stormwater conveyance network identified in the City.[2] Of the identified stormwater conveyance network, 87 percent is currently operated and maintained by one of the four public agencies.

When it comes to green infrastructure, both regional and distributed projects are needed to maximize the water quality, water supply, and flood risk management benefits the City desires to achieve with its stormwater management system. The City cannot address its stormwater management needs with regional or distributed projects alone. Figures showing locations of green infrastructure within the City are presented in Appendix D of the SWFP (see Volume 3).

ES.5 OPERATIONS AND MAINTENANCE

Operation and Maintenance (O&M) requirements and corresponding resource allocations must be considered during the project planning phase through design, construction, and optimization. Proper planning and executing O&M activities, from upstream pretreatment devices (e.g., trash/debris interceptor, sedimentation basin) through all other components of a project, can significantly improve the lifespan of a BMP facility, thereby increasing the project benefits at the project and watershed scale.

One common element shared among successful green and grey infrastructure projects is comprehensive O&M planning throughout the entire project life cycle. Key planning considerations are the project development phase, design phase, construction phase, and system performance phase. Operational requirements for green infrastructure are largely general and uniformly apply to all project categories, including ensured access, authorized access, safety, and documentation.

Grey infrastructure has a common knowledge approach to operations and maintenance, as these devices have been established longer than green infrastructure facilities and have a longer history of testing and data.

O&M is a critical component to ensure the proper performance of green and grey stormwater infrastructure over its designed service life. O&M requirements and corresponding resource allocations must be considered during the project planning phase through design, construction, and optimization. Neglect of O&M planning and insufficient resource allocation, such as budget, staff, equipment, and procedure training, could result in inadequate O&M activities, which could lead to shorter project life span, overall reduction in project life cycle benefits, and potential failure to achieve water quality compliance and water supply objectives. In light of this, future O&M challenges include an increased need

[2] The stormwater conveyance network length is calculated from the storm drain geodatabase provide by LADPW and LACFCD. Both geodatabases are regularly updated.

for resources, an increased demand for monitoring data, and a need for an improved system to evaluate and assess project performance.

Additional details regarding general O&M of the City's stormwater facilities can be found in Chapter 5 of Volume 3.

ES.6 INTEGRATED STORMWATER MANAGEMENT APPROACH

The "three-legged stool" approach to project benefit assessment and integration with respect to short and long-term project planning is developed within the SWFP. This integrated strategy aims at capturing "missed opportunities" in flood risk mitigation, water quality improvement, and water supply augmentation under existing conditions discussed herein, and hence would offer a comprehensive, well-rounded planning effort to meet the City's long-term stormwater management needs.

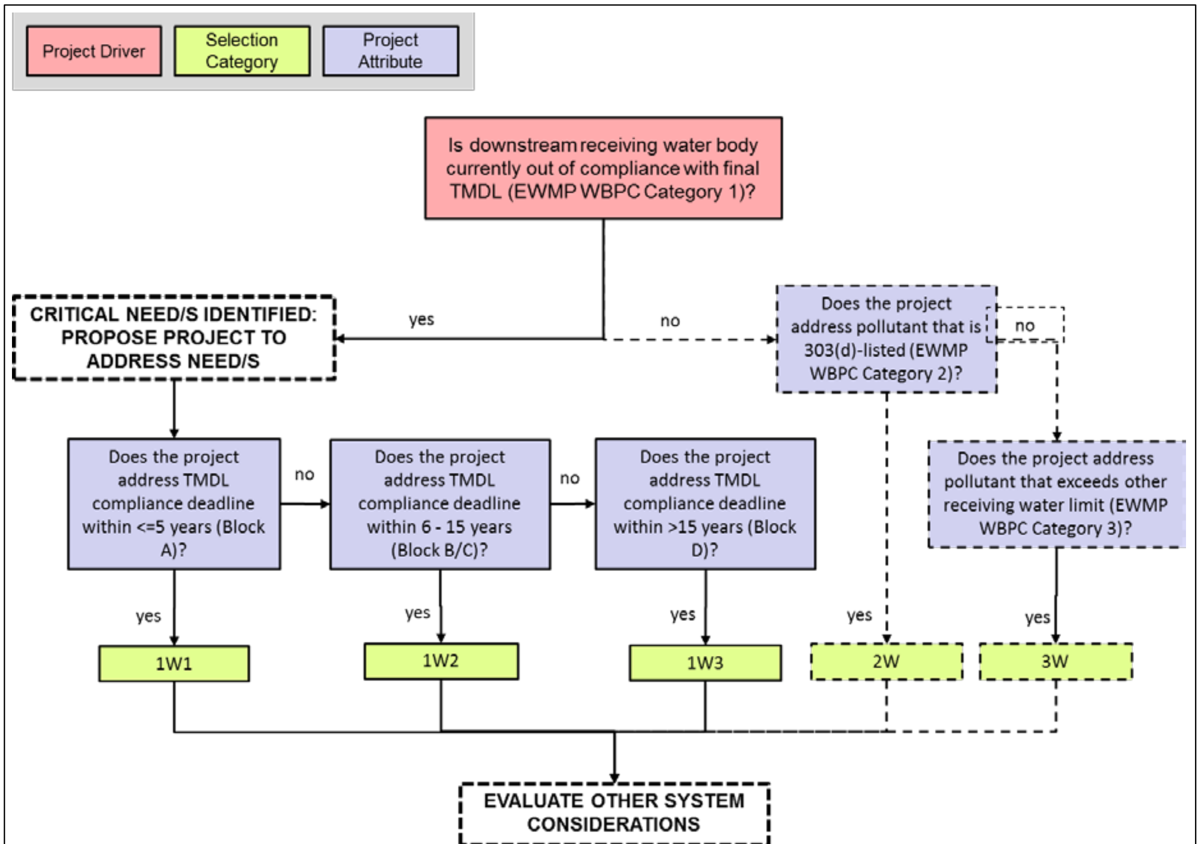
ES.6.1 The Practical Project Manager – The Three-Legged Stool

Stormwater infrastructure projects are typically targeted to address either flood risk mitigation, water quality improvement, or water supply augmentation. It is the intent of this SWFP to incorporate all three benefits into the "three-legged stool" integrated approach to stormwater and urban runoff infrastructure planning. This will help guide the decision-making process through the new selection scheme.

ES.6.2 Water Quality Improvement Projects

Stormwater improvement projects intended to improve the quality of a downstream waterbody are typically driven by regulations such as total maximum daily loads (TMDLs) and/or 303(d) listings. As required by the Los Angeles County MS4 Permit, the City prepared several EWMPs and one WMP to address impairments to downstream waterbodies such as rivers, bays, and oceans. The EWMPs[3] specified both regional and distributed projects predicted to achieve the required pollutant load reduction(s) by the TMDL-specified deadlines. LASAN is currently in the process of planning, designing, and constructing those projects, cooperating with other local agencies where multiple parties are involved. Corresponding selection drivers have been developed to select water quality improvement projects based on applicable TMDL compliance deadlines (e.g., <5 years, 6 – 15 years, > 15 years). Figure ES.3 illustrates the flowchart to evaluate the water quality benefits of a stormwater improvement project within this SWFP.

[3] No structural projects were proposed in the SMB J7 WMP.

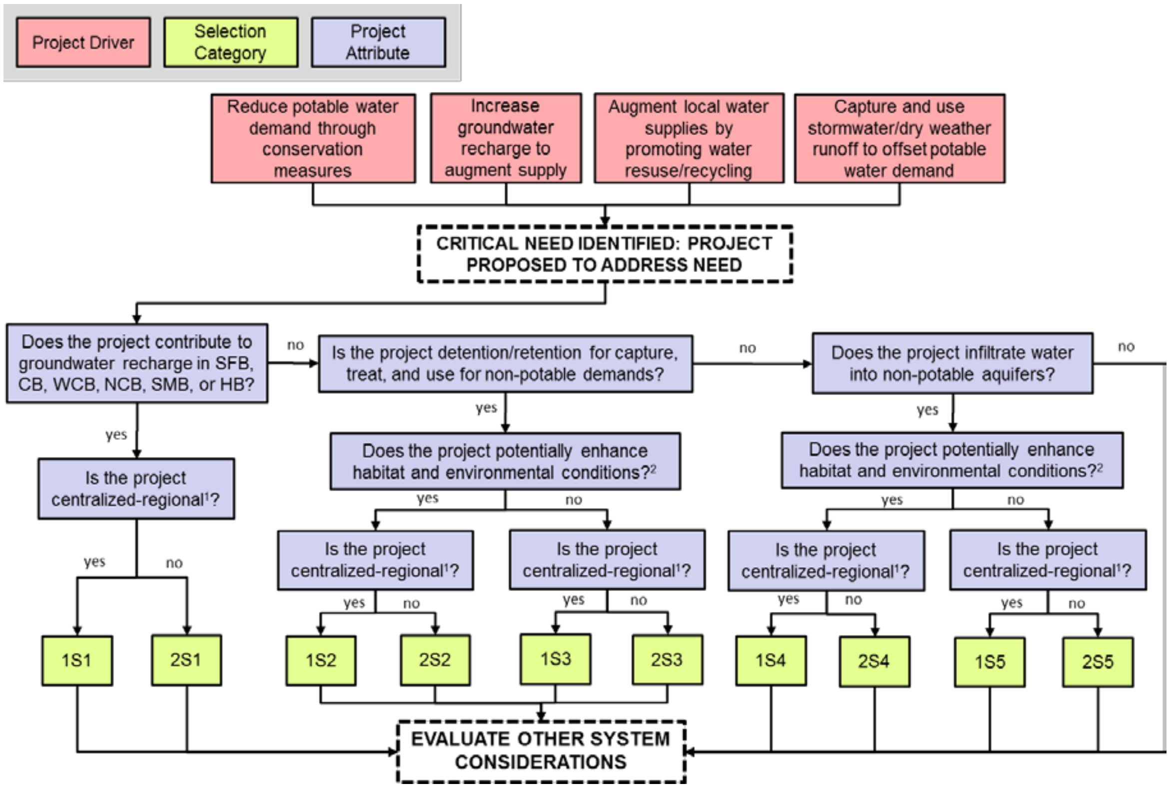


Abbreviation:
WBPC: Water Body Pollutant Combination

Figure ES.3 Water Quality System Considerations

ES.6.3 Water Supply Improvement Projects

Stormwater improvement projects intended to enhance local water resources are typically driven by goals to reduce potable water demand. Potable water demand reduction can be achieved through conservation measures, augmentation of groundwater recharge, enhancement of local water supplies by promoting water reuse/recycling, and/or capture and use of wet weather/dry weather runoff to offset potable water demand. Specific attention is given to enhancing the ability of the City to provide local water during a drought. In general, projects targeting local water supply augmentation are developed to diversify the City's water supply portfolio, create a more locally controlled source of water supply, and, in some instances, to respond to known or anticipated water supply and reliability challenges. Large-scale water supply augmentation projects are typically expected to be initiated and led by LADWP or other partners; however, smaller-scale and distributed projects with infiltration components resulting in water supply benefits could be led by any agency. Figure ES.4 illustrates the flowchart to evaluate the water supply benefits of a stormwater improvement project within this SWFP.

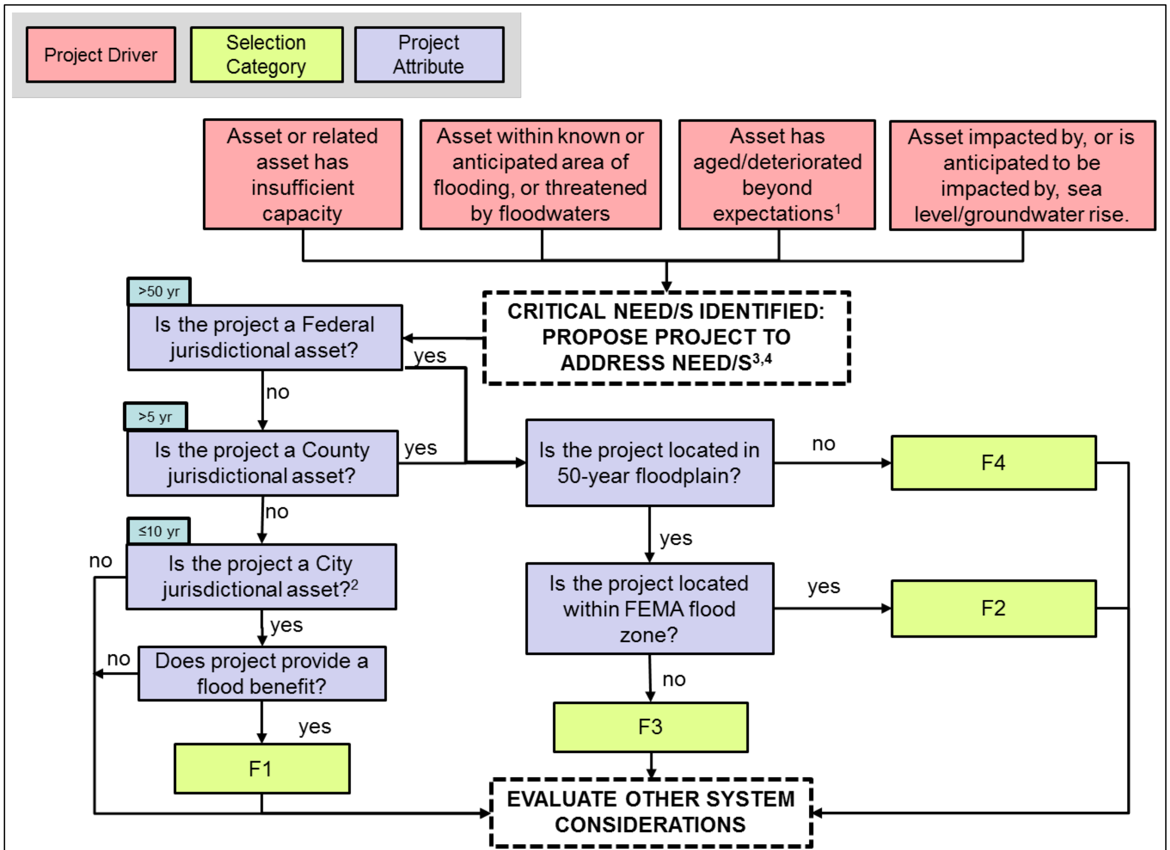


[1] Centralized/regional projects generally capture water from a larger tributary area comprised of multiple land use types and may capture more than 3 to 4 MGY (10 AFY). Distributed projects generally capture water from a smaller tributary area comprised of one or only a few land use types and may capture less than 3 to 4 MGY (10 AFY).
[2] Habitat and environmental enhancements may include capture efforts that increase groundwater elevations and create possible beneficial groundwater upwelling to support riparian and wetland vegetation.
Abbreviations:
CB: Central Basin, WCB: West Coast Basin; NCB: North Central Basin;
SFB: San Fernando Basin; SMB: Santa Monica Basin; HB: Hollywood Basin;
MGY: million gallons per year; AFY: acre-foot per year

Figure ES.4 Water Supply System Considerations

ES.6.4 Flood Risk Mitigation Projects

Stormwater improvement projects intended to reduce flood risks are typically driven by asset-specific needs, such as location with respect to a known or anticipated area of flooding; insufficient capacity; asset deterioration or expiration of useful life based on age; and/or known or anticipated impacts as a result of sea level or groundwater rise. Infrastructure projects or improvements designed to address flood risk management may be owned, operated, and/or maintained by multiple agencies such as LABOE, LACFCD, USACE, etc. The City is generally responsible for the mitigation efforts of flood events with a 10-year or less return period (LABOE, 1986). Regional, state, and federal agencies, including USACE and LACFCD, design stormwater facilities for a much larger range of flood events, generally ranging from the 10-year flood event to the 100-year flood event.[4] Figure ES.5 illustrates the flowchart to evaluate the flood risk benefits of a stormwater improvement project within this SWFP.



[1] Infrastructure rehabilitation/replacement as a basis for identified project drivers.
[2] The City's requirement is to manage Flood Risk associated with storms up to the 10-year recurrence interval (i.e., a storm event with a 1 in 10 chance of being met or exceeded on an annual basis) for continuing routine/functional needs, depending on location.
[3] Required coordination between City, County, and Federal agencies.
[4] Potential use of flood control facilities to capture and/or store stormwater and urban runoff

Figure ES.5 Flood Risk Management System Considerations

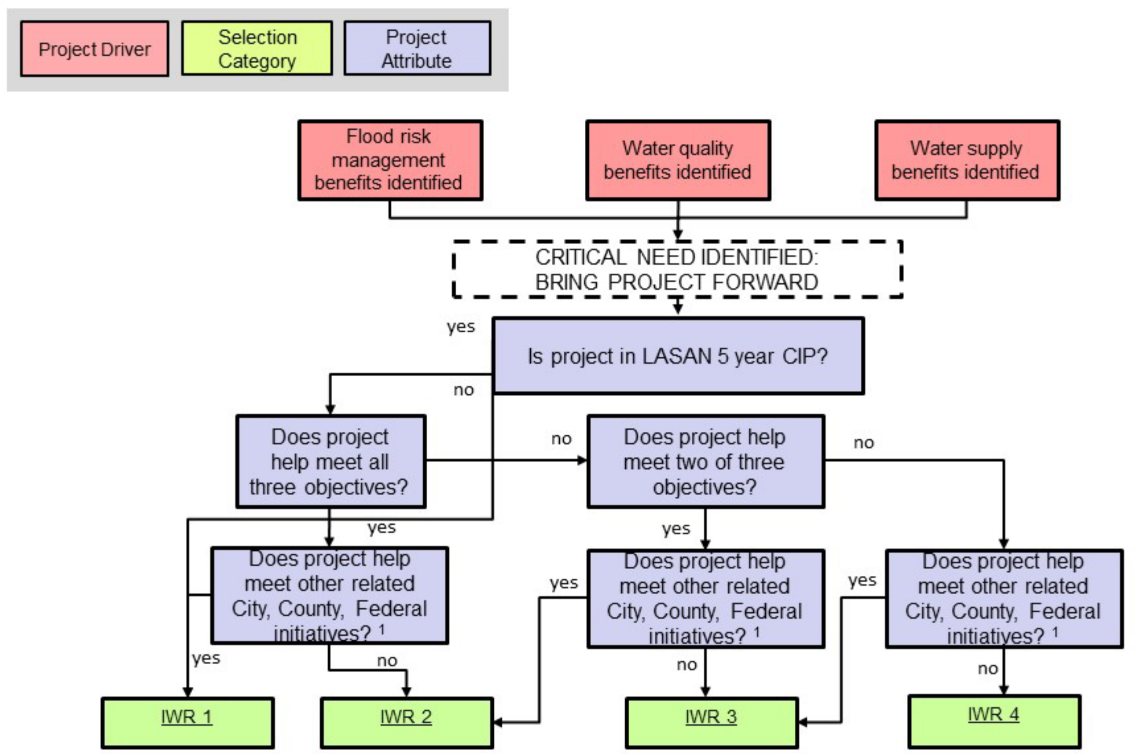
ES.6.5 Multi-Benefit Stormwater Projects

Ideally, flood risk improvements, water quality benefits, and water supply augmentation are inherent to all projects. It is the intent of this SWFP to attempt to select projects that result in benefits in all three areas. The implementation of an integrated approach to stormwater management is expected to result in lower costs over the long-term due to the following reasons: 1) the cost of a single multiple-benefit project is anticipated to be lower than the

4 For example, LACFCD's Hydraulic Design Manual (LACFCD, 1982) sets a minimum design storm frequency of 10-years for applicable drains, and the USACE's Los Angeles River Ecosystem Restoration Feasibility Study (USACE, 2015), commonly known as the ARBOR Study, shows that portions of the LA River have capacity above the 100-year flow rate.

cost of multiple single-benefit projects to achieve the same goals; and 2) fewer projects may be necessary to meet local goals over the long-term, ultimately resulting in long-term savings.

In addition to the primary benefits discussed above, projects may also have secondary benefits, of particular value to the communities in which the projects are constructed. These secondary benefits can generally be grouped into environmental benefits and community benefits. Such secondary benefits may help address environmental or social equity targets, such as those included in the City of LA's Sustainable City pLAn. Figure ES.6 illustrates the flowchart to evaluate the integrated water resources benefit of a stormwater improvement project within this SWFP.



[1] Other initiatives that are directly or indirectly connected to the identified objectives of flood risk, water quality, and water supply may include ED#5, Sustainable City pLAn, the LARRMP, City PLANTS, etc.
[2] Project selections evaluated on a case-by-case review of specific project opportunities. This process will involve review by applicable City Bureaus, Divisions, and Departments based on considerations such as funding availability, compliance timeline, community input, and contributions.
[3] This evaluation process is consistent with the selection approach identified within One Water LA Task 5.

Figure ES.6 Integrated Water Resources System Considerations

ES.7 STORMWATER IMPROVEMENT PROGRAM

To help the City meet its stormwater and urban runoff management needs over the next 25 years, a City SIP consisting of three phases was developed. The development of the SIP relied on results from multiple watershed planning efforts from both public and private agencies within the City's jurisdiction. Projects proposed within the City's jurisdiction from previous watershed planning efforts were compiled and evaluated using the three-legged stool evaluation criteria. Only City-involved projects (either as lead agency or in partnership with other agencies) are included in the three SIP phases:

- 5-year SIP phase (2017-2022);[5]
- 10-year SIP phase (2022-2027); and
- 25-year SIP phase (2027-2042).

ES.7.1 Project Database Development

As a key component to the stormwater management aspect of the One Water LA 2040 Plan, a single database of planned and potential projects was developed to compile ongoing stormwater management efforts from multiple agencies operating within the City. The database is foundational to the development of the SIP as it provides a common platform to evaluate all projects against standardized stormwater project selection criteria. Existing stormwater, urban runoff, and watershed planning efforts that identified projects within and upstream of the City's jurisdiction were compiled into the database.

Some of these projects included Green Streets, which are a critical component to the City's stormwater management system since they allow for the development of stormwater projects on a distributed basis. Each of the five City-led EWMPs presented planning-level targets for Green Streets implementation, based on EWMP-specific implementation metrics and spatial resolution. Recognizing that near-term projects proposed in these Green Streets plans are not sufficient in and of themselves to meet the LARWQCB-approved EWMP implementation targets, a Green Streets screening analysis was conducted herein to develop City-wide, catchment-specific Green Streets programs. Table ES.4 summarizes the planned implementation schedule for various "blocks" of green streets based on applicable regulatory compliance deadlines.

[5] The 5-year CIP is based on LASAN's 2015 5-year stormwater CIP, with the addition of new projects developed within the One Water framework. Please see Chapter 7 of the SWFP (Volume 3) for specific changes made to the original 5-year stormwater CIP.

Table ES.4 Green Streets Implementation Schedule Comparison
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Green Streets Block	EWMP Milestone Schedule	WMA	Regulatory Compliance Attainment
Block A	2021	BC	BC Metal and Bacteria TMDLs - 100%
		SMB	SMB J2/3 - SMB Beach Bacteria TMDL -100% MdR Mother's Beach and Back Basins Bacteria TMDL - 100%
	2024	ULAR	LA River Metals TMDL - 50%
Block B	2026	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 50%
	2028	ULAR	LA River Metals TMDL - 100%(1)
Block C	2032	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 100%
		ULAR	LA River Bacteria TMDL - 44.5%(2)
Block D	2037	ULAR	LA River Bacteria TMDL - 100%

Notes:
(1) Block definitions for the ULAR WMA is based on two TMDLs. According to the ULAR EWMP, all Green Streets are required to meet the LA River Metals TMDL. Hence, the Green Streets programs in the ULAR WMA are separated into Block A and Block B
(2) This milestone is not based on regulatory deadlines, but was estimated by interpolating between the end of Block B (2028) and the final LA River Bacterial TMDL compliance attainment at the end of Block D (2037)

A total of 445 Green Streets Block programs were developed. The details of the established methodology and results are presented in Section ES.7.2 below and Appendix E of the SWFP (see Volume 3). In addition to these Green Streets projects, low flow diversion projects and climate resiliency projects developed within the One Water LA 2040 Plan were included in the database and the resulting SIP.

ES.7.2 Stormwater Project Selection Overview

After compiling all identified stormwater projects into a single project database, each project was evaluated based on the three-legged stool selection approach. The project list was then sorted by the following selection factors:

- Primary Selection Factors:
  - Already Fully Funded Stormwater Projects
    - 2015 LASAN 5-yr CIP
    - SCMP Projects[6]
  - Integrated Water Resources Selection Category

[6] Not all SCMP projects were fully funded by the time One Water LA 2040 Plan was completed.

- Secondary Selection Factors:
  - Water Quality Selection Category
  - Water Supply Selection Category
  - Flood Risk Management Selection Category

The selection process was chiefly dependent on the four primary selection factors. The secondary selection factors were only evaluated if the primary selection factors of two projects were found to be identical.

ES.7.3 Stormwater Database Overview

Category 1, defined as planned regional grey infrastructure projects (including storm drain improvement), includes 328 projects. Locations are shown in Appendix G of the SWFP (see Volume 3) on Figures G.1 through G.11

Category 2, defined as planned regional green infrastructure projects, includes 252 projects. Locations are shown in Appendix H of the SWFP (see Volume 3) on Figures H.1 through H.11

Category 3, defined as planned distributed green infrastructure projects, includes 621 projects. Locations are shown in Appendix E of the SWFP (see Volume 3) on Figure E.1 through E.11

In total, 1,201 stormwater management projects[7] were identified and evaluated in accordance to the three-legged stool evaluation criteria. The complete selection outcome table is presented in Appendix B of this Summary Report and Appendix F of the SWFP (see Volume 3). Three sets of figures have been created to show locations of the selected projects for the categories of:

1. Planned Regional Grey Infrastructure
2. Planned Regional Green Infrastructure
3. Planned Distributed Green Infrastructure.

Out of the 1,201 projects included in the project database, 59 projects are not affiliated with the City. It is assumed that the City will not provide funding for these projects. The remaining 1,142 City-involved projects were categorized into the 5-year, 10-year, and 25-year SIP phases. The 5-year SIP phase was based on LASAN's 2015 5-year stormwater and green infrastructure Capital Improvement Program with enhancements made to incorporate new information within the One Water framework. The capital cost of the 5-year SIP phase was revised accordingly. The total capital cost of non-5-year SIP phase and City-involved projects was divided by 20 to obtain the average annual SIP budget from year 2022 to 2042. The 10-year and 25-year SIP phase budgets were computed by multiplying the annual SIP budget by 5 and 15, respectively.

The current SIP consists of 1,142 specific projects with an estimated total capital cost of $5.6 billion. This capital cost estimate differs from the City's estimated EWMP compliance

[7] Including the 445 Green Streets programs identified in Section 7.3.1.

obligation of $7.4 billion. The reason for this discrepancy is that the City's financial obligation towards EWMP compliance was estimated based on the EWMP compliance metric[8]. A significant portion of the EWMP compliance metric has not yet been converted into actual projects. As a result, the cost is not reflected in the SIP capital cost. The City plans on refining the EWMP compliance obligation cost and identifying additional projects to cover the EWMP compliance metric through the EWMP adaptive management framework.

Of the 1,142 projects identified in the SIP, 714 projects with an estimated total capital cost of $3.1 billion are either regional projects that were developed during the EWMP development, or Green Streets programs that were developed in accordance with the respective with the EWMP compliance metric. Table ES.5 specifically summarizes the resultant Green Streets programs cost by WMA. As shown, the total estimated capital cost of all Green Streets programs is approximately $1.1 billion. A detail breakdown of targets and cost of each Green Streets programs is presented in Appendix E of the SWFP (see Volume 3).

Table ES.5 Green Streets Programs Cost Summary
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

WMA	Block	Green Streets Implementation Target[(1)] Length (mi)	Green Streets Implementation Target[(1)] Capture Volume(AF)	Estimated Capital Cost (million $)	Estimated O&M Cost (million $/year)
Ballona Creek	Block A	61	223	$312	$19
Santa Monica Bay	Block A	14	52	$73	$4
Dominguez Channel	Block B	4	16	$22	$1
	Block C	4	16	$22	$1
Upper Los Angeles River	Block A	70	254	$356	$21
	Block B	70	254	$356	$21
	Total[(2)]	**224**	**815**	**$1,140**	**$70**

Notes:
(1) Targets calculated as equivalent EWMP implementation targets subtracting lengths/capture volumes from already planned Green Streets projects.
(2) Totals may not add up due to rounding.

Abbreviations:
WMA = Watershed Management Area; AF = acre-feet

The estimated total project capital cost of $3.1 billion is included as part of the City's $7.4 billion estimated obligation toward EWMP compliance. The remaining 428 SIP projects with an estimated total capital cost of $2.5 billion have been identified by City agencies that

[8] Static BMP capture volume

were not involved with EWMP development (e.g., LADWP). Although these projects were not evaluated as being part of the City's EWMPs, further studies are recommended to quantify the water quality benefits of these projects and to evaluate their eligibility toward EWMP compliance.

In summary, the City's SIP makes significant progress towards the City's EWMP compliance obligations, but it is not a standalone database to fully cover this obligation since not all necessary projects were specifically identified in the EWMPs. The SIP will be updated regularly to evaluate projects proposed by non-EWMP City agencies for their eligibility toward EWMP compliance and to incorporate additional projects developed through the EWMP adaptive management framework and through the distributed solutions identified in the One Water LA 2040 Plan recommended policies and programs.

The recommended SIP is summarized by project category and planning phase on Figure ES.7. The total estimated Capital Cost of the SIP is $5.6 billion with the vast majority (90 percent) allocated to regional and distributed green infrastructure, while only 10 percent of the SIP is for regional grey infrastructure projects.

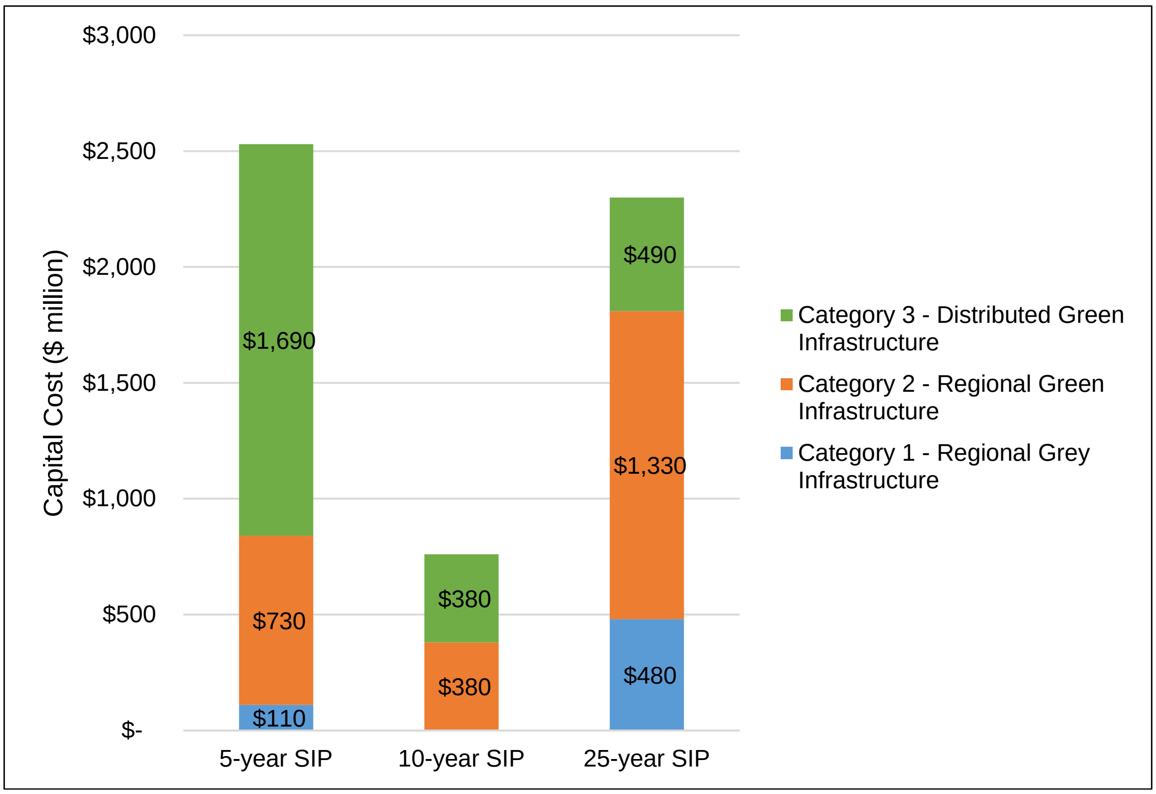


Figure ES.7 Capital Cost Distribution by Project Category and SIP Phase

The SIP will result in increased O&M obligations as projects come on line. Moreover, the SIP will require regular updates to incorporate changes to meet compliance milestones as well as water supply and flood risk mitigation objectives. Hence, the 5-year, 10-year, and 25-year SIP phases will need to be periodically revised by re-executing the project selection methodology described herein.

ES.8 FINANCIAL STRATEGY

The City has an urgent need to identify sources of funding for the implementation of the SIP to meet compliance deadlines. Chapter 8 of the SWFP examines the funding needs for that program, and the challenges facing the City to raise necessary funds. It examines the conceptual needs for funding based upon a simplified set of assumptions, reviews the adequacy of existing sources of funding for stormwater projects, and identifies possible sources of funding in the future, comparing potential funding sources with projected funding requirements.

ES.8.1 Amortized SIP Cost

A simplified financial analysis was conducted to amortize the cost of the City's SIP. It was assumed that 20 percent of the capital cost would be funded as Pay-As-You-Go (PAYGO), while the remaining 80 percent of the capital cost is financed based on an interest rate of 4.5 percent for 30 years. In this assumed scenario, an inflation factor of two percent is applied to costs and simplified assumptions are used regarding the schedule for construction and bond issuances. The O&M costs of the SIP are assumed to be proportional to the capital cost allocated to each category. In addition, future forecasts include estimated O&M for existing stormwater quality projects of approximately $44 million dollars per year in constant dollars. Figure ES.8 illustrates the estimated/projected annual cost obligation throughout the planning period.

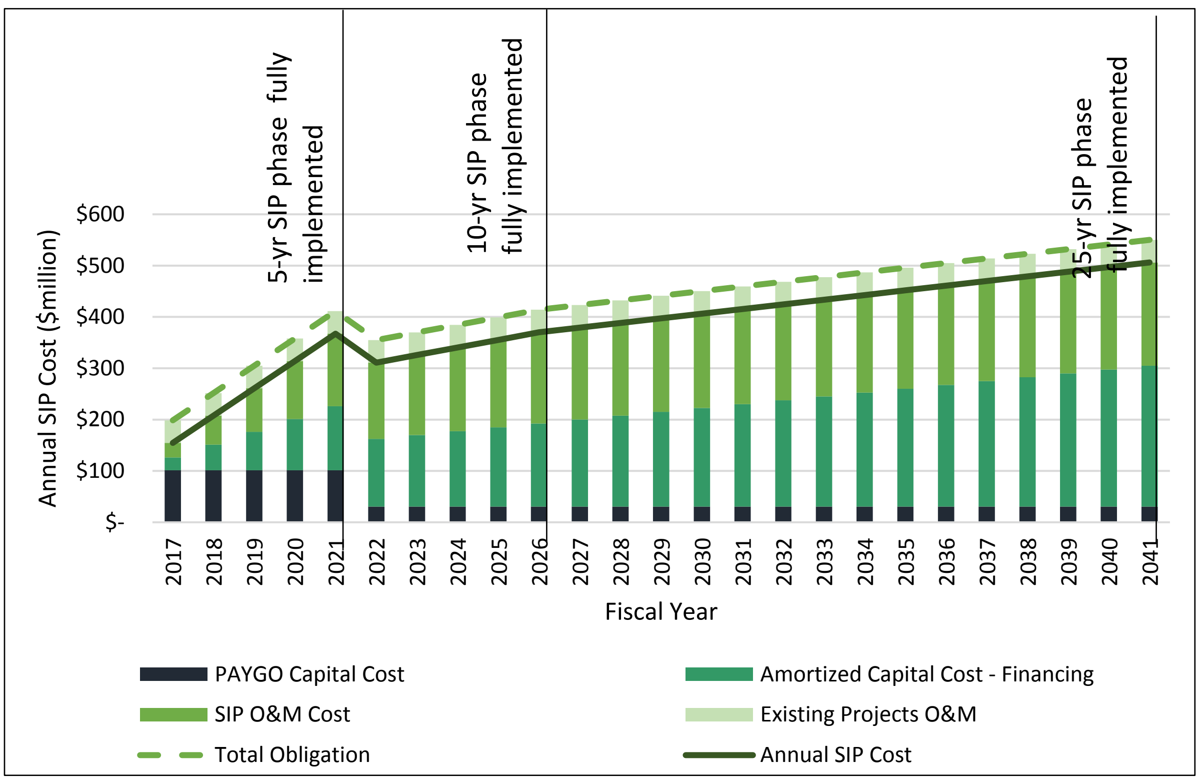


Figure ES.8 Amortized Annual SIP Cost through Year 2042

As shown on Figure ES.8, the beginning annualized cost obligation for the SIP in year 2017 is estimated at $188 million. As more projects are implemented each year, the total cost obligation increases to $387 million at year 2021 when the 5-year SIP phase projects are implemented. Starting at year 2022, the capital PAYGO is updated based on the 10-year SIP phase cost. The resultant annual cost obligation for year 2022 is $341 million. As a result of the increasing O&M and amortized financing costs, the annual cost then gradually increases to $403 million by the end of year 2026 when all 10-year SIP phase projects are implemented. Starting at year 2027, the PAYGO capital cost is updated again based on the 25-year SIP phase cost. The resultant annual cost for year 2027 is $403 million. The annual cost obligation reaches a maximum at $549 million at year 2042 when all SIP projects are implemented. These annualized cost obligations are representative of the total revenue requirements to fund the SIP.

Benefits of Stormwater Investments

The City could benefit from identifying additional means to fund and implement the stormwater improvement plan. Not only would the City avoid potential compliance penalties amounting to thousands of dollars per day for each TMDL violation, the compliance program offers the substantial ancillary benefits illustrated on Figure ES.9. To realize these benefits, the City should continue to explore financing options in greater detail, innovate project delivery options; and continue to pursue additional sources of funding.

Figure ES.9 Non-monetary Economic Benefits of Stormwater Investments

ES.8.2 Current Funding Mechanisms

Stormwater management is one of many objectives within the City and just one part of LASAN's vast responsibilities. It will be very challenging for the City to develop adequate sources of revenue to address these estimated cost requirements described above.

Figure ES.10 compares existing revenue sources with the conceptual annual cost obligation of the City's stormwater management program.

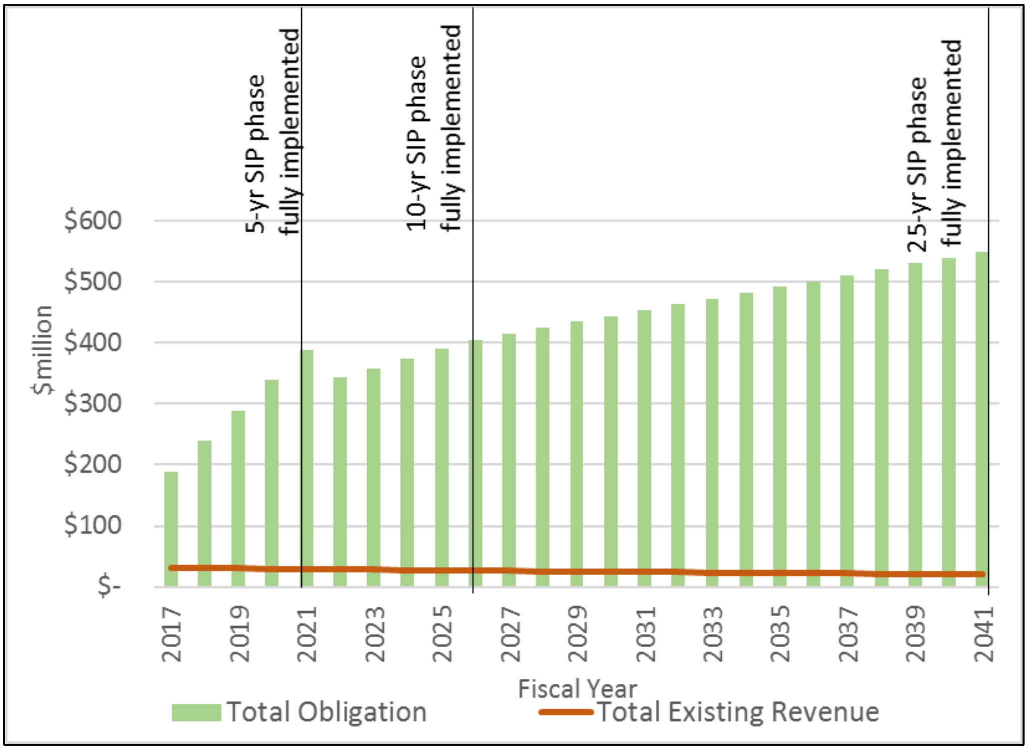


Figure ES.10 Deficiencies between Existing Revenues and Project Costs

As depicted on Figure ES.10, the conceptual SIP cost cannot be adequately funded from existing revenue sources. Current revenue sources plus assumed continued successes in obtaining grant funding will generate approximately $31 million per year, which is less than O&M costs for existing stormwater quality management projects implemented by LASAN/LABOE and far less than the O&M obligations when considering increased O&M from the SIP. Further, when compared to the estimated future annual cost obligations for Capital and O&M associated with existing programs and future SIP, the deficiency is dramatic. The annual cost obligation exceeds existing revenue sources immediately and the deficiency grows over time as new projects are contemplated and the effects of inflation tend to lessen the buying power of the Stormwater Pollution Abatement Charge (SPAC) fee relative to costs that will increase with inflation.

ES.8.3 Assumptions for Future Funding

In recognition of the funding deficiency described above, the SWFP summarizes a set of key assumptions regarding potential future sources to fund the SIP, in order to allow for a presentation of pertinent issues and a conceptual description of an approach to future funding. Figure ES.11 demonstrates the application of all estimated future sources of revenue and outside funding sources toward the conceptual annual needs for funding. As shown, sufficient funding to address the City's stormwater funding needs has not been identified. Table ES.6 summarizes the remaining deficit at each milestone year.

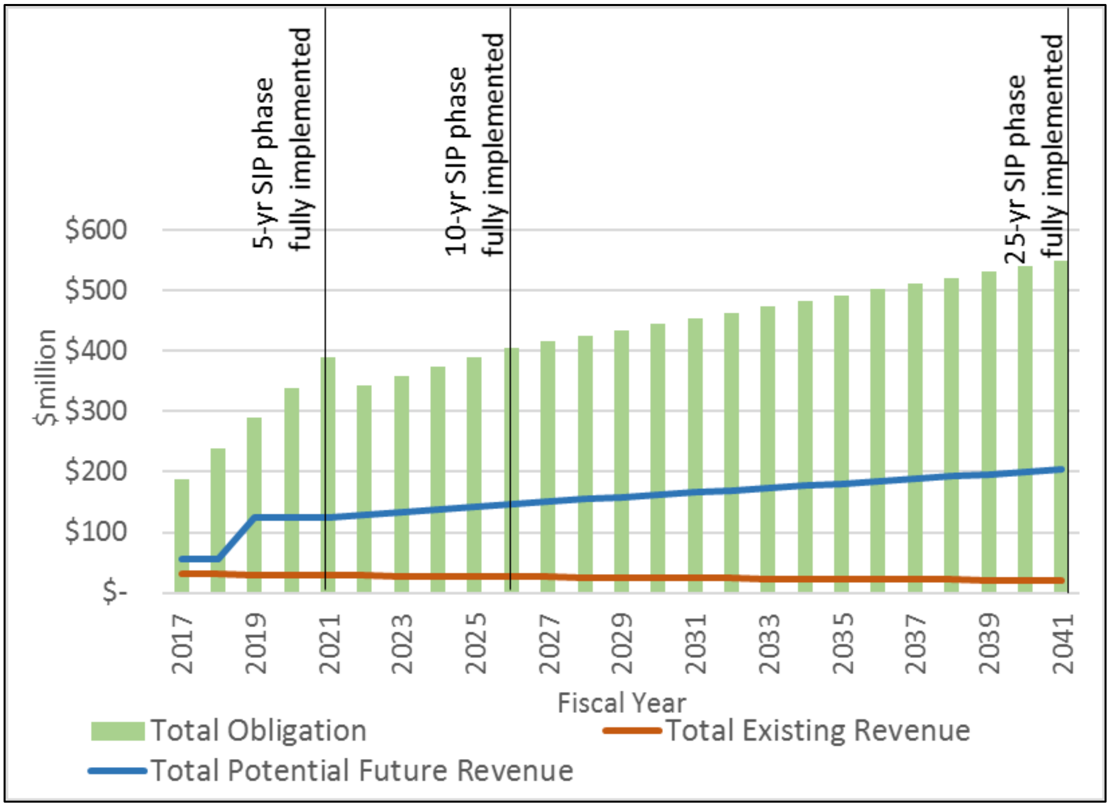


Figure ES.11 Comparison between Potential Funding and Cost Obligation

Table ES.6 Funding Deficit Summary
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Milestone Year	Total Obligation	Existing Funding Revenues	Future Funding Revenues	Deficit	Cumulative Deficit
2017 (First year the of 5-year SIP Phase)	$199	$21	$28	($150)	($150)
2021 (Last year of the 5-year SIP Phase)	$411	$19	$109	($283)	($1,050)
2022 (First year of the 10-year SIP Phase)	$355	$19	$115	($221)	($1,270)
2026 (Last year of the 10-year SIP Phase)	$414	$17	$138	($259)	($2,250)
2027 (First year of the 25-year SIP Phase)	$423	$17	$141	($266)	($2,510)
2041 (Last year of the 25-year SIP Phase)	$550	$12	$182	($356)	($6,920)

Notes:
(1) All costs reported in million dollars
(2) The total obligation covers the SIP cost only and does not fully cover the City's obligation to the EWMPs.

As presented in Table ES.6 and depicted on Figure ES.10, the deficit between funding sources identified to date and the conceptual annual cost obligation ranges from $150 million in constant dollars at year 2017 to $356 million in constant dollars at year 2042. This equates to an estimated cumulative deficit in 2042 of $6.9 billion. On average, the funding sources identified to-date would supply approximately 1/3 of the total funding obligation outlined in this SWFP.

In addition to the stormwater projects included in the database and SIP, parcel-based solutions are an important component of the distributed green infrastructure program. The LID ordinance, along with any future stormwater ordinances, will be reviewed periodically to assess their overall impact on projects needed to achieve water quality objectives. Many of the Plan's recommended policies are intended to increase implementation and improve performance of distributed BMPs. The policies outline strategies to simplify processes and remove barriers to installing green infrastructure, develop incentives and property owner recognition programs, increase training and education, develop maintenance protocols and increase partnership opportunities with non-profit partners. A full list of the policies can be found in Volume 7.

ES.9 CONCLUSIONS AND RECOMMENDATIONS

The Stormwater and Urban Runoff Facilities Plan guides the City and its partners to help meet the Mayor's goals of increasing stormwater capture, reducing potable water use, implementing green streets, and building more sustainable and resilient infrastructure. The Plan identifies over 1,200 project opportunities required to help meet these goals while providing improved flood protection, water quality benefits, and/or water supply enhancements. Most of these project opportunities are distributed in nature, with the clear majority being green streets. This focus on green streets moves away from the traditional prioritization of large-scale regional/centralized facilities, allowing a densely-urbanized city like Los Angeles to implement multi-benefit projects without the often impossible-to-find space that these types of projects typically require.

To implement such a broad-reaching plan, significant integration is necessary, both internally and externally. Within the City, integrating management processes for decision making and selection of projects is critical to project implementation. Departments need to work collectively to ensure that there is cohesion and agreement in the entire life of each project, from concept planning, funding, and design through construction, optimization, and operations. Externally, partnerships with nonprofit organizations, businesses, residents, and other local, regional, State, and Federal agencies are critical to the success of this Plan. Such partnerships are critical not only to the funding and implementation of individual projects, but to long-term regulatory compliance, a healthier environment, and the overall well-being of the people of Los Angeles.

Additional conclusions and recommendations can be found in Chapter 9 of the SWFP.

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INTRODUCTION

The City of Los Angeles (City) is currently creating the One Water LA 2040 Plan to identify synergies and develop an integrated framework for collaboration and coordination within the City and all its departments, as well as other agencies/entities, related to water reclamation plants (WRP), watersheds, water facilities, and water resource management efforts. This significant, comprehensive effort seeks to connect water to environmental, economic, and social benefits that will build on the success of the City's 2006 Water Integrated Resources Plan (IRP).

The development of the One Water LA 2040 Plan will result in smarter land use practices, healthier watersheds, greater reliability of the City's water and wastewater systems, increased efficiency and operation of utilities, enhanced livable communities, resilience against climate change, and protection of public health.

As part of the One Water LA 2040 Plan, Los Angeles Sanitation (LASAN) developed this Stormwater and Urban Runoff Facilities Plan (Facilities Plan). This plan, which has been developed based on the guiding principles set forth in Phase 1 of the One Water LA 2040 Plan, summarizes the existing stormwater infrastructure within the City and seeks to better understand the needs of the stormwater infrastructure system over the next 25 years. Given the uniqueness of the City and its existing infrastructure, such an effort is critical to facilitate integrated management of water resources throughout the City. Building from significant previous stormwater infrastructure planning efforts, the Facilities Plan includes a Stormwater Improvement Program (SIP) that selects future infrastructure projects based on a variety of benefits achieved for the City.

1.1 PURPOSE AND OBJECTIVES

Stormwater infrastructure is the set of physical assets that convey or collect both stormwater runoff and dry weather urban runoff throughout the City, collectively working to manage the risks of floods, meet water quality requirements, and provide water supply augmentation benefits. The stormwater infrastructure system within the City includes both grey and green infrastructure:

- **Grey infrastructure** is the stormwater conveyance and detention infrastructure that has historically been designed to provide flood protection by collecting runoff, detaining collected runoff to attenuate peak discharge rates when necessary, and ultimately conveying runoff away from City property to downstream receiving waters, including oceans, reservoirs, spreading basins, and groundwater aquifers.
- **Green infrastructure** is composed of both nature-inspired and mechanical systems that are designed to mimic natural processes to retain, infiltrate, and/or treat runoff,

thereby providing multiple benefits including, but not limited to, flood protection, water quality improvement, and water supply benefits.

Combined with the City's management programs and strategies, these individual infrastructure components work together to manage stormwater and dry weather urban runoff within the City.

The Facilities Plan evaluates various types of studies, plans, projects, and programs seeking to integrate efforts related to flood risk mitigation, water quality benefits, and water supply benefits. By integrating these efforts, the City's stormwater infrastructure needs and requirements over the next 25 years are selected. The future SIP is presented in terms of 5-year, 10-year, and 25-year phases.

The stormwater component of the One Water LA 2040 Plan comprehensively and equally considers the following:

- **Water Quality Improvement** – providing environmental and habitat benefits and improving the health of local watersheds by reducing impervious cover, restoring ecosystems, and decreasing pollutants in the waterways;
- **Water Supply Augmentation** – capturing runoff to help offset potable water use through direct use projects, increasing water supply through groundwater augmentation; and
- **Flood Risk Mitigation** – protecting life and safety and mitigating local flood impacts.

The integration of these stormwater system considerations into the One Water LA 2040 Plan to provide a comprehensive view of the City's stormwater infrastructure network will help lay the foundation for future improvements. This effort will help support the integrated water goals of the One Water LA 2040 Plan, in part, through the development of stormwater improvement projects.

The objectives of the Facilities Plan are to:

1. Review and summarize the City's stormwater infrastructure and relevant polices, plans, and programs – past, present, and future;
2. Integrate various aspects of stormwater components and find implementation opportunities that assist with flood protection, water quality benefits, and/or water supply benefits and enhancements with all City departments and regional entities;
3. Provide a methodology for identifying and selecting stormwater infrastructure projects. Among numerous other factors, this methodology will consider results from the Climate Risk and Resilience Assessment for Wastewater and Stormwater Infrastructure (One Water TM No. 5.5; see Volume 6), which identified stormwater infrastructure at risk of failure or loss of efficiency due to anticipated climate change scenarios and proposed corresponding climate resiliency infrastructure projects;

4. Make recommendations for the integration of stormwater infrastructure facility management in the City by 2040 by building on existing plans and studies, developing integrated management processes for decision making and selection of projects, and leveraging resources;
5. Develop a prioritized SIP to guide the City with the implementation of the large number of stormwater projects to meet TMDL compliance deadlines, mitigate flood risks, and achieve water supply benefits; and
6. Help achieve the Mayor's stormwater capture goal of 150,000 AFY by 2035 as defined in the City Sustainability Plan.

1.2 HISTORICAL CONTEXT OF THE CITY'S STORMWATER SYSTEM AND MANAGEMENT

This section provides a comprehensive summary of the development of the City's stormwater management system, from the singularly-focused flood mitigation approach in the early 1900s to the current multi-objective methodology.

1.2.1 Stormwater Quality Improvement

For almost 80 years, the primary considerations for design of stormwater projects in the City were flood control and water supply. Following the passage of the Porter-Cologne Act of 1969 and the Clean Water Act (CWA) of 1972, stormwater began to be regulated from a water quality perspective. The State Water Resources Control Board (SWRCB) and the Nine Regional Water Quality Control Boards (RWQCBs) of California were established as a result of the passage of the Porter-Cologne Act, which authorized the State of California to regulate water quality and water resources for surface and groundwater in California. The Porter-Cologne Act mandated the establishment of a comprehensive program for water quality policy, water quality standards, and regulation of pollutant discharge from point and non-point sources in California. In 1990, following the Los Angeles Regional Water Quality Control Board's (LARWQCB) adoption of the original Waste Discharge Requirements (WDRs) for Municipal Separate Storm Sewer Systems (MS4) within the Coastal Watersheds of Los Angeles County (Order No. 90-079; National Pollutant Discharge Elimination System (NPDES) Permit No. CA0061654), water quality became a driver for stormwater infrastructure design within the City.

Now, the City is leading the way as one of the most proactive cities in the nation with regards to stormwater quality protection and enhancement. Among other progressive actions, the City was one of the first in the nation to initiate and incorporate low impact development (LID) requirements into new development and redevelopment projects. In parallel with the development of the City's LID program, the City passed the Proposition O – Clean Water Bond in October 2004, authorizing $500 million of general obligation bonds for projects to prevent and remove pollutants from regional waterways and the ocean, consequently protecting public safety while meeting federal CWA regulations. More recently, the City completed six Watershed Management Programs (WMP)/Enhanced Watershed Management Programs (EWMPs), which included detailed water quality modeling for all of their watersheds to demonstrate reasonable assurance of compliance with applicable water quality standards within the region. Additional information on these programs and the regulatory framework in which the City exists can be found in Section 2.1.

1.2.2 Water Supply Augmentation

The 1915 Los Angeles County Flood Control Act initiated not only regional flood control effort, but also the effort of utilizing stormwater runoff for water supply. Large scale, centralized infrastructure projects such as dams, spreading grounds, and basins were constructed by US Army Corps of Engineers (USACE), Los Angeles County Flood Control District (LACFCD), and Los Angeles Department of Water and Power (LADWP) to capture aggregated, in-channel runoff from upstream drainage areas. These centralized stormwater infrastructure projects were designed to capture and infiltrate stormwater into local groundwater aquifers without other added water supply benefits. Due to the recent drought condition in California, water supply benefits of stormwater management and infrastructure system design have become increasingly important, both in terms of groundwater augmentation as well as other provided benefits. The recent focus of stormwater infrastructure design in the City has widened to focus not only on large centralized projects but also to select smaller scale projects such as distributed and mid-sized regional projects. Projects still incorporate groundwater recharge benefits, but also help offset water supply demand and provide environmental and habitat benefits

Water supply projects as part of the infrastructure network provide benefits to the City in many ways, such as:

- Increased infiltration into vegetated areas to offset the demand for potable water used for irrigation;
- Offsetting of potable water demand via on-site capture and use Best Management Practices (BMPs), such as underground cisterns or tanks that connect to an irrigation system; and
- The provision of additional environment and habitat benefits, such as the mitigation of heat island effects and the creation of wildlife habitats.

The quantification of these benefits is still widely unknown. For example, the City has estimated an average annual capture volume of 29,000 million gallons (MG), or 89,000 acre-feet (AF), of stormwater for the average storm year based on the implementation of all WMP/EWMP-defined BMPs (Cox, 2016). LADWP, as part of its 2015 Stormwater Capture Master Plan (SCMP), estimated that an additional 10,100 to 18,200 MG (31,000 to 56,000 AF) of runoff per year could be infiltrated into potable aquifers through distributed infiltration BMPs, along with another 11,400 to 16,600 MG (35,000 to

51,000 AF) per year in centralized infiltration facilities. In addition, the distributed BMPs will capture 700 to 2,300 MG (2,000 to 7,000 AF) stormwater runoff per year for direct use.

1.2.3 Flood Risk Mitigation

In parallel with the City's progressive economy and population growth starting in the early 20th century, the City began construction of a stormwater conveyance network that was primarily designed to route runoff to downstream receiving water bodies as quickly as possible for the sake of flood protection. In 1915, the Los Angeles County Flood Control Act established the LACFCD and empowered it to manage flood risk in the County of Los Angeles. Beginning in the late 1930s, primarily due to the devastating flood of 1938, the USACE, with assistance from LACFCD, began construction of concrete-lined open channels such as the Los Angeles River and Ballona Creek to further enhance the City's resilience toward regional flood hazards (USACE, 2013). In concurrence with the flood protection channels, LACFCD, USACE, and LADWP collaboratively constructed large, centralized stormwater detention infrastructure such as dams, spreading grounds, and basins to attenuate peak flood discharge rates as well as capture and recharge stormwater runoff to groundwater basins. However, since most of this infrastructure was built in upper portions of the watershed, significant runoff continued to occur downstream, with little to no additional abatement or capture.

As the stormwater system continued to grow to help address local and regional flood issues, a sophisticated network of channels, pipes, culverts, pump stations, dams, spreading grounds, and catch basins extended throughout the City. This infrastructure network is commonly referred to as 'grey' infrastructure. With the growth of the LA Basin, the grey stormwater infrastructure has also grown in response. According to the Geographic Information System (GIS) data provided by the LACFCD, this LA Basin network has over 4,500 miles of pipes and 600 miles of open channels. The LACFCD alone includes 500 miles of open channel and 2,800 miles of storm drains (Bradbury, 2016). The rest of the grey infrastructure is owned by the municipalities, California Department of Transportation (Caltrans), USACE, and private developers.

Beginning in the 1980s, the stormwater management approach used for infrastructure design shifted toward floodplain and watershed management, as mandated from both State and Federal regulatory and reporting agencies. Many of the projects implemented under this approach utilize nature-inspired systems and designs to capture and infiltrate stormwater. These types of projects are commonly referred to as 'green' projects. Since the introduction of the concept of floodplain and watershed management, there has been an increase in 'green' infrastructure implementation throughout the City. This shift has resulted in designing and implementing regional, distributed, and centralized (larger-scale) projects that often provide multiple benefits.

Notable among the floodplain management efforts are the National Flood Insurance Program (NFIP) and the Community Rating System (CRS), which are further described in

Section 2.2. Both programs were developed by the Federal Emergency Management Agency (FEMA). These programs provide benefits in the form of reduced flood insurance costs for communities that meet minimum requirements (City of Los Angeles, 2015). The City joined the NFIP on December 2, 1980 and has participated in the CRS since 1991. The City also developed its first Floodplain Management Plan (FMP) in 2001. The purpose of the FMP is to identify the City's flood-prone areas and establish goals, objectives, policies, and programs to reduce flood hazards. The FMP was updated in April 2010 and October 2015 and is recognized as the City's primary guide to floodplain management planning.

While the City-led FMP identifies flood hazards with 100-year and 500-year return periods, the City sizes City-owned storm drains for flood events with frequencies less than the 100-year event. The City is generally responsible for the mitigation effort of flood hazards resulting from the 10-year event. As such, larger events are often managed through regional systems owned and operated by regional entities, such as LACFCD and USACE.

Both LACFCD and the USACE work together to address the larger flood control issues within and beyond the City limits. In general, within the City the USACE is responsible for flood control within the LA River and a few of its major tributaries, such as Tujunga Wash. The City works with the USACE on flood projects in the LA River within the City boundaries. The LACFCD works with the City on both local and regional flood projects for the operations and maintenance of the stormwater infrastructure in and around the City, since the stormwater system extends into adjacent cities.

1.2.4 A Proactive City

Despite the vastness and complexity of the City's stormwater infrastructure network, the City of Los Angeles remains at the forefront of integrated stormwater management and system design. As mentioned above, the Public Right-of-Way (PROW) Green Stormwater Infrastructure (GSI) Program, the City's LID program, Proposition O – Clean Water Bond, the SCMP, and WMP/EWMPs are a sampling of initiatives the City has taken to enhance and protect their waterways.

1.2.4.1 Public Right-of-Way Green Stormwater Infrastructure Program

The PROW GSI Program, currently under development, will soon be a groundbreaking "Green Streets" policy. With streamlined implementation procedures and emphasis on areas of greatest environmental need, it may be the first of its kind on the west coast, if not nationwide.

The PROW GSI Program includes an ordinance that would require PROW projects to implement green stormwater infrastructure, with varying levels of performance requirements. Implementation will be dependent on project scope, project size, and degree of potential environmental significance, or benefit. By use of an "Environmental Significance Category" projects in high priority areas for water quality and water supply will be held to higher implementation requirements. The PROW GSI Program is expected to reduce overall City costs by linking green infrastructure with already planned construction activities, provide a pre-designed "GSI unit" approach for simplified implementation, reduce resident, business, and traffic disruption through streamlined coordination, and identify opportunities for multiple funding streams to stimulate multi-benefit project development. A companion Handbook is in development to assist in compliance with the Program's ordinance and simplify the implementation of requirements.

1.2.4.2 Low Impact Development Program

The City is one of the first in the nation to initiate and incorporate a LID program that called for BMPs for residential, commercial, and industrial projects. Based on the previously established first LID standard via the Standard Urban Stormwater Mitigation Plan (SUSMP) in 1997, the City passed their updated LID Ordinance (Ordinance No. 181899) in November 2011, requiring stormwater mitigation for an even larger number of development and redevelopment projects than was previously required under the SUSMP.[9]

Following the release of the 2012 MS4 Permit, the City updated its 2011 LID Ordinance in September 2015 (Ordinance No. 183833) to incorporate changes from the new Permit. In addition to the requirements set forth in the MS4 Permit, the City adopted LID standards that went above-and-beyond the minimum Permit requirements. Due to a need to clarify requirements, the LID Ordinance was updated again in May 2016.[10] The update incorporated the use of LID BMP alternatives into the project design, consistent with the guidance provided in the City's Best Management Practice Handbook (City of Los Angeles, 2016).

1.2.4.3 Proposition O – Clean Water Bond

The City passed the Proposition O – Clean Water Bond in October 2004, authorizing $500 million of general obligation bonds for projects to prevent and remove pollutants from regional waterways and the ocean, consequently protecting public safety while meeting federal CWA regulations (LASAN, n.d). Proposition O projects are represented in one or more of the following categories:

- Water-quality protection of rivers, lakes, beaches, bays, and the ocean;
- Water conservation, including drinking water and source protection;
- Flood water reduction, including river and neighborhood parks that prevent polluted runoff and improve water quality; and
- Stormwater capture and use.

[9] The terminology for stormwater project requirements changed from SUSMP to LID in 2011.
[10] The LID Ordinance requires all parcel developments and redevelopments that result in alterations of more than 500 square feet of impervious area to capture and/or treat stormwater runoff from the design storm. The design storm is defined as the 85th percentile 24-hour storm, or a 0.75-inch storm, whichever is greater.

Since the approval of Proposition O, LASAN and the Los Angeles Bureau of Engineering (LABOE) have utilized the funding source for stormwater projects that protect public health and the environment, including storm drain improvements, catch basin retrofits, low flow diversion (LFD) upgrades, and regional stormwater management projects. Existing and planned Proposition O projects are further discussed in Section 4.3 and Section 7.1, respectively.

1.2.4.4 Watershed Management Plan/Enhanced Watershed Management Program

The 2012 MS4 Permit allows Permittees to customize their stormwater programs through the development and implementation of an EWMP or a WMP to achieve compliance with receiving water limitations (RWLs) and water quality-based effluent limits (WQBELs).

The City is the leading entity of four EWMPs (Ballona Creek [BC], Dominguez Channel [DC], Santa Monica Bay Jurisdictions 2 and 3 [SMB J2/3], and Upper Los Angeles River [ULAR]) and one WMP (Santa Monica Bay Jurisdiction 7 [SMB J7]). It is also participating entity of the Marina del Rey (MdR) EWMP. The WMP/EWMPs are the most current and comprehensive watershed management programs in the City to-date. They build upon multiple previously-developed planning efforts and identify detailed implementation strategies to comply with the MS4 Permit and provide additional environmental, aesthetic, recreational, and/or water supply benefits as well as other community enhancements.

Although a separate watershed management effort was completed for SMB J2/3, SMB J7, and MdR, these three watersheds have been merged together as "Santa Monica Bay Watershed Management Area" (SMB WMA) for this Facilities Plan. Hence there are four watershed management plans considered in this Facilities Plan.

1.2.4.5 Stormwater Capture Master Plan

In October 2015, LADWP developed the SCMP to evaluate existing stormwater capture efforts, analyze the role of stormwater capture in the City's water supply portfolio, and provide recommendations for future stormwater capture opportunities.

The SCMP synthesized existing and planned actions by LADWP, LACFCD, other City agencies, and local non-governmental entities that impact stormwater to ensure that the Master Plan complements and enhances significant stormwater capture efforts already in progress. By estimating the amount of stormwater generated by the subwatersheds tributary to and within the City of Los Angeles and investigating multiple constraints associated with capturing stormwater for beneficial use, the SCMP sought to determine the realistic amount of stormwater the City can reliably depend upon and the impact that this amount of stormwater capture would have on surface water quality improvements and peak flow attenuation in the Los Angeles River.

An extensive list of potential stormwater capture alternatives (policies, ordinances, projects, programs) was compiled and analyzed to compare the strategic and business case aspects for each project, individually and as part of a larger suite of alternatives. The list included centralized and distributed stormwater capture programs and projects, as well as an implementation plan, to create a roadmap that capitalizes on political, physical, and financial opportunities.

The SCMP is a document that outlines the City's strategies over the next 20 years to implement stormwater projects and programs, and to cooperate with others on projects in the City that will contribute to more reliable and sustainable local water supplies.

1.2.5 Stormwater Special Topic Groups

To provide an opportunity for in-depth and focused stakeholder engagement, five Special Topic Groups (STG) were created for key Plan components. The purpose of these groups was to gather key stakeholder perspectives during the planning process. The topics identified for these Special Topic Group (STG) discussions include:

- Partnership & collaboration;
- Stormwater management;
- Communication & outreach;
- Decentralized/on-site treatment; and
- Funding & cost-benefit.

Stakeholders were invited to participate in one or more STGs at the first Stakeholder Workshop of One Water LA Phase 2, and the Stormwater management STG was the most popular group of the five STGs. Stakeholders representing a wide range of perspectives and background participated in this process. The purpose of the Stormwater management STG were to:

- Discuss diversity of stormwater projects and programs throughout the City;
- Acknowledge the EWMP goals and SCMP targets can only be met with everyone's involvement;
- Identify opportunities to partner with public/private/ NGOs for projects and programs; and
- Participate in identifying stormwater priorities of the City.

General results emerging from the Stormwater management STG included recommendations that incentives, rebates, and rewards such as stormwater fee discounts and subsidies could be provided for project development on private parcels. Additionally, there was a desire for the City to explore 3rd party funding assistance for education programs, NGO participation, impervious buy-back programs, and possibly stormwater trading credits, among others. Other results included outreach and recognition concepts such as promoting green infrastructure values and acknowledging businesses and homeowners that exhibit sustainable practices.

More detailed information on the participants, meeting dates, and outcomes is summarized in Volume 9.

1.3 REPORT ORGANIZATION

Having provided introductory information in Chapter 1 of this report, Chapter 2 provides information on the regulatory context in which the City's stormwater is managed. Chapter 3 provides a brief overview of the historical demands placed on the City's stormwater system based on summarized model results. Following these contextual sections, Chapter 4 discusses the existing stormwater collection system components and the management issues that are involved in having multiple agencies owning/managing different components of the system. Chapter 5 provides a brief overview of the City's operations and maintenance (O&M) protocols for stormwater infrastructure. Chapter 6 then introduces the integrated approach to stormwater management that the City is implementing. Chapter 7 describes a near-term and long-term SIP for projects based on the integrated approach discussed in Chapter 6. The SIP includes a list of selected stormwater projects as well as cost estimates for proposed projects. This is followed by the identification of funding opportunities in Chapter 8. Conclusions are presented in Chapter 9.

REGULATORY BACKGROUND

Stormwater and urban runoff within the City are subject to a myriad of regulations, directives, and policies. Federal and State agencies set water quality goals and targets for runoff discharges in an effort to protect receiving waters, while also setting goals and targets for the use of runoff to benefit local water supply. In response, the City has developed master plans, ordinances, directives, and other documents to implement these goals and targets at the local level.

2.1 WATER QUALITY

Table 2.1 summarizes a selection of applicable Federal, State, and City regulations and guidance documents related to stormwater and urban runoff quality. Section 2.1.1 provides additional details on these Federal and State regulations, and Section 2.1.2 provides details on applicable City regulations. It should be noted that many of the regulations and guidance listed here in Section 2.1 are related to water supply and/or flood risk as well.

Table 2.1 Stormwater Regulations and Guidance Related to Water Quality
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Requirement	Year First Enacted	Description and/or Goals	Link
Federal and State			
Porter-Cologne Water Quality Control Act	1969	Provides the SWRCB and nine RWQCBs the authority to implement the Clean Water Act in California	https://www.waterboards.ca.gov/laws_regulations/docs/portercologne.pdf
Clean Water Act	1972	Establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters	https://www3.epa.gov/npdes/pubs/cwatxt.txt
California Ocean Plan	1972	Establishes beneficial uses for ocean waters, water quality limits for discharges, and programs for implementation	http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/cop2015.pdf
Los Angeles Basin Plan	1975	Establishes beneficial uses for inland waters, water quality limits for discharges, and programs for implementation	http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.shtml
Total Maximum Daily Loads	Multiple years	Set waste load allocations for point source discharges (including the MS4) of pollutants into an impaired water body, and provides a compliance timeline	http://www.waterboards.ca.gov/water_issues/programs/tmdl/#rb4

Table 2.1 Stormwater Regulations and Guidance Related to Water Quality Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

Requirement	Year First Enacted	Description and/or Goals	Link
MS4 Permit	1990	Prohibits unauthorized non-stormwater discharges through the MS4; requires control of discharges to the maximum extent possible; and incorporates all total maximum daily loads (TMDL)	http://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/losangeles.shtml
California Industrial General Permit	1997	Requires industrial dischargers to register with the SWRCB and to implement a Stormwater Pollution Prevention Plan	http://www.waterboards.ca.gov/water_issues/programs/stormwater/igp_20140057dwq.shtml
California Construction General Permit	1999	Requires applicable construction projects to register with the SWRCB and implement a Stormwater Pollution Prevention Plan	http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml
City/Local			
Water Quality Compliance Master Plan for Urban Runoff	2009	Provides strategic directions for planning, budgeting, and funding to improve stormwater quality and urban runoff water quality through green-blue infrastructure approaches	http://www.lastormwater.org/wp-content/files_mf/wqcmpur.pdf
Green Streets & Green Alleys Design Guidelines and Standards	2009	Provides guidelines for implementation of green streets and alleys	https://nacto.org/wp-content/uploads/2015/04/green_streets_and_green_alleys_la.pdf
Green Streets Standard Plans	2010	Provides standard design specifications for certain green street BMPs	http://eng.lacity.org/techdocs/stdplans/s-400.htm
Low Impact Development Ordinance	2011	Requires stormwater mitigation for all development and redevelopment projects that create, add, or replace 500 square feet or more of impervious area	http://www.lastormwater.org/wp-content/files_mf/finallidordinance181899.pdf
Planning and Land Development Handbook for Low Impact Development	2011	Companion document to LID Ordinance	http://www.lastormwater.org/wp-content/files_mf/lidhandbookfinal62212.pdf
Bureau of Engineering Special Order No. 001-0204 - Dewatering	2014	Requires that groundwater dewatering discharges be directed to the sewer, unless otherwise determined infeasible by LASAN	http://eng.lacity.org/techdocs/sporders/2004/SO001-0204.pdf

**Table 2.1 Stormwater Regulations and Guidance Related to Water Quality
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan**

Requirement	Year First Enacted	Description and/or Goals	Link
Water Conservation Ordinance	2016	Requires that groundwater dewatering discharges be used on-site or be directed to the sewer, unless otherwise infeasible	https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-water/a-w-conservation/a-w-c-ordinanceandcodes?_adf.ctrl-state=vevqfas7x_4&_afrLoop=99749738185873
Enhanced Watershed Management Programs / Watershed Management Programs	2016	Provide strategies, actions, and schedules for compliance with MS4 Permit	http://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/watershed_management/
Public Right-of-Way Low Impact Development Green Stormwater Infrastructure Program	To Be Determined (TBD)	Ordinance requiring public right-of-way projects to implement green stormwater infrastructure. Companion Handbook to assist compliance with the Ordinance and simplify implementation of requirements.	Under development

2.1.1 Federal and State Regulations and Guidance Documents

2.1.1.1 Porter-Cologne Act

In California, the 1969 Porter-Cologne Water Quality Control Act grants the SWRCB and the nine RWQCBs the authority to protect water quality and implement California's responsibilities under the Clean Water Act. The governing RWQCB for the Los Angeles area is the LARWQCB, headquartered in downtown Los Angeles.

2.1.1.2 Clean Water Act

The CWA is administered by the U.S. Environmental Protection Agency (EPA) and is the primary federal law governing water pollution in the United States (see Figure 2.1). Also known as the Federal Water Pollution Control Act, the CWA was established in 1972 but with major amendments in 1977 and 1987. It provides the basis for the protection of all inland surface waters, estuaries, and coastal waters in the U.S. The 1972 CWA required point sources, such as industrial facilities and WRPs, to obtain a NPDES permit prior to discharge. Discharges from the MS4 were not considered a point source at that time. However, research in the 1970s and 1980s indicated that urban stormwater runoff was a major source of pollution to the nation's receiving waters, which resulted in the Water

Quality Act of 1987. This act required MS4s to obtain a NPDES permit, as well. As noted, the EPA is responsible for ensuring implementation of the Clean Water Act; however, they may delegate the authority to the State.

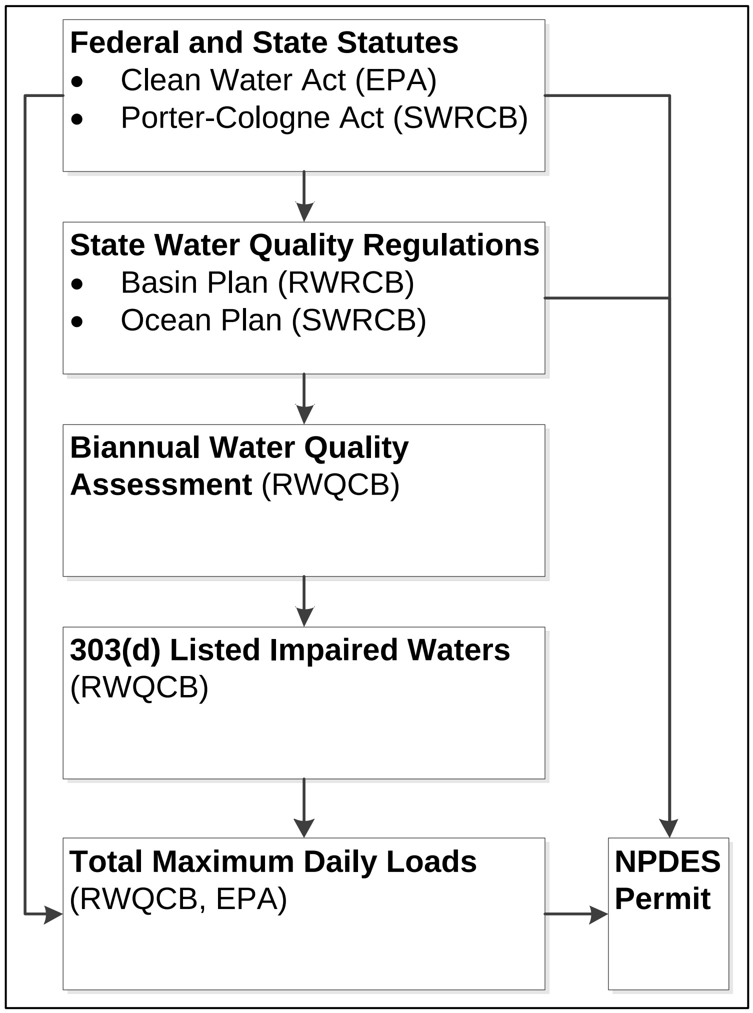

Figure 2.1 Overview of Water Quality Regulatory Process

Section 303(d) of the CWA lists surface water bodies that do not meet applicable water quality standards, based on a biannual assessment of water quality data. In California, this assessment is carried out by the SWRCB and RWQCBs. Surface waters that do not meet applicable water quality standards are placed on the "303(d) List" of impaired water bodies. The most recent list in California was released in 2010 and was approved by the EPA in October 2011. All of the City's major water bodies (LA River, Ballona Creek, Machado Lake, etc.) are on the 303(d) List. Placement of a water body on the 303(d) List results in the required development of a TMDL by the LARWQCB.

2.1.1.3 California Ocean Plan

The first California Ocean Plan was developed by the SWRCB in 1972. The goal of the Ocean Plan is to protect the quality of ocean waters in California by the control of point source discharges to those waters. It defines beneficial uses for ocean waters, provides water quality limits for discharges, and includes a program for implementation. For example, the Ocean Plan specifies indicator bacteria standards to protect water contact recreation in coastal waters. Those same standards can be found in the Santa Monica Bay Beaches Bacteria (SMBBB) TMDL, as well as in the MS4 Permit as water quality based effluent limitations for storm drain discharges to the Santa Monica Bay.

The Ocean Plan undergoes a triennial review process. The most recent version of the plan, the 2015 Ocean Plan, took effect in January 2016.

2.1.1.4 Los Angeles Basin Plan

The Los Angeles Basin Plan from the LARWQCB is similar to the Ocean Plan but applies to inland water bodies. The first Basin Plan was developed in 1975 and has since undergone several revisions. The Basin Plan for the Los Angeles region identifies all the waters in the region that are subject to regulation; designates beneficial uses to those waters; provides narrative and numeric objectives (e.g., water quality standards or limits) that must be maintained to protect the designated beneficial uses; and contains implementation programs to protect all waters in the region subject to regulation. The Basin Plan, including the TMDLs and Basin Plan Amendments (BPAs) included therein, can be seen as foundational to the water quality regulatory requirements for the City's surface waters.

2.1.1.5 TMDLs

A TMDL specifies the maximum amount of a pollutant that a discharger can discharge into a water body without impacting the designated beneficial uses. Implementation schedules set interim and final compliance milestones to be achieved by specified times.

Currently, receiving water bodies within the City are collectively subject to 22 TMDLs. These are summarized by watershed in Table 2.2. As a general rule, TMDL compliance milestones for dry weather discharges are usually on a shorter time schedule than the compliance milestones for wet weather discharges; not all TMDLs have separate milestones for dry and wet weather.

Table 2.2 TMDLs Applicable to the City of Los Angeles
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

TMDL Compliance Schedule(1)	Watershed	TMDL	Condition	Original TMDL Effective Date	TMDL Reconsideration Date (if applicable)	Interim Target(2)	Final Milestone
TMDL Currently Effective or <=5 years (2017 - 2021)	Ballona Creek (BC)	BC Trash		8/28/2002	6/30/2016		9/30/2015
		BC Bacteria	Dry weather	4/27/2007	7/2/2014		4/27/2013
			Wet weather	4/27/2007	7/2/2014		7/15/2021
		BC Metals	Dry weather	10/29/2008	10/26/2015		1/11/2016
			Wet weather	10/29/2008	10/26/2015		1/11/2021
		BC and Estuary Toxics		1/11/2006	10/26/2015	1/11/2017 (75%)	1/11/2021
		BC Wetlands (Sediment and Invasive Exotic Veg)		3/26/2012			-
	Marina del Rey (MdR)	MdR Toxics	Back basins	3/22/2006	10/16/2015	3/22/2016 (50%)	3/22/2018
			Front basins	3/22/2006	10/16/2015	3/22/2019 (50%)	3/22/2021
		MdR Mother's Beach and Back Basins Bacteria	Dry weather	3/18/2004	4/6/2006		12/28/2017
			Wet weather	3/18/2004	4/6/2006		7/15/2021
	Santa Monica Bay (SMB)	SMB Bacteria	Dry weather summer	7/15/2003			7/15/2006
			Dry weather winter	7/15/2003			11/1/2009
			Wet weather	7/15/2003	7/2/2014	7/15/2018 (50%)	7/15/2021
		SMB Debris		3/20/2012		3/20/2017 (40%) 3/20/2018 (60%) 3/20/2019 (80%)	3/20/2020
		SMB DDTs and PCBs		3/26/2012			-
	Upper Los Angeles River (ULAR)	LA River Nutrients		9/27/2004	8/7/2014		3/23/2004
		LA River Trash		9/23/2008	6/30/2016		9/30/2016
		Echo Park Lake		3/26/2012			-
		Lincoln Park Lake		3/26/2012			-

Table 2.2 TMDLs Applicable to the City of Los Angeles
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

TMDL Compliance Schedule[1]	Watershed	TMDL	Condition	Original TMDL Effective Date	TMDL Reconsideration Date (if applicable)	Interim Target[2]	Final Milestone
	Dominguez Channel (DC)	Machado Lake Trash		3/6/2008			3/6/2016
		Machado Lake Nutrients		3/11/2009			9/11/2018
		Machado Lake Pesticides and PCBs (Toxics TMDL)		3/20/2012			9/30/2019
TMDL 6-15 years (2022 - 2032)	BC	BC and Estuary Toxics		1/11/2006	10/26/2015	1/11/2017 (25%) 1/11/2021 (50%)	1/11/2025
	ULAR	LA River Metals	Dry weather	10/29/2008	11/3/2011	1/11/2020 (75%)	1/11/2024
			Wet weather	10/29/2008	11/3/2011	1/11/2024 (50%)	1/11/2028
		LA River Bacteria		3/23/2012		See Footnote 3	See Footnote 3
	DC	DC & LA Harbor and Long Beach Harbor Toxics		3/23/2012			3/23/2032
TMDL >15 years (2033 - 2040)	ULAR	LA River Bacteria	Wet weather	3/23/2012			3/23/2037

Notes:

(1) Final TMDL milestones have been grouped by <=5 years, 6-15 years, and >15 years. For the purposes of overall planning effort, the critical years for TMDL compliance were determined to be 2021 (close to <=5 year), 2032 (close to 6-15 years), and 2037 (close to >15 years). Specific TMDLs for these three milestone years have been presented. It is to be noted that there are few TMDLs that do not fit this schedule.

(2) Only future interim targets are listed here. The City is currently implementing water quality improvement projects to seek to achieve compliance with past interim targets. As part of the adaptive management process, the City is evaluating progress towards achieving applicable water quality objectives set by the MS4 Permit, improved water quality in MS4 discharges and receiving waters, and stormwater retention needs. The City will continue collaboration with other agencies as part of this adaptive management process to identify and implement modifications to existing projects and future projects as deemed necessary during the evaluation process.

(3) Final milestone depends on segment. See BPA for detailed implementation schedule.

2.1.1.6 MS4 Permit

TMDLs are not enforceable until they are incorporated into the MS4 Permit. The objective of the MS4 Permit is to ensure that MS4 discharges within the County of Los Angeles do not cause or contribute to the exceedance of water quality standards in regional water bodies. General MS4 Permit requirements, which are relevant to maintaining water quality standards, include:

- Requirements to effectively prohibit unauthorized non-stormwater discharges through the MS4;
- Requirements to implement controls to reduce the discharge of pollutants to the maximum extent practicable;
- Other provisions the LARWQCB has determined appropriate for the control of such pollutants.

So far, the LARWQCB has issued four permits, i.e., in 1991, 1996, 2001, and 2012. These permits have become more stringent with every renewal. In general, early permits focused more on requirements for implementation of certain BMPs (mostly institutional measures such as public engagement, which did not greatly impact the City's operations). With the last MS4 Permit, which became effective on December 28, 2012 (Order No. R4-2012-0175; NPDES Permit No. CAS004001), the focus shifted toward requirements for meeting the numeric limits for urban runoff and stormwater discharges as well as the water quality limits for protection of the beneficial uses of the receiving waters.

The current MS4 Permit has incorporated all of the City's 22 TMDLs and, as a result, TMDL discharge limitations for the City's MS4 and receiving water limitations for the City's receiving waters are now enforceable. In fact, the TMDLs in Table 2.2 determine the magnitude (scope) and scheduling of the watershed control measures proposed in the City's WMP and EWMPs, as discussed in Section 2.1.2 later.

2.1.1.7 Industrial General Permit

Certain City facilities are subject to the statewide NPDES General Permit for Stormwater Discharges Associated with Industrial Activities (Industrial General Permit). This permit is issued by the SWRCB to several categories of industrial dischargers. First issued in 1997, the current version of the permit became effective July 1, 2015. The Industrial General Permit requires the development and implementation of a site-specific Stormwater Pollution Prevention Plan (SWPPP) to meet the permit requirements. It also establishes monitoring requirements and numeric action levels. Examples of City facilities that may be subject to the Industrial General Permit are landfills, certain transportation facilities, WRPs, and hazardous waste facilities.

2.1.1.8 Construction General Permit

Comparable to the Industrial General Permit, the SWRCB first issued a NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) in 1999. A revised Construction General Permit was most-recently released in 2009 (with subsequent amendments). In general, this permit applies to all construction and demolition activities that result in a land disturbance of one acre or more. The main focus of the Construction General Permit is sediment control and the control of other pollutants associated with construction activity. The City is subject to this permit for its own construction projects; for example, the construction of a new sewer line that exceeds the one-acre threshold would be subject to the Construction General Permit. Construction projects subject to this permit must develop and implement a SWPPP.

2.1.2 City/Local Regulations and Guidance Documents

The City has developed several plans, ordinances, manuals, and guidelines with the primary objective of complying with applicable water quality regulations. However, many of the City's planning and implementation efforts also target other objectives, such as increasing local water supply and potable water conservation, habitat restoration, and neighborhood improvements. The following subsections introduce local water quality regulations/guidance documents and describe the City's implementation approaches to applicable regulations.

2.1.2.1 Water Quality Compliance Master Plan for Urban Runoff

The Water Quality Compliance Master Plan for Urban Runoff (WQCMPUR) was developed by LASAN Watershed Projection Division (WPD) in collaboration with stakeholders in response to City Council Motion CF 07-0663, dated March 2, 2007. The Council Motion required the development of a water quality master plan with strategic directions for planning, budgeting, and funding to improve stormwater quality and urban runoff water quality. The WQCMPUR provides a 20-year strategy to reduce pollutant loads flowing into local rivers, creeks, lakes, and beaches and was adopted by the Board of Public Works in 2009. The purpose of the WQCMPUR is to provide a broad watershed-based perspective using "green" and natural solutions to improve Los Angeles water quality and maintain compliance with current and emerging water quality regulations. Applying the guidelines of the WQCMPUR will assist the City in making cleaner neighborhoods, improving surface water quality, reducing flood risk, and providing more open space throughout the City.

2.1.2.2 Manuals, Guidelines, and Standard Plans

In May 2016, LASAN updated its Planning and Land Development Handbook for Low Impact Development. This is the companion document to the LID ordinance and provides guidance for development and redevelopment projects to comply with the ordinance.

LASAN's Green Streets & Green Alleys Design Guidelines and Standards (2009) assists developers, planners, designers and engineer with incorporating green infrastructure BMPs (nature-inspired and mechanical systems that are designed to retain, infiltrate, and/or treat runoff, thereby providing multiple benefits) into streets, alleys, and parking lots. LASAN and LABOE also developed several standard plans for green streets (S-480 through S-486 for parkway swales, vegetated stormwater curb extensions, and interlocking pavers). The use of these standard plans facilitates the plan check process and reduces associated fees (LABOE, 2010).

Additionally, the City's Watershed Protection Program website[11] provides many guidelines for residents for capturing rainwater on their properties.

2.1.2.3 Low Impact Development Ordinance

The City Council adopted LID Ordinance No. 181899 in September 2011, which became effective in May 2012 and made Los Angeles one of the first cities in the region to adopt an LID ordinance. In order to make the City's LID program compliant with the 2012 MS4 Permit, additional revisions to LID provisions were included in Ordinance No. 183833, which was adopted by City Council in August 2015.

The LID ordinance applies to all developments and redevelopment projects in the City that create, add, or replace 500 square feet (sq ft) or more of impervious area. These projects must retain 100 percent of the stormwater quality design volume on-site through infiltration, evapotranspiration, and stormwater capture and use (unless otherwise infeasible). Projects must implement all applicable source controls to prevent pollutants from entering the MS4, implement all relevant site design elements to minimize impacts of the development on the natural hydrology, and implement structural BMPs as needed to capture the design volume. The design volume is typically the runoff resulting from the 85th percentile, 24-hour storm event. However, if the waterbodies receiving runoff from the site are susceptible to hydromodification, then hydromodification controls will be required, which may cause the project to have to retain or detain additional runoff volume.

The LID ordinance will have a gradual, yet widely impactful, effect on the stormwater infrastructure of the City. By shifting the focus of stormwater infrastructure design from exclusively considering flood control to now incorporating LID strategies, stormwater infrastructure development will be affected due to a reduction in runoff and an increased focus on treatment, infiltration, and retention of runoff. Further, sites undergoing new development or redevelopment will have their hydrologic impacts largely mitigated by LID strategies. Over time, virtually all existing developments of the City will undergo redevelopment and refurbishment, giving the LID ordinance an opportunity for large cumulative impacts on runoff volume and runoff quality in the City through implementation at these sites.

[11] http://www.lastormwater.org/

2.1.2.4 Watershed Management Program/Enhanced Watershed Management Program

The County MS4 Permit allows Permittees the flexibility to develop WMP or EWMP to implement the requirements of the Permit on a watershed scale through customized strategies, control measures, and BMPs. Both EWMP and WMP have the general goal of compliance with the MS4 Permit on a watershed scale, with the main difference between the two being that EWMPs seek to "… comprehensively evaluate opportunities, within the permittees' collective jurisdictional area in a watershed management area, for collaboration between permittees and other partners on multi-benefit regional projects that, wherever feasible, retain all non-stormwater runoff and the runoff of the 85th percentile, 24-hour storm event for the drainage areas tributary to projects, while also achieving other benefits including flood control and water supply, among others". In short, the EWMPs put more emphasis on regional collaboration, multi-benefit projects, and the capture of stormwater for water supply benefits.

The City took the lead in the development of five EWMPs and one WMP for its four major watersheds, working in close collaboration with approximately thirty partner agencies and cities (co-permittees). The draft WMP was submitted to the LARWQCB in June 2014 and the final WMP was submitted in May 2015. The LARWQCB approved the WMP in August 2015. The draft EWMPs were submitted to the LARWQCB in June 2015 and the final EWMPs were submitted in January 2016. The LARWQCB approved the EWMPs in April 2016.

Ballona Creek EWMP

The BC WMA is approximately 128 square miles. The City is the largest permittee (by land area) in this EWMP and works together with seven other permittees. The BC WMA can be considered one of the most challenged watersheds in the County in terms of water quality – it has several TMDLs with compliance milestones fast approaching by 2021 and, as a highly urbanized watershed, opportunities for stormwater capture projects on public land and the PROW are limited. For wet weather compliance, the biggest challenge is the Metals TMDL and in particular zinc, which was used as the limiting pollutant in the Reasonable Assurance Analyses (RAA) for the BC EWMP. The biggest challenge for dry weather compliance is the Bacteria TMDL. The City is currently under a Time Schedule Order (LARWQCB order R4-2015-0108) and now has until 2019 to meet all dry weather requirements of the Time Schedule Order and the dry weather requirements of the Bacteria TMDL. The BC EWMP was approved by the LARWQCB on April 20, 2016. State and Federal regulations applicable to the BC WMA establish clear compliance timelines to address water quality issues. A comprehensive overview of interim and final TMDLs applicable to the BC WMA is provided in Table 2.2.

Dominguez Channel EWMP

The area covered by the DC WMA is approximately 79 square miles, or 61 percent of the total DC watershed area[12]. The City is the largest permittee (by land area) in this EWMP and works together with six other permittees. The EWMP area is divided into three subwatersheds:

- The DC subwatershed, which is subject to the Toxics TMDL for Dominguez Channel and the Greater Los Angeles and Long Beach Harbors;
- The Machado Lake subwatershed, which is subject to Trash, Nutrients, and Toxics TMDLs for Machado Lake; and
- The LA Harbor, which is subject to the Toxics TMDL and the LA Harbor Bacteria TMDL.

The limiting pollutants that govern EWMP implementation in the DC WMA depend on the sub-watershed. The final compliance deadline for the entire watershed is 2032. The City currently is under a Time Schedule Order (No. R4-2014-0023) that provides additional time to comply with the Los Angeles Harbor Bacteria TMDL requirements for Inner Cabrillo Beach.

The DC EWMP was approved by the LARWQCB on April 21, 2016. State and federal regulations applicable to the DC WMA establish clear compliance timelines to address water quality issues. A comprehensive overview of interim and final TMDLs applicable to the DC WMA is provided in Table 2.2.

Marina del Rey EWMP

The MdR WMA is hydrologically considered to be a subwatershed in the larger Santa Monica Bay watershed, but it has its own TMDLs for bacteria and toxics. The MdR WMA is approximately 2.9 square miles, making it one of the smallest EWMP areas in the Los Angeles region. The County is the lead agency for developing the EWMP for MdR WMA, with LACFCD, the Cities of Los Angeles and Culver City as participating agencies. MdR Harbor, which is owned and operated by the County, is the primary receiving water body. Other water bodies include Ballona Lagoon, Venice Canals, and a portion of the Ballona Wetlands. The primary challenge for the MdR WMA is compliance with the Toxics and Bacteria TMDLs by 2018 and 2021, respectively. The LARWQCB has issued a Time Schedule Order (No. R4-2014-0142) for implementing the dry weather requirements of the Bacteria TMDL, as the initial compliance deadline of 2007 was not met.

The MdR EWMP was approved by the LARWQCB on April 27, 2016. State and federal regulations applicable to the MdR WMA establish clear compliance timelines to address

[12] The remaining 39 percent of DC watershed area is within the jurisdiction of cities or agencies that did not participate in the DC EWMP.

water quality issues. A comprehensive overview of interim and final TMDLs applicable to the MdR WMA is provided in Table 2.2.

Santa Monica Bay EWMP for Jurisdictions 2 & 3

The LARWQCB has divided the larger SMB watershed into several jurisdictions from the Ventura-Los Angeles County line to the Palos Verdes Peninsula. The SMB J2/3 EWMP is a collaboration between five agencies, with the City being the lead and largest agency. SMB is the primary receiving water body in the SMB J2/3 WMA, and the primary concern related to water quality is public health of beach visitors as a result of bacteria pollution. The SMB J2/3 WMA is approximately 54 square miles. The County and Cities of Los Angeles and Santa Monica have constructed over twenty LFDs at the major storm drain outfalls to the SMB within the SMB J2/3 WMA. These LFDs divert dry weather runoff away from the beaches to the sewer system for treatment at the Hyperion WRP. Heal the Bay, a locally based non-profit organization whose mission is to make Southern California coastal waters and watersheds safe, healthy, and clean, typically grades the Santa Monica Bay beaches within the SMB J2/3 WMA with an "A" rating during dry weather. The primary driver of proposed actions in the SMB J2/3 EWMP are related to the SMBBB TMDL for wet weather, which requires full compliance by 2021.

The SMB J2/3 EWMP was approved by the LARWQCB on April 21, 2016. State and federal regulations applicable to the SMB J2/3 WMA establish clear compliance timelines to address water quality issues. A comprehensive overview of interim and final TMDLs applicable to the SMB J2/3 WMA is provided in Table 2.2.

Santa Monica Bay WMP for Jurisdiction 7

The SMB J7 WMA is approximately 1.5 square miles, spanning between Palos Verdes and San Pedro. While this area is subject to the same TMDLs as SMB J2/3 WMA, years of monitoring have shown that applicable water quality standards, particularly bacteria standards, are commonly met. Since there is no direct need for the implementation of stormwater capture projects in this area, the City elected to develop and implement a WMP instead of an EWMP. The primary challenge of the J7 is to maintain current water quality conditions.

The SMB J7 WMP was approved by the LARWQCB on August 5, 2015. A comprehensive overview of interim and final TMDLs applicable to the SMB 7 WMA is provided in Table 2.2.

Upper Los Angeles River EWMP

The ULAR WMA is the largest of the City's WMA with an area of 485 square miles. The City is the largest permittee (58 percent of the watershed area) and developed the EWMP for ULAR with 18 partner agencies. Impaired water bodies include the Los Angeles River Reach 2 through 6 and major tributaries such as Compton Creek, Rio Hondo, Arroyo Seco, Verdugo Wash, and Tujunga Wash. Also, some of the City's lakes in the watershed, e.g., Echo Park Lake and Lincoln Park Lake, have been assigned TMDLs by the EPA. The major challenges in the Upper Los Angeles River EWMP are the dry weather requirements of the Bacteria TMDL and the 2028 wet weather compliance milestone of the Metals TMDL. For wet weather, zinc is the limiting pollutant that drives the EWMP compliance effort, but additional actions are required after 2028 to meet the wet weather requirements of the Bacteria TMDL by March 2037.

The ULAR EWMP was approved by the LARWQCB on April 20, 2016. State and federal regulations applicable to the ULAR WMA establish clear compliance timelines to address water quality issues. A comprehensive overview of interim and final TMDLs applicable to the ULAR WMA is provided in Table 2.2.

2.1.2.5 Construction and Groundwater Dewatering

The City has a general policy to minimize dewatering and other forms of discharge of groundwater to the storm drain system, whether such discharges are associated with construction activities or permanent post-construction activities. The first conveyance option for these types of discharges is the sewer system. Only when it has been determined by LASAN that the capacity of the sewer system is not sufficient to accommodate the discharge does the storm drain become a conveyance option. When dewatering is allowed, a dewatering plan must be developed and a permit must be obtained from the Regional Board. This policy is provided by LABOE Special Order No. 001-0204 (2014) and The City of Los Angeles Department of Building Safety (LADBS) Water Conservation Ordinance. Dewatering on construction projects must also comply with requirements of the California Construction General Permit, when applicable.

2.1.2.6 Public Right-of-Way Low Impact Development Green Stormwater Infrastructure Program

The PROW GSI Program will prioritize the potential for both surface water quality and water supply benefits. The current planning approach will mandate that all PROW projects map their project location to determine the threshold of potential environmental significance, or ESC, ranging from Low Priority to Very High Priority. Very High Priority locations are deemed to hold very high opportunity for environmental benefits, and as such, projects in those locations will be held to higher implementation. The ESC was developed using past studies that analyzed the geographical locations of surface water body compliance needs and underlying aquifers, amongst other factors that contribute to water quality and water supply improvement.

2.2 WATER SUPPLY

Table 2.3 summarizes a selection of applicable Federal, State, and City regulations and guidance documents related to water supply. Section 2.2.1 provides additional details on these Federal and State regulations, and Section 2.2.2 provides details on applicable City regulations.

Table 2.3 Stormwater Regulations and Guidance Related to Water Supply
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Requirement	Year Enacted	Description and/or Goals	Links
Federal and State			
State Senate Bill X7-7	2006	Requires statewide 20% reduction of the urban per capita water use by 2020	http://www.water.ca.gov/wateruseefficiency/sb7/docs/SB7-7-TheLaw.pdf
Recycled Water Policy	2009	Encourages stormwater capture and infiltration	http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/
State Assembly Bill 1881	2010	Sets goals for water efficiency in landscaping	http://www.water.ca.gov/wateruseefficiency/docs/ab_1881_bill.pdf
California Green Building Code	2013	Contains building design elements related to stormwater management, including retention and infiltration of stormwater runoff	https://codes.iccsafe.org/public/document/details/toc/657
California Model Water Efficient Landscape Ordinance	2010	Contains provisions for stormwater retention and infiltration (continually updated)	http://www.water.ca.gov/wateruseefficiency/landscapeordinance/
California Water Action Plan	2014	Provides detailed roadmap and action items of the State's strategy toward sustainable water management through 2020	http://resources.ca.gov/california_water_action_plan/
State Senate Bill 485	2015	Authorizes the Los Angeles County Sanitation District (LACSD) to develop stormwater and dry weather runoff management projects	https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB485
Governor's Executive Order B-37-16	2016	Requires statewide reductions of potable water use through multiple measures, including the prohibition of several activities that generate runoff	https://www.gov.ca.gov/docs/5.9.16_Executive_Order.pdf
City/Local			
Mayor's Executive Directive No. 1	2013	Launches Great Streets Initiative to promote green infrastructure for improved environmental resilience	https://www.lamayor.org/sites/g/files/wph446/f/page/file/Executive-Directive-1-Great-Streets-Initiative-1.pdf?1426619965
Los Angeles Green Building Code	2013	Includes voluntary and mandatory provisions for stormwater management for new buildings and building alterations	http://www.ladbs.org/docs/default-source/publications/code-amendments/2017-l-a-amendment-to-ca-codes.pdf?sfvrsn=8

Table 2.3 Stormwater Regulations and Guidance Related to Water Supply Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

Requirement	Year Enacted	Description and/or Goals	Links
Mayor's Executive Directive No. 5	2014	Decrease per capita potable water demand by 20% by 2017 and reduce imported potable water by 50% by 2024 in part by increasing groundwater remediation, stormwater infiltration, and green infrastructure	https://www.lamayor.org/sites/g/files/wph446/f/page/file/ED_5_-_Emergency_Drought__Response_-_Creating_a_Water_Wise_City.pdf?1426620015
City Sustainability pLAn	2015	Provides City's goals and plans for a sustainable city, and includes many provisions for stormwater management as a resource	http://plan.lamayor.org/wp-content/uploads/2017/03/the-plan.pdf
Mayor's Executive Directive No. 7	2015	Directs City departments to implement the goals of the Sustainability pLAn	https://www.lacity.org/sites/g/files/wph281/f/Executive_Directive_No._7_Sustainable_City_pLAn.pdf
Stormwater Capture Master Plan	2015	Provides strategic goals and actions for the capture, infiltration, and direct use of runoff to reduce potable water use and increase local water supply in the City	https://www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=OPLADWPCCB421767&RevisionSelectionMethod=LatestReleased
Urban Water Management Plan 2015	2015	Provides long-term strategies for sustainable water supply in the City, including stormwater capture and management (completed every five years)	http://www.water.ca.gov/urbanwatermanagement/uwmp2015.cfm
Los Angeles County Guidelines for Alternate Water Sources: Indoor and Outdoor Non-Potable	2016	Provides direction for the use of alternate water sources both indoors and outdoors, including the capture and use of rainwater, graywater, stormwater, and recycled water	http://publichealth.lacounty.gov/eh/docs/ep_cross_con_AltWaterSourcesGuideline.pdf

2.2.1 Federal and State Regulations and Guidance Documents

2.2.1.1 State Senate Bill X7-7 (SBX7-7)

SBX7-7, also referred to as The Water Conservation Act of 2009, was enacted in November 2009 and requires all water suppliers to increase water use efficiency. This bill requires the state to achieve a 10 percent reduction in urban per-capita water use in California by 2015 and a 20 percent reduction by 2020. Urban retail water suppliers are required to develop urban water use targets. Retailers that do not comply with the bill are not eligible for State water grants or loans.

2.2.1.2 Recycled Water Policy

In response to California's drought, the State of California adopted the SWRCB's Recycled Water Policy in 2009 with amendments in 2013. The recycled water policy calls for an increase in the capture and use of stormwater State-wide by 500,000 acre-feet per year (AFY) by 2020 and by 1,000,000 AFY by 2030. The policy provides guidance and incentives for Regional Boards to streamline approval of recycled water and stormwater capture projects throughout the State.

2.2.1.3 State Assembly Bill 1881 (AB1881)

AB1881 was approved by the Governor of California in September 2006. The bill directed the California Department of Water Resources to update its Model Water Efficient Landscape Ordinance for use and implementation by local agencies by 2010. AB 1881 became effective in 2010 and is primarily focused on new construction and commercial landscapers. The bill has many goals, including efficient water use in landscaping, preventing any provisions for the prohibition of low water-using plants, encouraging the onsite capture and retention of stormwater, and minimizing irrigation overspray. While the overall goal of AB1881 is water efficient landscaping, the specific guidelines and requirements for capturing stormwater and preventing irrigation overspray directly relate to and impact stormwater management in Los Angeles.

2.2.1.4 California Green Building Code

The California Green Building Code ("California Green Building Standards Code", California Code of Regulations, Title 24, Part 11), or CALGreen, was last updated in 2013. This code promotes sustainable construction practices in five areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. The code has many mandatory and voluntary measures for residential and nonresidential structures, some of which impact stormwater management.

2.2.1.5 California Model Water Efficient Landscape Ordinance

In response to Executive Order B-29-15 from Governor Brown, the California Department of Water Resources updated the State's Model Water Efficient Landscape Ordinance to require more efficient irrigation systems, incentivize greywater usage, require maximization of on-site stormwater retention, and limit the use of high water-use vegetation. The California Water Commission approved the revised ordinance on July 15, 2015. The ordinance applies to development projects with landscape areas greater than 500 sq ft. Local agencies must adopt the State ordinance by December 2015 or adopt their own ordinance that is at least as effective as the State's ordinance. The ordinance contains provisions for stormwater retention and infiltration.

2.2.1.6 California Water Action Plan

The California Water Action Plan was originally released by Governor Brown's administration in January 2014 and was recently updated in 2016 in response to the prolonged drought conditions throughout California. The plan has three major objectives: 1) the creation of more reliable water supplies; 2) the restoration of important species and habitat; and 3) the creation of a more resilient, sustainably-managed water resources system. Developed by the California Natural Resources Agency, the California Department of Food and Agriculture, and the California Environmental Protection Agency, the California Water Action Plan establishes many specific action items in ten areas, many of which will have an impact on stormwater management in the region and the City.

2.2.1.7 State Senate Bill No. 485

SB 485, as an amendment to the Health and Safety Code, authorizes LACSD to acquire, construct, operate, maintain, and furnish facilities for the diversion, management, and treatment of stormwater and dry weather runoff. SB 485 initiated collaboration among LACSD and other county and local stormwater management agencies, such as LACFCD and LASAN, to collaborate and explore opportunities for management of stormwater and dry weather runoff for beneficial uses.

2.2.1.8 Governor's Executive Order B-37-16

In May of 2016, Governor Brown issued Executive Order B-37-16 in response to the prolonged drought experienced by California. The order provides additional requirements to previous orders (B-26-14, B-28-14, B-29-15, B-36-15) for increased potable water conservation, elimination of waste, and resiliency to drought. For example, the SWRCB is directed to prohibit practices that waste potable water, such as hosing of sidewalks and over-irrigation that causes runoff.

2.2.2 City/Local Regulations and Guidance Documents

The following subsections introduce local water supply regulations/guidance documents and describe the City's implementation approaches.

2.2.2.1 Mayor's Executive Directive Number 1

On October 10, 2013, Mayor Eric Garcetti issued Executive Directive Number 1 (Great Streets Initiative) to focus on developing Great Streets that activate the public realm, provide economic revitalization, and support great neighborhoods. Great Streets will support the following six goals:

- Increased Economic Activity
- Improved Access and Mobility
- Enhanced Neighborhood Character
- Greater Community Engagement

- Improved Environmental Resilience
- Safer and More Secure Communities

This directive establishes a Great Streets Working Group, led by the Deputy Mayor of City Services and with participation by representatives from Department of City Planning, Department of Cultural Affairs, Department of Transportation, Department of Public Works, and Economic and Workforce Development Department.

2.2.2.2 Los Angeles Green Building Code

The 2013 City of Los Angeles Green Building Code is an amendment to Article 9 of the Los Angeles Municipal Code. It was adapted from the State of California's 2010 Green Building Standards Code (CALGreen Code). The ordinance includes both mandatory and voluntary measures relative to local water supply. The Green Building Code applies to every new building, every building alteration with a valuation over $200,000, residential alterations that increase a building's volume, and every building addition unless specifically excluded. The Green Building Code contains provisions for reducing potable water use indoors and outdoors, capturing stormwater, and infiltrating stormwater onsite.

2.2.2.3 Mayor's Executive Directive Number 5

On October 14, 2014, Mayor Eric Garcetti issued Executive Directive Number 5 (Emergency Drought Response) in response to the long-standing drought being faced by the City. To address the decrease in water supply and uncertainty in availability, the directive sets the following three goals:

- Reduce per capita potable water use by 20 percent by 2017;
- Reduce imported potable water by 50 percent by 2024 (revised to 2025 in pLAn); and
- Create an integrated strategy to increase local water supplies and improve water security.

The directive established a Mayoral Water Cabinet, led by the Mayor's Office and with participation by representatives from LASAN, LADWP, Department of Recreation and Parks, Metropolitan Water District of Southern California (Metropolitan), and the Proposition O Citizens Advisory Oversight Committee. The Water Cabinet meets on a monthly basis to ensure progress with the various plans and actions called for by the directive, including stormwater capture and storage as part of an integrated water strategy.

2.2.2.4 Los Angeles Sustainable City pLAn and Mayor's Executive Directive Number 7

In April 2015, Mayor Garcetti released the Sustainable City pLAn. The plan sets short term (through 2017) and longer term (through 2025 and 2035) targets in 14 categories related to the environment and sustainability; among these is the goal to lead the nation in water conservation, to source the majority of the City's water locally, and to increase resiliency to disasters. There are many proposed measures to reach these goals. Measures related to stormwater management include: expanding the rain barrel program and incentivizing on-site capture and reuse; expanding the number of green streets and green infrastructure sites; expanding the use of permeable pavement in large infrastructure projects; and implementing the BMPs identified in the EWMPs.

The Mayor's Executive Directive Number 7 directs City departments and commissions to implement the goals of the Sustainability pLAn in the strategic planning and selection of their programs in order to achieve the near-term and long-term goals of the plan.

2.2.2.5 Los Angeles Department of Water and Power (LADWP) Stormwater Capture Master Plan

One of LADWP's key strategies to ensure long term water supply for the City is to increase the local water supply and decrease the need for imported water. LADWP and its partners at LACFCD currently capture an average of 29,000 AFY of stormwater. The SCMP identified that another 35,000 AFY is infiltrated into potable aquifers through incidental recharge. In 2015, LADWP completed the SCMP to determine how much additional local stormwater could be captured in both potable aquifers and for direct use and to determine the most cost-effective way to accomplish this through projects, programs, and policies. The SCMP evaluated an aggressive and a conservative scenario to implement these projects, programs, and policies over the next 20 years. Modeling conducted for the SCMP determined that an additional 31,000 to 56,000 AFY could be infiltrated into potable aquifers through distributed infiltration BMPs along with another 35,000 to 51,000 AFY in centralized infiltration facilities. The potential for direct use of stormwater was much smaller and ranged between 2,000 and 7,000 AFY.

To accomplish these goals, the SCMP calls for a suite of on-site infiltration and direct use of runoff in green streets, sub-regional projects, and centralized facilities. Each of these have their advantages and disadvantages, and local circumstances may determine which of these will be most effective. However, in general, infiltration BMPs are less valuable for LADWP when located over aquifers that are confined, perched, or not pumpable by the City. Therefore, from a water supply perspective, infiltration projects should be selected over usable aquifers while direct use projects should be selected over other aquifers.

The SCMP and the EWMPs were developed to address different issues and meet different objectives; however, implementation strategies for the capture, infiltration, and direct use of runoff have many similarities in the two plans, and assumed implementation rates within the two plans were jointly developed. One of the goals of One Water LA 2040 Plan is to coordinate implementation of the two plans so that benefits for the City are maximized.

2.2.2.6 LADWP Urban Water Management Plan 2015

In 2016, the LADWP released its 2015 Urban Water Management Plan (UWMP). The City is required to update this plan once every five years with the intent to secure a reliable water supply and improve resources management. The 2015 UWMP responds to the current drought by addressing emergency declarations from the governor, State regulations for potable water use reduction, executive directives from the Mayor, and the sustainable water supply goals of the City Sustainability pLAn.

The UWMP is an extensive plan with forecasts of future water demands and water supplies and outlines the plan to secure a sustainable water supply for Los Angeles through 2040. The UWMP includes several new measures to increase local water supply, conserve water, and increase resiliency to drought, and integrates the goals and strategies of the SCMP for the capture of stormwater to benefit local water supply.

2.2.2.7 Los Angeles County Department of Public Health Requirements

In addition to regulating recycled water use, the Los Angeles County Department of Public Health (LACDPH) has detailed requirements that must be adhered to for the installation, pipeline construction, and use/re-use of non-potable water supplies (including captured rainfall runoff and dry weather runoff).

In 2016, LACDPH released its *Guidelines for Alternate Water Sources: Indoor and Outdoor Non-Potable Use* (LACDPH, 2016). These guidelines provide direction for the use of alternate water sources both indoors and outdoors, including the capture and use of rainwater, graywater, stormwater, and recycled water. LACDPH is required to review all alternate water source projects with the exception of non-pressurized rain barrels/cisterns designed for outdoor use.

2.3 FLOOD RISK MITIGATION

With regards to flood risk mitigation, the City is generally responsible for the mitigation efforts of flood events with a 10-year or less return period (LABOE, 1986). Regional, state, and federal agencies, including USACE and LACFCD, design stormwater facilities for a much larger range of flood events, generally ranging from the 10-year flood event to the 100-year flood event.[13]

LACFCD and the USACE work together in addressing the larger flood control issues both inside and outside the City limits. In general, the USACE is responsible for flood control along the LA River and the City works with the USACE on flood projects in the LA River within the City boundaries. The LACFCD works with the City on both local and regional flood projects for the operations and maintenance of the stormwater infrastructure in and around the City.

LADPW, LACFCD, and the USACE all share responsibility in managing local flood risks in the City. Inter-agency cooperation is assumed based on existing and future requirements, regulations, and Memorandums of Understanding (MOU) with respect to financing, constructing, and operating and maintaining flood control projects described herein.

[13] For example, LACFCD's Hydraulic Design Manual (LACFCD, 1982) sets a minimum design storm frequency of 10-years for applicable drains, and the USACE's Los Angeles River Ecosystem Restoration Feasibility Study (USACE, 2015), commonly known as the ARBOR Study, shows that portions of the LA River have capacity above the 100-year flow rate.

Table 2.4 summarizes a selection of applicable Federal, State, and City regulations and guidance documents related to flood mitigation. Section 2.3.1 provides additional details on these Federal and State regulations, and Section 2.3.2 provides details on applicable City regulations.

Table 2.4 Stormwater Regulations and Guidance Related to Flood Mitigation
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Requirement	Year First Enacted	Description and/or Goals	Links
Federal and State			
FEMA National Flood Insurance Program (NFIP)	1968	Federal program managed by FEMA provides flood insurance, improves floodplain management, and develops maps of flood hazard zones (FEMA, 2016a).	https://www.fema.gov/national-flood-insurance-program
Community Rating System (CRS)	1990	Part of the NFIP. Voluntary incentive program to encourage floodplain management activities and exceed minimum NFIP requirements. CRS goals are to reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management (FEMA, 2016b).	https://www.fema.gov/community-rating-system
City/Local			
Los Angeles County Flood Control Act	1915	Established the LACFCD and initiated flood control and water conservation effort	http://www.ladpw.org/wmd/irwmp/docs/Prop84Round3/Att1_DG_Authorization_Eligibility_05of16.pdf
City of Los Angeles Storm Drain Design Manual	1986	Part G of the City of Los Angeles Standard Plans. Presents design criteria, standards, policies, and procedures, for the design of storm drains.	http://eng.lacity.org/techdocs/stormdr/Index.htm
City of Los Angeles Sewer Design Manual	1992	Part F of the City of Los Angeles Standard Plans. Presents design criteria, standards, policies, and procedures, for the design of sewer projects.	http://eng.lacity.org/techdocs/sewer-ma/
Los Angeles County Hydrology Manual	1999	Reference and training guide for hydrologic design procedures to be used for design of storm drains, basins, pump stations, and major channel projects. The Manual's primary purpose is to explain steps involved in converting rainfall to runoff flow rates and volumes using Public Works' standards.	https://dpw.lacounty.gov/wrd/Publication/index.cfm
Floodplain Management Plan	2015	City's primary guide to floodplain management planning. Includes a CRS.	http://eng.lacity.org/projects/fmp/pdf/2015-fmp.pdf

2.3.1 Federal and State Regulations and Guidance Documents

2.3.1.1 FEMA Programs

The Federal Emergency Management Agency (FEMA) is an agency managed by the Federal government that coordinates the government's role in natural or man-made domestic disaster preparation, response, and recovery. The agency can trace its beginnings to the Congressional Act of 1803, which aided a New Hampshire town following an extensive fire. The agency began to take its current form when President Carter's 1979 executive order merged many separate disaster-related responsibilities into the Federal Emergency Management Agency (FEMA, 2016c).

FEMA has defined flood zones and identified flood hazard areas to plan and implement floodplain management measures.

- Special flood hazard areas (SFHAs): Land areas that are at high risk for flooding, including floodplains and areas subject to coastal storm surge. SFHAs are indicated on flood insurance rate maps (FIRMs). High-risk areas have at least a 1 in 4 chance of flooding during a 30-year mortgage and are subject to inundation by the 1 percent annual chance flood (100-year flood).
- Non-special flood hazard areas (NSFHAs): Land areas in a moderate-risk to low-risk flood zone (Zones B, C, X Pre- and Post-FIRM). In moderate- to low-risk areas, the risk of being flooded is reduced but not completely removed.

Notable among the floodplain management efforts developed by FEMA are the NFIP (FEMA, 2016a) and the CRS (FEMA, 2016b). These programs provide benefits in the form of financial protection from flood events for homeowners and reduced flood insurance costs for communities that meet minimum requirements. The City joined the NFIP on December 2, 1980 and as discussed in the following section, has participated in the CRS since 1991.

2.3.2 City/Local Regulations and Guidance Documents

The following subsections introduce local flood mitigation regulations/guidance documents and describe the City's implementation approaches.

2.3.2.1 Los Angeles County Flood Control Act

The Los Angeles County Flood Control Act, enacted in 1915, established the LACFCD and empowered it to manage flood risk and initiate water conservation effort through stormwater runoff capture-and-recharge in the County of Los Angeles.

2.3.2.2 City of Los Angeles Storm Drain Design Manual

The City's Bureau of Engineering published the Storm Drain Design Manual (Part G) in 1986 (LABOE, 1986). The manual presents the design criteria, standards, policies, and procedures for design of storm drains within the City.

In 1999, the City adopted the Los Angeles County Hydrology Manual as the basis for hydraulic design of storm drains (LABOE, 1999). The County Hydrology Manual is therefore the current standard governing design flow rates within City storm drains.

The Los Angeles Hydrology Manual specifies that a LACFCD permit is required for any work in a LACFCD easement, for storm drain connections or remodeling of existing LACFCD drainage facilities in City streets, and/or for work in City streets that will physically affect existing LACFCD drainage structures.

2.3.2.3 City of Los Angeles Sewer Design Manual

The Sewer Design Manual (Part F of the City of Los Angeles Standard Plans) was published in 1992 (LABOE, 1992). Section F-800 of the Sewer Design Manual presents operation and maintenance details of a wastewater collection system. The manual summarizes pump station operation and maintenance details, ranging from responsibility and procedures for alarm response, to specifics on part maintenance. Section F-800 provides an overview of guidelines and procedures for developing an effective program, noting that detailed maintenance instructions can be found via manufacturer's manuals.

2.3.2.4 Los Angeles County Hydrology Manual

The City adopted the Los Angeles County Hydrology Manual (Section 200) as the basis for hydrologic design in 1999, per the Bureau of Engineering Special Order No. 007-1299, as it was to the mutual benefit of both agencies to improve efficiency by establishing a uniform standard for conducting a hydrology study (LABOE, 1999). A transitional period of five years was required, wherein LABOE staff and private consultants could use either the Hydrologic Design method in the Los Angeles County Hydrology Manual or the LABOE method shown in the Storm Drain Design Manual for hydrologic design.

Chapter 4 of the Los Angeles County Hydrology Manual, titled "Policy on Levels of Protection," specifies the following:

- Capital Flood Level of Protection
  - The Capital Flood is the runoff produced by a 50-year frequency design storm falling on a saturated watershed (soil moisture at field capacity). A 50-year frequency design storm has a probability of 1/50 of being equaled or exceeded in any year.
  - The Capital Flood level of protection applies to all facilities, including open channels, closed conduits, bridges, dams, and debris basins not under State of

California jurisdiction. These facilities must also be constructed in or intercept flood waters from natural watercourses. Facilities under the State of California jurisdiction must also meet the state's criteria, which may include the Probable Maximum Flood criteria.

  - The Capital Flood applies to all areas mapped as floodways.
  - The Capital Flood level of protection applies to all facilities constructed to drain natural depressions or sumps. These facilities include channels, closed conduits, retention basins, detention basins, pump stations, and highway underpasses.
  - The Capital Flood level of protection applies to all culverts under major and secondary highways.

- Urban Flood Level of Protection
  - All drainage facilities in developed areas not covered under the Capital Flood protection conditions must meet the Urban Flood level of protection. The Urban Flood is runoff from a 25-year frequency design storm falling on a saturated watershed. A 25-year frequency design storm has a probability of 1/25 of being equaled or exceeded in any year.
  - Drains must at least carry flow from the 10-year frequency design storm. The street or highway must carry the balance of the 25-year frequency design storm below the property line.

2.3.2.5 City of Los Angeles Floodplain Management Plan

The City developed its first FMP in 2001 to identify and reduce flood hazards to protect the health, safety, quality of life, environment, and economy of the City of Los Angeles through partnerships and careful planning. The FMP was consequently updated in April 2010 and October 2015. It is recognized as the City's primary guide to floodplain management planning.

The FMP includes a CRS, a voluntary program within FEMA's NFIP that focuses on three things:

- Encourages floodplain management activities that exceed the minimum requirements of the NFIP;
- Facilitates accurate insurance rating; and
- Promotes awareness of flood insurance.

The City of Los Angeles has participated in the CRS program since 1991. The City has a Class 7 rating, so the citizens who live in a 100-year floodplain can receive up to a 15 percent discount on their flood insurance; outside the 100-year floodplain they receive a 5 percent discount.

It is anticipated that the FMP will help the City maximize its credit potential under the CRS. The FMP updated the flood risk assessment for the City of Los Angeles, which profiles nine types of flood hazards that exist within the City:

- Flooding in FEMA-designated SFHAs;
- NSFHA hillside areas, NSFHA shallow flooding areas;
- NSFHA urban drainage flood areas;
- Flash flooding NSFHA coastal areas;
- Geologic hazard areas; and
- Tsunami hazards and system-related failures including both dams and levees.

The risk assessment for the FMP used the best available data, science, and technology, with tools that included GIS and FEMA's risk assessment platform, Hazus-MH, a program that includes extensive inventory data such as demographics, building stock, critical facilities, transportation facilities, and utilities. This led to the identification of an action plan, which includes 80 flood hazard mitigation initiatives to reduce or eliminate losses resulting from the impacts of flooding, each with an associated selection level (short-term, long-term, or further study required). It should be noted that some of the initiatives outlined in the FMP fall outside of the CRS credit criteria and that CRS creditability was not the sole focus of the FMP development.

2.3.2.6 City of Los Angeles Known Areas of Flooding

The City of Los Angeles tracks reported areas of flooding. These areas are considered areas of 'unmet drainage needs' and are based on City staff and citizen-observed flooded areas as well as citizen complaints and observations. These areas will be considered in subsequent stormwater management system analysis, with the goal of minimizing the impacts of flooding and meeting safety requirements while addressing water quality and water supply needs.

2.4 REGIONAL PLANNING

There are many regional planning efforts that potentially impact stormwater management within the City. Two important efforts are summarized in this section.

2.4.1 Los Angeles Basin Stormwater Conservation Study

The LACFCD and the U.S. Bureau of Reclamation developed this joint study in 2014 to study the long-term water conservation and flood control impacts from projected climate change and population increase in the Los Angeles Basin. The Los Angeles Basin Stormwater Conservation Study (Basin Study) includes water supply and demand projections for 2035 and 2095 as well as climate change projections for the following two main objectives:

- Evaluate the long-term potential of existing LACFCD infrastructure (e.g., flood control dams, reservoirs, spreading grounds), to conserve increased amounts of stormwater for water supply.
- Analyze the potential for new facilities and operational changes to capture increased amounts of stormwater volumes for water supply.

Whereas the Basin Study primarily focuses on LACFCD facilities, there are many connections to the City's stormwater management planning, specifically the LADWP's SCMP and, to a lesser extent, LASAN's WMP/EWMPs.

2.4.2 Integrated Regional Water Management Plan

The Greater Los Angeles County Region updated its Integrated Regional Water Management Plan (IRWMP) in 2014. The original plan was developed in 2006 to increase collaboration among water resource managers, wastewater agencies, stormwater and flood managers, watershed groups, and other stakeholder to improve water resource planning in the Greater Los Angeles County Region. The 2014 update was intended to define a clear vision for sustainable management of water resources through the next 20 years through the following goals: reduce the reliance on imported water; comply with water quality regulations by improving urban runoff quality; protect, restore, and enhance natural processes and habitats; increase watershed friendly recreation; reduce flood risk; and adapt to mitigate against climate change vulnerabilities.

The IRWMP defines planning targets to meet these goals over a 25-year timeframe, except for the climate change goal, which used a 40-year timeframe. Several targets are directly related to stormwater management in the City, settings goals for stormwater capture capacity, direct use of stormwater, and stormwater infiltration. The IRWMP is an important document in that it facilitates regional collaboration between multiple stakeholders and provides mechanisms for funding of selected stormwater management projects.

In 2016, the Greater Los Angeles Committee approved incorporation of the EWMPs into the IRWMP.

2.4.3 Various Los Angeles River Master Plans

The Los Angeles River flows 51 miles through numerous cities and communities in Southern California. It stretches 32 miles within the City alone, from the confluence of the Arroyo Calabasas and Bell Creek in the west San Fernando Valley, down to the border with Vernon at the southern end of Downtown Los Angeles. Various local and regional agencies have developed Los Angeles River master plans that focus on improving the water quality and the ecological function of the Los Angeles River, as well as creating economic development opportunities to enhance and improve Los Angeles River-adjacent communities. Examples of Los Angeles River Master Plans include City-led Los Angeles River Revitalization Master Plan, the Los Angeles County-led Los Angeles River Master Plan, the USACE-led Los Angeles River Ecosystem Restoration Feasibility Study (currently in progress), the Los Angeles County-led Lower Los Angeles River Revitalization Plan (currently in progress) and the Los Angeles River Master Plan Update (currently in progress), and the Santa Monica Mountains Conservancy-led Upper Los Angeles River and Tributaries Revitalization Plan (proposed in Assembly Bill 466).

STORMWATER AND DRY WEATHER RUNOFF FLOWS

Given the rapidly evolving nature of stormwater management within the City, stormwater and dry weather runoff flows are expected to change significantly over the next 25 years, thereby influencing and affecting infrastructure needs in this timeframe. As stated earlier, a detailed quantification of future flows in light of all of these changes has not yet been completed within the City; however, a qualitative discussion of future flows is presented below.

Although detailed hydrologic and hydraulic modeling is not being conducted as part of the Facilities Plan, the Facilities Plan relies on previous hydrologic modeling results to provide the context for existing demands being placed on the City's storm drain system. These summarized flow results are meant to provide a high-level context for demands being placed on the City's storm drain system.

3.1 STORMWATER AND DRY WEATHER RUNOFF FLOW DEFINITIONS

Flows enter the infrastructure system in various ways from a variety of sources. As mentioned in Chapter 1, the stormwater management system and the network of storm drains and concrete-lined channels throughout the City is very complex. For the purpose of the modeling effort, flow calculations, and this report, the stormwater and dry weather runoff are defined as coming from five main sources:

- **Precipitation:** Precipitation which falls over the City;
- **Upstream Run On:** Flows that enter the City from tributary watersheds;
- **Groundwater Upwelling:** Groundwater that seeps into the MS4 or surface waterbodies due to rising groundwater table;
- **WRP Discharges:** Discharge from a WRPs to the MS4. Within the City, this occurs within the Los Angeles River Watershed.
- **Irrigation and Incidental Flow:** Irrigation applied within the City and other incidental flow. Although these flows are most often associated with dry weather flows, they are also considered for stormwater runoff since they influence soil moisture, basin storage volumes, recharge volumes, and evapotranspiration.

Combining the efforts from the three major agencies that operate and maintain the stormwater infrastructure system, including both green and grey infrastructure, outflows are defined in the following way:

- **Discharge to Streams/Rivers/Channels:** Runoff that reaches streams, rivers, or channels. Some of this water is infiltrated, evapotranspired, or diverted.

- **Discharge to the Ocean:** Runoff that reaches the ocean.
- **Water Supply & Quality Benefits (Capture and Use/Potable Water Offsets):** Runoff that is captured and stored for use on-site, most often after being diverted from the MS4.
- **Water Supply & Quality Benefits (Environmental and Habitat):** Runoff that passively infiltrates into the ground through permeable surfaces, such as green infrastructure. These are in areas of the City where there is no groundwater aquifer connectivity for the City or other regional pumpers to directly benefit from this water for water supply.
- **Water Supply & Quality Benefits (Groundwater Recharge/Direct Water Supply):** Runoff that is infiltrated into the City's groundwater aquifers via mid-size regional or large regional projects, such as drywells, infiltration basins, or spreading basins.
- **Evapotranspiration:** Runoff that is used by plants or evaporated directly.

3.2 WATERSHED MANAGEMENT AREA OVERVIEW

In previous watershed planning efforts, watershed management area (WMAs) were defined throughout the City based on major receiving water bodies. For the purposes of the One Water LA 2040 Plan, four WMAs are adopted from the recently completed WMP/EWMPs. In addition, in the recently completed SCMP, the areas tributary to the City were divided into 17 subwatersheds (15 of which contain City area), and a hydrologic model simulating stormwater inflow and outflow was completed according to the SCMP subwatershsed definition. For the purposes of the One Water LA 2040 Plan, the SCMP subwatersheds and the corresponding hydrological model outputs were combined to match the four WMAs. Figure 3.1 shows the WMAs along with the SCMP subwatersheds.

As depicted on Figure 3.1, both the study area of the SCMP and the WMP/EWMPs covered the City's entire jurisdiction. Despite different hydrologic models being used, the SCMP and the WMP/EWMPs were developed in close coordination with each other. Similar hydrologic input parameters were used to simulate precipitation and upstream run-on into the City's jurisdiction. In addition, both watershed planning efforts used similar assumptions for BMP simulation, such as programmatic BMP implementation rate, and distributed BMP type and configuration. Regarding the identification of regional BMPs, there was no overlap on projects between the various studies. In other words, no SCMP regional BMPs were included in the WMP/EWMPs, and vice-versa. However, the ULAR EWMP stated that structural regional BMPs proposed in the SCMP will be evaluated for eligibility towards the EWMP implementation target through its adaptive management framework.

A brief overview of each WMA and the corresponding EWMPs/WMP is presented in the subsections below.

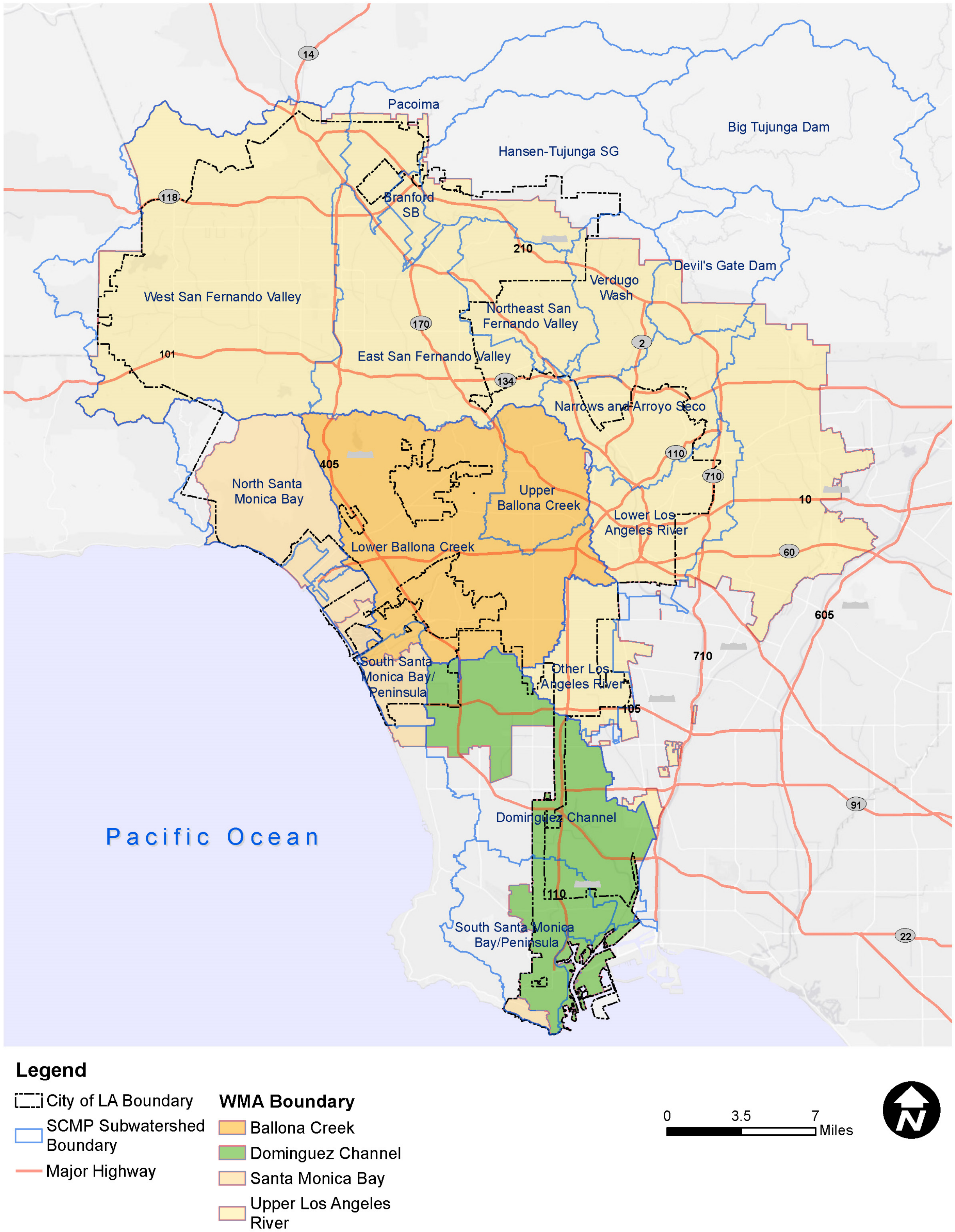

Figure 3.1 - WMA Boundaries and SCMP Subwatersheds within the City of LA
One Water LA 2040 Plan
Stormwater and Urban Runoff Facilities Plan

One Water LA

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3.2.1 Ballona Creek WMA

The BC WMA covers approximately 128 square miles and comprises the Cities of Beverly Hills and West Hollywood, and portions of the Cities of Los Angeles, Inglewood, Culver City, and Santa Monica, as well as unincorporated areas of the County of Los Angeles. Additionally, LACFCD owns and operates drainage infrastructure within incorporated and unincorporated areas in the watershed.

Collectively, Ballona Creek and Estuary are approximately 9.5 miles long, from Cochran Avenue to the Pacific Ocean. Major tributaries to Ballona Creek include Sepulveda Canyon Channel and Centinela Creek. Other water bodies in the watershed include the Del Rey Lagoon and the Ballona Wetlands, which are both connected to the Ballona Estuary through tide gates. The City constitutes 82.5 percent of the BC WMA and is the responsible agency for the Del Rey Lagoon, whose tributary area is approximately 25 acres. Approximately 460 acres of the Ballona Wetlands are located within the BC WMA and the remaining portion (approximately 166 acres) is located in the MdR WMA. The Ballona Wetlands are partly owned and/or managed by the California Department of Fish and Wildlife and the State Land Commission.

3.2.2 Dominguez Channel WMA

The DC WMA is located within the southern portion of Los Angeles County and encompasses approximately 79 square miles. The DC WMA is comprised of the cities of El Segundo, Hawthorne, Inglewood, Lomita, Los Angeles, and Unincorporated County. The City of Los Angeles constitutes 24 percent of the DC WMA.

The DC WMA empties into the northeast side of the Consolidated Slip[14], the most upstream portion of the Los Angeles Harbor, located downstream of the Dominguez Channel Estuary. The Estuary is 8.2 miles in length, spanning from the downstream end of the lined portion of the Dominguez Channel (6.7 miles in length) to the Los Angeles Harbor. Approximately 2.2 miles of the Dominguez Channel Estuary is within the DC WMG jurisdiction. The Torrance Lateral is 3.4 miles in length and tributary to the Dominguez Channel Estuary. Approximately 1.8 miles of the Torrance Lateral is within the DC WMA (DC EWMP Group, 2016).

3.2.3 Santa Monica Bay WMA

The boundary of SMB, as defined for the National Estuary Program, extends from the Los Angeles/Ventura County line to the northwest and to Point Fermin located on the Palos Verdes Peninsula to the southeast. The land area that drains into SMB follows the crest of the Santa Monica Mountains on the north to Griffith Park, then extends south and west across the Los Angeles coastal plain to include the area east of Ballona Creek and north of

[14] Consolidated Slip is a harbor located in the East Basin area of the Port of Los Angeles.

the Baldwin Hills. South of Ballona Creek, the natural drainage is a narrow coastal strip between Playa del Rey and Palos Verdes (LARWQCB, 2011).

Due to its extensive geographic coverage, the SMB watershed is divided into smaller subwatersheds, including Jurisdictions 1 through 7 and the MdR subwatershed. Several subwatershed jointly submitted one WMP/EWMP. The City is a participating agency of the SMB J2/3 EWMP, MdR EWMP, and SMB J7 WMP. For the purpose of the One Water LA 2040 Plan, these three EWMP WMAs are combined and herein referred as the SMB WMA.

3.2.3.1 Marina del Rey

The MdR is a small subwatershed within the SMB Watershed. It is bordered by the SMB J2 and J3 to the west and the BC WMA to the north and east. The MdR Harbor is open to the SMB through the main channel and shares a common breakwater with BC. The MdR WMA also includes the Venice Canals and the tributary area to the Ballona Lagoons, which discharge to the MdR, near the exit to SMB.

3.2.3.2 Jurisdictions 2 & 3

The SMB J2/3 is a subwatershed within the SMB WMA, encompassing 54 square miles, with exclusion of areas for which the MS4 Permittees do not have jurisdiction, including land owned by the State of California, Caltrans, the United States Government, and an area of the Chevron Facility located in the City of El Segundo. The responsible agencies consist of the City of El Segundo, City of Los Angeles, City of Santa Monica, County of Los Angeles, and LACFCD. The City constitutes 76 percent of the SMB J2/3 WMA.

3.2.3.3 Jurisdiction 7

The SMB J7 is located within the southern portion of the SMB SMA. It consists of land owned by the City and includes LACFCD infrastructure, totaling approximately 1.5 square miles. The J7 WMP agencies include the City of Los Angeles and LACFCD; the City constitutes 98.4 percent of the J7 subwatershed.

3.2.4 Upper Los Angeles River WMA

The area included in the ULAR EWMP is the largest of all the EWMP areas in Los Angeles County – approximately 485 square miles. The City constitutes 59 percent of the ULAR WMA.

The major receiving water within the ULAR WMA is the Los Angeles River. The Los Angeles River is approximately 51 miles long and is segmented into six reaches by the California Water Quality Control Plan, Los Angeles Region (Basin Plan). Five of the six reaches lie within the ULAR EWMP area. These five reaches are listed below (listed from upstream to downstream):

- Reach 6 begins at the headwaters of the Los Angeles River (the confluence of Arroyo Calabasas and Bell Creek) and extends to Balboa Boulevard
- Reach 5 runs from Balboa Boulevard through the Sepulveda Basin
- Reach 4 runs from Sepulveda Dam to Riverside Drive
- Reach 3 runs from Riverside Drive to Figueroa Street
- Reach 2 runs from Figueroa Street to Carson Street

3.3 MODELED STORMWATER FLOWS

Based on the model runs completed for the SCMP, the WMP/EWMPs, and a cross check of project metrics, the existing distribution of average annual flows in the City were analyzed based on historical rainfall records and existing development conditions. Using the Load Simulation Program in C++ (LSPC) hydrologic model, the City and the areas tributary to the City were divided into 17 subwatersheds (15 of which contain City area), and the average annual inflows and outflows of stormwater to each subwatershed were quantified between water year[15] 1989 and water year 2011 (LADWP, 2015).

As described earlier in the section, the SCMP subwatershed inflows and outflows were combined with those from the SCMP modeling to be presented in terms of WMAs. A summary of the hydrologic model results by WMP/EWMP watershed management area are shown in Table 3.1.

[15] A water year is defined from October 1st to September 30th.

Table 3.1 Distribution of Average Annual Stormwater Flows
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

			Ballona Creek		Dominguez Channel		Santa Monica Bay[2]		Upper Los Angeles River		City Total	
			(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)
Inflows		Precipitation	84	94,100	12	13,400	36	40,300	234	262,100	**366**	**409,900**
Inflows		Runoff from Upstream of City	10	11,200	20	22,400	3	3,400	102	114,300	**135**	**151,300**
Inflows		Irrigation	43	48,200	8	9,000	13	14,600	156	174,700	**220**	**246,500**
Inflows		WRP Discharge[3]	0	0	0	0	0	0	39	43,700	**39**	**43,700**
Inflows		Groundwater Upwelling	0	0	0	0	0	0	4	4,500	**4**	**4,500**
		Total Inflow	**137**	**153,500**	**40**	**44,800**	**52**	**58,300**	**535**	**599,300**	**764**	**855,900**
Outflows	Discharge	To Stream/ River/Channel	59	66,100	29	32,500	16	17,900	276	309,200	**380**	**425,700**
Outflows	Discharge	To Ocean[1]	59	66,100	27	30,200	17	18,900	250	279,900	**353**	**395,100**
Outflows	Water Supply & Quality Benefits	Capture & Use	0	0	0	0	0	100	0	100	**0**	**200**
Outflows	Water Supply & Quality Benefits	Environmental & Habitat	8	9,000	2	2,300	4	4,600	10	11,300	**24**	**27,200**
Outflows	Water Supply & Quality Benefits	Groundwater Recharge	3	3,400	0	0	0	0	55	61,600	**58**	**65,000**
Outflows		Evapotranspiration	67	75,000	11	12,300	31	34,700	220	246,400	**329**	**368,400**
		Total Outflow	**137**	**153,500**	**40**	**44,800**	**52**	**58,300**	**535**	**599,300**	**764**	**855,900**

Notes:

(1) Discharge to ocean does not include discharge diverted from channels, rivers streams. The total outflow is computed based on discharge to streams and channels only

(2) Although a separate watershed management effort was completed for SMB J2/3, SMB J7, and MdR, these three watersheds have been merged together as "Santa Monica Bay Watershed Management Area" for this Facility Plan.

(3) Discharges from the Hyperion and Terminal Island WRPs were not included since the these two WRPs directly discharge into the ocean

Abbreviations:

mgd = million gallons per day; AFY = acre-feet per year; WRP = water reclamation plant

Table 3.1 presents estimates of inflow based on precipitation, flows entering the City from upstream systems, and irrigation water. The sum of these three flow sources provides an estimate of total inflow to the City for the average year.

Outflows are presented in terms of the six categories listed above. Since some losses occur within rivers, streams, and channels due to infiltration, evapotranspiration, and diversions, there is a difference between the discharge to streams/channels and the discharge to the ocean. Ultimately, the sum of the runoff that discharges to the ocean, is used for water supply benefits, or is evapotranspired equals the estimated total inflow.

For the modeled existing condition, approximately 764 million gallons (MG) of total inflow to the City is estimated to occur per day in average. Of this inflow, approximately 380 MG of runoff is estimated to make its way to receiving water channels and streams. After accounting for losses and diversions from these streams and channels, approximately 353 MG (46 percent of the total inflow) is estimated to discharge from the storm drain system into the ocean. 353 MG (46 percent of the total inflow) is either evaporated from the City or is infiltrated into unusable aquifers, and approximately 58 MG (8 percent of the total inflow) is infiltrated through permeable areas or in centralized spreading grounds.

In order to bracket how the inflows and outflows for each subwatershed change during dry and wet years, the total inflows and outflows were modeled on the wettest and driest years between 1989 and 2011. Annual precipitation totals from 71 rain gauges that on or upstream of City were examined and the average annual precipitation depth in this period is 18.3 inches. The wettest year (2005) experienced 44.6 inches of precipitation, and the driest year (2007) experienced just 5.3 inches of precipitation. The modeling results for the wettest and driest years are shown in Table 3.2 and Table 3.3 respectively.

In the wettest year condition, of the 1,636 MG of total inflow to the City on a daily average, approximately 1,040 MG (64 percent of the total inflow) was discharged through the storm drain system to the ocean, while 114 MG (7 percent of the total inflow) was recharged and 482 MG (29 percent of the total inflow) was either evaporated from the City or infiltrated into Non-potable aquifers.

In the driest year condition, of the 359 MG of total inflow to the City on a daily average, approximately 105 MG (29 percent of the total inflow) was discharged through the storm drain system to the ocean. A majority of the inflow to the City, approximately 241 MG (67 percent of the total inflow), was evaporated or infiltrated into Non-potable aquifers, and only 13 MG (4 percent of the total inflow) was recharged. This disparity occurs because the irrigation volume is roughly the same in drier years as in the average and wetter years, but the precipitation and run-on is greatly reduced.

Table 3.2 Distribution of Stormwater Flows for the Wettest Year (WY 2005)
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

			Ballona Creek		Dominguez Channel		Santa Monica Bay[2]		Upper Los Angeles River		City Total	
			(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)
Inflows		Precipitation	218	244,200	28	31,400	87	97,500	562	629,500	**895**	**1,002,600**
Inflows		Runoff from Upstream of City	27	30,200	49	54,900	9	10,100	394	441,300	**479**	**536,500**
Inflows		Irrigation	43	48,200	8	9,000	12	13,400	156	174,700	**219**	**245,300**
Inflows		WRP Discharge[3]	0	0	0	0	0	0	39	43,700	**39**	**43,700**
Inflows		Groundwater Upwelling	0	0	0	0	0	0	4	4,500	**4**	**4,500**
Inflows		**Total Inflow**	**288**	**322,600**	**85**	**95,300**	**108**	**121,000**	**1,155**	**1,293,700**	**1,636**	**1,832,600**
Outflows	Discharge	To Stream/ River/Channel	177	198,300	68	76,200	52	58,200	804	900,600	**1,101**	**1,233,300**
Outflows	Discharge	To Ocean[1]	178	199,400	67	75,000	53	59,300	742	831,000	**1,040**	**1,164,700**
Outflows	Water Supply & Quality Benefits	Capture & Use	0	0	0	0	0	100	0	100	**0**	**200**
Outflows	Water Supply & Quality Benefits	Environmental & Habitat	16	17,900	3	3,500	10	11,200	22	24,600	**51**	**57,200**
Outflows	Water Supply & Quality Benefits	Groundwater Recharge	5	5,600	0	0	0	0	109	122,100	**114**	**127,700**
Outflows		Evapotranspiration	89	99,700	15	16,800	45	50,400	282	315,900	**431**	**482,800**
Outflows		**Total Outflow**	**288**	**322,600**	**85**	**95,300**	**108**	**121,000**	**1,155**	**1,293,700**	**1,636**	**1,832,600**

Notes:

(1) Discharge to ocean does not include discharge diverted from channels, rivers streams. The total outflow is computed based on discharge to streams and channels only

(2) Although a separate watershed management effort was completed for SMB J2/3, SMB J7, and MdR, these three watersheds have been merged together as "Santa Monica Bay Watershed Management Area" for this Facility Plan.

(3) Discharges from the Hyperion and Terminal Island WRPs were not included since the these two WRPs directly discharge into the ocean

Table 3.3 Distribution of Stormwater Flows for the Driest Year (WY 2007)
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

			Ballona Creek		Dominguez Channel		Santa Monica Bay[2]		Upper Los Angeles River		City Total	
			(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)
Inflow in mgd (AFY)		Precipitation	23	25,800	3	3,400	10	11,200	65	72,800	**101**	**113,200**
		Runoff from Upstream of City	2	2,200	4	4,500	1	1,100	12	13,400	**19**	**21,200**
		Irrigation	38	42,600	7	7,800	12	13,400	139	155,700	**196**	**219,500**
		WRP Discharge[3]	0	0	0	0	0	0	39	43,700	**39**	**43,700**
		Groundwater Upwelling	0	0	0	0	0	0	4	4,500	**4**	**4,500**
		Total Inflow	**63**	**70,600**	**14**	**15,700**	**23**	**25,700**	**259**	**290,100**	**359**	**402,100**
Outflows in mgd (AFY)	Discharge	To Stream/ River/Channel	13	14,600	6	6,700	3	3,400	84	94,100	**106**	**118,800**
		To Ocean[1]	13	14,600	6	6,700	3	3,200	83	92,900	**105**	**117,400**
	Water Supply Benefits	Capture & Use	0	0	0	0	0	100	0	100	**0**	**200**
		Environmental & Habitat	2	2,200	0	0	1	1,100	2	2,200	**5**	**5,500**
		Groundwater Recharge	1	1,200	0	0	0	0	12	13,400	**13**	**14,600**
		Evapotranspiration	47	52,600	8	9,000	19	21,300	162	181,500	**236**	**264,400**
		Total Outflow	**63**	**70,600**	**14**	**15,700**	**23**	**25,700**	**259**	**290,100**	**359**	**402,100**

Notes:

(1) Discharge to ocean does not include discharge diverted from channel, streams and rivers. The total outflow is computed based on discharge to streams and channels only

(2) Although a separate watershed management effort was completed for SMB J2/3, SMB J7, and MdR, these three watersheds have been merged together as "Santa Monica Bay Watershed Management Area" for this Facility Plan.

(3) Discharges from the Hyperion and Terminal Island WRPs were not included since the these two WRPs directly discharge into the ocean

The modeling analysis was conducted in parallel with the development of the City-led EWMPs. Despite reasonable differences in model setup and assumed parameters, the overall results are similar. Please refer to Appendix I for a summary of EWMP stormwater flow modeling.

Since the end of the modeling period (Water Year 2011), the City has undertaken significant implementation efforts to capture additional stormwater. These efforts have included the planning, design, and installation of numerous regional and distributed BMPs. These BMPs will be implemented under various programs including the WMP/EWMPs within the City, the LID Ordinance, Proposition O, the Green Streets Policy, and the Stormwater Capture Master Plan.

The City's stormwater plans predict how much volume could be captured in distributed and regional BMPs implemented strategically throughout the City. Capture volumes developed as part of these plans were used to adjust the existing runoff, aquifer recharge, and evapotranspiration in the City to reflect 5, 10, 15, and 20 years of stormwater infrastructure investment.

Over the next 25 years, additional distributed, regional, and centralized infiltration BMPs will be implemented in areas conducive to recharge, provided funding is available. In addition, other infiltration BMPs, along with capture and use BMPs, will be implemented in areas where recharge is not conducive, which will reduce runoff and potable water demand and provide water resource benefits other than groundwater recharge. Although the direct impacts of such efforts have yet to be quantified in terms of stormwater flow rates within the MS4 network, the City estimated an average annual capture volume of 29,000 MG of stormwater for the average storm year based on the implementation of all EWMP-defined BMPs. Please refer to Appendix I for additional details.

3.4 HISTORICAL DRY WEATHER RUNOFF

Due to the significant spatial variation in the quantity of dry weather runoff throughout the City, high-resolution modeling efforts have not been undertaken to quantify such flows. Rather, where available, historical monitoring records are relied upon to understand urban runoff flows within the City's MS4.

Dry weather flows within the City include incidental urban runoff, WRP discharges, and groundwater upwelling:

- **Incidental urban runoff:** This type of runoff occurs as a result of nuisance flows, such as irrigation overspray, car washes, subsurface inflows to broken storm drains, dewatering activities that discharge to the storm drain system, etc. Based on analyzing the LFD monitoring data from 2012 to 2016, the median value for incidental runoff is approximately 84 gallons per day (gpd) per impervious acre of land. This value is significantly lower than the incidental urban runoff rate determined from the

City of Los Angeles Water Integrated Resource Plan (190 gpd per impervious acre) (LASAN & LADWP, 2004). Over the past ten years, LASAN and other public agencies have implemented a series of watershed management projects and programs, including the Proposition O projects, to reduce dry weather runoff. Additionally, LADWP and other water supply agencies have promoted water conservation efforts so there appears to be an overall downward trend in dry weather flow rates. The estimated median flow rate of 84 gpd per impervious acre is applied throughout the City.

- **WRP discharge:** The WRPs contributing to urban runoff are the Donald C. Tillman Water Reclamation Plant (DCTWRP), the Los Angeles-Glendale Water Reclamation Plant (LAGWRP), and the Burbank Water Reclamation Plant (BWRP). These three WRPs are estimated to contribute a total of 39 MG of water per day (mgd) of dry weather flow, according to the dry weather flow model discussed in the *One Water LA: Los Angeles River Low-Flow Study DRAFT* (2016).
- **Groundwater upwelling:** This type of discharge can occur in soft bottom reaches of the rivers throughout the City and in areas where shallow groundwater tables intersect the land surface.

3.4.1 Diverted Runoff

In a number of locations within the City, LFDs have been installed to divert runoff flows from the storm drain for treatment or storage. For LFDs that directly connect to the sanitary sewer, one hundred percent of dry weather flows within the storm drain upstream of a LFD are diverted to the sanitary sewer and conveyed to a WRP for treatment. In some cases, stormwater runoff are routed to an infiltration basin or urban runoff treatment facility, (e.g., Mar Vista Recreation Center Stormwater BMP) with all excess flows being routed to the sanitary sewer or back to the storm drain. These efforts are being implemented by LASAN to enhance water quality in the City.

Although LFDs have historically been implemented primarily for dry weather flow reduction and treatment, LFDs can also operate during smaller wet weather events to improve water quality during storm events.

To-date, LASAN owns and operates 21 LFDs. Flow records for 13 have been provided by the City and are summarized in Table 3.4. Additional LFD projects have been proposed by the City and are further evaluated in Chapter 7.

For the watersheds in which these LFDs are located, the average flow rate information can serve as an estimate of existing urban runoff flows from these areas.

Table 3.4 Average Annual LFD Flows
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

			Average Annual(1)	
Plant	**Address**	**Outlet**	**Volume (MG)**	**Rate (gpm)**
#647	Venice Sw-1600 Main St. Venice	HWRP	4.2	8.1
#701	S.LA Wetlands 5413 Avalon Bl. L.A. 90011	HWRP	8.5	16.1
#710	8th St. LFD 2460 1/2 Enterprise Av. L.A.	HWRP	15.5	29.6
#730	Palisades Park-15100 1/2 Pacific Palisades 90272	HWRP	107.6	204.6
#732	Marquez-17013 1/2 P.C.H. Pacific Palisades 90272	HWRP	2.9	5.5
#733	1521 1/2 W. Channel Rd. Pacific Palisades 90272	HWRP	296.0	563.1
#734	Temescal Lf-15733 1/2 P.C.H. Pacific Palisades 90272	HWRP	47.4	90.1
#739	Bayclub-230 1/2 Arno Wy. Pacific Palisades 90272	HWRP	0.7	1.4
#740	Westside Park - 2785 Clyde St. L.A. 90016	HWRP	3.7	7.1
#741	Mar Vista Park - 11430 Woodbine St. Mar Vista 90066	HWRP	7.6	14.4
#742	Penmar	HWRP	1.8	3.4
#747	Thornton-713 1/2 Main St. Venice	HWRP	6.8	13.0
#750	7600 Imperial Hwy. Vista Del Mar	HWRP	3.6	6.8

Note:
(1) Calculated based on available flow monitoring data from July 2012 to March 2016.
Abbreviations:
HWRP = Hyperion Water Reclamation Plant; gpm = gallons per minute

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EXISTING STORMWATER SYSTEM

The components of the stormwater collection system within the City – including facilities owned, operated, and/or maintained by other agencies within the City – are summarized within this section of the Facilities Plan.

In order to identify and summarize both existing infrastructure and planned future infrastructure, significant GIS data covering the City was collected and compiled. These data, along with other relevant data, have been summarized in tables and figures herein. A complete list of all data analyzed as part of the Stormwater and Urban Runoff Facilities Plan can be found in Appendix H.

4.1 KEY PLAYERS: ROLE AND RESPONSIBILITIES

The stormwater infrastructure network within the City of Los Angeles is a complex system of streets, catch basins, pipes, channels, basins, pump stations, and other infrastructure that work collectively to manage stormwater and urban runoff. Not only is this system vast and multi-faceted, but it is owned, operated, and/or maintained by numerous agencies including the City, Los Angeles County, State of California, and Federal Government.

There are three primary agencies that have historically been responsible for the design, construction, and maintenance of the grey stormwater infrastructure to meet the City's needs related to stormwater management. These agencies are:

- City of Los Angeles Department of Public Works
- Los Angeles County Flood Control District
- US Army Corps of Engineers

In addition, there are several other agencies that, since the 1990s or later, have been incorporating green stormwater infrastructure projects, CIPs, and management decisions into their activities to comply with stormwater discharge regulations.

This section provides a brief introduction on the roles and responsibilities of applicable agencies with respect to stormwater and urban runoff management. Specific projects and programs operated or planned by each agency are further discussed in Section 4.3.

Many challenges exist when it comes to planning, designing, and implementing stormwater infrastructure projects within the City, due in large part to the number of agencies involved in these processes and the roles these agencies play.

Figure 4.1 shows some examples of various interactions between the City and other partner agencies. These are sample examples and are not a comprehensive list of all ongoing initiatives implemented or in-progress. The examples shown in Figure 4.1 have been arranged in a manner to fit within some of the objectives established for this Facilities Plan, including water quality improvement, water supply augmentation, flood control, and management, and other drivers such as community beatification, open space and recreation and habitat enhancement.

Figure 4.1 Examples of Ongoing Collaborative Initiatives

Some of the examples of ongoing initiatives shown on Figure 4.1 are listed below:

- Collaborative governance approach by instituting collaborative planning and budgeting processes aimed to facilitate increased and reliable funding for integrated multi-purpose projects.
- Opportunities to align diverse infrastructure agencies' goals, investments, and programs.
- Collaboration to advance green infrastructure and community resilience.
- Wetlands protection and restoration.
- Safe, healthy, and clean coastal waters and watersheds.
- Community Planning with Green Alleys and Living Streets.
- Accessibility to open space, the Los Angeles River, and recreation opportunities.

- Connectivity opportunities through Los Angeles River bike path and enhancement of railroad properties to facilitate better safe connections.

4.1.1 City of Los Angeles Collaboration

The following City departments, bureaus, and agencies are involved in managing stormwater within the City, though the roles and responsibilities of each vary widely.

4.1.1.1 Department of Public Works

The City of Los Angeles Department of Public Works (LADPW) is the primary department responsible for planning, managing, operating, and maintaining the City's stormwater infrastructure system. LADPW has three primary bureaus that oversee the City's stormwater management system: LASAN, LABOE, and the Los Angeles Bureau of Street Services (LABSS).

LASAN is responsible for the following stormwater management activities:

- Manage and oversee the City's stormwater program;
- Develop stormwater pilot projects;
- Protect beneficial uses of receiving waters;
- Comply with water quality mandates;
- Plan and develop projects for water quality improvements;
- Support and manage the City's Green Streets programs;
- Operate and maintain City-owned stormwater conveyance infrastructures;
- Upgrade existing stormwater control measures and/or ordinances;
- Report on the City's regulatory compliance
- Provide water supply benefits; and
- Support and provide flood protection.

LABOE serves as the engineering arm of the City, and is responsible for the following stormwater-related activities:

- Design and construct stormwater CIP projects for water quality improvement and reduction in flood risk;
- Maintain GIS modeling and mapping;
- Develop a program for regular condition assessment on stormwater facilities;
- Identify ways to mitigate local flood hazards;

- Identify and implement sustainable design (turf removal, Leadership in Energy and Environmental Design [LEED] projects, etc.);
- Track FEMA responsibilities and reporting; and
- Coordinate flooding requirements and O&M responsibilities between the USACE and LACFCD.

LABSS supports stormwater management within the City, particularly in light of the planned implementation of many green infrastructure projects using LID principles within the PROW. LABSS is responsible for all work within the PROW, including landscaping, curb and gutter modifications, and catch basin retrofits.

Together, LABSS, LABOE, and LASAN work with other City departments, such as Department of Recreation and Parks (LARAP) and Department of Transportation (LADOT); other partner agencies outside the City; and non-profit organizations to coordinate the implementation and O&M of stormwater projects and efforts. Given the above listed responsibilities, LADPW has the bulk of responsibility for the stormwater infrastructure for the City.

4.1.1.2 Department of Water and Power

LADWP provides water and electricity service to the City's nearly four million residents and businesses. In this role, LADWP manages the City's water rights, including the pueblo rights which recognize the original settlement of Los Angeles under the Spanish government granting all native waters within the San Fernando Basin and the Upper Los Angeles River to the City. To realize these rights, LADWP owns and co-operates (with the LACFCD) several spreading grounds that capture stormwater runoff in the Upper Los Angeles River area for groundwater recharge.

With different legal and jurisdictional approaches toward stormwater, LADWP formed the Watershed Management Group in 2008 to evaluate the benefits of capturing stormwater. For purposes of augmenting water supply, both the Manager of Planning and the Deputy Manager of Water began investigating stormwater opportunities for water supply, including tours and discussions with other water agencies in Southern California.

These efforts resulted in LADWP awarding the contract for development of its SCMP in July 2013, relying on support from the nonprofit environmental advocacy group TreePeople, as well as other advisors. The SCMP evaluated existing stormwater capture efforts, analyzed the role of stormwater capture in the City's water supply portfolio, and provided recommendations for future stormwater capture opportunities throughout the City, and in some cases in areas tributary to the City. The SCMP was finalized in August 2015.

LADWP is not directly responsible for stormwater infrastructure within the City; however, under the water supply augmentation regulation framework outlined in Section 2.2, LADWP is actively seeking partnerships to implement various types of stormwater projects -

distributed, mid-size regional, and large regional - if there is a direct water supply, water conservation, and/or groundwater recharge component.

4.1.1.3 Department of Recreation and Parks

LARAP is charged with promoting community welfare through programs and services at over 420 parks City-wide. LARAP has been actively implementing LID measures to recycle and use stormwater and reduce dry weather runoff. City-owned parks are also selected as regional centralized stormwater capture locations and are a critical component to the City-led EWMPs.

4.1.1.4 Department of City Planning

The City of Los Angeles Department of City Planning (LADCP) has the responsibility of preparing, maintaining, and implementing a General Plan for the City, providing guidance in areas such as transportation, housing, open space, and land use elements. LADCP supports the integration of green infrastructure through LADCP-led programs such as Clean Up Green Up, Complete Street, Great Streets Initiative, and the Mobility Plan 2035.

4.1.1.5 Department of Building Safety

LADBS is responsible for the development of the building and safety code, compliance with said code, and relevant plan checks. Although LADBS is not directly involved with stormwater management, stormwater management is indirectly linked to a selection of LADBS's programs, such as the Green Building Code, Graywater System Permits, and Recycled Water in Concrete.

4.1.1.6 Department of Transportation

LADOT is responsible for the planning, design, construction, and operations of transportation facilities in the City. Although LADOT is not directly involved with stormwater management, several LADOT-led street development programs, including the Complete Street (in collaboration with LADCP), People Street, and Vision Zero, have the potential to be integrated with the City's Green Streets Program to incorporate green infrastructure into LADOT-led projects to achieve stormwater management benefits.

4.1.1.7 Department of General Services

The City of Los Angeles Department of General Services (LAGSD), also known as General Services Division, provides City leadership in the management of facilities, equipment, supplies, maintenance, and other support services to City departments, residents, and elected officials. Notably, LAGSD promotes the use of smart irrigation controllers on public parcels owned by other City entities.

4.1.1.8 Los Angeles World Airports

Los Angeles World Airports (LAWA) is a City department that owns and operates three airports in the Los Angeles Region: Los Angeles International, Los Angeles/Ontario International, and Van Nuys. LAWA manages a portion of stormwater from the airports through on-site stormwater management systems, and collaborates with other City departments to manage the remaining stormwater runoff off-site. LAWA incorporates stormwater management planning into various airport master plan activities.

Although LAWA is not a MS4 Permittee, it is committed to collaborate with the LADPW on future regional stormwater management project planning in terms of providing project siting opportunities and sharing project costs.

4.1.1.9 Port of Los Angeles

The Port of Los Angeles (POLA) is a gateway for international commerce, located in San Pedro Bay, consisting of 7,500 acres of land and water along 43 miles of waterfront, with 27 passenger and cargo terminals. Port Engineering is the primary department responsible for stormwater management in POLA.

4.1.1.10 Los Angeles Zoo

The Los Angeles Zoo, including the land, facilities, and animals, is owned by the City and home to more than 250 species of mammals, birds, amphibians, and reptiles. In addition, the Zoo's botanical collection includes several planted gardens with over 800 different plant species. The Los Angeles Zoo is actively seeking opportunities to implement stormwater BMPs to reduce urban runoff and treat stormwater runoff on-site.

4.1.1.11 LARiverWorks – Los Angeles RiverWorks Office

The LARiverWorks is a specialized team within the Mayor's office. The team, in partnership with USACE and LADPW, facilitates LA River revitalization and restoration efforts. Stormwater-related programs and efforts include LA River CIP projects, LA Greenway 2020, and the LA River Revitalization Master Plan.

4.1.1.12 Los Angeles Unified School District

Los Angeles Unified School District (LAUSD) is the City's school district, enrolling 640,000 students at over 900 schools and nearly 190 charter schools. District boundaries cover 720 square miles, including the City as well as all or parts of 31 smaller municipalities and several unincorporated sections of Southern California. As a non-designated Phase II MS4 Permittee, LAUSD actively collaborates with City and County entities to implement stormwater management BMPs in accordance with their Stormwater Technical Manual (LAUSD, 2009). In addition, LAUSD-owned properties are considered important potential parcels for the siting of future regional centralized stormwater capture BMP projects through the WMP/EWMP adaptive management framework.

4.1.2 Los Angeles County

4.1.2.1 Los Angeles County Department of Public Works

The Los Angeles County Department of Public Works (LACDPW) provides public infrastructure and municipal services to the residents of Los Angeles County. LACDPW is responsible for the design, construction, operation, and maintenance of roads, traffic signals, bridges, airports, sewers, and flood control, water supply, water quality, and water conservation facilities. Its diverse operations fall within six core service areas: Transportation, Water Resources, Waste Management, Public Buildings, Development Services, and Emergency Management. The water resources branch of LACDPW seeks to provide sustainable water supplies and healthy watersheds while reducing flood risk for the communities in Los Angeles County.

One of the ways LACDPW has sought to achieve this goal is through the implementation of multi-benefit, collaborative, centralized/regional BMP projects (e.g., the Rory M. Shaw Wetlands Park Project). Such projects are often designed to not only provide flood control protection, but also benefits such as environmental ecosystem restoration, water quality enhancement, and recreational areas.

In 1984, LACDPW entered into an operational agreement with the LACFCD, agreeing to take responsibility for stormwater planning and operations activities. In addition to overseeing the LACFCD, the LACDPW is also responsible for planning, implementing, and maintaining stormwater management systems for all unincorporated County areas.

LACDPW is an active member of the One Water LA Steering Committee and has participated in the Stormwater Facilities Plan working group meetings, demonstrating their commitment to collaborate on stormwater management strategies for the benefit of Los Angeles.

4.1.2.2 Los Angeles County Flood Control District

In 1915, the Los Angeles County Flood Control Act established the LACFCD and empowered it to manage flood risk and conserve stormwater for groundwater recharge. Since its establishment, LACFCD has coordinated with the USACE to develop and construct a comprehensive stormwater infrastructure network that provides for the regulation and control of flood waters through the use of reservoirs and flood channels, storm drains, reservoirs, spreading grounds, debris basins, stormwater lift stations, and LFDs.

Unlike cities and counties, the LACFCD does not own or operate any municipal sanitary sewer systems, public streets, roads, or highways. The LACFCD operates and maintains storm drains and other accessory drainage infrastructure within its service area. The LACFCD has no planning, zoning, development permitting, or other land use authority within its service area. The permittees that have such land use authority are responsible under the MS4 Permit for inspecting and controlling pollutants from industrial and commercial facilities, development projects, and development construction sites (Part II.E, p. 17).

The MS4 Permit language clarifies the unique role of the LACFCD in stormwater management programs:

> "[G]iven the LACFCD's limited land use authority, it is appropriate for the LACFCD to have a separate and uniquely-tailored stormwater management program. Accordingly, the stormwater management program minimum control measures imposed on the LACFCD in Part VI.D of this Order differ in some ways from the minimum control measures imposed on other Permittees. Namely, aside from its own properties and facilities, the LACFCD is not subject to the Industrial/Commercial Facilities Program, the Planning and Land Development Program, and the Development Construction Program. However, as a discharger of storm and non-stormwater, the LACFCD remains subject to the Public Information and Participation Program and the Illicit Connections and Illicit Discharges Elimination Program. Further, as the owner and operator of certain properties, facilities and infrastructure, the LACFCD remains subject to requirements of a Public Agency Activities Program." (Part II.F, p. 18.)

As a participating agency of various City-led WMP/EWMPs, the LACFCD has committed to responsibilities above-and-beyond its obligations under the 2012 MS4 Permit. For example, the LACFCD is committed to implementing certain elements of the Public Information and Participation Program (PIPP), such as maintaining a county-wide hotline and website for public reporting and general stormwater management information, broadcasting public service announcements, and conducting regional advertising campaigns. The LACFCD is committed to the implementation of certain regional elements of the monitoring program as well, such as continuing to operate the seven existing mass emission sampling stations.

4.1.2.3 Los Angeles County Department of Parks and Recreation

The Los Angeles County Department of Recreation and Parks (LACDPR) is responsible for promoting community welfare through programs and services at over 180 parks County-wide. One such example is the #OurParks program, which seeks to support local parks and open space in LA County to benefit children and communities throughout the County. LACDPR has been actively implementing LID measures to recycle and use stormwater and reduce dry weather runoff. County-owned parks such as Ladera Park are also important regional centralized stormwater capture locations and are a critical component to the City-led EWMPs.

4.1.2.4 Los Angeles County Sanitation District

Founded in 1923, the LACSD (formerly known as the County Sanitation Districts of Los Angeles County) provides wastewater and solid waste management services to about

5.5 million people in Los Angeles County. The service area covers approximately 824 square miles and encompasses 78 cities, including the City of Los Angeles, and unincorporated County areas (LACSD, n.d.).

Via the effective implementation of LFDs, LACSD provides treatment of diverted urban runoff and stormwater from City and LACFCD storm drains. Section 305 of the LACSD Wastewater Ordinance specifies that no dry weather runoff or stormwater generated from >0.1 inch rainfall shall be discharged to the LACSD's sewage system except where prior approval has been obtained from a LACSD chief engineer. The Ordinance requires the use of LACDPW-specified stormwater devices to divert excess stormwater and dry weather runoff to an approved stormwater drainage system (LACSD, 2012).

The LACSD operates multiple water reclamation projects, including the award-winning Montebello Forebay Groundwater Recharge Project. As summarized in Section 2.2, SB 485 authorizes LACSD to acquire, construct, operate, maintain, and furnish facilities for the diversion, management, and treatment of stormwater and dry weather runoff. SB 485 initiated the collaboration among LACSD and other county and local stormwater management agencies, such as LACFCD and LABSS, to collaborate and explore opportunities of management stormwater and dry weather runoff for beneficial uses. As a result, LACSD is a potential participant within the One Water framework, particularly with the opportunity of water supply offsets assisting local jurisdictions within LACSD's service area to comply with stormwater-related regulatory requirements.

4.1.2.5 Los Angeles County Metropolitan Transportation Authority

Los Angeles County Metropolitan Transportation Authority (Metro) is a County agency that is responsible for the planning, coordination, design, construction, and operation of the County's public transit system. Metro manages stormwater runoff from right-of-ways through various structural BMPs, which is part of the Metro Environmental Management System (EMS). Although Metro is not a MS4 Permittee, it is committed to collaborate with LADPW and LACDPW for implementing watershed management projects, including the installation of green infrastructure on Metro right-of-ways that capture and treat stormwater and urban runoff.

4.1.3 State Agencies

4.1.3.1 California Department of Transportation

Caltrans is responsible for the design, construction, management, and maintenance of more than 50,000 miles of State highway system, including freeways, bridges, tunnels, ancillary facilities, and related properties, and is subject to the permitting requirements of Clean Water Act section 402(p). Caltrans' discharges consist of stormwater and non-stormwater discharges from State owned right-of-ways.

Before July 1999, discharges from Caltrans' MS4 were regulated by individual NPDES permits issued by the RWQCBs. On July 15, 1999, the SWRCB issued a statewide permit (Order No. 99-06-DWQ), which regulated all discharges from Caltrans MS4s, maintenance facilities, and construction activities. On September 19, 2012, the Department's permit was re-issued (Order No. 2012-0011-DWQ), becoming effective on July 1, 2013 (SWRCB, 2012).

Caltrans have been installing structural BMPs, including detention basins, CDS and media filters through their BMP Retrofit Pilot Studies to manage stormwater runoff from Caltrans right-of-ways. Additionally, due to recent drought, Caltrans has been funding BMP implementations throughout the Los Angeles Region for stormwater management.

Caltrans' Stormwater Campaign educates California residents on ways to keep the highways clean, which ultimately helps keep California waterways clean. "Protect Every Drop" is Caltrans' Stormwater Public Education Campaign to help encourage positive behaviors needed by the motoring public to help improve water quality throughout the State. By reducing stormwater pollution in and around the more than 50,000 lane miles of the highway system, water that discharges into major watersheds in the state will carry less pollutants and reduce the impact to our precious waterways (Caltrans, n.d.).

4.1.3.2 High Speed Rail Authority

The California High Speed Rail Authority (CHSRA) is responsible for planning, designing, building, and operating the first High-Speed Rail system in the nation. California's high-speed rail, which is planned to be completed by 2029, will run from San Francisco to Los Angeles and will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. Stormwater capture via infiltration, capture and use, and/or retention is required in station and facility design.

4.1.3.3 California State Department of Parks and Recreation

California State Department of Parks and Recreation (CSDPR) manages 280 parks in the State of California. State parks and recreational areas that are tributary to Areas of Special Biological Significance (ASBS)[16] are classified as non-traditional small Permittees under the Phase II MS4 Permit (No. 2013-0001 DWQ). These permittees are required to demonstrate compliance with Section I and II of Attachment C of Phase II MS4 Permit in the ASBS Compliance Plan Submittal. California Department of Parks and Recreations proposed a BMP Retrofit Plan to install stormwater capture, infiltration, and filtration BMPs at state park visitor parking lots. The most updated BMP Retrofit Plan, which was part of the ASBS Compliance Plan, included 11 high-priority parking lots in park units that discharge to five ASBSs. An additional 28 parking lots were selected for future evaluations.

[16] The State of California's Ocean Plan identifies Areas of Special Biological Significance throughout the State. These areas are designated as requiring special protection of species or biological communities to assure the maintenance of natural water quality.

Seven state parks (including parks, recreational areas, and beaches) are sited in and near the City. All seven state parks, including the Los Angeles State Historic Park located in downtown Los Angeles, are complying with stormwater discharge regulations. None of these are tributary to an ASBS. As a result, there is currently no information of implementing structural stormwater controls for offsite runoff in any of these state parks.

In addition to structural controls, CSDPR is implementing programs to raise public awareness on the issue of stormwater runoff pollution, including an ongoing collaboration with Sacramento State Office of Water Programs to develop the California State Parks educational website. The website, currently available as an interim version, provides information to the visiting public on the most common stormwater pollutants in the State Park system due to human activity.

4.1.4 Federal Agencies

There are two federal agencies that have historically been responsible for the management of stormwater in the City of Los Angeles: the USACE and FEMA.

4.1.4.1 United States Army Corps of Engineers

The USACE owns and operates some of the most critical regional flood control infrastructure within the City. Historical references indicate that the Los Angeles River and its tributaries constantly changed courses as heavy floods washed through its alluvial plain prior to the 1930s. The dramatic changing course led to severe property damage and loss of life in the City. In the late 1930s, the LACFCD requested federal aid to construct flood channels and dams along an LA River tributary in order to stabilize the water course. Following the funding approval from the Flood Control Act of 1936, the USACE Los Angeles District led the construction of flood channels and dams along the Los Angeles, Rio Hondo, and San Gabriel Rivers. Additional funding was granted in 1938 and 1941 to expand channel and dam construction in 31 tributary canyons (USACE, 2013).

The USACE, in coordination with the LACFCD, has continuously maintained and improved the capacity of constructed flood control channels and dams to protect the City up to the 100-year flood event.

Often as the lead agency constructing regional flood channels and dams in the City, the USACE is responsible for operating and maintaining most of these flood channels and dams. They are also a key stakeholder for the development and evaluation of river study plans from other agencies. In September 2013, the USACE and the LABOE completed the Los Angeles River Ecosystem Restoration Feasibility Study, which was adopted by the City Council in June 2016. The study is an important watershed planning effort that identified restoration efforts along the Los Angeles River while maintaining its flood management capacity. Additional discussion of how the feasibility study is integrated with the City's stormwater management system is presented in Section 4.5.

USACE is also responsible for periodically updating floodplain mapping in Los Angeles County. The most recent update was completed in October 2016. Floodplain mapping is an important factor to help the City plan its flood management system. This Facilities Plan utilized the updated floodplain mapping to evaluate the flood risk mitigation benefit of a stormwater management project. Please refer to Sections 6.4 on floodplain mapping was incorporated into the stormwater improvement project selection criteria.

4.1.4.2 Federal Emergency Management Agency

FEMA is an agency of the United States Department of Homeland Security. FEMA's primary objective is to coordinate major disaster response and recovery that are beyond the capability of local and state authorities to address. Among regulating various disaster types, FEMA provides guidance and programs for the development of state and local floodplain management. As discussed in Section 1.2, the City is a participating community of two notable FEMA programs, NFIP, and CRS.

Individual agencies are responsible for periodically updating their respective floodplain mapping. FEMA must approve the updated floodplain mapping for agencies to maintain a certain rating, which affects flood insurance rates for City property owners.

4.1.5 Private Owners and Developers

Privately owned stormwater management infrastructure is a vital component to the City's management system. LID BMPs on private parcels can effectively reduce stormwater runoff and pollutant load at the source, thereby increasing the efficiency of downstream regional stormwater management projects. Further discussion of private stormwater management programs and projects can be found in Chapter 2 and Section 4.2.2.2.

4.1.6 Other Regional Agencies

4.1.6.1 Metropolitan Water District of Southern California

Metropolitan is a regional wholesaler that delivers water to 26 member public agencies. Metropolitan owns and operates an extensive water system, including the Colorado River Aqueduct, hydroelectric facilities, nine reservoirs, hundreds of miles of pipes, and five water treatment plants. Currently, Metropolitan has no existing or planned project involvement with stormwater capture and use within the City, but they are a potential participant within the One Water framework, particularly with the opportunity to offset water supply.

4.1.6.2 Water Replenishment District of Southern California

The WRD of Southern California is a regional entity that manages groundwater in 43 cities of Southern Los Angeles County. WRD is the official groundwater level monitoring entity and adjudicator for the Central Basin and West Coast Basin. WRD updated its Groundwater Basins Master Plan in September 2016, which examined potential project opportunities to increase stormwater capture and recharge projects in Los Angeles Forebay area.

4.2 EXISTING SYSTEM OVERVIEW

The stormwater infrastructure system within the City works collectively to provide multiple benefits to the public at-large, and includes both grey and green infrastructure:

- **Grey infrastructure** is the stormwater conveyance and detention infrastructure that has historically been designed to provide flood protection by collecting runoff, detaining collected runoff to attenuate peak discharge rates when necessary, and ultimately conveying runoff away from City property to downstream receiving waters, including oceans, reservoirs, and groundwater aquifers.
- **Green infrastructure** is composed of both nature-inspired and mechanical systems that are designed to retain, infiltrate, and/or treat runoff, thereby providing multiple benefits including, but not limited to, flood protection, water quality improvement, and water supply benefits.

Combined with the City's management programs and strategies, these individual infrastructure components work together to manage stormwater and urban runoff flows within the City.

4.2.1 Grey Infrastructure

The City's grey infrastructure network includes some of the oldest stormwater assets in the City. The goal of the grey infrastructure network, which began to be installed in the City in the 1930s and 1940s, is to avoid flooding and route collected water away from urban areas and to the ocean as quickly as possible. Examples of grey stormwater infrastructure asset types include:

- Storm drains and open channels;
- Outfalls;[17]
- LADOT street profiles (road curbs, gutters, and catch basins);

[17] Outfalls are end points of storm drains that connect to open channels

- Pump stations;
- Low flow diversion structures that divert to the sewer system;
- Debris basins; and
- Reservoirs and dams.

During a storm event, runoff travels from land, rooftops, and impervious areas to a network of storm drains via streets profiles, which are designed to convey runoff from a storm of 10-year frequency[18] (LABOE, 1969). Runoff collected in storm drains is often conveyed to rivers and other open channels before ultimately arriving at the downstream receiving water or detention facility. The process is driven by gravity flow in conventional systems. In some instances, runoff collects at a low elevation relative to the surrounding region and needs to be pumped. In this situation, pumping stations, or lift stations, are used within stormwater conveyance systems to aid in the routing of runoff.

This robust network of grey infrastructure is primarily a combination of resources, planning, and collaboration within and between USACE, LACFCD, Caltrans, and LABOE. These agencies own, operate, and/or maintain stormwater grey infrastructure within the City. Figure 4.2 is an overview of storm drains and open channels (herein collectively referred as "stormwater conveyance system") within the City. LABOE and LACFCD are responsible for operating and maintaining stormwater conveyance systems within the City.

[18] According to Bureau of Engineering Manual Part G 100 – Storm Drain Design, the depth of flow during a storm of 10-year frequency should not exceed the curb height (usually 8 inches) of a street. Additional storm drain facilities are required if the curb height is not sufficient to convey such storm event.

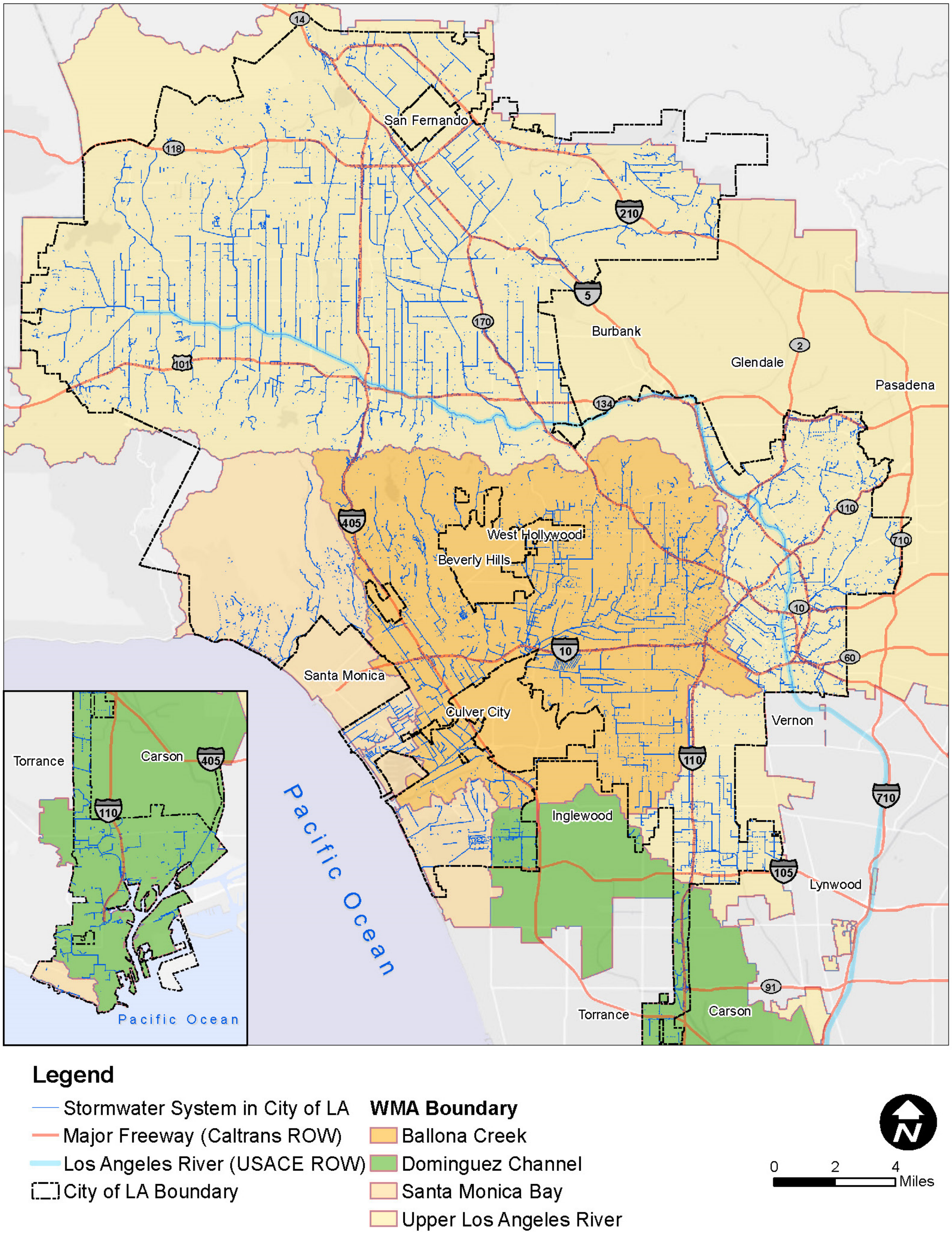


Figure 4.2 - Los Angeles Stormwater System Infrastructure
One Water LA 2040 Plan
Stormwater and Urban Runoff Facilities Plan

One Water LA

carollo

Caltrans and USACE are generally responsible for stormwater conveyance systems within their right-of-ways.[19] As summarized in Table 4.1, there are approximately 2,500 miles of stormwater conveyance network identified in the City.[20] Eighty-seven percent of the identified stormwater conveyance network is currently operated and maintained by one of the four public agencies.

Table 4.1 Identified Existing Grey Infrastructure in City of LA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

	Infrastructure Ownership by O&M Agency						
Infrastructure Type	**City of LA**	**LA County**	**Caltrans**	**USACE**	**Private Developer**	**Unknown**	**Total**
Storm Drains Length (mi)	1,215	619	153	<1	21	284	2,605
Open Channels Length (mi)	57	123	3	20	1	27	269
Number of Lift Stations	11	5	0	0	0	0	16
Number of Low Flow Diversions	14	28	0	0	0	0	42
Number of Debris Basins	85	138	0	0	0	0	223
Number of Dams	0	1(1)	0	3(2)	0	0	4

Notes:

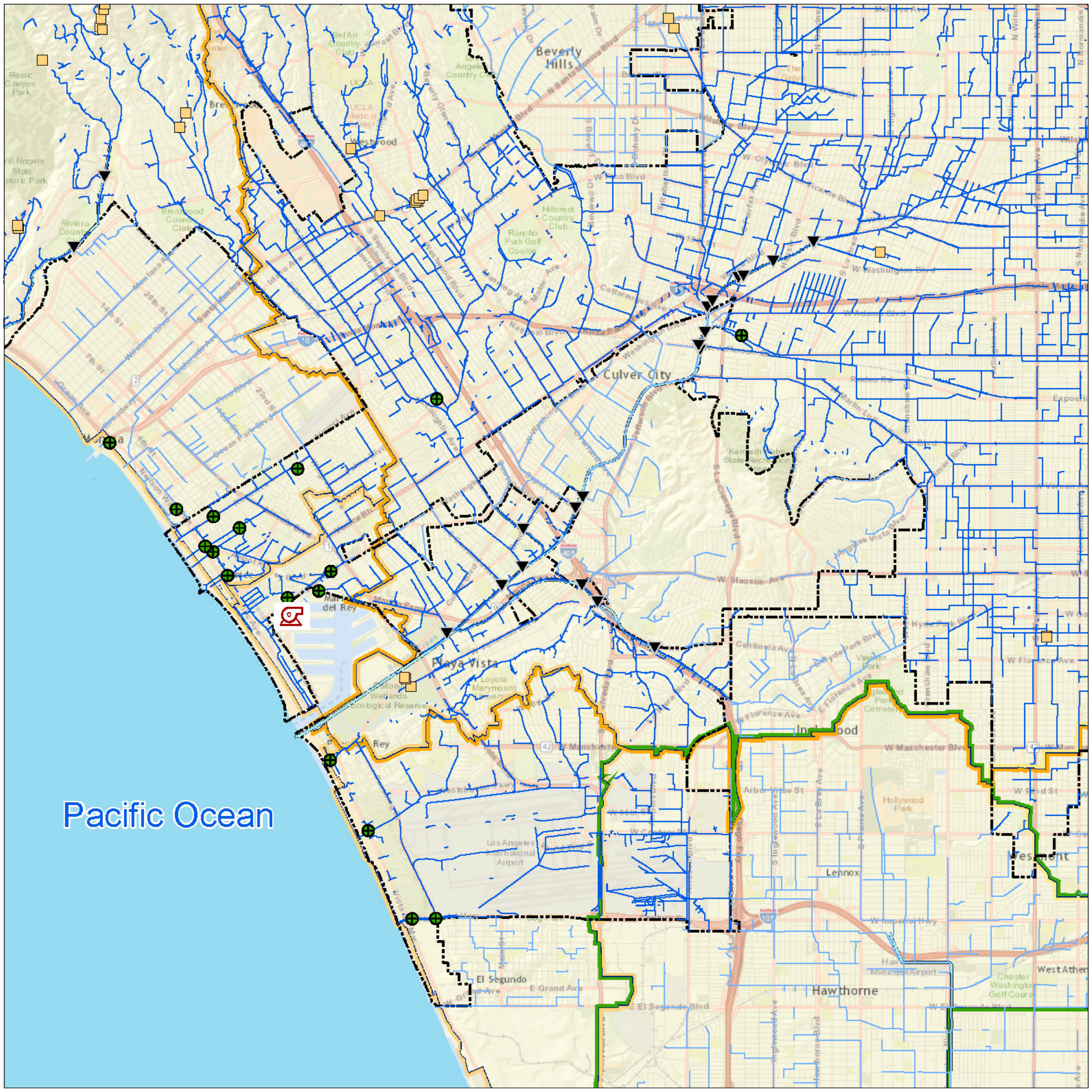
(1) Pacoima Dam
(2) Lopez Dam, Hansen Dam, Sepulveda Dam

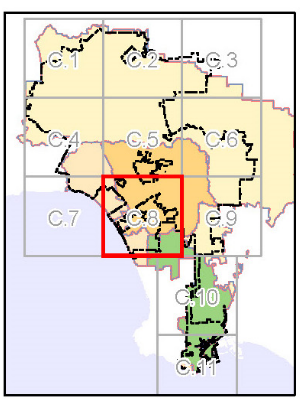
Abbreviation:

mi = miles

In addition to summarizing the stormwater conveyance system, Table 4.1 also summarizes other existing grey infrastructure by O&M agency. Figures C.1 through C.11 in Appendix C present the locations of existing grey infrastructure in the City. A sample is presented on Figure 4.3.

[19] A portion of the Los Angeles River and storm drains in associated right-of-ways is operated and maintained by LACFCD.
[20] The stormwater conveyance network length is calculated from the storm drain geodatabase provide by LADPW and LACFCD. Both geodatabases are regularly updated.





Legend

- City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River
- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
- National Hydrography Dataset Flowline
- Dam
- Spreading Ground
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

N

0 1 2 Miles

Figure 4.3 - Existing Grey Infrastructure in City of Los Angeles (Sample)
One Water LA 2040 Plan
Stormwater and Urban Runoff Facilities Plan

The stormwater conveyance system conveys stormwater runoff into downstream receiving waters via outfalls. Table 4.2 summarizes the number of major outfalls[21] by receiving waters within the City.

**Table 4.2 Major Outfall by Receiving Waters in City of LA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan**

Receiving Water	Number of Major Outfall
Ballona Creek WMA	**20**
Ballona Creek	17
Centinela Creek	3
Dominguez Channel WMA	**4**
Dominguez Channel	2
Dominguez Channel Tributaries(1)	2
Santa Monica Bay WMA	**15**
Santa Monica Bay	15
Upper Los Angeles River WMA	**121**
Los Angeles River	59
Los Angeles River Tributaries(2)	62

Notes:
(1) Include Torrance Lateral and Wilmington Drain
(2) Include Aliso Canyon, Arroyo Calabasas, Arroyo Seco, Bell Creek, Big Tujunga Creek, Browns Canyon, Bull Creek, Burbank Western Channel, Lopez Canyon, Pacoima Wash, Tujunga Wash, and Verdugo Wash.

4.2.2 Green Infrastructure

Green stormwater infrastructure refers to stormwater infrastructure that seeks to mimic nature by absorbing and filtering stormwater, thereby reducing the environmental impact to receiving waters, increasing the utilization of captured runoff as a useful water resource, and providing other community benefits. Green infrastructure projects are designed and built to achieve one or more of the following objectives:

- Retain and remove stormwater and urban runoff from the MS4 through infiltration, groundwater recharge, and water use/reuse;
- Treat and remove pollutants contained in stormwater and urban runoff, and release treated runoff back into the MS4 or sewer system, and hence demonstrate compliance with regulations summarized in Chapter 2; and
- Provide water supply benefits through environmental and habitat enhancement.

[21] Defined as outfalls with diameter greater than or equal to 36 inches.

Green infrastructure design incorporates LID strategies into traditional design and is considered a resource in the City. As a result, green infrastructure projects are a component in annual budgets for numerous departments. Example uses of the captured water include irrigation, groundwater recharge, and other potable water offsets. These alternate uses have led to the development of green streets, LID features, BMPs, and rainwater capture and use systems, including 25 Proposition O projects in the City and numerous EWMP projects. Along with detention basins, these green infrastructure projects work together to improve water quality, provide water supply benefits, and prevent flooding in urbanized areas.

Green infrastructure facilities can be either designed as regional projects or distributed projects, as further described in the subsections below. In addition, parcel-based solutions are an important component of the distributed green infrastructure program. Many of the Plan's recommended policies are intended to increase implementation and improve performance of distributed BMPs. The policies outline strategies to simplify processes and remove barriers to installing green infrastructure, develop incentives and property owner recognition programs, increase training and education, develop maintenance protocols, and increase partnership opportunities with non-profit partners. A full list of the policies can be found in Volume 7.

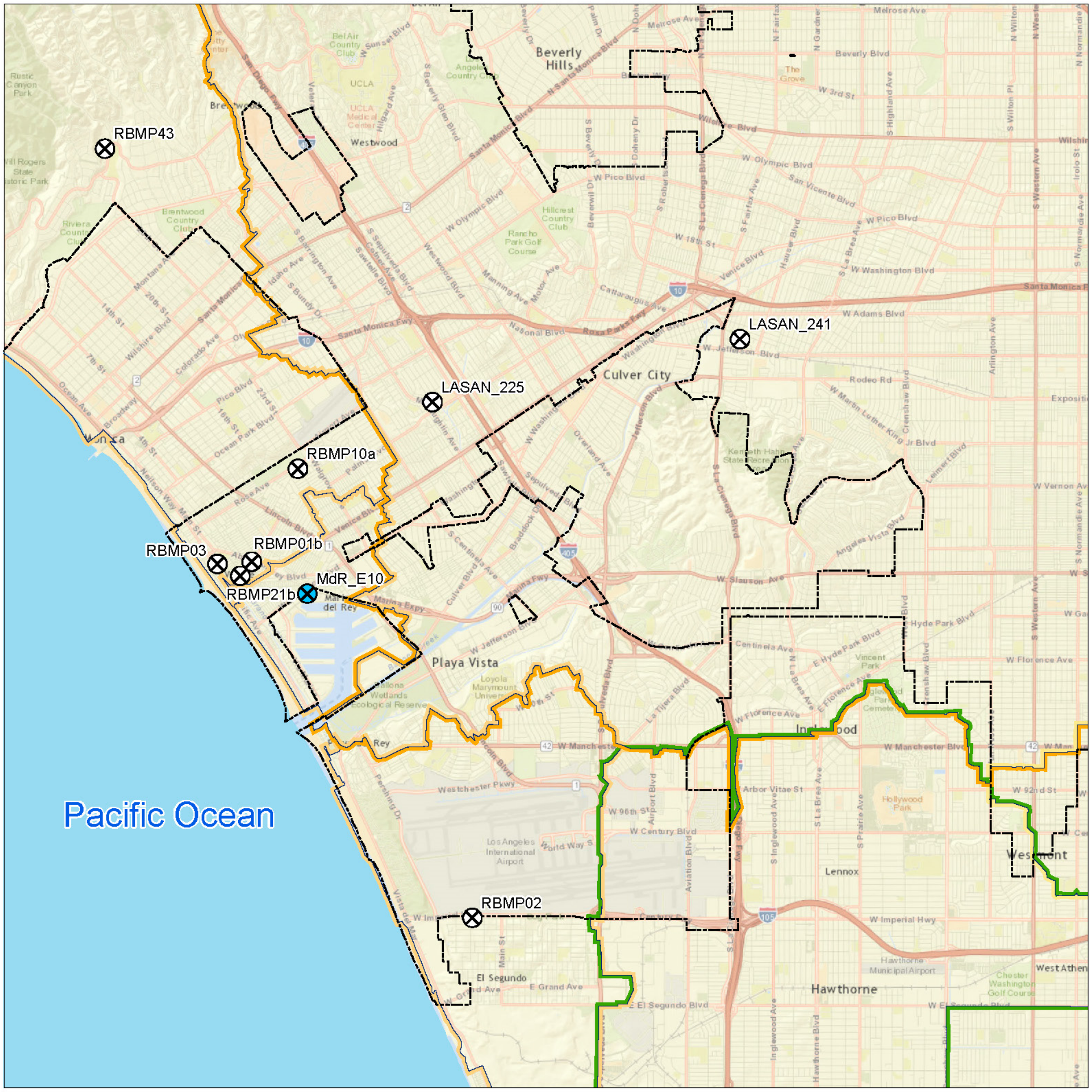
The City cannot address its stormwater management needs with regional or distributed projects alone. Both green infrastructure project types are needed to maximize the water quality, water supply, and flood risk management benefits the City's stormwater management system can provide to the stakeholders. Figures D.1 through D.11 in Appendix D present locations of existing green infrastructure projects that will be implemented by March 2017[22]. A sample is presented on Figure 4.4. A detailed inventory list of existing green infrastructure in the City is also provided in Appendix D.

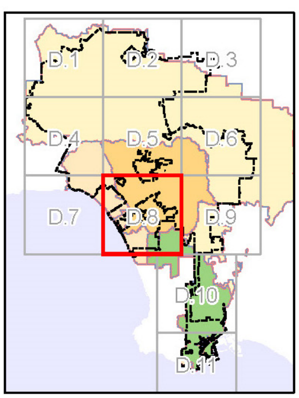
4.2.2.1 Regional Projects

In consistent with the definitions provided in the MS4 Permit and the EWMPs, regional projects are large-scale projects that are individually planned and designed to capture or treat stormwater and/or non-stormwater from mid-sized to large drainage areas that include multiple parcels and various land uses. Regional projects consist of nature-inspired and mechanical BMPs. Examples of regional projects are:

- Retention/infiltration basins (including spreading grounds);
- Capture, storage and use systems;
- Nature-inspired flow-through treatment systems, such as wetlands; and
- Low flow diversions that divert stormwater and non-stormwater to other regional green infrastructure projects.

[22] Includes existing green infrastructure project and green infrastructure project that will be completed or begin construction by March 2017.





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

Centralized- Regional Project by Agency

- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

0 1 2 Miles

Figure 4.4 - Existing Green Infrastructure in City of Los Angeles (Sample)

One Water LA 2040 Plan

Stormwater and Urban Runoff Facilities Plan

One Water LA

carollo

Regional projects can be implemented on both private and public parcels. However, most watershed planning efforts select project locations on public parcels to avoid the significant cost associated with land acquisition. Specifically, LASAN selects the following land use types for regional project siting:

- Parking lots,
- Public schools, and
- Parks.

Regional projects provide the opportunity for partnership between the City and regional agencies to implement cost-effective solution to achieve the City's stormwater management needs.

4.2.2.2 Distributed Projects

Distributed projects refer to small-scale green infrastructure projects that are designed to treat stormwater and urban runoff from small drainage areas, which are usually comprised of one to a few parcels. Specific types of distributed projects include site-scale detention, porous pavement, infiltration trenches, drywells, cisterns, nature-inspired systems (i.e., bioretention/biofilter cells, bioswales, and green roofs), flow-through BMPs (i.e., downspout filters, flow-through planters, and proprietary units), and source controls (i.e., catch basin retrofits, proprietary units).

Green streets are one common application of distributed projects along PROWs. Examples of green street projects include installing linear bioretention/bioswales in parallel to roads, retrofitting catch basins to intercept various pollutants, and using pervious pavement material. The EWMPs envisioned that distributed green streets projects will be implemented through a systematic and streamlined process across the City and will be integrated with other street development and redevelopment programs. Table 4.3 is an overview of existing street development programs the City currently participates in. Not all programs listed below incorporate stormwater management elements at this time. The future PROW GSI Program is an effort to facilitate inclusion of green stormwater infrastructure into routine street construction projects so that in essence, these projects become "Green Street" projects. The City's vision of GSI implementation within the PROW holds concurrent social, economic and environmental benefit. By adopting distributed projects along PROWs, such as bioswales, tree filters, drywells, porous pavements, etc. the City is not only investing in water quality and water supply, but additionally improving neighborhood livability, increasing green jobs, and providing potential for multiple funding streams and cost savings associated with project coupling.

Table 4.3 Green Street Development Related Programs within the City of LA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Street Program	Description of Program and Program Objectives	Include Stormwater Elements?
Green Streets Program	Design streets & sidewalks to capture and/or infiltrate runoff in drought-tolerant bioswales and permeable pavement.	Yes
LA Great Streets	Active mayoral initiative in early stages of design and planning to activate public spaces, provide economic revitalization, increase public safety, enhance local culture, and support great neighborhoods.	Yes
Mobility Plan - Complete Streets	Planning and guidance document with conceptual designs for streets to accommodate a balance of all modes of transportation, and provide safety and convenient access for all street users. Complete Streets Design Guide is a companion to Mobility Plan 2035.	Yes
Green Alley Program	Sister to Green Streets Program.	Yes
GRASS Program	Collaboration between LASAN, Cal Poly, and UCLA. Task to create a priority grid of stormwater capture greenways within the Upper Los Angeles River Watershed.	Yes
LA City Bicycle Plan	A supplementary plan to the concept of Complete Streets.	No
Water LA	A non-government organization (NGO)-led program that promotes "urban acupuncture" that includes installing shallow infiltration basins in the parkways of residential neighborhoods.	Yes
People Streets	A City- and LADOT-led program to create active and vibrant pedestrian-oriented streets.	No
Public Right-of-Way Low Impact Development Green Stormwater Infrastructure Program	A program currently under development which would require public right-of-way construction projects to implement varying levels of GSI, dependent on project scope, size, and location. The program is to include an ordinance and accompanying handbook to assist City staff, contractors, designers, and developers in compliance with the ordinance.	Yes

Another application of distributed structural projects is LID, which refers to the incorporation of distributed projects on private parcels, most often as part of a larger development or redevelopment project. Such LID practices capture, treat, and/or infiltrate on-site runoff. LID projects in the City are implemented primarily through the City's LID Ordinance, as discussed in Chapter 2.

In addition to the LID Ordinance, LID projects can be implemented through a residential rebate and incentive program, which encourages and incentivizes residential homeowners to retrofit their properties with LID features to prevent urban runoff generated on-site to the downstream conveyance system on the street. LASAN's Downspout Disconnection Program is an example of such a residential LID program.

As of December 2016, the design volume of stormwater flow captured/treated for LID projects completed on private property is 136.6 acre-feet. This is for 5,935 projects that have been completed from FY 2012-13 to FY 2015-16 with an equivalent impervious area of 1,640 acres. For this calculation, it's assumed that all BMPs were designed to capture an average of 1-inch of rain in a 24-hour rain event in the Los Angeles area.

The City is developing alternative compliance options for developers to choose from in order to satisfy the City's LID stormwater requirements. Once developed the LID Ordinance will be amended to allow developers to choose from not only managing their required volume onsite but through one of the following alternative compliance options:

- In lieu fee,
- Offsite mitigation, and
- Credit trading.

The City also implements LID strategies and principles on public parcels such as libraries, city hall, public schools, and parks. Public LID retrofit projects provide key advantages such as the ability to integrate with already-planned infrastructure upgrades, avoidance of land acquisition costs, and public engagement and education opportunities.

Distributed projects allow for collaboration between the City and non-government organizations and local communities to address the City's stormwater management needs.

4.2.3 Non-Structural Stormwater Management Programs

Non-structural stormwater management programs (i.e., institutional programs) are non-constructed measures that limit the amount of stormwater runoff or pollutants at the source. Institutional programs are implemented to meet requirements for minimal control measures (MCMs) in the MS4 Permit.

According to the MS4 Permit, institutional programs are grouped into six categories:

- Development Construction Program: The Development Construction Program aims to control stormwater pollution from active construction sites. This program is implemented through sediment control measures, retention and recycling of construction-related materials and wastes, containment of non-stormwater runoff from washing and other activities, and erosion/slope controls.
- Industrial/Commercial Facilities Program: The goal of the Industrial/Commercial Facilities Program is to track, inspect, and ensure compliance at industrial and commercial facilities that are critical sources of constituents in stormwater.
- Illicit Connection and Illicit Discharges (IC/ID) Detection and Elimination Program: The program requires Permittees to document, track, and report all cases of IC/ID and implement a response procedure and methods for public reporting.
- Public Agency Activities Program: The activities under the Public Agency Activities Program include sewage system maintenance and overflow/spill prevention, public yard management, streets and roads maintenance (e.g., street sweeping), storm drain operation and management, emergency procedures, and other essential Permittee activities.
- Public Information and Participation Program (PIPP): The objectives of the PIPP program is to measurably increase public knowledge, change waste disposal and runoff pollution generation behavior, and involve/engage target populations in stormwater pollution mitigation.
- Planning and Land Development Program: The Planning and Land Development Program on private parcels implements a set of requirements for development and redevelopment projects to minimize impacts from urban runoff, maximize pervious surface areas, minimize the quantity of stormwater directed to impervious surfaces, and minimize parking lot and street pollution.

A list of currently implemented MCM activities by the City is reported in the Los Angeles County MS4 Permit Unified Annual Report. Through the WMP/EWMP development, each WMP/EWMP group is given the opportunity to customize MCM activities by assessing the effectiveness of each MCM currently being implemented.

4.2.4 Groundwater Basins within the City Limit

Since groundwater basins receive runoff from the City's stormwater infrastructure, the basins within the City limits are briefly considered here. There are nine major groundwater basins that lie below the City and offer recharge opportunities for structural BMPs proposed in the EWMPs and other watershed planning efforts. Figure 4.5 shows the locations of groundwater basins within the City boundary.

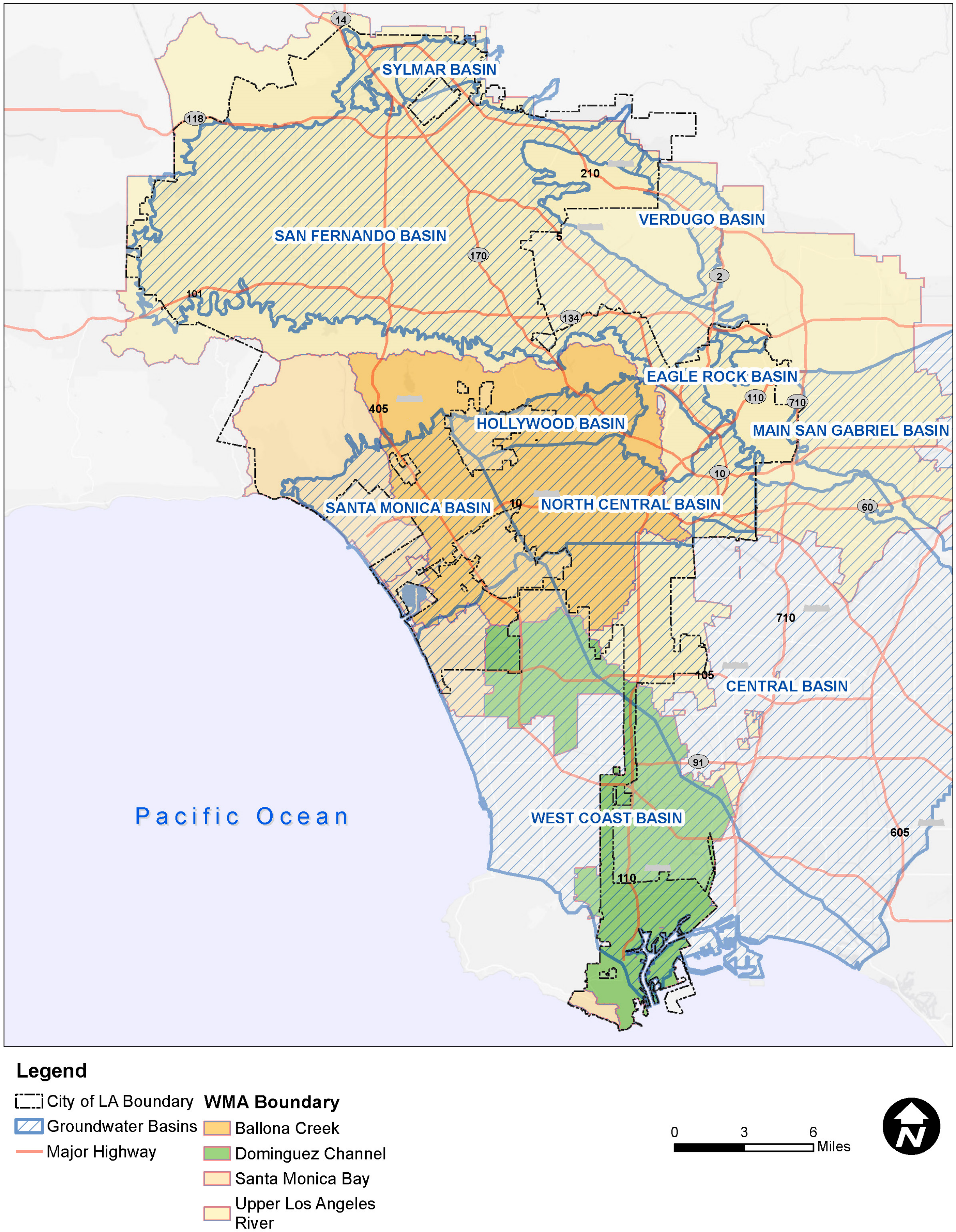


Figure 4.5 - WMA Boundaries and Groundwater Basins within the City of LA

One Water LA 2040 Plan

Stormwater and Urban Runoff Facilities Plan

Table 4.4 lists the groundwater basins within each WMA.

Table 4.4 Groundwater Basins by WMA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Groundwater Aquifers within Each WMA	Basin Area (ac)	Basin Area within City of LA Boundary (ac)
Ballona Creek		
Central Basin	7,110	5,990
Hollywood Basin	10,060	7,090
North Central Basin	19,730	18,940
San Fernando Basin	50	50
Santa Monica Basin	19,250	13,850
West Coast Basin	4,850	1,740
Dominguez Channel		
Central Basin	4,040	480
West Coast Basin	41,920	15,190
Santa Monica Bay		
Santa Monica Basin	12,080	6,600
West Coast Basin	6,530	4,340
Upper Los Angeles River		
Central Basin	29,330	11,200
Eagle Rock Basin	1,580	1,580
Hollywood Basin	10	10
Main San Gabriel Basin	22,350	420
North Central Basin	8,250	8,250
San Fernando Basin	125,930	108,880
Sylmar Basin	5,240	4,550
Verdugo Basin	6,100	650
West Coast Basin	20	20
Grand Total	**324,420**	**209,810**

Abbreviation:
ac = acre

4.3 EXISTING SYSTEM COMPONENTS

This section presents an inventory of existing stormwater infrastructure that has been identified in the City within each WMA.

4.3.1 Stormwater Systems in Ballona Creek WMA

4.3.1.1 Grey Infrastructure

According to the collected GIS data, there are 905 miles of storm drains and 32 miles of open channels that receive stormwater and urban runoff from the City within the BC WMA.

Figures C.1, C.6, C.8 and C.9 in Appendix C show locations of existing grey infrastructure in the City's jurisdiction of the BC WMA.

4.3.1.2 Green Infrastructure

As shown in Figures D.1, D.6, D.8, and D.9 in Appendix D, there are five existing green infrastructure facilities within the City's jurisdiction of the BC WMA, including three Proposition O projects. Appendix D also includes a detailed inventory of projects shown in these four figures.

An extensive literature review was conducted as part of the BC EWMP to identify additional existing distributed projects. Table 4.5 presents the number of existing distributed projects installed and maintained by the City during calendar year 2011 – 2012[23]. Assuming no maintenance was conducted for projects installed during the same year, the sum of projects installed and maintained during calendar year 2011 provides a reasonable estimate of the City's distributed project assets. No GIS data or address information were provided in the BC EWMP for these projects.

Table 4.5 Existing City of LA Distributed Projects in BC WMA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan(1)

Project Type	Estimated Number of City-Led Projects
Porous Pavement	34
Infiltration Trench, Dry Well	197
Rainfall Capture	26
Bioretention, Bioswale, Biofilters	1,655
Flow-Through	98
Catch Basin Retrofit	16,267
Other(2)	37

Notes:
(1) Tabular data collected in June 2016
(2) Project types not specified in the source data

[23] Numbers of distributed projects maintained and installed during calendar year 2011-12 are summarized in BC EWMP Appendix 6F. No detailed list was provided in the BC EWMP.

4.3.2 Stormwater Systems in the Dominguez Channel WMA

4.3.2.1 Grey Infrastructure

According to the provided GIS data, there are 211 miles of storm drains and 14.4 miles of open channels that receive runoff from the City within the DC WMA. Figure C.8 through C.11 in Appendix C show locations of existing grey infrastructure in the City's jurisdiction of the DC WMA.

4.3.2.2 Green Infrastructure

As shown in Figure D.8 through D.11 in Appendix D, there are four existing green infrastructure facilities within the City's jurisdiction of the DC WMA. All four projects are Proposition O projects. Appendix D also provides a detailed inventory of projects shown in these four figures.

An extensive literature review was conducted as part of the DC EWMP to identify additional existing distributed projects. Table 4.6 summarizes existing distributed projects installed and maintained during calendar year 2011 – 2012.[24] Assuming no maintenance was conducted for projects installed during the same year, the sum of projects installed and maintained during calendar year 2011 is a reasonable estimate of the City's distributed project assets. A GIS layer summarizing identified City distributed projects was provided as part of the DC EWMP submission. Upon review, the GIS data covers additional distributed projects for certain distributed project types (e.g., two rainfall capture and use units were identified in DC Appendix O, but nine units were identified in the GIS data) and does not cover all distributed projects for other distributed project types (e.g., 12 porous pavement units were identified in DC Appendix O, but six units were identified in the GIS data file). Given the discrepancies between these two data sources, the number of distributed projects shown in Table 4.6 are computed as the maximum between numbers reported in DC EWMP Appendix O and that reported in the GIS data file.

[24] Numbers of distributed projects maintained and installed during calendar year 2011 - 2012 are summarized in DC EWMP Appendix O.

Table 4.6 Existing City of LA Distributed Projects in DC WMA Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan(1)

Project Type	Estimated Number of City-Led Projects
Site-Scale Detention	6
Porous Pavement	12
Infiltration Trench, Dry Well	46
Rainfall Capture	9
Bioretention, Bioswale, Biofilters	191
Flow-Through	24
Catch Basin Retrofit	1,886
Other(2)	64

Notes:
(1) Tabular data collected in June 2016
(2) Project types not specified in the source data

4.3.3 Stormwater Systems in the Santa Monica Bay WMA

4.3.3.1 Grey Infrastructure

According to the collected GIS data, there are 159 miles of storm drains and 17 miles of open channels that receive runoff from the City within the SMB WMA. Figures C.4, C.7, C.8, and C.11 in Appendix C show locations of existing grey infrastructure in the City's jurisdiction of the SMB WMA.

4.3.3.2 Green Infrastructure

As shown on Figures D.4, D.7, D.8, and D.11 in Appendix D, there are nine existing green infrastructure facilities within the City's jurisdiction of the SMB WMA, including eight Proposition O projects. Appendix D also provides a detailed inventory of projects shown in these four figures.

An extensive literature review was conducted as part of the MdR EWMP, J2/3 EWMP, and J7 WMP to identify additional existing distributed projects. The results are summarized in Table 4.7, Table 4.8, and Table 4.9, respectively.

Table 4.7 Existing City of LA Distributed Projects in MdR WMA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan(1)

Project Type	Estimated Number of City-Led Projects
Porous Pavement	1
Infiltration Trench, Dry Well	1
Rainfall Capture	2
Bioretention, Bioswale, Biofilters	3
Flow-Through	3
Catch Basin Retrofit	103
Other(2)	1

Notes:
(1) Tabular data collected in June 2016
(2) Project types not specified in the source data

Table 4.8 Existing City of LA Distributed Projects in SMB J2/3 WMA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan(1)

Project Type	Estimated Number of City-Led Projects
Site-Scale Detention	14
Porous Pavement	51
Infiltration Trench, Dry Well	9
Rainfall Capture	44
Bioretention, Bioswale, Biofilters	179
Flow-Through	11
Catch Basin Retrofit	2,835
Other(2)	5

Notes:
(1) Tabular data collected in June 2016
(2) Project types not specified in the source data

Table 4.9 Existing City of LA Distributed Projects in SMB J7 WMA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan(1)

Project Type	Estimated Number of City-Led Projects
Porous Pavement	1
Rainfall Capture	1
Bioretention, Bioswale, Biofilters	8
Other(2)	3

Notes:
(1) Tabular data collected in June 2016
(2) Project types not specified in the source data

4.3.4 Stormwater Systems in Upper Los Angeles River WMA

4.3.4.1 Grey Infrastructure

According to the provided GIS data, there are 1,333 miles of storm drains and 208 miles of open channels that receive runoff from the City within the ULAR WMA. Figures C.1 through C.6 in Appendix C show locations of existing grey infrastructure in the City's jurisdiction of the ULAR WMA.

4.3.4.2 Green Infrastructure

As shown on Figures D.1 through D.6 in Appendix D, there are 24 existing green infrastructure facilities within the City's jurisdiction of the SMB WMA, including 13 Proposition O projects. Appendix D also provides a detailed inventory of projects shown in these figures.

An extensive literature review was conducted as part of the ULAR EWMP to identify additional existing distributed projects. Table 4.10 summarizes existing distributed projects included in ULAR EWMP Appendix 6F.3.

Table 4.10 Existing City of LA Distributed Projects in ULAR WMA
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan(1)

Project Type	Estimated Number of City-Led Projects
Site-Scale Detention	8
Porous Pavement	174
Infiltration Trench, Dry Well	562
Rainfall Capture	405
Bioretention, Bioswale, Biofilters	3,420
Flow-Through	825
Catch Basin Retrofit	21,865
Other(2)	1,200

Notes:
(1) Tabular data collected in June 2016
(2) Project types not specified in the source data

4.4 SYSTEM MANAGEMENT CONSIDERATIONS

For 80 years, the management and focus of the City's stormwater infrastructure was to convey and manage flooding in the LA Basin. Since the 1990s, primarily due to regulations and the willingness to work with stakeholders and non-profits, stormwater projects with infiltration and capture/use components/benefits have also been built. In order to sustain the function of the stormwater system over time, infrastructure is periodically upsized, expanded, rehabilitated, or replaced. When planning for the upsizing, rehabilitation, and replacement of stormwater infrastructure, consideration must be given not only to the physical condition of the infrastructure, but also the function it serves in the context of the larger stormwater and urban runoff network. The following section summarizes several considerations for the management of the stormwater system, including:

- Size and scope of the network;
- Asset owner;
- Asset management in the existing condition;
- Asset management in the future condition;
- Rehabilitation and replacement;
- Monitoring and data management;
- Health and safety;
- Cost; and
- Climate Change.

These are described in more detail below.

4.4.1 Size and Spatial Scope of the Stormwater Conveyance Network

With the growth of the LA Basin, local stormwater conveyance infrastructure has grown to a network of over 4,500 miles of storm drains and 600 miles of open channels. As shown on Figures C.1 through C.11 in Appendix C, the City's stormwater conveyance infrastructure is not an isolated system, but is connected with other LA Basin stormwater conveyance infrastructure outside of the City. When assessing performance of the City's stormwater conveyance network, it is important to consider additional stormwater runoff from upstream stormwater conveyance networks as well as the impact of upstream stormwater management facilities shown on Figures C.1 through C.11 in Appendix C.

As described in Section 4.1, there are multiple agencies that are responsible for operating and maintaining stormwater infrastructure within the City's boundary. Facilitating multi-agency collaboration on creating and updating a single stormwater infrastructure database, instead of maintaining and updating separate databases by each individual agency, is highly encouraged for better managing the City's stormwater management system. A single, unified stormwater infrastructure database minimizes data inconsistency and helps clarify O&M responsibility of the large and spatially-diverse stormwater infrastructure within the City's boundary.

4.4.2 Asset Owner

Coordination challenges are inherent to a stormwater and urban runoff management system with multiple agency owners, managers, and operators responsible for different components of a multifunctional system. In the LA Basin, the identification and categorization of stormwater infrastructure assets is kept by the responsible entity. Within the City boundary, the responsible entity can be either a City agency (e.g., LABOE, LASAN, or LADWP) or a non-City agency (e.g., LACFCD, Caltrans, USACE), depending on the asset location and function. The function of each agency with respect to the project phase (e.g., pre-design, design, O&M, etc.) is discussed in further detail in Section 4.1.

The responsibility for stormwater and urban runoff discharge most often lies with the asset owner. For example, there are City, LACFCD, and privately-owned storm drain outfalls along certain sections of coastline. These same agencies would be responsible for the discharge from their assets, as they are also responsible for maintaining them. The privately-owned assets are primarily storm drains that were constructed by a private landowner/developer and either not offered to, or accepted by, a public agency.

4.4.3 Asset Management: Existing Condition

In the existing condition, the management of assets is primarily targeted toward the O&M of existing assets, with the goal of extending their useful life and functionality (see Chapter 5 for more detail) to serve the system needs. Additionally, some immediate needs may arise due to unplanned asset failure (i.e., emergency projects), in which cases the failure would be repaired by the responsible entity, with additional non-critical, site-specific upgrades potentially added to the longer-term SIP.

Depending on the SIP timeline determined in Section 7.4, it would be expected that some projects would likely be under development in the present condition. In some cases, certain projects may be "moved up on the list" and selected for immediate implementation due to existing opportunities or constraints such as funding availability (e.g., receipt of grant funds), coordination with another project at that same location (e.g., a developer is connecting to the storm drain at the same location which was due for an upgrade one year later), and other considerations.

4.4.4 Asset Management: Future Condition

In the future condition, asset management is primarily guided by the SIP determined in Section 7.4 and the EWMP implementation strategy, but also influenced by a variety of interrelated factors, including: long-term planning for asset rehabilitation and replacement (see Section 4.4.5), funding availability (both departmental and project-based; see Section 4.4.8), potential revisions to existing Standard Operating Procedures (SOPs) or a change in the best practices for O&M, and inter-agency coordination. The level of inter-agency coordination can impact the scale and direction of future planning projects in that more inter-agency coordination will likely result in the long-term planning targets toward multi-agency, multi-benefit projects, while less inter-agency coordination will likely result in long-term project planning targeted toward the responsible agency's needs alone. The City has achieved significant progress in this pioneering effort with green infrastructure projects by initiating coordination and realizing the value and benefits of multi-agency, multi-benefit projects. The City is looking forward to continuing the effort. Due to the long term planning efforts, the number and/or types of projects selected for long-term implementation may be influenced over time by factors such as changing goals and priorities within the City.

4.4.5 Rehabilitation and Replacement

Stormwater infrastructure rehabilitation and/or replacement evaluations aim to keep assets operational so they may perform their intended function within the system. The decision to rehabilitate or replace an asset considers both the physical condition of the infrastructure components as well as the infrastructure's long-term ability to meet its intended purpose(s) in the overall stormwater system under current and future conditions. Infrastructure rehabilitation and/or replacement criteria typically include:

- Age and life expectancy;
- Condition;
- Function; and
- Ability to meet potential future regulations and/or requirements.

The infrastructure rehabilitation and replacement analysis includes analysis of the physical condition of the infrastructure to determine when it needs to be rehabilitated or replaced. The performance and capacity of the system to handle floods, meet water quality goals, and handle additional future flows (i.e., from climate change or other sources) compliment the physical components for rehabilitation and replacement decisions.

Rehabilitation and replacement decisions are typically selected based on the remaining life of the asset (age of the asset relative to the design life) and supplemental condition data, which are used to adjust the design life to more accurately reflect the remaining life of the asset. Potential supplemental condition data may include closed circuit television, flow monitoring data, inspection records, maintenance records, etc. If necessary, assumptions will be made to fill in missing data. The remaining life of each asset is usually calculated to produce a projected schedule of infrastructure replacement.

In lieu of replacement, some assets can be rehabilitated to improve their condition and extend their life. Examples of typical rehabilitation methods include installing pipe lining, performing point repairs, and increasing maintenance activities.

Where appropriate, the timing of rehabilitation projects is forecasted for each asset. The age and/or condition are used to assess if and when a rehabilitation can be performed.

4.4.6 Monitoring and Data Management

Stormwater infrastructure assets are designed to achieve specific objectives – whether to provide flood risk mitigation, improve water quality, augment the water supply, and/or provide other secondary benefits. If a project is not meeting a defined objective, it should be rehabilitated, replaced, or otherwise modified. Whether or not an objective is being met is then assessed through the definition of specific performance-related metrics, data collection, and comparison to those metrics. In some cases, this is referred to as the project "optimization" phase. For example, water quality data may be collected at the influent and effluent of a natural treatment BMP to demonstrate a reduction in nutrients. Examples of other monitoring parameters might include inflow, outflow, water depth (surface or subsurface), number of overflow events, health of vegetation, pump rate, etc. It is critical that the monitoring approach be thought out in the pre-design phase of the project to incorporate access points into the design (e.g., monitoring wells, access manholes). Performance monitoring and tracking may also be a requirement for certain grant funding applications.

The management of data is a key piece of tracking project performance. In some cases, data may be required to be provided to regulatory agencies such as the LARWQCB, and in others it may be saved in an agency-specific or local project database. The requirements of each end user are considered in designing the monitoring program, for example: how the data will be collected (e.g., manually, automated, on the cloud), data format (e.g., parameters, parameter spelling/terminology), quality assurance/quality control (QA/QC) protocols, and other factors.

4.4.7 Health and Safety

The stormwater infrastructure system is intended to protect local citizens and structures from flooding. Local regulations for drainage design are intended to serve this root purpose in requiring that storm drains serve a specific capacity, are made of a certain material, etc. Health-related regulations also serve to protect local citizens from health-related impacts associated with stormwater infrastructure, such as vector issues relating to standing water.

Health and safety considerations are also very important for all levels of staff involved in the design, construction, operation, maintenance, and monitoring phases of a project. Health and safety considerations are typically first introduced in the conceptual or pre-design phase of a project and include considerations such as the ease of entry/access of operations, maintenance, and monitoring personnel; potential building code requirements for large equipment housing structures; electrical requirements for assets with mechanical components, etc. Early consideration allows for design modifications to be made early in the process. In later project stages, the project-specific SOPs also consider the health and safety of project personnel.

4.4.8 Costs

Cost is often the determining factor for if, when, and how a stormwater infrastructure project is designed, built, and maintained. Project construction costs are often estimated in the conceptual phase, with refinements made via engineer's estimates in the design phase, and via contractor bid in the construction phase. Conceptual or engineer's estimates, with design, permitting, escalation, and other contingencies, are often used for long-term planning purposes. O&M costs are recurring and must also be planned for in advance. Without proper maintenance, a well-designed stormwater project may have a significantly shorter service life, and a reduced overall life cycle project value. Therefore, planning for long-term O&M costs at the conceptual project phase is critical to the implementation of large scale, multi-benefit stormwater infrastructure.

Project costs for each upcoming year are usually considered in the annual agency and departmental budgets. Longer-term planning is addressed in the 10-year and 25-year SIP phases, which are presented in Chapter 8 along with the 5-year SIP phase. The LID ordinance, along with any future stormwater ordinances, will be reviewed periodically to assess their overall impact on projects needed to achieve water quality objectives.

Potential funding sources vary by project and can range from recurring agency budgets to grants, local sources such as Proposition O, interagency partnerships, existing or new public-private partnerships, and others. Chapter 8 focuses in more detail on stormwater infrastructure financing strategies.

4.4.9 Climate Change

Factors predicted to be affected by climate change include annual average temperatures, number of hot days, precipitation patterns and extreme rain events, and sea levels. Increased temperatures and hot days will likely increase the risk, duration, and frequency of power outages during peak demand periods. Increased frequency and duration of drought and more frequent hot days will likely increase fire risk. Increased precipitation will likely increase the risk of localized flooding and erosion. Sea level rise will increase the risk and severity of coastal flooding during coastal storms and tsunamis. As a result, assets and operations are at risk to power loss, flooding, landslides, and fire. As part of the One Water LA efforts, a climate change risk assessment was performed consisting of scenario development, screening analyses, site visits, risk analyses, and adaptation planning. For stormwater infrastructure specifically, climate change risk assessments were performed for stormwater pumping plants and low flow diversions. The assessment included using the EPA Climate Resilience Evaluation and Awareness Tool (CREAT) and other resources for identifying climate change scenarios, assessing risks, and performing benefit-cost analyses. A description of these threats and risks is provided in TM 5.5.

After selecting asset locations, climate scenarios, threats, and assets of concern, the consequences from climate change-related threats were assessed, considering existing resources and projects previously planned. Conceptual asset valuations were then developed to monetize the consequences from climate change-related threats. Short- and long-term adaptation measures with conceptual capital costs were then identified for assets and operations to mitigate the consequences from climate change-related threats.

In summary, five LFDs and two stormwater pump stations were suspected to be at risk of inundation due to climate change impacts. The recommended improvements to increase the climate resiliency of these facilities are further discussed in Chapter 7.

4.5 LOOKING AHEAD: PLANNING FUTURE PROJECTS/ PROGRAMS

Understanding the existing stormwater system infrastructure and management provides the foundation necessary to identify and select future stormwater infrastructure needs to meet flood control, water quality, and water supply requirements. New technologies are continuously applied to improve the efficiency of capturing and/or treating stormwater while maintaining and reducing a project's overall life cycle costs. For example, the use of cloud-based active diversion control system can effectively shrink the footprint of downstream retention while maintaining the overall capture efficiency; the use of light weight, high strength infiltration media can increase the retention capacity while maintaining the structural integrity requirement of stormwater management infrastructure. The use of state-of-the-practice proprietary devices can significantly enhance the life span of the downstream stormwater retention system.

To develop the Facilities Plan within the City's One Water LA 2040 framework, the following watershed planning efforts have been compiled and presented in Chapter 7 to identify and strategize implementation of future projects that meet the City's infrastructure needs:

- City of Los Angeles Stormwater and Green Infrastructure 5-Year Capital Improvement Plan (herein referred as the "2015 LASAN 5-year CIP:" This 2015 5-year CIP embodies the full range of projects required for the LASAN WPD to make significant progress with compliance with early TMDL milestones through 2021. The 2015 LASAN 5-year CIP list consists of 270 projects. Projects presented this CIP are assumed to be of highest importance compared to all other future projects proposed in the remaining watershed planning efforts (listed below). Any 2015 LASAN 5-year CIP projects that do not get implemented within 5 years will therefore roll forward to be included in long term SIP phases.
- WMP/EWMPs in which the City is involved: As part of the WMP/EWMP development, each WMP/EWMP group identified existing and planned green infrastructure projects and proposed additional green infrastructure projects to achieve the desired pollutant reduction requirement, which was established through the Reasonable Assurance Analysis (RAA). Several EWMP projects have been included in the 2016 LASAN 5-year CIP plan. The remaining EWMP projects will be evaluated for applicability towards the City's 10-year and 25-year SIP phases.
- Stormwater Capture Master Plan: LADWP developed the SCMP to evaluate existing stormwater capture efforts, analyze the role of stormwater capture in the City's water

supply portfolio, and provide recommendations for future stormwater capture opportunities. Future projects and programs proposed in the SCMP are evaluated in Chapter 7 for applicability towards the City's 10-year and 25-year SIP phases.

- LABOE Storm Drain Capital Improvement Plan: LABOE constantly updates its storm drain CIP screening list. There are currently more than 400 storm drain CIPs consisting of about 170 miles of storm drain pipes needed in drainage deficient areas. These are prioritized based on severity and scheduled for improvements when funding becomes available. In addition to these projects, other system deficiencies include replacement of 30 miles of corrugated metal pipe (CMP), which accounts for the majority of the annual emergency repairs. The estimated cost to repair and construct new storm drains is estimated to be over $600M. Several storm drain CIP projects have been identified as potential green street opportunities and have been included in LASAN WPD's 5-year CIP list. The remaining storm drain CIP projects will be further evaluated in Chapter 7 for applicability towards the City's 10-year and 25-year SIP phases.
- Los Angeles Basin Stormwater Conservation Study: The Basin Study is a partnership between the LACFCD and the Bureau of Reclamation, Southern California Area Office. The Basin Study encompasses 1,900 square miles, including the City and extending beyond the entire County of Los Angeles. The purpose of the Basin Study is to evaluate existing LACFCD facilities and develop recommendations for filling the gap between current and future water demand in the study areas. The Basin Study proposed additional new spreading ground and soft channel improvement projects that have not been incorporated into other watershed planning efforts. These projects will be evaluated in Chapter 7 for applicability towards the City's 10-year and 25-year SIP phases.
- Los Angeles River Ecosystem Restoration Feasibility Study (commonly known as the ARBOR Study): The ARBOR Study is a collaborative effort between LABOE and USACE. The study includes an evaluation of alternatives for restoring 11 miles of the LA River while maintaining the existing levels of flood risk management. Identified restoration efforts include creating and re-establishing riparian strand and marsh habitat, increasing connectivity to other ecological zones in proximity, and re-introducing natural physical and ecological processes to enhance flood control and water quality benefits.
- *Arundo donax* Eradication Plan: Effort throughout the Southern California Region, including the Counties of Los Angeles, Ventura, Orange, and San Diego, are underway to eradicate this plant by initiating site-specific removal and a long-term plan for future eradication efforts. This involves removal of invasive plant species, with removal occurring in an upstream to downstream manner, to control the water loss from watersheds resulting from *Arundo donax* invasion caused by the *Arundo* leaf transpiration. One objective of the Plan is quantifying potential water losses that could be reduced through ongoing efforts and projects.

OPERATIONS AND MAINTENANCE

O&M is a critical component to ensure the proper performance of green and grey stormwater infrastructure over its designed service life. O&M requirements and corresponding resource allocations must be considered during the project planning phase through design, construction, and optimization. Neglect of O&M planning and insufficient resource allocation, such as budget, staff, equipment, and procedure training, will result in inadequate O&M activity, which will lead to shorter project life span, overall reduction in project life cycle benefits, and potential failure to achieve water quality and water supply compliance objectives. Alternatively, properly planning and executing O&M activities, from upstream pretreatment devices (e.g., trash/debris interceptor, sedimentation basin) through all other components of a project, can significantly improve the lifespan of a BMP facility, thereby increasing the project benefits at the project and watershed scale.

This section provides a brief overview of O&M planning and implementation in the City as it relates to green and grey stormwater infrastructure.

5.1 OVERVIEW

This section outlines applicable definitions, responsible parties, and general O&M planning considerations.

5.1.1 Definitions

There must be clear distinction between what activities are characterized as either "'operations' or 'maintenance.' Although different in nature, as pertaining to the City's stormwater system, O&M are also related to one another. Proper O&M ensures the continued efficiency, effectiveness, and sustainability of a system. For the purposes of this report, "operations" and "maintenance" may be defined as follows:

- **Operations:** Operations constitute regular activities, following a set of established procedures, which are performed to effectively use, manage, and/or implement a project as prescribed or intended. Effective operations aim at maintaining a project at satisfactory working conditions to avoid the consequences of project failure or interruptions to project functionality. Some examples of project operations for green infrastructure projects include: operating a diversion pump at an infiltration basin; programming a supervisory control and data acquisition (SCADA) system for desired functionality and control; or monitoring water quality at an engineered wetland to improve system performance. Some examples of project operations for grey infrastructure projects include: turning off/on a pump at a low flow diversion; opening a sluice gate at detention basin; or monitoring flow in a storm drain channel.

- **Maintenance:** Maintenance constitutes activities which are performed to keep a project or system in functioning and good condition. Maintenance activity can be further characterized as either preventative or corrective (responsive). Some examples of project maintenance for green infrastructure projects include: repairing a diversion pump at an infiltration basin; replacing a SCADA system component in order to maintain desired functionality and control; or trimming and irrigating plants in a parkway swale to sustain vegetative growth and filtration. Some examples of project maintenance for grey infrastructure projects include: repairing a pump at a low flow diversion; removing trash and debris from a detention basin; or scraping a storm drain channel to remove sediment and algae.

5.1.2 Responsible Parties

There are several agencies involved with the O&M of grey and green infrastructure in the City of Los Angeles. The network of infrastructure is primarily a combination of resources, planning, and collaboration within and between the City of Los Angeles (i.e., LASAN, LABOE, and LABSS, LADWP), USACE, LACFCD, and Caltrans. These agencies own, operate, and/or maintain stormwater infrastructure within the City. Responsibility between agencies is often coordinated through MOUs or Memorandum of Agreement (MOA), which are negotiated among agencies based on asset ownership, staff availability, resource allocation, and other logistics that are agreed upon among different agencies. Depending on the project specific scenario, a project may be operated and maintained by different agencies. In addition, any established MOU/MOA is subject to change upon agreement of responsible parties.

At times, public agencies will partner with private organizations or non-profit organizations to collaborate on the operations and maintenance of a facility. For example, a private company may agree to pay for a green street project in the PROW, with the understanding that LABSS will maintain the project after construction. This type of public-private partnership can relieve the City of upfront capital costs while also allowing them to ensure that long-term performance of a project is maintained.

5.1.3 O&M Planning Considerations

Sources such as the EPA's guidance on the "Importance of Operation and Maintenance for the Long-Term Success of Green Infrastructure (EPA, 2013) provide key planning considerations applicable to both green and grey infrastructure O&M. Additional local stormwater infrastructure O&M references and guidance documents are provided in Sections 6.2.1 and 6.3.1.

There is one common element shared among successful green and grey infrastructure projects, and that is comprehensive O&M planning throughout the entire project life cycle. Key planning considerations are summarized as follows:

- **Project Development Phase** – this is the phase of a project when concept-level planning is initiated, partnerships are formed, and funding resources are secured.
  - **Partnerships** – Partnerships are an important consideration in the initial project planning phase. As described above, inter-city partnerships, inter-agency partnerships, public-private partnerships, and partnerships with the community at large are critical components to a project's success. Public education and engagement early in a project's development, for example, can lead to improved community involvement with maintenance activities and security. Partnerships may provide opportunity for more efficient use of limited resources in the form of knowledge, funding, training, personnel, and equipment. Any necessary user agreements should be initiated during this phase.
  - **Funding** – Prior to project implementation, it is vital to identify dedicated funding sources. Funding should not only cover the capital cost of the project, but should address ongoing costs such as staffing and labor, including associated training; monitoring efforts, including equipment and analytical costs; and O&M supplies that will be required throughout the life of the project, such as landscaping material, irrigation water, and infrastructure components and equipment that may need to be replaced. Funding should aim to be sustainable based on the existing financial plan that is in place.
  - **Site Selection** – The determination of the feasibility of a site in regards to project constructability, maintainability, and access is critically important. Proper site selection is directly related to future maintenance requirements. For example, a project sited in a high-visibility area, such as a public park, requires ongoing care to ensure an appropriate aesthetic for the site. Additionally, for projects sited on public parcels with expected public access, additional design planning and O&M may be required to reduce safety risks such as open water and fall hazards. For further information regarding proper site selection, please see the City's Planning and Land Development Handbook for Low Impact Development (City of Los Angeles, 2016).
  - **Environmental Permits** – It is essential to work with regulatory agencies tasked with permitting stormwater facilities as early as possible in the project development phase. Permit issues related to environmental studies, scopes of work, construction permits, and long-term maintenance activities must be discussed with regulatory agencies as soon as possible to streamline the permit acquisition process.
  - **Project Category** – The O&M requirements can vary significantly depending on project category. As an example, a nature-inspired system (NIS) or system component may take a significant time period to establish the desired

vegetation condition in terms of vegetation density and coverage for desired water quality treatment and stormwater management performance, and it may require additional post-construction O&M efforts, such as invasive species removal and protection against predators. A mechanical system or system component (e.g., a pump station) may require regular checkup and testing to ensure proper function. A passive system (e.g., a treatment wetland) or system component (e.g., catch basin inlet screen) may require additional O&M activities to maintain vegetation or prevent clogging. The type of project will also significantly affect the total project cost. For example, passive systems may require less intensive O&M due to the absence of mechanical features, while certain nature-inspired systems, such as treatment wetlands, typically require significant O&M efforts.

- **Design Phase** – this is the phase of a project when design is advanced from concept-level to final designs and specifications. User agreements between partner agencies should be completed during this phase of development. Project design must always be done in accordance with relevant standard plans, guidelines, and manuals to ensure appropriate uniformity and compliance. Safety of O&M personnel and the public at large must also be considered during project design.
  - **Access** – Systems should be designed to be safely accessible to vehicle or foot traffic, as needed. Roads and/or stairs must be provided to inspect and maintain the system when and as required. Other items related to facility access, such as lighting, maintenance hatches, and ventilation must be considered. Observation pipes and wells shall be provided when an underdrain or similar component is part of the system. The City's Planning and Land Development Handbook for LID (City of Los Angeles, 2016) may be referenced for further details on observation pipe and observation well design.
  - **Automation** – During the Design Phase, it should be determined if automation of project facilities will be feasible. Automation will increase the up-front capital cost of a project, but can improve the operational efficiency of a project and reduce maintenance cycles, thereby limiting long-term O&M costs.
  - **Security** – Maintenance costs and frequency can be severely impacted due to theft and vandalism. For example, irrigation system components or pumps can be intentionally damaged; metal grates, copper wiring, or other mechanical parts can be stolen; or project facilities can be tagged or vandalized in other ways. Security should therefore be considered during project design. Appropriate security measures will also help reduce safety risks. As feasible, a plan for coordination among various agencies (e.g., LAPD, LA County Sheriff's Department, Park Rangers, and other enforcement agencies) should be considered during this phase.

- **Construction Phase** – following completion of design, this is the phase of a project when the project is built. This phase includes review of project submittals, attendance of meetings by all relevant parties, training of appropriate project staff, and initiation of optimization.
  - **Accountability Mechanisms** – Establish a project-specific O&M plan, such as a SOP document. One primary objective of the O&M plan/SOP is to lower the technical barrier such that City O&M staff with little or no stormwater management background can sufficiently perform O&M activities. In addition, an O&M plan/SOP ensures each involved party is aware of their responsibilities. Designated O&M agency representatives should assume the role of liaison to communicate with vendors and other O&M staff about their O&M support and warranty periods for any proprietary devices or equipment (e.g., SCADA). If ownership of the system is transferred, the O&M plan should be transferred to the corresponding party.
  - **Training –** Establishment of a training program that corresponds with the SOP is key to the establishment of accountability mechanisms and long-term project sustainability. A designated O&M agency representative should be responsible for training other O&M staff to properly conduct O&M activity in accordance with an established SOP. Establishment and maintenance of a repository for all SOP's will also aid in the development of a standardized training program.
  - **Optimization Initiation** – Identify performance indicators and associated monitoring parameters, and prepare post-construction monitoring that drives the rest of O&M planning during this optimization phase. The intent of optimization is to refine the original SOP to accommodate challenges and factors that were not expected during project design phase, such as extreme drought or wet condition and invasive species. It is important to establish a duration of the optimization phase, which will vary by project type. Generally, the optimization phase of a NIS system should be longer than that of a passive treatment system. Modifications to O&M procedure adopted from the optimization phase ultimately help maintain project performance over the project life span.
- **System Performance Phase** – following completion of project construction, this phase of a project covers the start-up and the initial functioning life of a project. Due to project-specific variances, this phase can last for a few months or up to five years.
  - **Continual Monitoring** – Monitoring activities and schedule should be included in the System Performance Phase where required to assess the effectiveness of green and grey infrastructure facility management practices. Some infrastructure facilities will require continual monitoring for control purposes, and may require reaction in response to system variation. Monitoring done as part of post-construction project modification is considered a part of "Adaptive

Management" and is separate from the standard compliance monitoring requirements.

- **Remote Monitoring** – When remote data tracking programs (e.g., SCADA) are included as part of the SOP, it is critical to ensure that the program provides reliable and consistent data. If and when remote tracking programs go offline, a framework should be in place to identify vendors/personnel who can fix the program and bring it back online in as little time as possible, so as to reduce the amount of time that data is not being collected.
- **Proper Documentation** – By tracking O&M activities and costs, one may confirm that the system is operating as intended, or identify opportunities for more effective strategies. Example documentation activities include keeping O&M log books for site conditions and maintenance. Additional O&M activity documentation requirements are summarized in Table 5.1 (see page 5-8).
- **Staff Allocation** – Although initially identified during the Project Development Phase, O&M staff allocation should be refined throughout a project's development. Following completion of construction, designated inspection technicians and engineers should be assigned charge of O&M responsibility. A system can only operate effectively and efficiently with properly educated employees or volunteers. Training material should be easy to understand and convey both the details and big-picture environmental benefits of a properly functioning system.

5.2 GENERAL O&M GUIDANCE FOR GREEN INFRASTRUCTURE PROJECTS

The following Section provides a brief overview of general O&M guidance for green infrastructure projects.

5.2.1 Project Categories

As described in Section 4.1.5, green infrastructure may contain a combination of nature-inspired, mechanical, and passive components, and may be regional or distributed in scale. Further details on O&M requirements are discussed in Section 6.2.2.

For more detailed operation and maintenance requirements specific to a particular green infrastructure system, the following manuals are recommended as guidance:

- City of Los Angeles
  - Planning and Land Development Handbook for Low Impact Development (City of Los Angeles, 2016);
  - City Landscape Ordinance (City of Los Angeles, 2005);
  - Green Stormwater Infrastructure in the Public Right-of-Way Handbook (draft currently under development, level of O&M detail to be determined)

- County of Los Angeles
  - Low Impact Development Standards Manual (County of Los Angeles, 2014);
  - Guidelines for Alternate Water Sources: Indoor and Outdoor Non-Potable Uses (Los Angeles County Department of Public Health, 2016); and
- Caltrans - Caltrans Stormwater Quality Handbook Maintenance Staff Guide (Caltrans, 2003)

5.2.2 Operation and Maintenance Requirements

Operational requirements for green infrastructure are largely general and uniformly apply to all project categories. For example, all green infrastructure systems should be inspected periodically. The frequency of inspection could range from daily to annually, and is largely dictated by variables that are project-specific (e.g., type of project, location of project, drainage area to project, project phase, etc.). Therefore, inspection frequency should be researched further in the manuals referenced above.

- **Ensured Access** – Systems should be accessible to vehicle or foot traffic as needed. Roads and/or stairs must be provided to inspect and maintain the system when and as required. Connectivity and circulation between projects and within project boundaries are key components for cost effective O&M. Observation pipes and wells should be provided when an underdrain or similar component is part of the system. The City's Planning and Land Development Handbook for LID may be referenced for further details on observation pipe and observation well design.

- **Authorized Access** – Only approved and trained individuals should have access to operate, inspect, and maintain any green infrastructure system. For project with multiple agencies, an O&M plan and/or MOU should be developed to ensure each involved party is aware of their roles and responsibilities for all project components. Specific O&M technicians and engineers should be trained and assigned charge of O&M activity.

- **Safety** – For green infrastructure facilities sited at parcels with expected public access (e.g., parks, parking lots), additional O&M requirements may be needed to reduce safety risk, such as fall hazards and open water, to the public and the O&M staff. Special O&M requirements are required if the project site has to be accessed at times of heavy rain or unforeseen conditions.

- **Documentation** – O&M activities and costs should be tracked and analyzed to confirm that the system is operating as intended, or identify opportunities for more effective strategies.

For projects utilizing manufactured products, the vendor may provide product-specific O&M guidance, and O&M may be conducted by the vendor during the product warranty period. City O&M staff should work with product vendors to clarify O&M responsibilities during the pre-design phase. For projects with an O&M warranty, City O&M staff should also be engaged in coordination with vendors to oversee the O&M activity and identify O&M issues that may affect project performance.

General activities for each project type are provided in Table 5.1. It is expected that the O&M SOP for each individual project would be uniquely suited to the project components and O&M needs.

Table 5.1 General Green Infrastructure O&M Requirements
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Project Type	Example Activity
Nature-Inspired	• Document existing conditions and maintenance performed on the field log • Post-weather monitoring (e.g., drawdown time, infiltration rate) • Inspect for trash and debris • Check for erosion or clogging at inlet as applicable • Health and safety check • Inspect for signs of vector breeding • Remove weeds and overgrown vegetation • Re-establish or mow/trim vegetation to sustain vegetation; irrigate, as necessary, and ensure proper functioning of irrigation lines, connections, and timers • Re-establish side slopes when needed
Mechanical	• Document existing conditions and maintenance performed on the field log • Post-weather monitoring (e.g., drawdown time, infiltration rate) • Remove trash and debris accumulation at trash capture device • Provide stock inventory of mechanical components as applicable in preparation for system failure. • For commercial proprietary devices, inspect and maintain per manufactures' requirements
Passive	• Replace facility soil, mulch and geotextile fabric to maintain design infiltration rate • Remove trash and debris • Remove sediment at inlet and regrade/provide rip/rap for scour • Reestablish or mow/trim vegetation to sustain vegetation; irrigate, as necessary, and ensure proper functioning of irrigation lines, connections, and timers • Perform vector control activities

5.3 GENERAL O&M GUIDANCE FOR GREY INFRASTRUCTURE PROJECTS

5.3.1 Project Categories

Grey infrastructure plays a key role in collecting and conveying discharge from Los Angeles streets before ultimately being discharged. Examples of grey infrastructure asset types range from storm drains and open channels to reservoirs and dams. General O&M guidance has been provided in the context of the following facilities, although O&M SOPs should be project-specific: culverts, ditches, gutters, underdrains, inlets, open channels, debris basins, and pump stations, including LFDs.

5.3.2 Operation and Maintenance Requirements

Generally, grey infrastructure has a common knowledge approach to operations and maintenance, as these devices have been established longer than green infrastructure facilities and have a longer history of testing and data. Being that grey infrastructure facilities are relatively less complex, there are correspondingly fewer O&M requirements.

For more detailed operation and maintenance requirements specific to a particular grey infrastructure system, the following manuals are recommended as guidance:

- City of Los Angeles
  - LABOE Sewer Design Manual for pump stations (LBOE, 1992)
  - LABOE Storm Drain Design Manual – Part G (LABOE, 1973)
- LACDPW - Debris Basin Maintenance Program Mitigated Negative Declaration (BonTerra Consulting, 2010)
- Caltrans - Stormwater Quality Handbook Maintenance Staff Guide (Caltrans, 2003)

General guidance for grey infrastructure O&M activities is summarized in Table 5.2.

Table 5.2 General Grey Infrastructure O&M Requirements Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan
Example O&M Activities
• Periodically inspect culverts, ditches, gutters, underdrains, horizontal drains and down drains for clogging and degradation to prevent flooding and provide sufficient hydraulic capacity • Inspect open channels for sufficient flow capacity and potential damage • Inspect for chemical contamination • Inspect for structural integrity, graffiti, or vandalism • Inspect debris basins to ensure adequate debris flow reduction and flood control • Inspect debris basins annually, after significant storms, and 72 hours after one significant storm per year • Inspect pump station screens to ensure no debris build-up • Inspect and clean pump outfall facilities to ensure free flow of water beyond pumping station • Remove accumulated sediment and debris from storm drains during the dry or low-flow season • Clear inlet grates of debris • Replace any damaged inlet grate or frames • Regrade/provide rip-rap to prevent scour at inlets • Clear nuisance vegetation (e.g., brush, trees, other vegetation) • For debris basins, clear the entrainment channel of sediment/vegetation • Perform structural repairs • Inspect for signs of vector breeding • Remove sump solids from pump station • Service or repair electrical and mechanical components • Remove waste oil, contain within buckets/drums, and recycle, reuse, or dispose of properly. • Install alarm detection and notification system to monitor variation from normal condition, including power failure, high water levels, obstructions, etc. • Employ an operations team to be attentive to notification system and respond when alarm is detected. • Perform vector control activities • Document monitoring results for later analysis.

5.4 STORMWATER O&M CHALLENGES IN THE FUTURE

Management challenges are inherent to having multiple agencies operate and maintain different components of a multifunctional system that is intended to provide stormwater and dry weather management. As the City's stormwater system evolves over the next 25 years and beyond, some challenges related to O&M that may be faced include:

- An increased need for resources. As infrastructure grows, particularly green infrastructure, not only is more funding required to finance the construction of projects, but more money and staff with proper training are needed to operate and maintain projects at effective levels.

- An increased demand for monitoring data. More and more projects are being constructed with a requirement for performance to be tracked via monitoring (e.g., water quality monitoring, flow monitoring, etc.). As the stormwater infrastructure network evolves, the need for more data means a need for more resources and more data management and analysis.

- The need for an improved system to evaluate and assess project performance. With strict regulatory requirements in place, a deviation from performance for certain green infrastructure projects may imply immediate non-compliance. Therefore, a need exists for a more robust, automated system to monitor project performance in real-time, thereby allowing system enhancements to occur as soon as possible in order to maintain performance standards.

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INTEGRATED STORMWATER MANAGEMENT ANALYSIS

The purpose of this Chapter is to present the framework behind the "three-legged stool" approach to project benefit assessment and integration with respect to short and long-term project planning. This integrated strategy aims at capturing "missed opportunities" in flood risk mitigation, water quality improvement, and water supply augmentation under existing conditions as discussed in Chapter 1 through Chapter 4, and hence would offer a comprehensive, well-rounded planning effort to meet the City's long-term stormwater management needs.

6.1 THE PRACTICAL PROJECT MANAGER – THE THREE-LEGGED STOOL

Historically, stormwater infrastructure projects are typically targeted to address either flood risk mitigation, water quality improvement, or water supply augmentation. It is the intent of this Stormwater Facilities Plan to incorporate all three benefits into the "three-legged stool" integrated approach to stormwater and urban runoff infrastructure planning. This will help guide the decision-making process through the new selection scheme that is recommended in this section. Each is discussed below individually, followed by a discussion of the overall approach to stormwater management.

In preparation of developing the City's SIP in Chapter 7, project selection criteria were developed to help phase the large number of stormwater projects gathered in the project database. The selection criteria were developed based on the expected project benefits as described below.

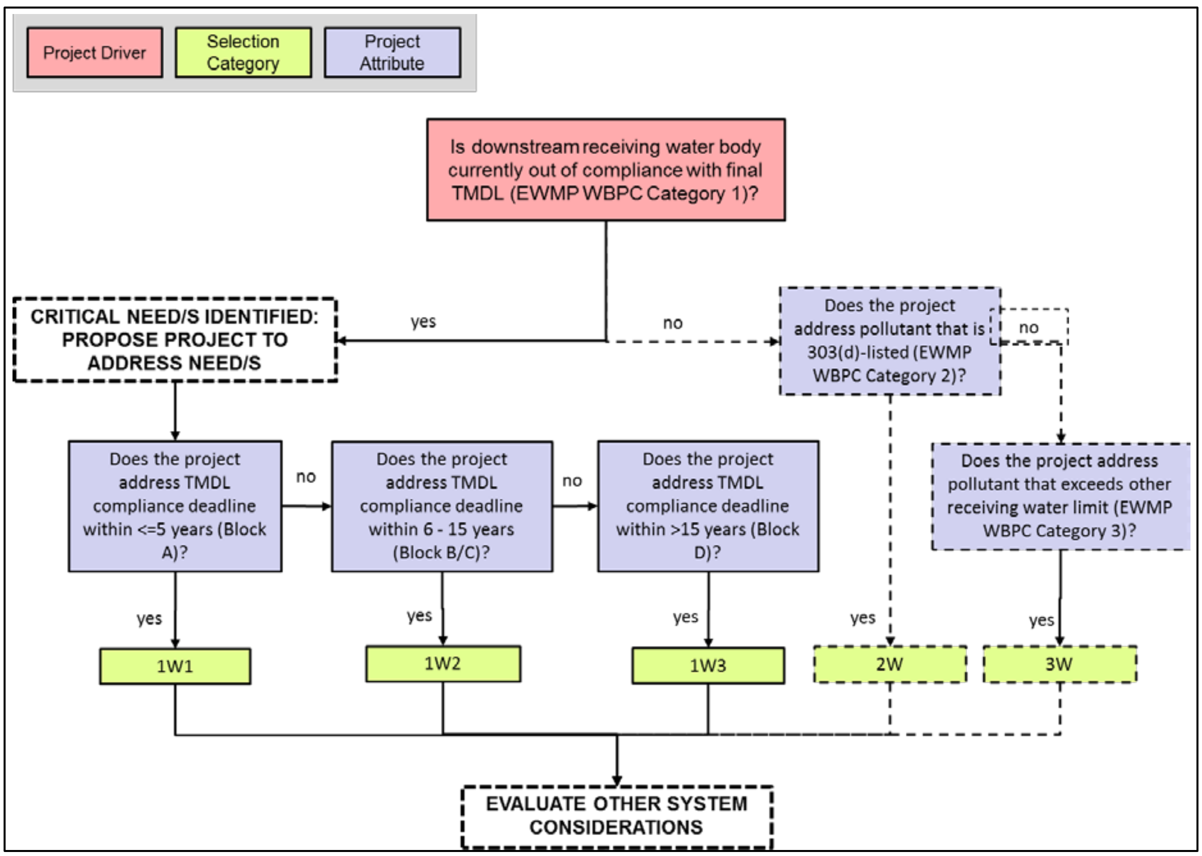
6.2 WATER QUALITY IMPROVEMENT

Stormwater improvement projects intended to improve the quality of a downstream waterbody are typically driven by regulations such as TMDLs and/or 303(d) listings. As discussed in Section 2.1, as required by the Los Angeles Region MS4 Permit, the City prepared several EWMPs and one WMP to address impairments to downstream waterbodies such as rivers, bays, and oceans. The EWMPs[25] specified both regional and distributed projects predicted to achieve the required pollutant load reduction(s) by the TMDL-specified deadlines. LASAN is currently in the process of planning, designing, and constructing those projects, cooperating with other local agencies where multiple parties are involved (e.g., LASAN would likely coordinate with LACFCD and LABOE in the case of low flow diversions to the sanitary sewer).

[25] The current SMB J7 WMP states no structural projects are required within the SMB J7 WMA.

Examples of projects with water quality benefits might range from large-scale constructed wetlands to small-scale tree-box filters or swales. In some cases, a project targeting water quality might also be designed to include water supply augmentation benefits (e.g., an infiltration basin could be sited above a functional aquifer), flood risk mitigation benefits (e.g., reducing the volume of runoff that would otherwise pass downstream and might overwhelm a portion of the drainage system), and/or other benefits as discussed in Section 5.5 (e.g., a biofilter would likely result in increased local biodiversity and could also be designed to include a recreational feature such as a perimeter walking path and educational signage).

To identify the water quality benefits for each stormwater project in the database prepared in Section 7.1, a flowchart was developed that results in a categorization utilizing a series of project attribute evaluations as illustrated on Figure 6.1.



<u>Abbreviations</u>:
EWMP: Enhanced Watershed Management Plan; TMDL: total maximum daily load;
WBPC: water body pollutant combination

Figure 6.1 Water Quality System Considerations

As shown on Figure 6.1, drivers for projects addressing water quality are primarily dependent on whether a downstream receiving water body is found to be out of compliance with a final TMDL (WBPC Category 1) and, as such, will strongly rely on the proposed projects to meet applicable pollutant load reduction targets. See Section 2.1 for more information on the implementation of local water quality regulations. As summarized in Table 2.2, the critical years for TMDL compliance are: 2021, 2032, and 2037. Corresponding selection drivers have been developed to rank water quality improvements projects based on applicable TMDL compliance deadlines. Building upon the TMDL milestones, the City developed generalized stormwater project implementation milestone years ("Blocks") based on applicable regulatory compliance milestones. The defined blocks are summarized in Table 6.1.

Table 6.1 Project Implementation Milestone Block Definition
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Block	EWMP Milestone Schedule	WMA	Regulatory Compliance Attainment
Block A	2021	BC	BC Metal and Bacteria TMDLs - 100%
		SMB	SMB J2/3 - SMB Beach Bacteria TMDL -100% MdR Mother's Beach and Back Basins Bacteria TMDL - 100%
	2024	ULAR	LA River Metals TMDL - 50%
Block B	2026	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 50%
	2028	ULAR	LA River Metals TMDL - 100%(1)
Block C	2032	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 100%
		ULAR	LA River Bacteria TMDL - 44.5%(2)
Block D	2037	ULAR	LA River Bacteria TMDL - 100%

Notes:
(1) Block definitions for the ULAR WMA is based on two TMDLs. According to the ULAR EWMP, all distributed Green Streets and regional projects on public parcels are required to meet the LA River Metals TMDL.
(2) This milestone is not based on regulatory deadlines, but was estimated by interpolating between the end of Block B (2028) and the final LA River Bacterial TMDL compliance attainment at the end of Block D (2037).

Projects that address pollutants that do not have any applicable TMDL compliance deadline may still be considered with water quality benefits, depending whether the target WBPC is 303(d)-listed. In summary, the selection category was determined based on the following water quality benefits:

- 1W1 (WBPC Category 1 Block A Projects) – Reduction of pollutant(s) with near-term (< = 5 years) final and/or interim TMDL deadline.
- 1W2 (WBPC Category 1 Block B/C Projects) – Reduction of pollutant(s) with mid-term (6 – 15 years) final and/or interim TMDL compliance deadline.

- 1W3 (WBPC Category 1 Block D Project) – Reduction of pollutant(s) with long-term (>15 years) final and/or interim TMDL compliance deadline.
- 2W (WBPC Category 2) – Reduction of pollutants that do not have an applicable TMDL but are listed on the CWA 303(d) list.
- 3W (WBPC Category 3) – Reduction of pollutants that are not 303(d)-listed but exceed applicable water quality limits.

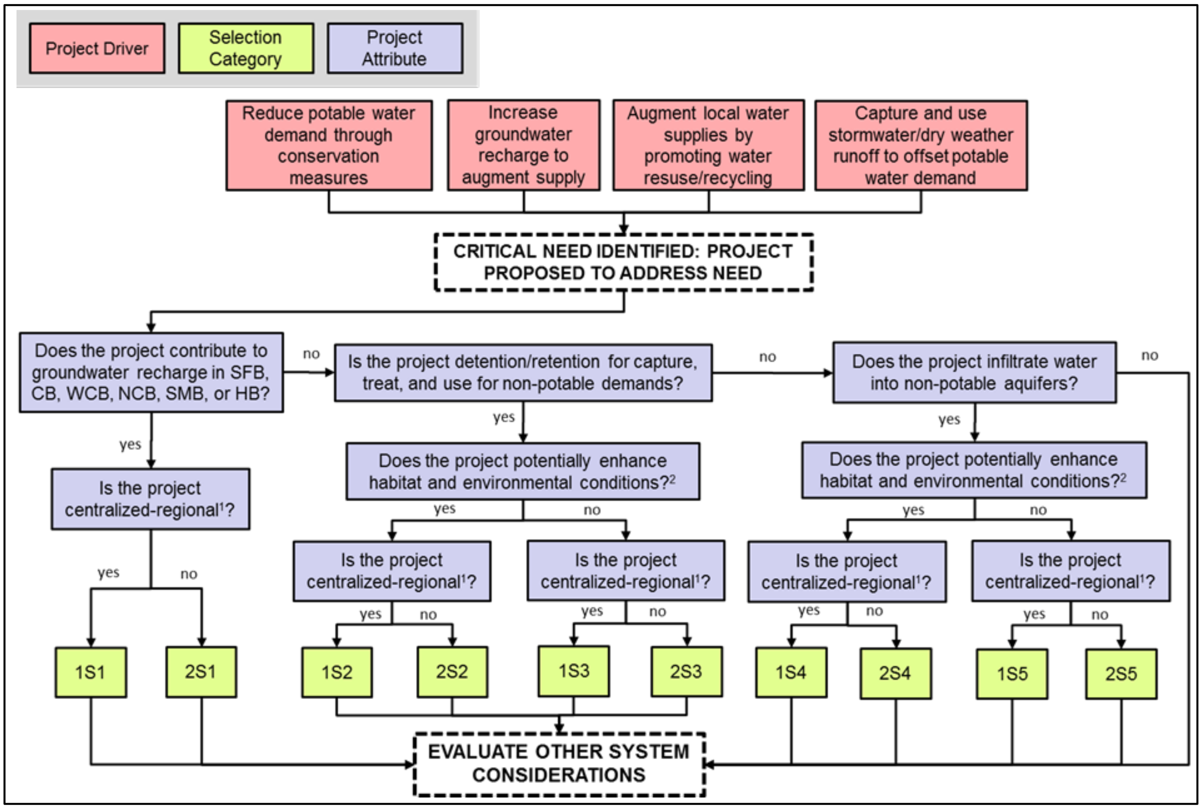
6.3 WATER SUPPLY AUGMENTATION

Stormwater improvement projects intended to enhance local water resources are typically driven by goals to reduce potable water demand through conservation measures, to augment groundwater recharge, to enhance local water supplies by promoting water reuse/recycling, to capture and use stormwater/dry weather runoff to offset potable water demand, and/or to enhance habitat and environmental conditions. Specific attention is given to the ability of the City to provide water during a drought. For overall planning purposes, the following three water supply augmentation drivers, ordered from high to low importance, are proposed: groundwater recharge, capture and use, and environmental habitat. See Section 2.2 for more information on the implementation of local flood mitigation regulations.

In general, projects targeting water supply augmentation are developed to diversify the City's water supply portfolio, create a more locally controlled source of water supply, and in some instances to respond to known or anticipated water supply and reliability challenges, such as Bay-Delta and Colorado River supply uncertainties due to allocations, pumping restrictions and other threats, LA aqueduct supply reduction due to Owens Lake dust mitigation, groundwater contamination in local groundwater basins, and/or climate change impacts (LADWP, 2015). As discussed in Section 2.3, the SCMP was a collaborative effort led by LADWP, with local agency partners including LASAN, Metropolitan, LACFCD, and other partner agencies. Large-scale water supply augmentation projects are typically expected to be initiated and led by LADWP or other partners, however, smaller-scale and distributed projects with infiltration components resulting in water supply benefits could be led by any agency.

Examples of projects with water supply benefits might range from large-scale spreading basins to small-scale dry wells or unlined BMPs with infiltration components. In some cases, a project targeting water supply augmentation might also be designed to include water quality benefits (e.g., reducing the downstream pollutant load associated with the reduced runoff volume that is now infiltrated), flood risk mitigation benefits (e.g., reducing the volume of runoff that would otherwise pass downstream and might overwhelm a portion of the drainage system), and/or other benefits as discussed in Section 5.5 (e.g., a spreading ground could be developed to result in increased local biodiversity and could also be designed to include a recreational feature such as a jogging path around the perimeter).

To identify the water supply benefits for each stormwater project in the database prepared in Section 7.1, a flowchart was developed that results in a categorization utilizing a series of project attribute evaluations as illustrated on Figure 6.2.



[1] Centralized/regional projects generally capture water from a larger tributary area comprised of multiple land use types and may capture more than 3 to 4 MGY (10 AFY). Distributed projects generally capture water from a smaller tributary area comprised of one or only a few land use types and may capture less than 3 to 4 MGY (10 AFY).
[2] Habitat and environmental enhancements may include capture efforts that increase groundwater elevations and create possible beneficial groundwater upwelling to support riparian and wetland vegetation.
Abbreviations:
CB: Central Basin, WCB: West Coast Basin; NCB: North Central Basin; SFB: San Fernando Basin; SMB: Santa Monica Basin; HB: Hollywood Basin; MGY: million gallons per year;
AFY: acre-feet per year

Figure 6.2 Water Supply System Considerations

As shown on Figure 6.2, water supply project selection was driven primarily by the project location and the project's ability to provide groundwater recharge. Stormwater and urban runoff infiltration into non-potable aquifers (i.e., aquifers not pumped for water supply) can follow several pathways. Infiltrated runoff may eventually "upwell" to support riparian vegetation or habitat needs or could surface as spring flow and potentially become a nuisance flow requiring additional measures to manage the runoff. Hence, the selection category (1S1 through 2S5, shown in the green boxes) was determined based on the following water supply benefits:

- Contribution to groundwater recharge;
- Contribution of captured rainwater/stormwater for direct use; and
- Impact on habitat and environmental enhancements.

For example, a project with selection category 1S1 refers to a regional project that contributes to groundwater recharge in one of the City adjudicated groundwater aquifer. A project with selection category 2S3 refers to a distributed project that captures, treats, and uses storm water or urban runoff for non-portable demands but does not enhance habitat and environmental conditions. For projects that currently do not have sufficient information to determine their water supply benefit, a GIS desktop screening analysis was conducted to identify the geophysical category based on the project locations. Projects located in Geophysical Category A[26] areas were assumed to provide groundwater recharge benefits. Projects located in other areas were assumed to provide direct use and/or environmental benefits.

6.4 FLOOD RISK MANAGEMENT

Stormwater improvement projects intended to reduce flood risks are typically driven by asset-specific needs, such as location with respect to a known or anticipated area of flooding, insufficient capacity, asset deterioration, or expiration of useful life based on age, and/or known or anticipated impacts as a result of sea level or groundwater rise. Infrastructure projects or improvements designed to address flood risk management may be owned, operated, and/or maintained by multiple agencies such as LABOE, LACFCD, USACE, etc. See Section 2.3 for more information on the implementation of local flood mitigation regulations.

Project needs due to localized flooding are often reported by local residents to LABOE and/or LACFCD depending on the extent of the project need, the project ownership, and the agency responsible for O&M. Emergency projects are selected first and imminently, while less critical or more sustained projects are added to the SIP for implementation based on other factors, as described below.

To assess asset deterioration or expiration of useful life based on age, LABOE developed an Asset Management Manual for Stormwater Infrastructure in 2006, which evaluated the current condition of storm drain features including open channels, storm drain pipes, debris

[26] Geophysical Category A is defined as an area that satisfies all of the following conditions: located above an unconfined aquifer, located above a permeable geology unit, located within hydrologic soil group A or B, and absence of infiltration constraints (LADWP, 2015). Please see Figure F.1 in Appendix F for geophysical categories within the City.

basins, catch basins, and pumping plants. Based on the results of an inspected sample, each asset was assigned a grade from A (very good condition, 10+ years useful life remaining, no repair actions needed) to F (failed condition, exceeded 4 times useful life, emergency repair action required). LABOE then either tied the asset grade to the appropriate current-year CIP (F grades), 5-year CIP (D grades), 10-year CIP (C grades), 20-year CIP (B grades), or did not consider the asset for the 20-year CIP (A grades). The next assessment was planned for approximately ten years out.

LABOE has also developed a point assignment system to establish the selection order of flood control CIP projects based upon multiple unique criteria in the categories of street and traffic impacts, extent of flooding and erosion, storm drain system impacts, and quality improvements. While the LABOE system is not being applied in this Stormwater Facilities Plan, which is taking more of a multi-benefit, multi-agency project selection approach, the LABOE system is being considered with regards to flood risk mitigation project drivers. The selection approach being implemented for this Stormwater Facilities Plan is described in more detail in Section 7.1.

LACFCD's CIP is currently evolving into a more traditional program. Although no specific projects are currently identified, future projects will be in line with examples such as Rory M. Shaw Wetlands Park Project (i.e., multi-benefit, regional objectives, and collaborative process). In the meantime, LACFCD will continue to proactively maintain their existing flood control infrastructure (such as the channels, dams, and spreading grounds).

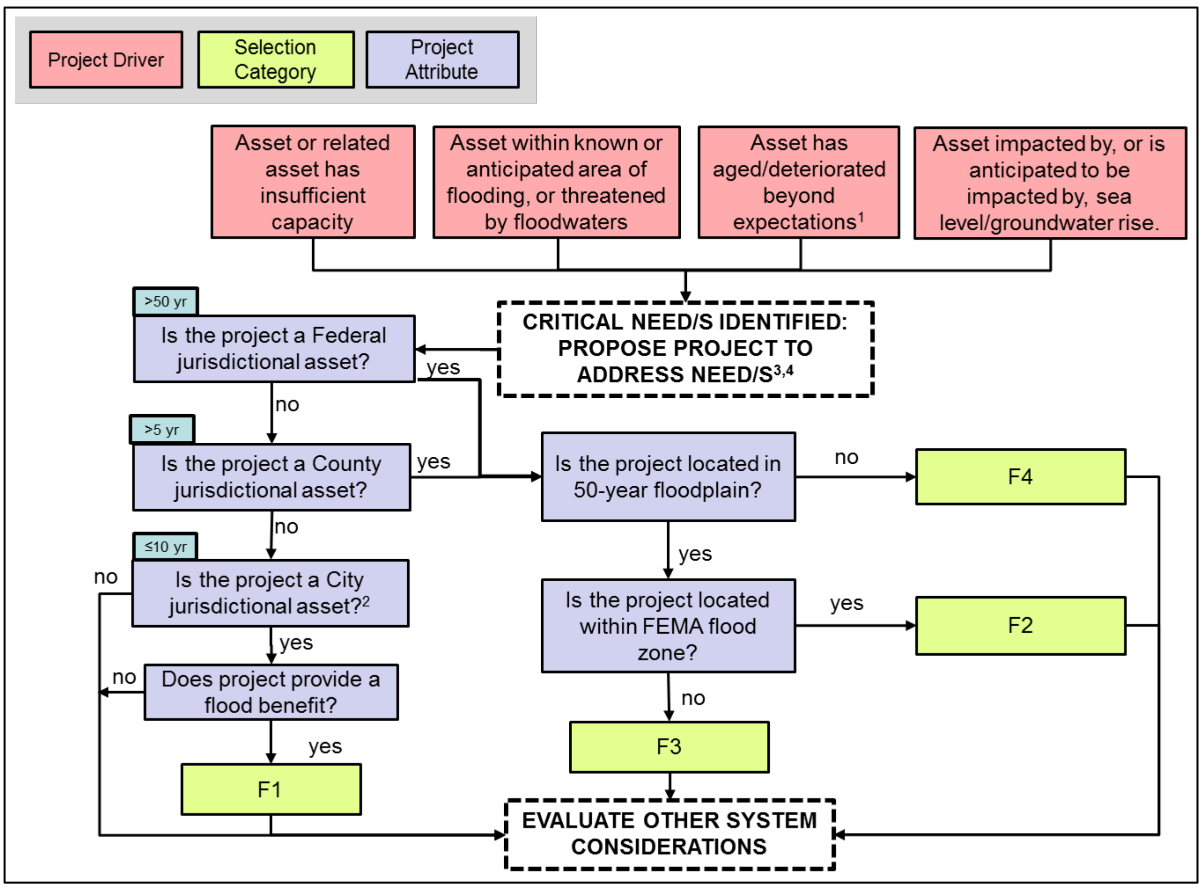
The American Society of Civil Engineers (ASCE) published their most recent infrastructure report card in 2013. 'Grades' were assigned in the category of flood control based primarily on the age of the system, based on data from the LACFCD maintenance database. An A was given to facilities built in the last 20 years, a B if built 20 to 50 years ago, a C if built 50 to 80 years ago, a D if built 80 to 100 years ago, and an F for facilities built over 100 years ago. Los Angeles County received a B+ for flood control. Information presented on the 2013 ASCE infrastructure report card has been considered while developing selection drivers in this Facilities Plan.

Examples of projects with flood risk management benefits might range from large-scale detention basins to individual repairs of failed sections of storm drain. The City is generally responsible for the mitigation efforts of flood events with a 10-year or less return period (LABOE, 1986). Regional, state, and federal agencies, including USACE and LACFCD, design stormwater facilities for a much larger range of flood events, generally ranging from the 10-year flood event to the 100-year flood event.[27]

[27] For example, LACFCD's Hydraulic Design Manual (LACFCD, 1982) sets a minimum design storm frequency of 10-years for applicable drains, and the USACE's Los Angeles River Ecosystem Restoration Feasibility Study (USACE, 2015), commonly known as the ARBOR Study, shows that portions of the LA River have capacity above the 100-year flow rate.

Intense rains can result in flash floods, especially in areas of prolonged drought and/or recent wildfires. Flood impacts can range in severity from minor impacts to flood water encroachment on buildings and properties, property damage, road flooding and closures, and/or other related safety concerns (FEMA, 2016). LABOE, LACFCD, and USACE all share responsibility in managing local flood risks. LABOE is generally responsible for the mitigation efforts of flood events with a 10-year or less return period. LACFCD and USACE are typically responsible for mitigating more severe flood events within the City's boundary. While this Stormwater Facilities Plan is prepared by the City, the City intends to present integrated solutions that could include several entities for project implementation.

To identify the flood risk mitigation benefits for each stormwater project in the database prepared in Section 7.1, a flowchart was developed that results in a categorization utilizing a series of questions as illustrated on Figure 6.3.



[1] Infrastructure rehabilitation/replacement as a basis for identified project drivers.
[2] City's requirement is to manage Flood Risk associated with storms up to the 10 year recurrence interval (i.e., a storm event with a 1 in 10 chance of being met or exceeded on an annual basis) for continuing routine/functional needs, depending on location.
[3] Required coordination between City, County, and Federal agencies.
[4] Potential use of flood control facilities to capture and/or store stormwater and urban runoff.

Figure 6.3 Flood Risk Management System Considerations

As shown on Figure 6.3, the selection category (F1 through F4, shown in the green boxes) was determined based on the following flood risk mitigation benefits:

- Jurisdictional unmet drainage need (City, County, Federal, etc.);
- Location with respect to 50-year floodplain; and
- Location with respect to FEMA flood zones.

For example, a project with selection category F1 refers to a City jurisdictional asset that provides flood mitigation benefit. A project with selection category F2 refers to a County or Federal jurisdictional flood mitigation asset that is located within any FEMA flood zone. The expected flood risk management benefits of projects summarized in the database were determined based on the project design and background information extracted from the source document.

In some cases, a project targeting flood risk mitigation might also be designed to include water quality benefits (e.g., a detention basin would also reduce the downstream pollutant load associated with the reduced runoff volume), water supply augmentation benefits (e.g., a flood risk detention basin could be designed over a functional aquifer and be designed for enhanced infiltration), and/or other benefits as discussed in Section 5.5 (e.g., a detention basin could be designed for recreational fields during dry periods in which it is not inundated with stormwater runoff).

6.5 NEED FOR AN INTEGRATED APPROACH TO STORMWATER MANAGEMENT

When deciding which projects should be funded and budgeted, the selection from each of the above listed category is taken in to consideration as well as the criticality of the project. As discussed previously and shown in the left side of Figure 6.4, flood risk management, water quality improvement, and water supply augmentation are the primary priorities for system improvements, upgrades, and long-term planning. Secondary benefits such as restoration, creating open space, and ecological functioning can also be considered in the design phase of each project, but may not be the primary driver for project selection. Currently, primarily due to how budgets and responsibilities align, the integration of project selection is not a part of the typical decision-making process and there is limited potential for benefit overlap. One of the goals of One Water LA 2040 and this Stormwater Facilities Plan is to have more projects align all objectives considered when deciding on the selection of projects. This includes more involvement and discussion between departments in order to maximize the benefits. The right side of Figure 6.4 presents this idealized approach in a conceptual manner, illustrating the "optimal project" as one in which all three primary drivers are present and maximized to the extent practicable.

The implementation of an integrated approach to stormwater management is expected to result in lower costs over the long term due to 1) the cost of a single multiple-benefit project is anticipated to be lower than the cost of multiple single-benefit projects to achieve the same goals; and 2) fewer projects may be necessary to meet local goals over the long-term, ultimately resulting in long-term savings.

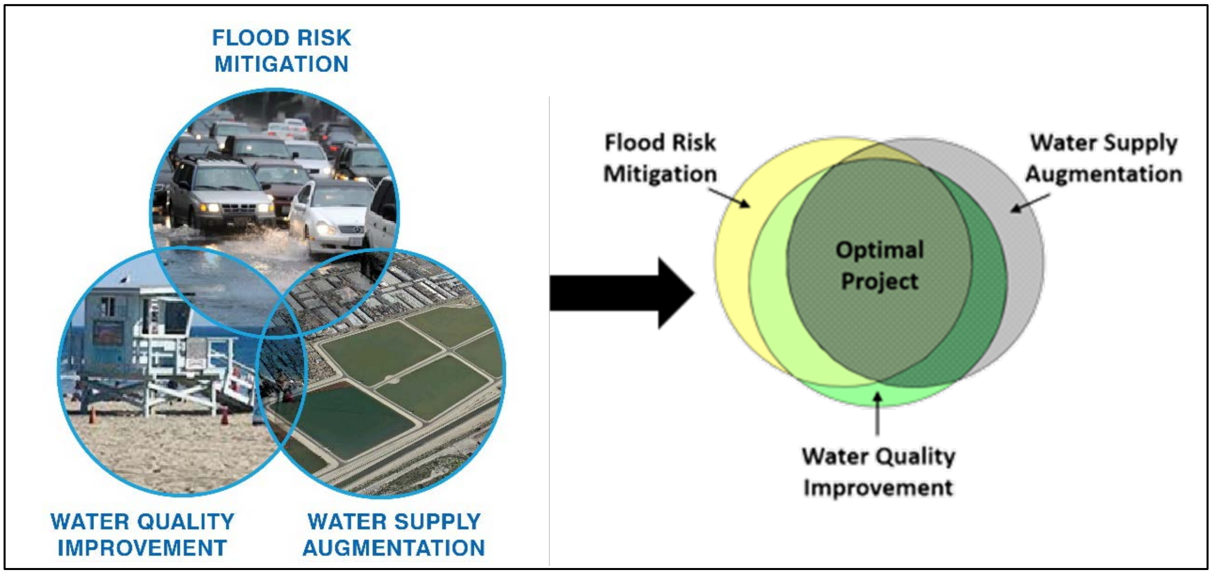


Figure 6.4 Multi-Benefit Integration Approach to the Optimal Project

6.5.1 Additional Benefits

In addition to the primary benefits discussed above, projects may also have secondary benefits, of particular value to the communities in which the projects are constructed. For example, a constructed wetland targeting nutrient removal (achieving water quality improvement as well as flood risk mitigation) may also provide the local community incremental air quality, biodiversity, urban greening, park access, and walkability benefits. These secondary benefits can generally be grouped into environmental benefits and community benefits.

Environmental benefits are those benefits beyond improved water quality, flood risk mitigation, and water supply augmentation, which will not be used as primary selection criteria, but are notable in their potential impacts. Examples include improved air quality, improved biodiversity, and increased tree canopy, among others. Such secondary benefits may help address environmental targets, such as those include in the City of LA's pLan.

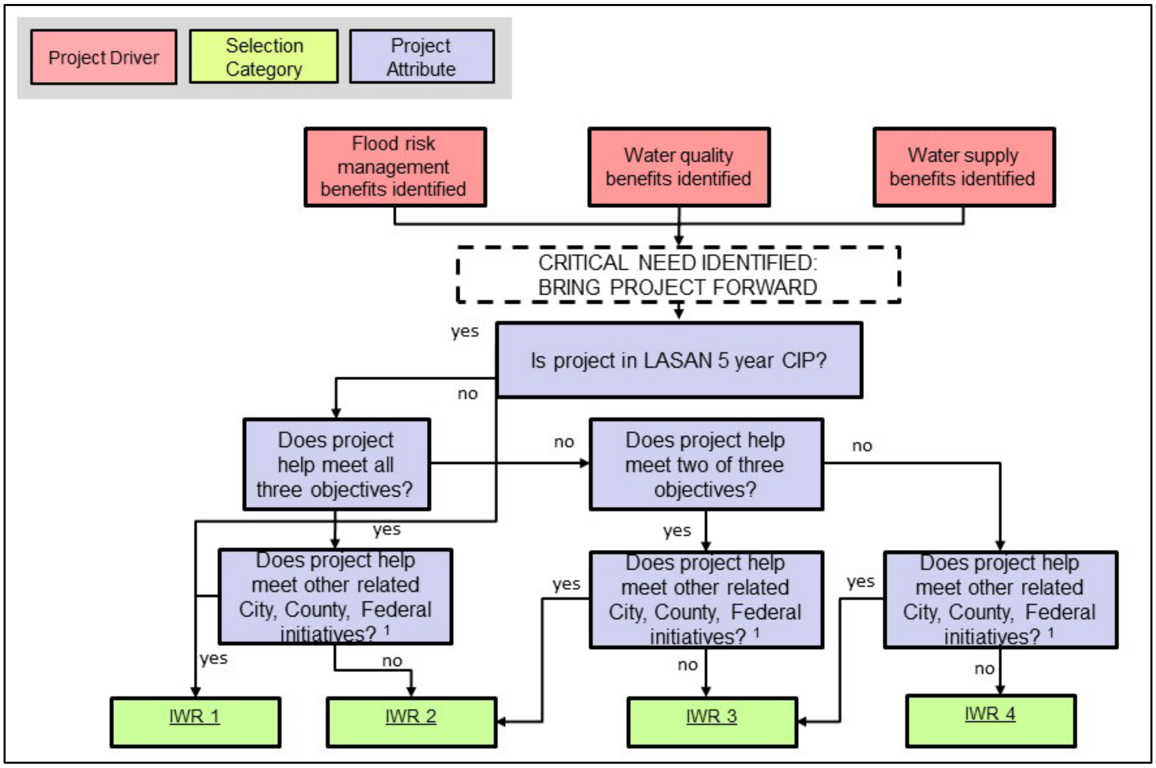
Community (or social equity) benefits are those benefits that selected projects will provide in an indirect manner, which benefit the local community residents, visitors, and businesses. Examples include reduced urban temperature/heat island effect through urban greening, improved access to local parks or open space (in the case of larger multi-use BMPs), and enhanced walkability (in the case of green streets BMPs). Such secondary benefits may help address social equity targets, such as those include in the City of LA's pLAn.

6.5.2 Strategies for Effective Integration

Ideally, flood risk improvements, water quality benefits, and water supply augmentation would be inherent to all projects, and it is the intent of this Facilities Plan to attempt to select projects that result in benefits in all three areas. However, in some cases, a planned project may not provide all three primary benefits, yet it may still warrant a higher selection due to significant singular benefits, critical regulatory requirements, environmental needs, funding availability, or other time-sensitive reasons. For example, a project with a significant water quality benefit, designed to achieve compliance with a near-term TMDL deadline, may not have a water supply or flood control benefit. In this case, the City would most likely still highly select the project despite its single-benefit focus, due to the potential repercussions of non-compliance with the TMDL. In such cases it will be at the discretion of the management to determine the project order outside of the established selection approach, as described in more detail in Section 7.1. It should be noted that highly selected single-purpose projects may have less funding resources available in comparison to multi-benefits projects. For example, per City Charter, LADWP cannot invest in projects that do no yield or develop water resources. Considering the potential policy issues and competing interests that may complicate the integration effort, it is the goal of One Water LA to set the stage for these discussions, facilitate discussions among various agencies and entities to solve competing interests, allow decisions to be made that provide cost-effective benefits to the City as whole, and ultimately overcome political barriers and make the strategy successful.

Secondary benefits can also be considered in the design phase of each project, but may not be the primary driver for which a project is developed or selected. For example, a project may be able to be designed to achieve its primary objectives (e.g., flood risk mitigation), while also improving pedestrian access and tree canopy. Such decisions are anticipated and encouraged to occur in the conceptual and design phases, with the input of the project collaborators and/or stakeholders, through a thorough assessment of project opportunities and constraints.

To identify the integrated water resources benefits for each stormwater project in the database prepared in Section 7.1, a flowchart was developed that results in a categorization utilizing a series of project attribute evaluations as illustrated on Figure 6.5.



[1] Other initiatives that are directly or indirectly connected to the identified objectives of flood risk, water quality, and water supply may include ED#5, Sustainability pLAn, the LARRMP, City PLANTS, etc.
[2] Project selections evaluated on a case-by-case review of specific project opportunities. This process will involve review by applicable City Bureaus, Divisions, and Departments based on considerations such as funding availability, compliance timeline, community input, and contributions.
[3] This evaluation process is consistent with the selection approach identified within One Water LA Task 5.

Figure 6.5 Integrated Water Resources System Considerations

As shown on Figure 6.5, the integrated water resources management aspect of a given project is based on the number of benefits the project can provide and the project's applicability towards identified City, County, or Federal initiatives. For example, a project with selection category IWR1 refers to either a project that is already listed on LASAN's 2015 5-year CIP project, or a project provides all three benefits and helps meet additional City, County or Federal initiatives. A project with selection category IWR3 refers to either a project that provides two benefits but does not meet other initiatives, or a project that provides one benefit and helps meet other initiatives. As summarized on Figure 4.2 in Section 4.1, the City's ongoing collaborative initiatives include recreational activity creation, community beautification, public health and safety improvement, and LA River revitalization. Other examples of City, County, and Federal initiatives include funding and climate change resilience. Hence, whether a project will help meet other related City, County, or Federal initiatives, especially on additional habitat related benefits, was an essential input to determine the integrated water resources benefit. For such purposes, after compiling and incorporating identified planned projects, the project database prepared in Section 7.1 was distributed to various One Water LA participating agencies and thus obtained additional input on a project's applicability for qualified initiatives.

STORMWATER IMPROVEMENT PROGRAM

To help the City meet its stormwater and urban runoff management needs through year 2040, a City SIP was developed to categorize the proposed projects and programs into the following three phases:

- 5-year SIP phase (2017-2022);[28]
- 10-year SIP phase (2022-2027); and
- 25-year SIP phase (2027-2042).

The development of this SIP relied on results from multiple stormwater, watershed, and flood risk planning efforts overlaying areas within and upstream of the City's jurisdiction. Projects proposed within and upstream of the City's jurisdiction were compiled and evaluated using the three-legged stool selection criteria. Project implementation deadlines were assigned based on applicable water quality, water supply, and/or flood risk management compliance requirements. It should be noted that although the project database intends to include all projects proposed within and upstream of the City's jurisdiction; only City-involved projects (either as lead agency or in partnership with non-City agencies) are included in the three SIP phases.

Section 7.1 describes the development process of a stormwater management database from already planned projects and new projects proposed and developed within the One Water LA 2040 Plan. Section 7.2 describes the stormwater project selection criteria ("The Three-Legged Stool"). Section 7.3 summarizes the sorted project database from the project selection process. Section 7.4 describes the SIP phasing methodology and outcome, which includes a revised 5-year phase, and the newly developed 10-year and 25-year SIP phases.

7.1 PROJECT DATABASE DEVELOPMENT

As a key component to the stormwater management aspect of the One Water LA 2040 Plan, a single database of planned and potential projects was developed to compile ongoing stormwater management efforts from multiple agencies operating within the City. The database is foundational to the development of the SIP as it provides a common platform to evaluate all projects against standardized stormwater project selection criteria. Existing stormwater, urban runoff, and watershed planning efforts that identified projects within and upstream of the City's jurisdiction were compiled into the database. In addition,

[28] The 5-year CIP is based on LASAN's 2015 5-year stormwater CIP, with the addition of new projects developed within the One Water framework. Please see Section 7.4.1 for specific changes made to the original 5-year stormwater CIP.

low flow diversion projects, climate resiliency projects, and distributed Green Streets Programs developed within the One Water LA 2040 Plan were included in the database and the resulting SIP. In total, 1,201 projects were identified and compiled into the project database. 707 projects were already planned projects identified from previous and ongoing stormwater and watershed planning efforts. An additional 445 Green Streets Block Programs, 42 low flow diversion projects and seven climate resilience retrofit projects were developed as part of the One Water LA 2040 Plan and were added to the project database.

7.1.1 Identification of Already-Proposed Stormwater Projects

Developing the City's SIP first relied on compiling already-proposed and potential stormwater projects within the City. As mentioned in Section 4.5, projects defined as "already-proposed" were recommended in the following watershed planning efforts and compiled into the project database:

- LASAN 2015 Stormwater and Green Infrastructure 5-year CIP
- EWMPs/WMP in which the City is involved (BC, DC, MdR, SMB J2/3, SMB J7, ULAR)
- LADWP Stormwater Capture Master Plan
- LABOE Storm Drain Capital Improvement Plan
- LACFCD/USBR Los Angeles Basin Stormwater Conservation Study
- USACE Los Angeles River Ecosystem Restoration Feasibility Study

In total, 1,046 projects were identified from the watershed planning efforts listed above. After eliminating 339 duplicate projects, 707 unique, planned and potential projects were added to the project database. The compiled project database was distributed to various One Water participating agencies, including LABOE, LASAN, LADWP, LACFCD, and USACE, who reviewed and provided additional project details to improve database accuracy.

7.1.2 City-Wide Green Streets Block Programs Development

Given the limited available open space in the City to implement centralized and regional grey and green infrastructure projects, Green Streets are a critical component to the City's stormwater management system since they allow for the development of stormwater projects on a distributed basis. Each of the five City-led EWMPs presented planning-level targets for Green Streets implementation, based on EWMP-specific implementation metrics and spatial resolution[29]. Working towards achieving the EWMP Green Streets implementation targets, the City has initiated various Green Streets projects and plans,

[29] See Table E.1 in Appendix E for details about EWMP Green Streets implementation targets.

including projects proposed in the LASAN 5-year CIP, the PROW LID policy, and the Great Street initiatives. At the same time, other City and non-City agencies have been developing multi-benefit Green Streets projects. Recognizing that near-term projects proposed in Green Streets plans listed above are not sufficient in and of themselves to meet the LARWQCB-approved EWMP implementation targets, a Green Streets screening analysis was conducted herein to develop City-wide, catchment-specific Green Streets programs to achieve the following objectives:

- Convert the various metrics of EWMP Green Streets implementation targets[30] into one unified metric (e.g., length of Green Streets to be implemented);
- Compile near-term Green Streets projects proposed by both City and non-City agencies or stakeholders to track progress toward achieving applicable EWMP Green Streets requirements compiled from the previous step;
- Estimate the capital and O&M cost of Green Streets projects needed to comply with EWMPs in each catchment or subwatershed,[31] whichever hydrologic boundary was used in each EWMP.

In contrast to detailed, street-specific Green Streets projects, each developed Green Streets program is designed to track all Green Streets projects that have been and will be implemented in any particular catchment or subwatershed and compare the combined totals of these Green Streets projects with the implementation target that was assigned to the catchment or subwatershed by the applicable EWMPs.

The Green Streets programs developed herein serve as a unified, City-wide Green Streets project tracking platform. The programs should not be interpreted as individual Green Streets projects, but are meant to help the City to track and evaluate already-planned Green Streets projects (including those from the LASAN 2015 5-year CIP) and future planned Green Streets projects with respect to their ability to meet the EWMP compliance target.

Table 7.1 summarizes the planned implementation schedule for various "blocks" of green streets based on applicable regulatory compliance deadlines.

[30] See Appendix E for a summary of various EWMP Green Streets implementation targets.
[31] Typically, a subwatershed contains multiple catchments.

**Table 7.1 Green Streets Implementation Schedule Comparison
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan**

Green Streets Block	EWMP Milestone Schedule	WMA	Regulatory Compliance Attainment
Block A	2021	BC	BC Metal and Bacteria TMDLs - 100%
		SMB	SMB J2/3 - SMB Beach Bacteria TMDL -100% MdR Mother's Beach and Back Basins Bacteria TMDL - 100%
	2024	ULAR	LA River Metals TMDL - 50%
Block B	2026	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 50%
	2028	ULAR	LA River Metals TMDL - 100%(1)
Block C	2032	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 100%
		ULAR	LA River Bacteria TMDL - 44.5%(2)
Block D	2037	ULAR	LA River Bacteria TMDL - 100%

Notes:

(1) Block definitions for the ULAR WMA is based on two TMDLs. According to the ULAR EWMP, all Green Streets are required to meet the LA River Metals TMDL. Hence, the Green Streets programs in the ULAR WMA are separated into Block A and Block B.

(2) This milestone is not based on regulatory deadlines, but was estimated by interpolating between the end of Block B (2028) and the final LA River Bacterial TMDL compliance attainment at the end of Block D (2037).

A total of 445 Green Streets Block programs were developed. The details of the established methodology and results are presented in Appendix E.

7.1.3 Newly Developed Stormwater Projects in One Water LA 2040 Plan

In addition to the compiled stormwater projects from previous planning efforts, Task 5 of the One Water LA 2040 Plan generated two types of newly identified stormwater projects – LFD opportunities and climate resiliency infrastructure. As part of the long-term alternatives evaluation, a cursory analysis of City-wide LFD opportunities was conducted that generated 42 new project opportunities. In addition, a climate resiliency analysis was conducted that identified specific infrastructure improvements for both stormwater and wastewater facilities to improve climate change resiliency. This effort generated 7 new stormwater infrastructure resiliency projects. Hence, a total of 49 new projects were proposed in other One Water LA tasks and were added to the stormwater project database.

Four Green Streets-based stormwater concepts were presented in Task 5 of the One Water LA 2040 Plan. In consistency with the City-wide Green Streets Programs developed herein, each stormwater concept provides a high-level summary of the expected water quality benefits, water supply benefits, and costs to comply with the EWMP implementation schedules.

7.1.4 Project Costs

In preparation of developing a financing strategy for the SIP, capital and annual O&M costs of stormwater improvement projects were obtained from the relevant source document or provided by the lead project development agency (when available).

For projects that did not have a capital cost estimate, high level "cost opinions" (rounded to the nearest half million dollars) were developed. These cost opinions should be refined into valid cost estimations as projects are further developed. A unit cost per foot of Green Streets was developed based on the City's Standard Plans and was applied to compute the capital cost of all Green Streets Programs. Details of cost development methodology is described in Appendix E.

For projects that did not have O&M costs available, annual O&M costs were estimated as percentages of the capital cost. The following three annual O&M cost fractions were developed based on literature reviews:

- Three (3) percent of the project capital cost for large-scale, centralized green infrastructure projects, such as spreading grounds and dams (Bureau of Reclamation, 2015).
- Five (5) percent of the project capital cost for medium-scale green infrastructure projects, such as an infiltration basin underneath a public park (EPA, 2005; Weiss et al., 2007).
- Six (6) percent of the project capital cost for Green Streets projects (EPA, 2005; Weiss et al., 2007).

It is implied that the annual O&M cost percentages listed above consider all O&M activities described in Chapter 5.

7.2 STORMWATER PROJECT SELECTION METHODOLOGY

After compiling all identified stormwater projects into a single project database, each project was evaluated based on the three-legged stool selection approach described in Chapter 6. To recap, the three-legged stool selection approach consists of the following key benefit considerations:

- **Water Quality Improvement:** Extent to which a project can improve water quality, specifically with respect to applicable TMDL compliance deadlines.

- **Water Supply Augmentation:** Extent to which a project can increase local water supply, specifically via groundwater recharge or capture for direct use, as well as the impact of a project to support habitat and/or other environmental enhancements.

- **Flood Risk Management:** Extent to which a project can reduce flood risk, specifically the ability of a project to impact asset capacity, fulfill jurisdictional obligations, and/or address flooding in a known area of flood vulnerability, such as the 50-year floodplain or a FEMA flood zone.

By executing all four project evaluation flow charts presented in Chapter 5, each project summarized in the database was assigned four selection categories that represent the project's water quality, water supply, flood risk mitigation, and integrated water resources management benefits. The project list was then sorted by the following selection factors:

- Primary Selection Factors:
  - Already Fully Funded Stormwater Projects
    - 2015 LASAN 5-yr CIP
    - SCMP Projects[32]
  - Integrated Water Resources Selection Category
- Secondary Selection Factors:
  - Water Quality Selection Category
  - Water Supply Selection Category
  - Flood Risk Management Selection Category

The selection process was primarily dependent on the two primary selection factors. The secondary selection factors were only evaluated if the primary selection factors of two projects were found to be identical. To demonstrate the selection process, a sample database containing four projects with representative selection factors was sorted and presented in Table 7.2.

As shown in Table 7.2, both Project 2 and 4 have lower selection categories in the integrated water resources and the flood risk management selection factors than Project 1 and 3 do, but Project 2 and 4 are both 5-year SIP phase projects while Project 1 and 3 are both not. Since the 5-year SIP phase project is the most important selection factor, Project 2 and 4 were prioritized before Project 1 and 3.

[32] Not all SCMP projects were fully funded by the time One Water LA 2040 Plan was completed.

Table 7.2 Project Selection Demonstration
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Before Selection							After Selection					
	Primary Selection Factors		Secondary Selection Factors					Primary Selection Factors		Secondary Selection Factors		
	5-yr CIP	IWR	WQ	WS	FRM			5-yr CIP	IWR	WQ	WS	FRM
Project 1	No	IWR1	1W1	1S1	F3		Project 2	Yes	IWR2	1W1	1S1	N/A
Project 2	Yes	IWR2	1W1	1S1	n/a		Project 4	Yes	IWR2	1W1	1S2	N/A
Project 3	No	IWR1	1W1	1S3	F1		Project 1	No	IWR1	1W1	1S1	F3
Project 4	Yes	IWR2	1W1	1S2	n/a		Project 3	No	IWR1	1W1	1S3	F1

Abbreviations:
IWR: integrated water resources; WQ: water quality; WS: water supply;
FRM: flood risk management; N/A: not applicable

Among the two 5-year SIP phase projects, Project 2 has a water supply selection category of 1S1, indicating it is a regional project that can capture and recharge stormwater into one of the major groundwater aquifers. Project 4 has a water supply selection category of 1S2, indicating it is a centralized project that can capture and treat stormwater for on-site reuse. Since major groundwater aquifer recharge is a more important benefit than capture for on-site reuse, Project 2 was selected over Project 4.

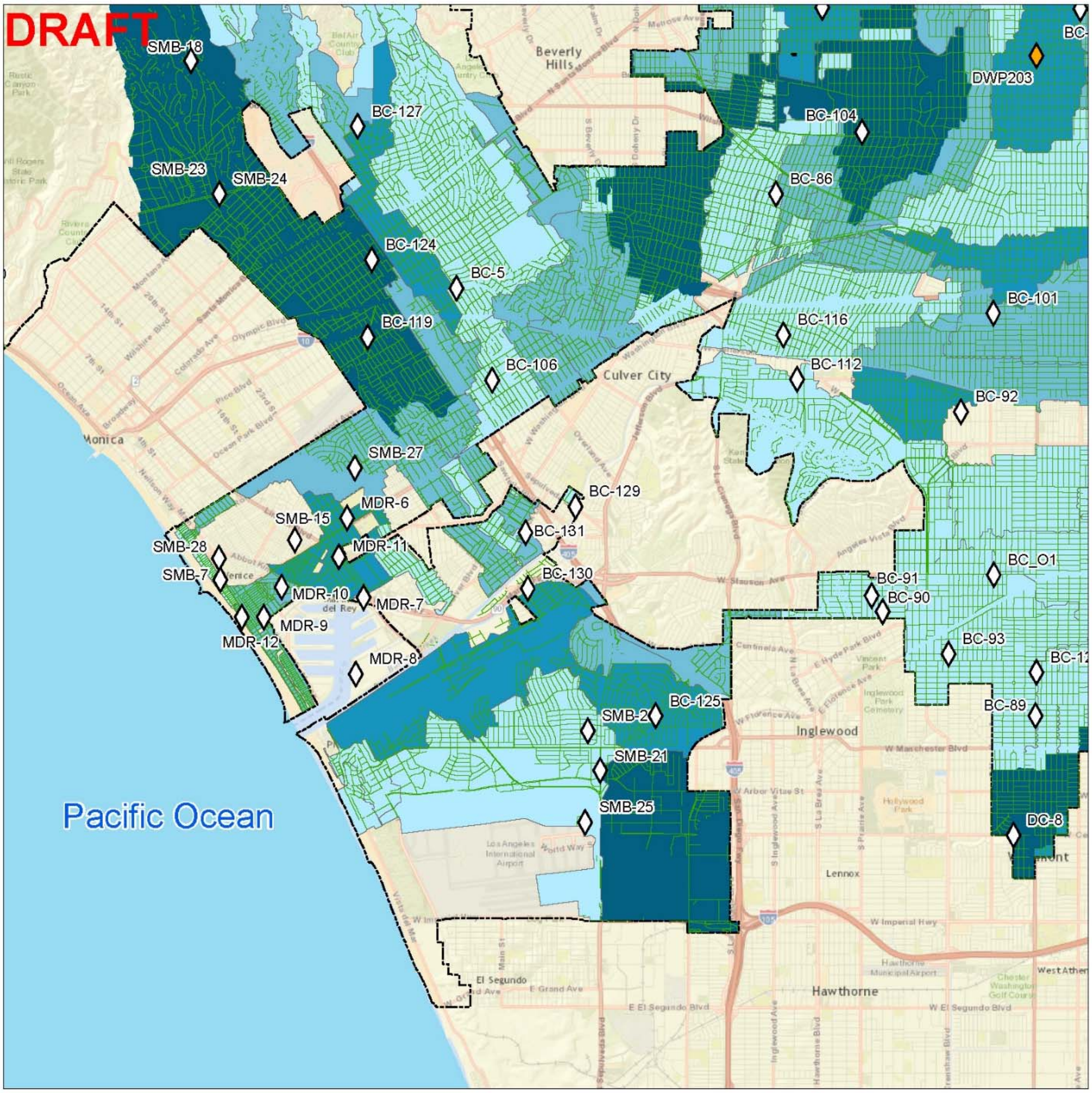
Among the two non-5-year SIP phase projects, Project 1 has a higher selection category in the water supply selection factor and a lower selection category in the flood risk management selection category than does Project 3. Since projects were selected by comparing the differences in the relatively more important selection factors, Project 1 was selected over Project 3 as water supply benefit is a more important selection factor than flood control management.

7.3 PROJECT DATABASE OVERVIEW

Section 7.3 presents a high-level summary of the outcomes of the Green Streets screening analysis and the project selection process.

7.3.1 Green Streets Block Programs

The Green Streets screening analysis described in Section 7.1.2 resulted in the identification of 445 Green Streets programs. Appendix E contains the complete list of these 445 Green Streets programs. Supplementary to the Green Streets programs list, Figure E.1 through E.11 in Appendix E provides an overview of the implementation targets and opportunity of the Green Streets Programs. A sample figure is presented on Figure 7.1.



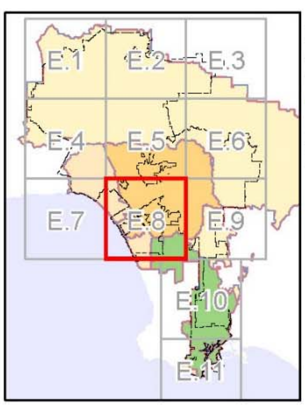


Figure 7.1 - Planned Green Streets Block Projects and Programs (Sample)
One Water LA 2040 Plan
Stormwater and Urban Runoff Facilities Plan

One Water LA

carollo

Based on the analysis outcome, Green Streets opportunities are greater than Green Streets implementation requirements for almost all catchments and subwatersheds. This provides flexibility and leaves room for additional Green Streets projects beyond the EWMP implementation requirements. In addition, the length of near-term Green Streets projects in a few catchments and subwatersheds (e.g., Catchment 103049 in the BC WMA) is already greater than the implementation target. Pending further assessment under the EWMP adaptive management framework, the surplus may be used to offset other EWMP implementation requirements (e.g., regional BMPs proposed on private parcels) or other Green Streets implementation targets in the same catchment or subwatershed.

As described in Section 7.3, the capital cost of the Green Streets programs was computed by multiplying the length-based implementation target by the average unit capital cost determined in Appendix E. The annual O&M cost was computed as six percent of the capital cost. Table 7.3 reveals the resultant Green Streets programs cost by WMA.

Table 7.3 Green Streets Programs Cost Summary
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

WMA	Block	Green Streets Implementation Target[1] Length (ft)	Green Streets Implementation Target[1] Capture Volume (ac-ft)	Estimated Capital Cost ($ million)	Estimated O&M Cost ($ million/year)
Ballona Creek	Block A	323,500	223	$312	$19
Santa Monica Bay	Block A	75,900	52	$73	$4
Dominguez Channel	Block B	23,100	16	$22	$1
	Block C	23,100	16	$22	$1
Upper Los Angeles River	Block A	368,800	254	$356	$21
	Block B	368,800	254	$356	$21
	Total[2]	**1,183,200**	**815**	**$1,140**	**$70**

Notes:
(1) Targets calculated as equivalent EWMP implementation targets subtracting lengths/capture volumes from already planned Green Streets projects.
(2) Totals may not add up due to rounding.

Abbreviation:
WMA: Watershed Management Area

As shown in Table 7.3, the total estimated capital cost of all Green Streets programs is approximately $1.1 billion, with nearly 60 percent of the cost allocated to the ULAR watershed. In addition, the annual capital O&M cost are estimated to total nearly $70 million. A detailed breakdown of targets and cost of each Green Streets programs is presented in Appendix E.

Overall, the Green Streets programs developed herein serve as a unified, City-wide Green Streets project tracking platform. Acknowledging the parallel Green Streets planning efforts from both City and non-City agencies and organizations, the Green Streets programs are meant to help the City evaluate proposed Green Streets projects against the EWMP compliance target. The 445 Green Streets programs developed herein were added to the project database and were subject to the project selection process. The selection outcome of the Green Streets programs is discussed altogether with other projects in Section 7.3.2.

7.3.2 Project Selection Outcome

7.3.2.1 Project Distribution by Project Category

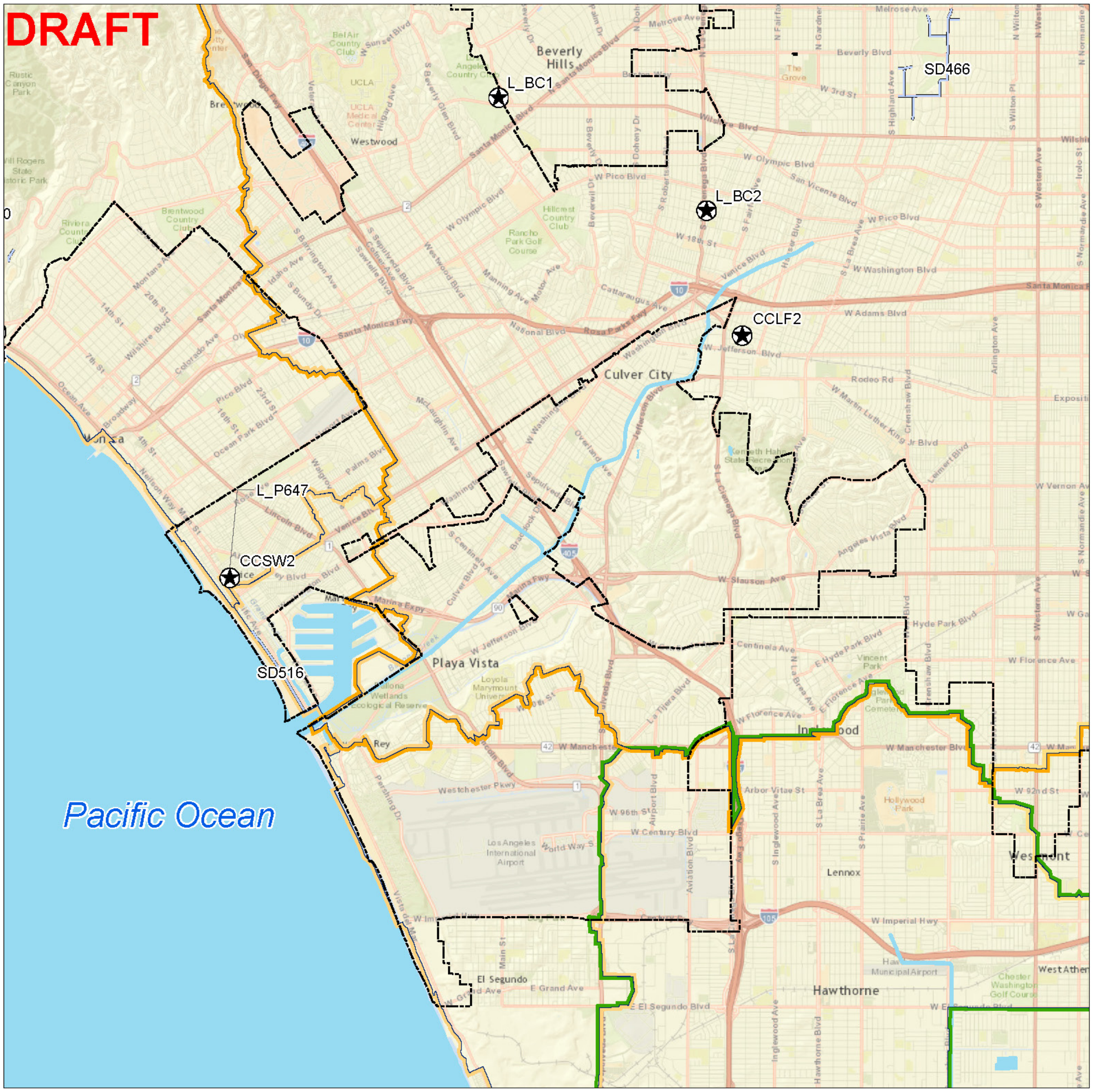
In total, 1,201 stormwater management projects[33] were identified and evaluated in accordance to the selection methodology presented in Section 7.2. The complete selection outcome table is presented in Appendix F. Three sets of figures showing project locations of the project selection outcome database for the following categories:

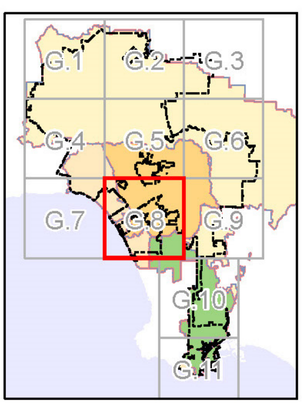
- Category 1, defined as planned regional grey infrastructure projects, (including storm drain improvement) includes 328 projects. Locations are shown in Appendix G on Figures G.1 through G.11, while a sample is presented on Figure 7.2.
- Category 2, defined as planned regional green infrastructure projects, includes 252 projects. Locations are shown in Appendix H on Figures H.1 through H.11, while a sample is presented on Figure 7.3.
- Category 3, defined as planned distributed green infrastructure projects, includes 621 projects. Locations are shown in Appendix E on Figure E.1 through E.11, while a sample is presented on Figure 7.1.

The capital cost of all stormwater improvement projects were either obtained from the source documents or estimated in accordance with the methodology described in Section 7.1.4. The number of projects and estimated subtotal capital costs are summarized in Table 7.4, Figure 7.4, and Figure 7.5.

As shown in Table 7.4 and depicted on Figure 7.4 and Figure 7.5, a total of 1,201 projects were identified with the majority of projects (621, or 52 percent) in Category 3. The estimated capital cost of all 1,201 projects were estimated at $9.4 billion. It can also be concluded that the majority (66 percent) of the total capital cost is associated with Category 2, totaling $6.2 billion among 252 projects.

[33] Including the 445 Green Streets programs identified in Section 7.3.1





Legend

- LASAN Stormwater/LFD Projects
- LABOE Storm Drain CIP
- City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

0 1 2 Miles

Figure 7.2 - Planned Regional Grey Infrastructure Projects (Sample)
One Water LA 2040 Plan
Stormwater and Urban Runoff Facilities Plan

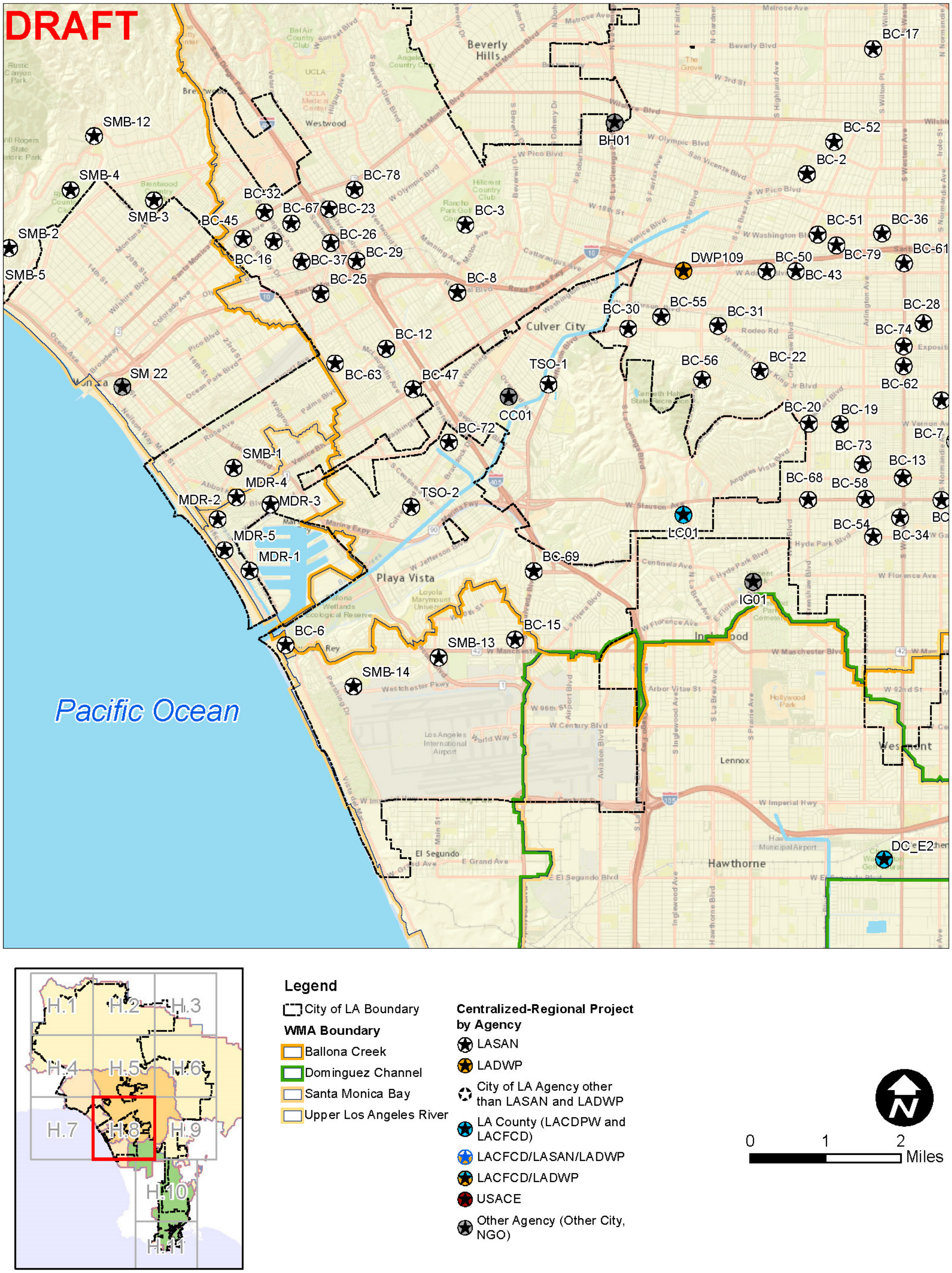


Figure 7.3 - Planned Regional Green Infrastructure Projects (Sample)
One Water LA 2040 Plan
Stormwater and Urban Runoff Facilities Plan

Table 7.4 Project Distribution by Watershed and Category
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

WMA	Project Category	Number of Projects	Capital Cost ($ million)	% of Total Capital Cost
Ballona Creek	Category 1 - Regional Grey Infrastructure	5	$40	0.4%
	Category 2 - Regional Green Infrastructure	88	$440	4.7%
	Category 3 - Distributed Green Infrastructure	113	$1,000	10.7%
	BC Subtotal	***206***	***$1,490***	***15.9%***
Dominguez Channel	Category 1 - Regional Grey Infrastructure	12	$30	0.3%
	Category 2 - Regional Green Infrastructure	7	$170	1.8%
	Category 3 - Distributed Green Infrastructure	31	$170	1.8%
	DC Subtotal	***50***	***$360***	***3.8%***
Santa Monica Bay	Category 1 - Regional Grey Infrastructure	8	$20	0.2%
	Category 2 - Regional Green Infrastructure	16	$130	1.4%
	Category 3 - Distributed Green Infrastructure	41	$380	4.1%
	SMB Subtotal	***65***	***$540***	***5.8%***
Upper Los Angeles River	Category 1 - Regional Grey Infrastructure	301	$490	5.2%
	Category 2 - Regional Green Infrastructure	143	$5,430	58.0%
	Category 3 - Distributed Green Infrastructure	436	$1,070	11.4%
	ULAR Subtotal	***880***	***$6,980***	***74.5%***
Total	Category 1 - Regional Grey Infrastructure	326	$580	6.2%
	Category 2 - Regional Green Infrastructure	254	$6,170	65.8%
	Category 3 - Distributed Green Infrastructure	621	$2,620	28.0%
	Total	**1,201**	**$9,370**	**100%**

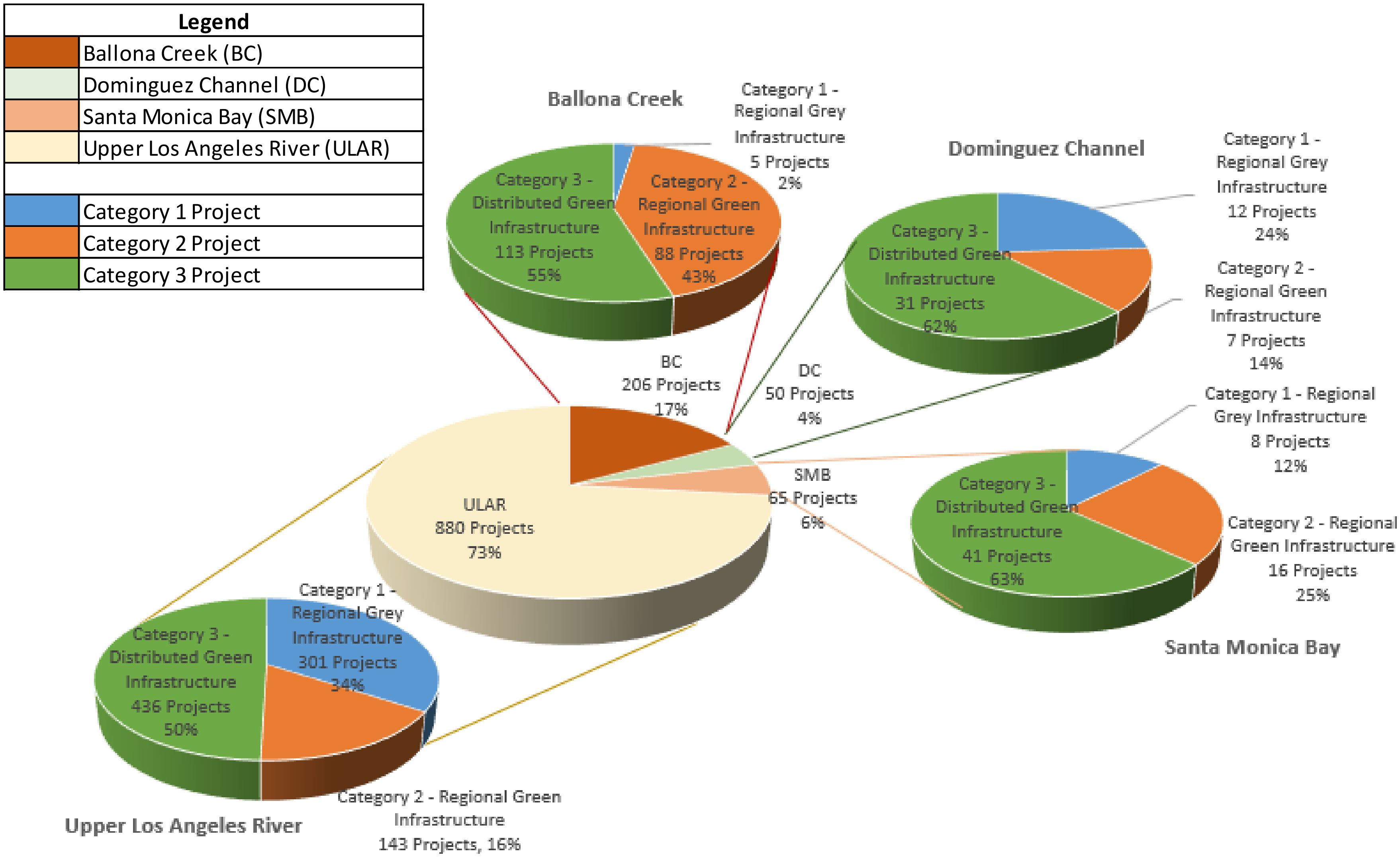


Figure 7.4 Project Count by Project Category and Watershed

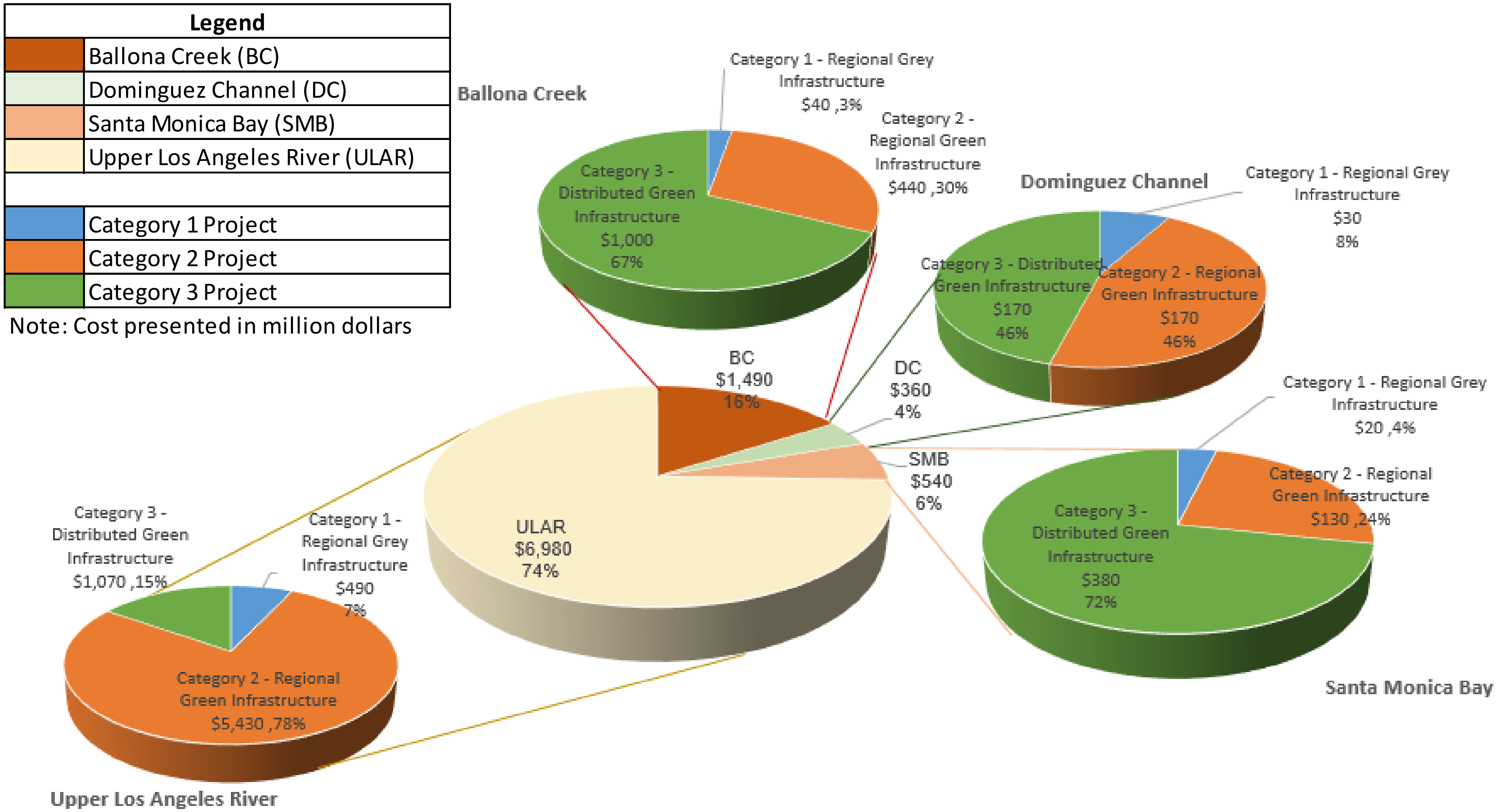


Figure 7.5 Capital Cost by Project Category and Watershed

7.3.2.2 Project Distribution by the Three-Legged Stool

The outcome of the project selection process was re-organized by project benefits in accord with the three-legged stool selection criteria. The number of projects and the subtotal capital cost of each benefit category are presented in Table 7.5, Figure 7.6, and Figure 7.7.

As shown in Table 7.5 and depicted on Figure 7.6, approximately half (614 projects or 51 percent) of the 1,201 projects in the stormwater project database provide two benefits. Among these projects, almost all of those projects (600 projects) provide water quality and water supply benefits. 308 projects (26 percent) provide all three benefits and therefore are the top priority projects. For the remaining 279 projects (23 percent) that provide one benefit, 277 of them provide flood risk mitigation benefits.

The capital cost distribution reveals a slightly different pattern than the project distribution. As shown in Table 7.5 and Figure 7.7, the majority of capital cost ($5.5 billion, or 59 percent) is contributed by projects providing all three benefits. The capital cost of projects providing two benefits is approximately $3.3 billion, or 36 percent of the total capital cost. Projects providing one benefit contribute to the remaining $490 million capital cost.

**Table 7.5 Project Database Overview by Three-Legged Stool Category
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan**

Benefit Category	Number of Projects	Capital Cost ($ million)	% of Total Capital Cost
Project with three benefits			
Water Quality & Water Supply & Flood Risk Mitigation	308	$5,530	59.0%
Project with two benefits			
Water Quality & Water Supply	600	$3,220	34.4%
Water Quality & Flood Risk Mitigation	13	$110	1.2%
Water Supply & Flood Risk Mitigation	1	$20	0.2%
Project with one benefit			
Water Quality	1	$1	<0.1%
Water Supply	1	$10	0.1%
Flood Risk Mitigation	277	$480	5%
Total	**1,201**	**$9,370**	**100%**

Note:
(1) Totals may not add up due to rounding.

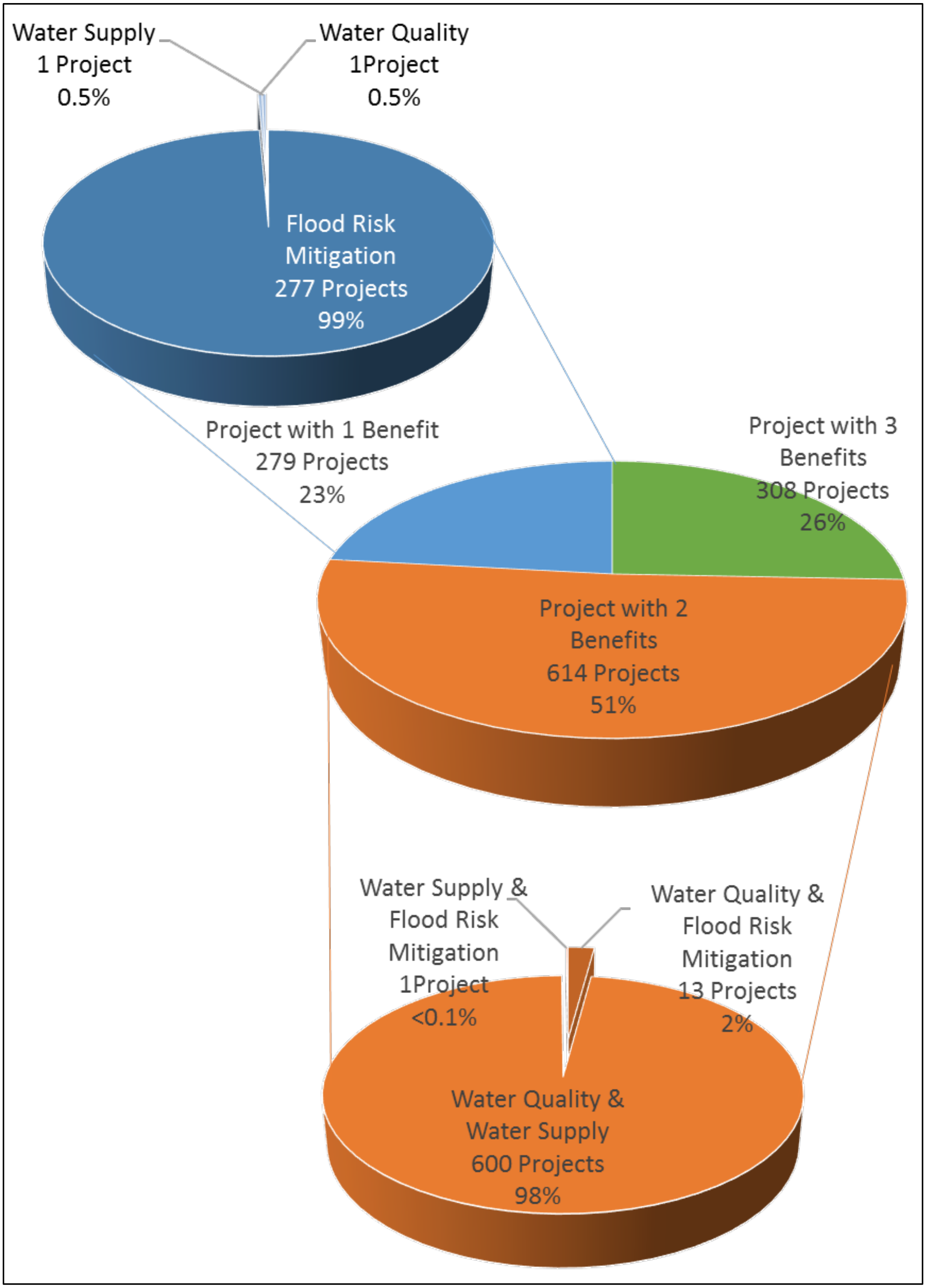
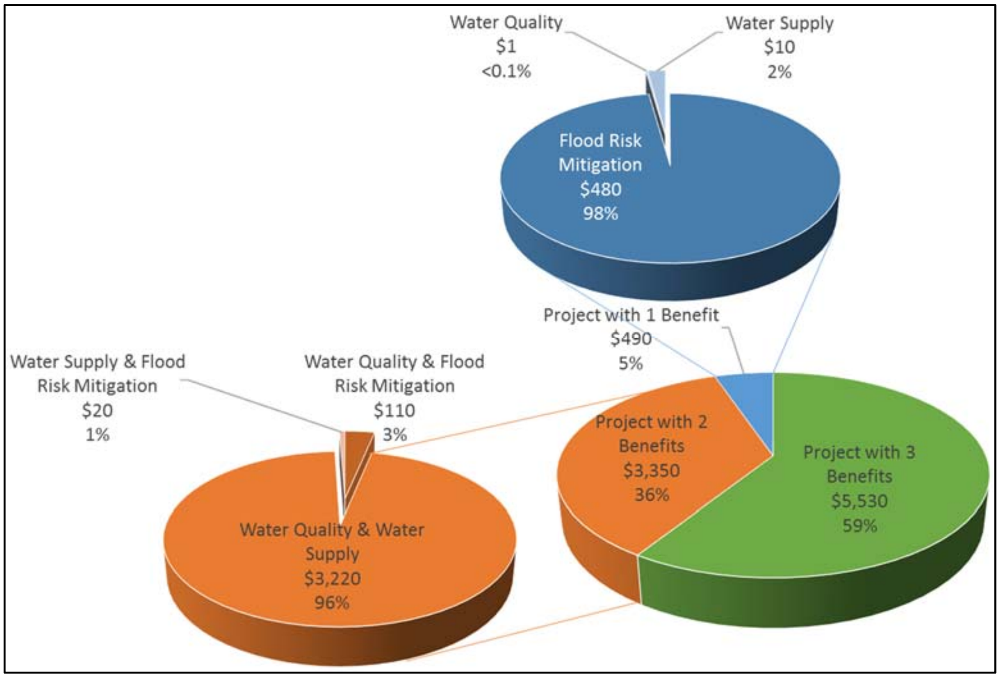


Figure 7.6 Number of Projects by Three-Legged Stool Category



Note: Cost presented in million dollars

Figure 7.7 Capital Cost Distribution by Three-Legged Stool Category

7.3.2.3 Project Distribution by Ownership

The project database includes all identified stormwater projects within or upstream of the City's jurisdiction, including those not affiliated with the City that do not involve any City agency. The number of projects and the subtotal capital cost of City-involved and non-City-involved projects are illustrated on Figure 7.8 and Figure 7.9 respectively.

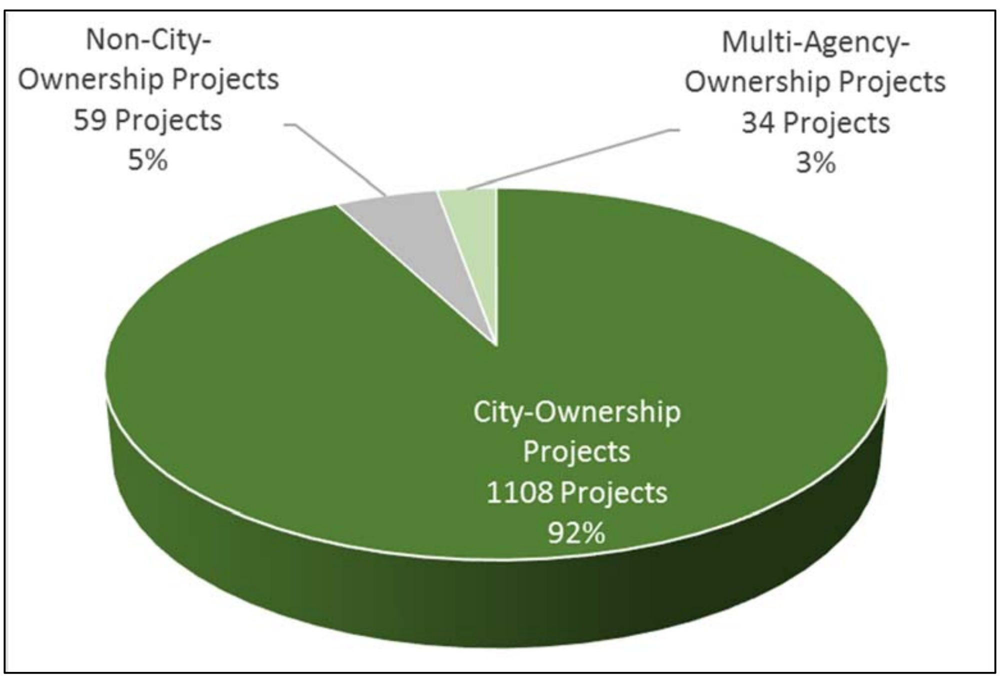
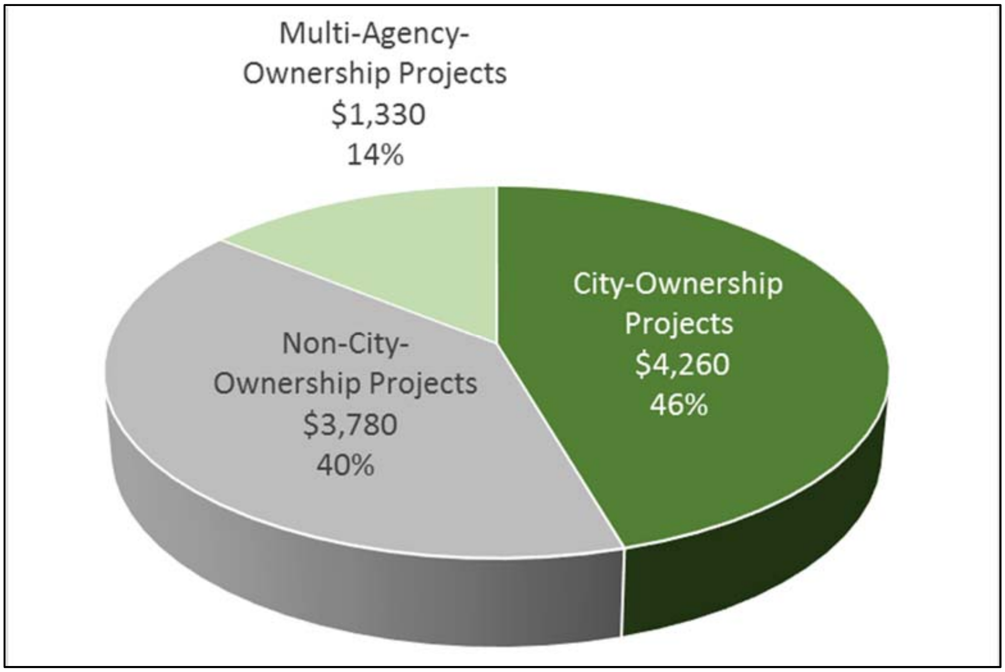


Figure 7.8 Project Distribution by Project Ownership



Note: Cost presented in million dollars

Figure 7.9 Capital Cost Distribution by Project Ownership

As shown on Figure 7.8 and Figure 7.9, out of the 1,201 projects included in the project database, 59 projects are not affiliated with the City. The rest of the projects are either led by a City agency or collaboratively developed between the City and other agencies or entities. The estimated cost of the 59 non-City projects is about $3.8 billion, or 40 percent of the estimated total capital cost.

Although non-City projects within or upstream of the City's jurisdiction contribute to the City's stormwater management needs, it is assumed that the City will not provide funding for these projects. Hence, these projects were excluded in the subsequent City's SIP discussion in Section 7.4. In addition, it was assumed the City will provide partial funding to all the multi-agency-ownership projects. Specific funding strategies for multi-agency-ownership projects are further discussed in Chapter 8.

The project selection process was built upon the information collected during the preparation of this Facilities Plan. The process is meant to help the City to plan project implementation in accordance with regulatory compliance milestone and to allocate necessary financial resources accordingly. As planned projects are implemented and new projects are proposed over time, this stormwater improvement project database should be constantly updated.

Although non-City projects were not further discussed, they were included in the project database and hence were included in all figures, charts, and appendices referenced in Section 7.3. Many of the non-City projects are regional scale infrastructure projects that would provide substantial stormwater management benefits to the City. If the City is interested in investing in any of the non-City projects in the future, the project database should be updated accordingly.

7.4 SIP PHASING

All projects were evaluated using the three-legged stool selection criteria, and the project database was sorted according to the project selection methodology. This section describes the process of dividing the sorted project database into 5-year, 10-year, and 25-year SIP phasing. The 5-year SIP phase was based on LASAN's 2015 5-year stormwater and green infrastructure CIP with enhancements made to incorporate new information within the One Water framework. The capital cost of the 5-year SIP phase was revised accordingly and was utilized to develop the 10-year and 25-year SIP phases

As summarized in Section 7.3, 1,201 stormwater management projects were included in the project database, and the total capital cost of all projects was estimated at $9.4 billion. 59 projects that were found not affiliation with any City agency. As a result, they were excluded from the City's SIP. All charts and figures presented in Section 7.4 were based on the revised project pool that includes 1,142 City-involved projects with a total capital cost of $5.6 billion.

7.4.1 Incorporating LASAN 2015 5-year CIP

LASAN developed the stormwater and green infrastructure 5-year SIP phase in December 2015. The 2015 5-year SIP phase included 270 projects and was scheduled to be implemented between years 2015 to 2020. The total capital cost of the 2015 5-year CIP was estimated at $1.5 billion. The 5-year SIP phase was updated herein by adjusting the baseline year, removing already implemented projects, and adding qualified projects developed in the One Water LA 2040 Plan. Table 7.6 summarizes the revisions to the 5-year SIP phase. The revised 5-year SIP phase contains a total of 390 projects and the revised capital cost is approximately $2.3 billion. A detailed explanation of each revision is provided in the subsequent subsections.

Table 7.6 Revisions to the 5-year Stormwater CIP
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Projects	Capital Cost ($ million)	Project Count	Reason of Removal/Addition
Original 2015 5-year SIP phase (270 projects)	$1,500	270	
Baseline Year Adjustment			
Additional capital cost of fully implementing all 2015 5-year SIP phase projects	$390	No adjustment	The 2015 cost estimate did not include the full implementation cost of 118 projects.
Revised Subtotal	***$1,890***	***271***	
Removal of In-Progress or Completed Projects			
Penmar Recreation Center	($8)	(1)	Project completed
Penmar Water Quality Improvements (Phase II)	($3)	(1)	Project in construction phase
Temescal Canyon Park	($5)	(1)	Project in post-construction phase
Temescal Canyon Park Stormwater BMP Phase II	($3)	(1)	Project in construction phase
Westchester LAX	($18)	(1)	Duplicate project as Argo Sub-basin Facility
Revised Subtotal	***$1,850***	***266***	
Incorporating 5-year SIP Phase Projects Developed in One Water LA			
Low Flow Diversion Projects	$70	42	New stormwater project developed in One Water LA Plan
Climate Resilience Projects	$30	7	New stormwater project developed in One Water LA Plan
Block A Green Streets Programs in BC and SMB WMA	$380	75	New stormwater project developed in One Water LA Plan
Additional Projects in BC WMA	$30	2	Additional City projects that contribute towards TMDL compliance in BC WMA
LADWP-LASAN Collaboration Projects	$180	21	LADWP-LASAN Collaboration Projects to be implemented within 5 years
Revised Subtotal	***$2,540***	***413***	

Note:
(1) Cost are approximate due to current project phase construction/post-construction/optimization

7.4.1.1 Baseline Year Adjustment

The LASAN 2015 5-year CIP included 270 projects and was based on the period from year 2015 to 2020 (included). According to the implementation schedule, 118 of the 270 2015 5-year SIP phase projects were not planned to be fully implemented by 2020. As a result, only early stage planning costs of these 118 projects were accounted for in the estimated $1.5 billion cost shown in the 5-year CIP report. According to the supplementary information to the 2015 5-year CIP, the total cost of fully implementing all 270 projects is estimated at $1.9 billion. The baseline year of all CIPs and SIPs developed within the One Water LA 2020 Plan was set at 2017. Hence, the period of the revised 5-year SIP phase was set between calendar year 2017 and 2022. As a result of the baseline year adjustment, the estimated cost of the original 2015 5-year SIP phase projects were updated from $1.5 billion to $1.9 billion, as shown in Table 7.6.

7.4.1.2 Removal of In-progress, Completed, and Duplicate Projects

To be consistent with the One Water LA 2040 Plan framework, projects that have begun/will begin construction before March 2017 are considered "existing projects" and hence are not contained within the SIP. As shown in the second part of Table 7.6, four 2015 5-year SIP phase projects were removed from the revised list as they are now considered "existing projects". In addition, a duplicate project was identified from the 2015 5-year SIP phase and hence removed.

7.4.1.3 Incorporating Qualified Projects Developed in One Water LA 2040 Plan

As stated in Section 7.1.3, 42 LFD projects and seven stormwater infrastructure resiliency projects were developed in Task 5 of the One Water LA 2040 Plan. Per team input, these projects were added to the 5-year stormwater CIP. In addition, Block A Green Streets programs and additional water quality improvement projects[34] proposed in the BC and SMB WMA watersheds were added to the 5-year SIP phase because they are required to meet the TMDL compliance deadline in these two watersheds by 2021.

LADWP has been working closely with LASAN to implement multi-benefits stormwater management projects on public parcels. Per OWLA team input, 21 LADWP-LASAN collaboration projects that were not previously included in the LASAN 2015 5-year CIP were added to the 5-year SIP phase.

7.4.2 SIP Phasing Through Year 2040

After revising the total capital cost of the 5-year SIP phase, all City-involved[35] projects that were not already in the 5-year SIP phase in the sorted, projected database were phased into 10-year and 25-year SIP phases. The total capital cost of non-5-year SIP phase and

[34] These are LADWP or LABOE led projects that are not included in the EWMP or LASAN 5-year CIP list.
[35] Defined as project that's are either lead by a City agency or that are collaboratively developed between City and non-City agencies.

City-involved projects was divided by 20 to obtain the average annual SIP budget from year 2022 to 2042. The 10-year and 25-year SIP phase budgets were computed by multiplying the annual CIP budget by 5 and 15, respectively.

As summarized above, the current SIP consists of 1,142 specific projects with an estimated total capital cost of $5.6 billion. This capital cost estimate differs from the City's estimated EWMP compliance obligation of $7.4 billion. The reason for this discrepancy is that the City's financial obligation towards EWMP compliance was estimated based on the EWMP compliance metric. A significant portion of the EWMP compliance metric has not yet been converted into actual projects. As a result, the cost is not reflected in the SIP capital cost. The City plans on refining the EWMP compliance obligation cost and identifying additional projects to cover the EWMP compliance metric through the EWMP adaptive management framework.

Of the 1,142 projects identified in the SIP, 714 projects with an estimated total capital cost of $3.1 billion are either regional projects that were developed during the EWMP development, or Green Streets programs that were developed in accordance with the respective EWMP compliance metric. As such, this $3.1 billion is included as part of the City's $7.4 billion estimated obligation toward EWMP compliance. The remaining 428 SIP projects with an estimated total capital cost of $2.1 billion have been identified by City agencies that were not involved with EWMP development (e.g., LADWP). Although these projects were not evaluated as being part of the City's EWMPs, further studies are recommended to quantify the water quality benefits of these projects and to evaluate their eligibility toward EWMP compliance.

In summary, the City's SIP makes significant progress towards the City's EWMP compliance obligations, but it is not a standalone database to fully cover this obligation since not all necessary projects were specifically identified in the EWMPs. The SIP will be updated regularly to evaluate projects proposed by non-EWMP City agencies for their eligibility toward EWMP compliance, to incorporate additional projects developed through the EWMP adaptive management framework, and through the distributed solutions identified in the One Water LA 2040 Plan recommended policies and programs. High-level summaries of project count, capital cost, and O&M cost by project category and three-legged stool selection criteria in each SIP phase are presented below. The complete 5-year, 10-year, and 25-year SIP phase lists are presented in Appendix F.

7.4.2.1 Project Distribution by Category and SIP Phase

The number of projects by category and SIP phase is summarized in Table 7.7 and Figure 7.10.

Table 7.7 Project Distribution by Category and SIP Phase Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

Project Category	Number of Projects 5-year SIP	10-year SIP	25-year SIP	Subtotal
Category 1 - Regional Grey Infrastructure	49	-	277	326
Category 2 - Regional Green Infrastructure	137	23	37	197
Category 3 - Distributed Green Infrastructure	227	185	207	619
Subtotal	**413**	**208**	**521**	**1,142**

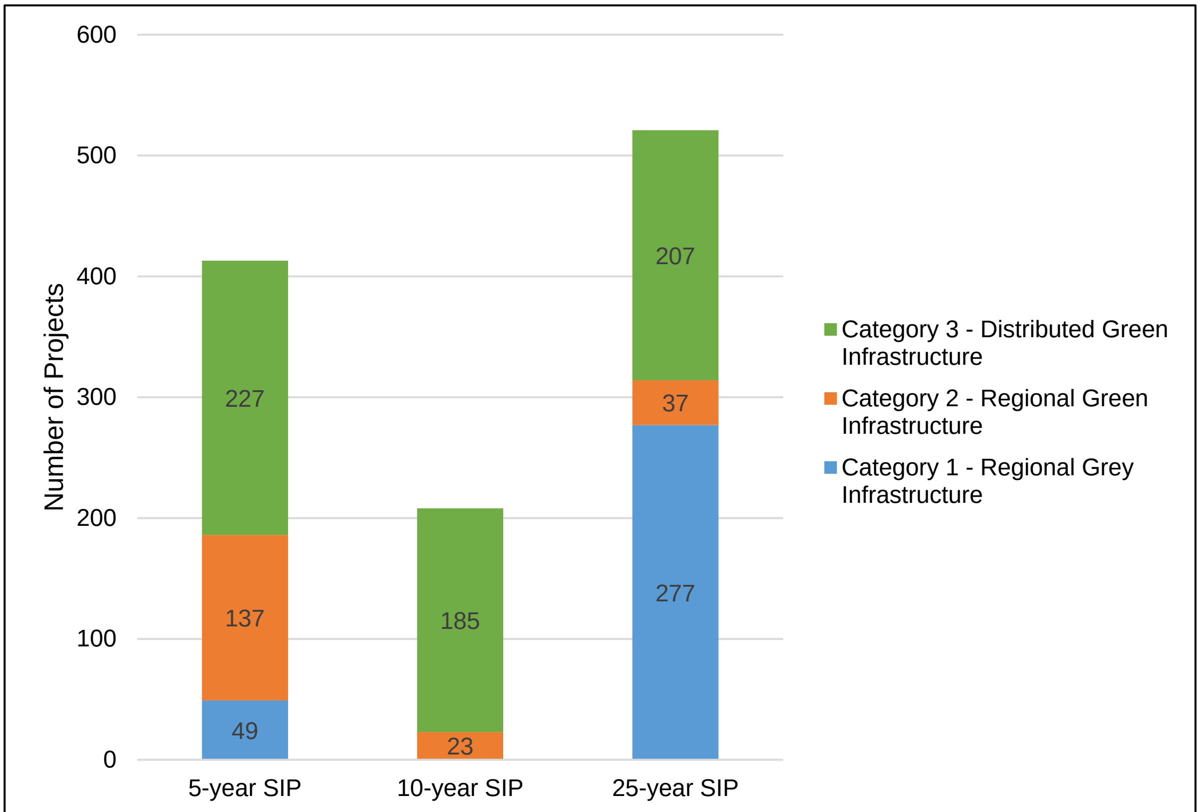


Figure 7.10 Project Distribution by Category and SIP Phase

As shown in Table 7.7 and depicted in Figure 7.10, the majority (85 percent) of Category 1 projects are included in the 25-year SIP phase, and the majority (69 percent) of Category 2 projects are included in the 5-year SIP phase. Category 3 projects are distributed relatively evenly among the three SIP phases.

7.4.2.2 Project Distribution by Three-Legged Stool and SIP phase

The number of projects per three-legged stool criteria and per SIP phase is summarized in Table 7.8 and Figure 7.11.

Table 7.8 Project Distribution by Three-Legged Stool Criteria and SIP Phase Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

Three-Legged Stool Selection Criteria	Number of Projects 5-year SIP	10-year SIP	25-year SIP	Subtotal
Project with three benefits	236	23	19	278
Project with two benefits	177	185	224	586
Water Quality & Water Supply	170	185	223	578
Water Quality & Flood Risk Mitigation	7	-	-	7
Water Supply & Flood Risk Mitigation	-	-	1	1
Project with one benefit	-	-	278	278
Water Supply	-	-	1	1
Flood Risk Mitigation	-	-	277	277
Subtotal	**413**	**208**	**521**	**1,142**

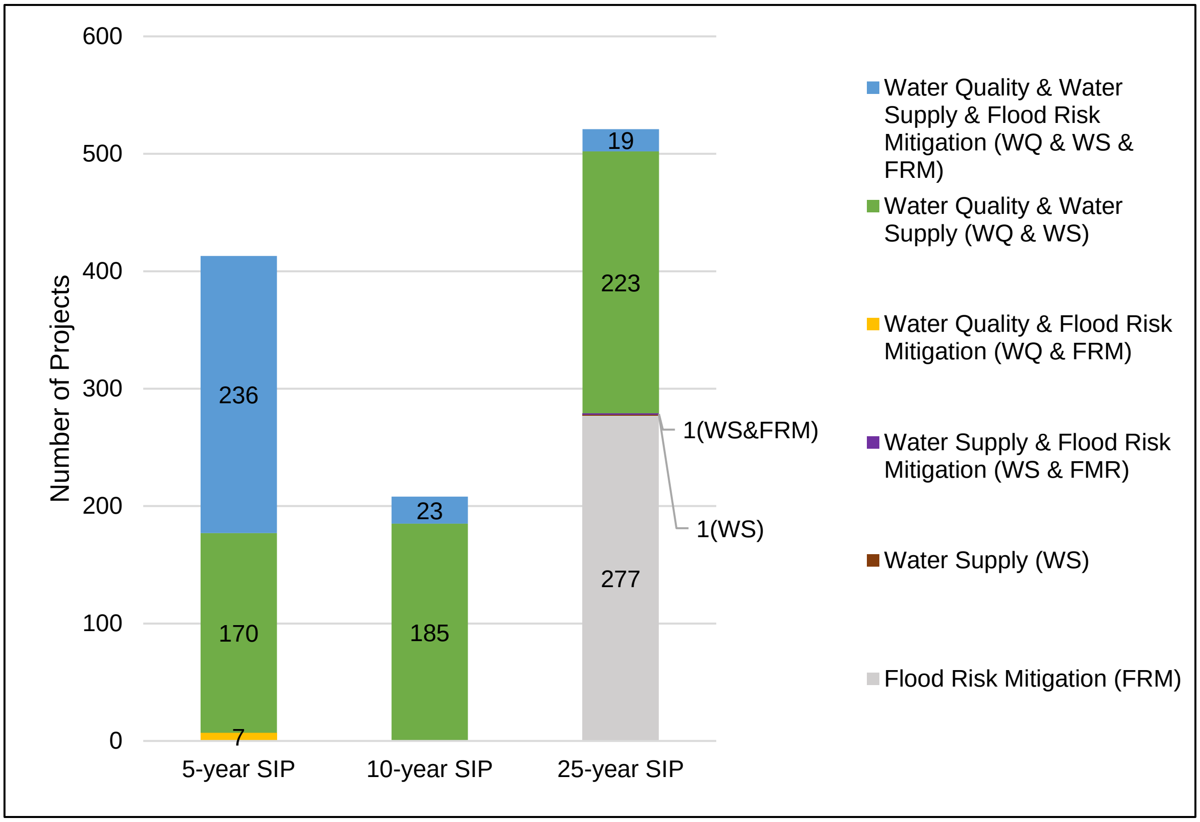


Figure 7.11 Project Distribution by Three-Legged Stool Criteria and SIP Phase

As shown in Table 7.8 and depicted on Figure 7.11, the majority of projects with three benefits (85 percent) are included in the 5-year SIP phase. Projects with two benefits are distributed relatively evenly among the three SIP phases. All projects with only one benefit are included in the 25-year SIP phase.

7.4.2.3 Capital Cost by Category and SIP phase

Table 7.9 and Figure 7.12 summarize the estimated capital cost by project category in each SIP phase.

Table 7.9 Capital Cost Distribution by Project Category and SIP Phase
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

	Capital Cost ($ million)			
Project Category	**5-year SIP**	**10-year SIP**	**25-year SIP**	**Subtotal**
Category 1 - Regional Grey Infrastructure	$110	-	$480	**$590**
Category 2 - Regional Green Infrastructure	$730	$380	$1,330	**$2,440**
Category 3 - Distributed Green Infrastructure	$1,690	$380	$490	**$2,560**
Subtotal	**$2,530**	**$760**	**$2,300**	**$5,590**

Note:
(1) Some totals may not add up due to rounding errors.

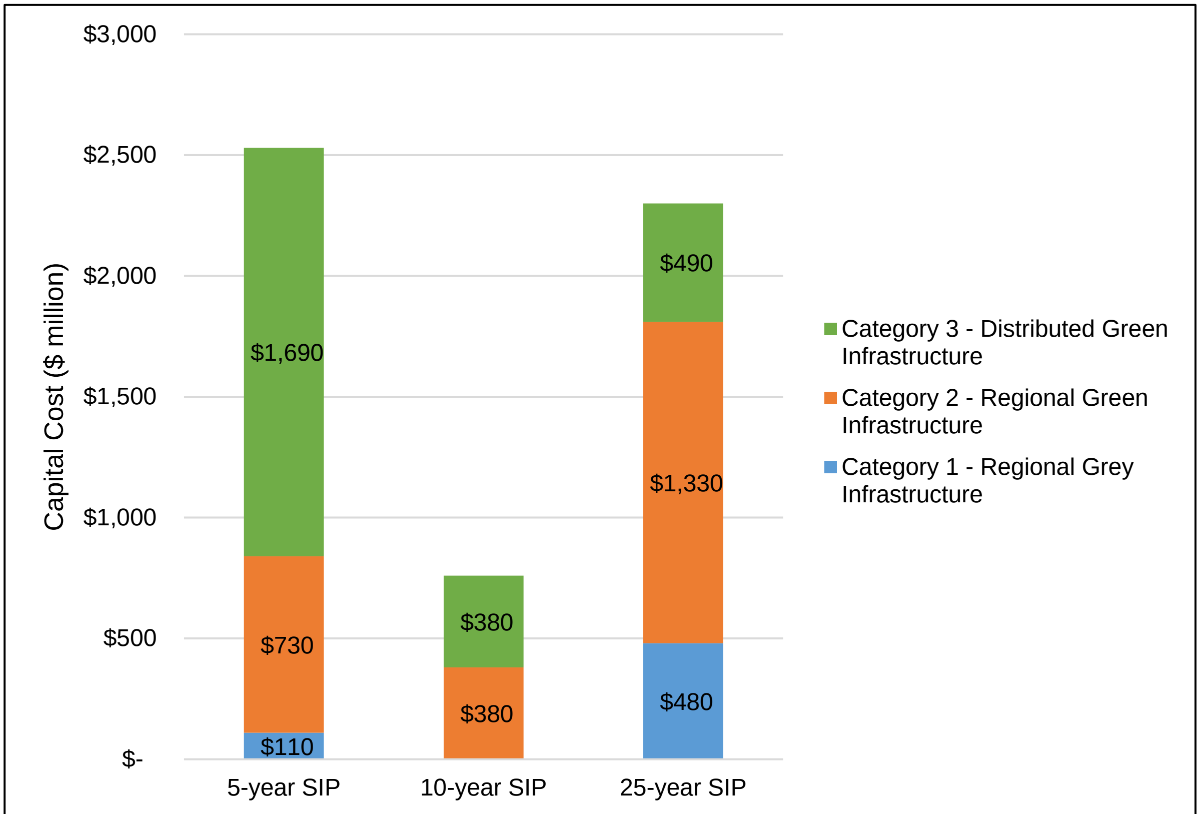


Figure 7.12 Capital Cost Distribution by Project Category and SIP Phase

As shown in Table 7.9 and depicted on Figure 7.12, the majority of the capital cost of Category 1 projects ($480 million, or 81 percent) is included in the 25-year SIP phase. The majority of capital cost of Category 2 projects ($1.3 billion, or 54 percent) is also included in the 25-year SIP phase. The majority of the capital cost of Category 3 projects ($1.7 billion, or 66 percent) is included in the 5-year SIP phase.

7.4.2.4 Capital Cost by Three-Legged Stool Criteria and SIP phase

Table 7.10 and Figure 7.13 summarize the estimated capital cost per the three-legged stool criteria in each SIP phase.

Table 7.10 Capital Cost Distribution by Criteria and SIP Phase
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Three-Legged Stool Selection Criteria	Capital Cost ($ million)			
	5-year SIP	**10-year SIP**	**25-year SIP**	**Subtotal**
Project with three benefits	**$940**	**$380**	**$780**	**$2,100**
Project with two benefits	**$1,590**	**$380**	**$1,030**	**$3,000**
Water Quality & Water Supply	**$1,570**	**$380**	**$1,000**	**$2,950**
Water Quality & Flood Risk Mitigation	$20	-	-	$20
Water Supply & Flood Risk Mitigation	-	-	$30	$30
Project with one benefit	-	-	$490	$490
Water Supply	-	-	$10	$10
Flood Risk Mitigation	-	-	$480	$480
Subtotal	**$2,530**	**$760**	**$2,300**	**$5,590**

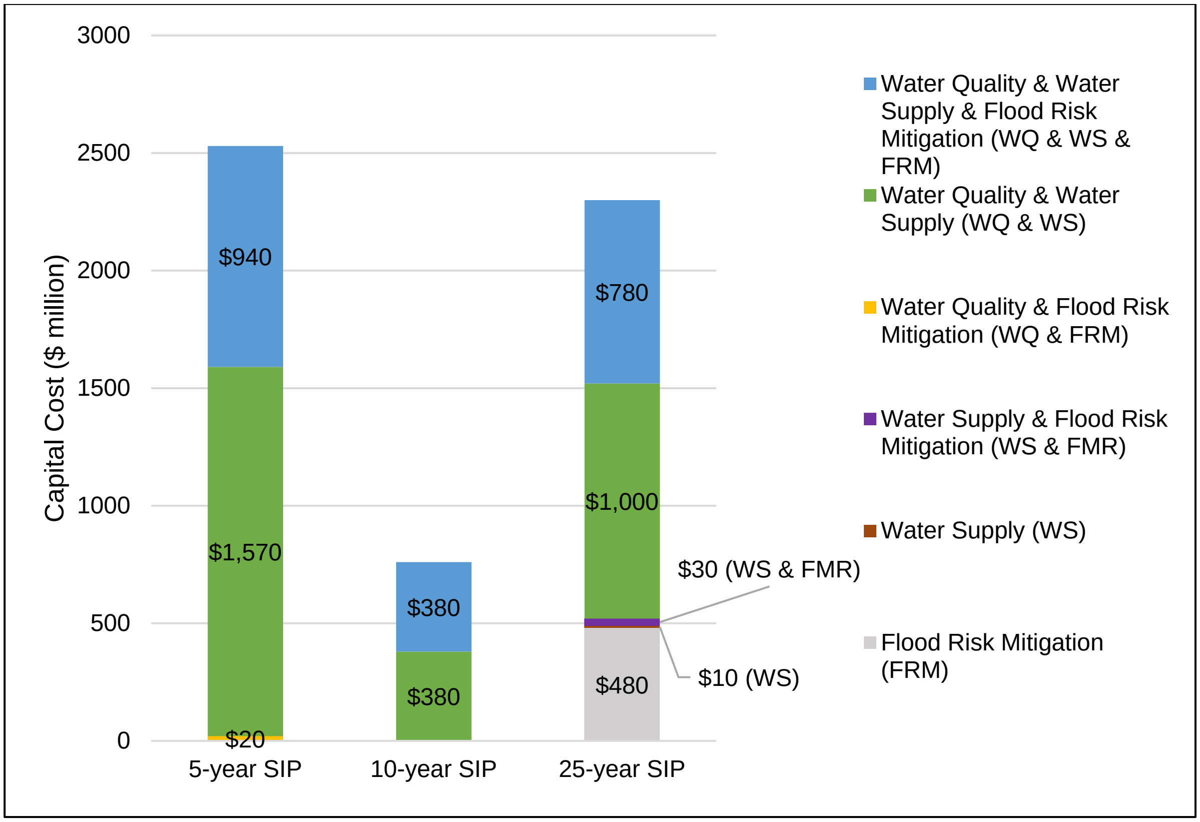


Figure 7.13 Capital Cost Distribution by 3-Legged Stool Criteria and SIP Phase

As shown in Table 7.10 and depicted on Figure 7.13, 45 percent of the capital cost of projects with three benefits are included in the 5-year. 53 percent of the total capital cost of projects with two benefits is included in the 5-year CIP. All capital cost of projects with one benefit is included in the 25-year SIP phase.

Over half ($1.6 billion, or 63 percent) of the 5-year SIP phase capital cost is contributed by projects providing water quality and water supply benefits, while the remaining capital cost of the 5-year SIP phase capital cost is contributed by projects with all three benefits. Similarly, the capital cost of the 10-year SIP phase is evenly distributed between projects providing all three benefits and projects providing water quality and water supply benefits. About half of the 25-year SIP phase capital cost ($1.0 billion, or 45 percent) is contributed by projects providing water quality and water supply benefits. $780 million, or 34 percent of the 25-year SIP phase capital cost is contributed by projects with all three benefits.

7.4.2.5 <u>Annual O&M Cost by Category and SIP phase</u>

Table 7.11 and Figure 7.14 summarized the estimated capital cost by project category in each SIP phase.

Table 7.11 Annual O&M Cost Distribution by Project Category and SIP Phase Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

	O&M Cost ($ million/year)			
Project Category	**5-year SIP**	**10-year SIP**	**25-year SIP**	**Subtotal**
Category 1 - Regional Grey Infrastructure	$10	-	$20	$30
Category 2 - Regional Green Infrastructure	$30	$10	$20	$60
Category 3 - Distributed Green Infrastructure	$100	$20	$30	$150
Subtotal	**$140**	**$30**	**$70**	**$250**

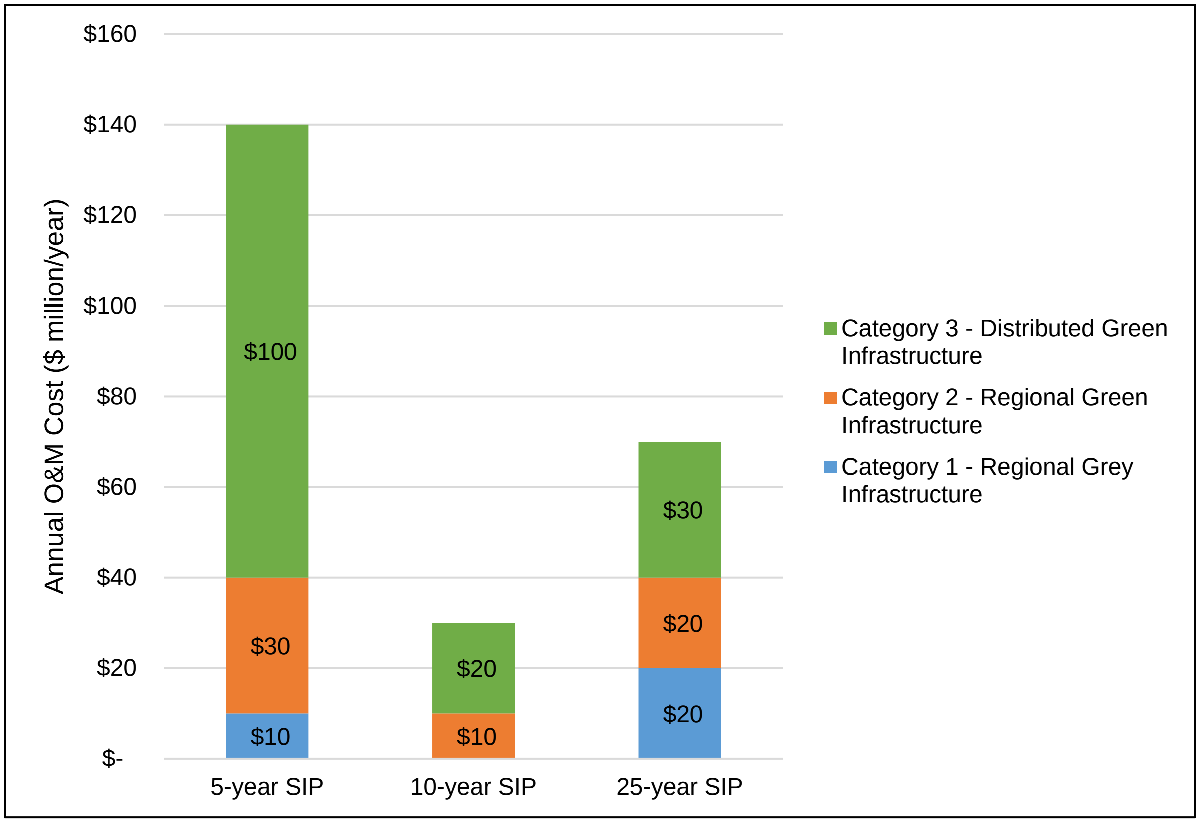


Figure 7.14 Annual O&M Cost Distribution by Project Category and SIP Phase

As shown in Table 7.11 and depicted on Figure 7.14, the majority of annual O&M cost of Category 1 projects ($20 million/year, or 67 percent) is included in the 25-year SIP phase. Half of annual O&M cost of Category 2 projects ($30 million/year) is allocated to the 5-year SIP phase. The majority of annual O&M cost of Category 3 project ($100 million/year, or 67 percent) is included in the 5-year SIP phase as well.

7.4.2.6 Annual O&M Cost by Three-Legged Stool and SIP phase

Table 7.12 and Figure 7.15 summarized the estimated capital cost by three-legged stool criteria in each SIP phase.

Table 7.12 Annual O&M Cost by Three-Legged Stool Criteria and SIP Phase
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

	O&M Cost ($ million/year)			
Three-Legged Stool Selection Criteria	**5-year SIP**	**10-year SIP**	**25-year SIP**	**Subtotal**
Project with three benefits	**$50**	**$10**	**$10**	**$70**
Project with two benefits	**$90**	**$20**	**$40**	**$150**
Water Quality & Water Supply	$90	$20	$40	$150
Water Quality & Flood Risk Mitigation	$2	-	-	$2
Water Supply & Flood Risk Mitigation	-	-	-	-
Project with one benefit	**-**	**-**	**$20**	**$20**
Water Supply	<$0.1	-	-	<$0.1
Flood Risk Mitigation	-	-	$20	$20
Subtotal	**$140**	**$30**	**$70**	**$240**

Note:
(1) Some totals may not add up due to rounding.

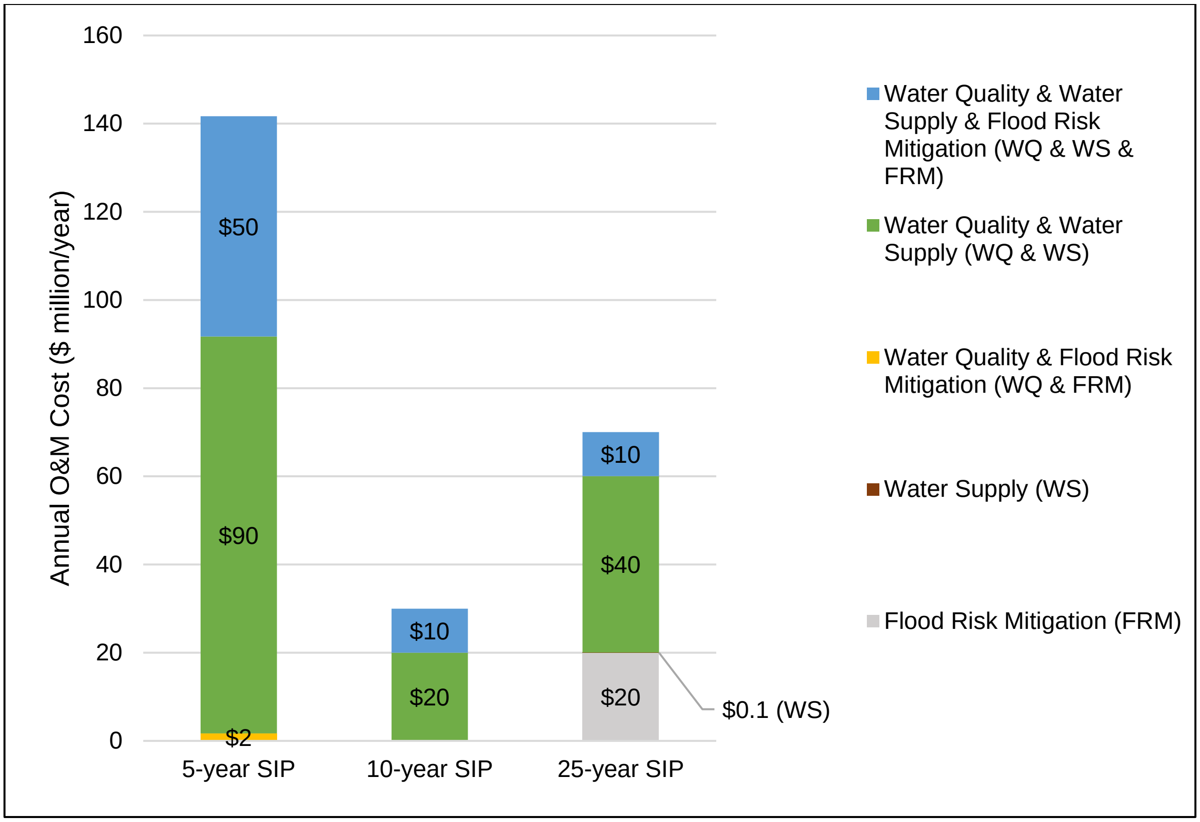


Figure 7.15 Annual O&M Cost by Three-Legged Stool Criteria and SIP Phase

As shown in Table 7.12 and depicted on Figure 7.15, 63 percent of the annual O&M cost of projects with three benefits is included in the 5-year phase. 60 percent of the total annual O&M cost of projects with two benefits is included in the 5-year CIP. 100 percent of annual O&M cost of projects with one benefit is included in the 25-year SIP phase.

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FINANCIAL STRATEGY

Prior sections of the Facilities Plan present the rationale for a SIP to achieve the City's objectives for stormwater management under the One Water LA 2040 Plan. As described, the City has an urgent need to identify sources of funding for this program to meet compliance deadlines. The purpose of Chapter 8 is to:

- Examine the funding needs for SIP, and the challenges facing the City to raise necessary funds;
- Examine the conceptual needs for funding based upon a simplified set of assumptions;
- Review the adequacy of existing sources of funding for stormwater projects; and
- Identify possible sources of funding in the future, comparing potential funding sources with projected funding requirements.

Section 8.1 describes the methodology and result of computing the annual cost obligation of the City's SIP developed in Chapter 7. Section 8.2 summarizes the benefits of stormwater infrastructure investment. Section 8.3 and Section 8.4 summarize the existing and potential future funding mechanisms for the City's stormwater management program, respectively. Section 8.5 discusses possible policies that may fill the remaining deficit between the City's annual cost obligations and identified funding sources by year 2040.

Additional discussion of the City's financial strategy for stormwater management is presented as part of the overall One Water LA 2040 Plan financial strategies in TM 4.1 of Volume 7.

8.1 AMORTIZED STORMWATER IMPROVEMENT PROGRAM COST

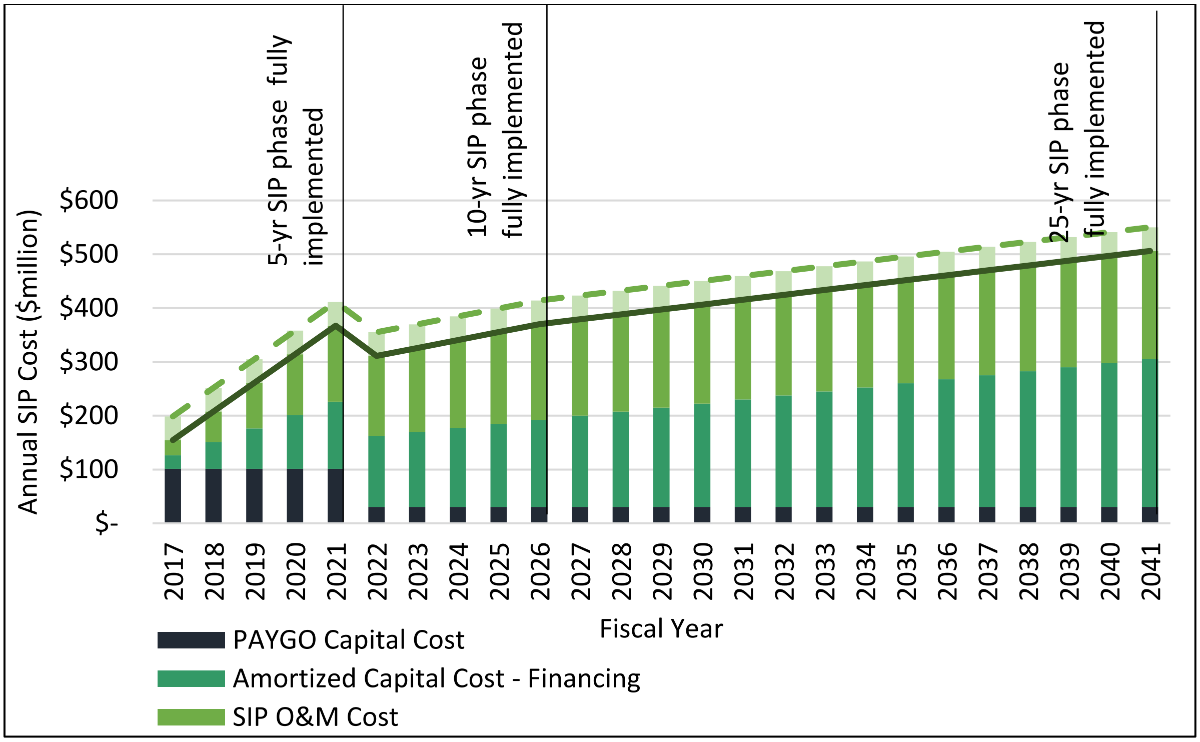
In preparation of discussing the financial strategy, a simplified financial analysis was conducted to amortize the cost of the City's SIP. It was assumed that annual capital costs within each SIP phase would be equivalent in expression of 2017 dollars. Furthermore, 20 percent of the capital cost is funded as Pay-As-You-Go (PAYGO), while the remaining 80 percent of the capital cost is financed based on an interest rate of 4.5 percent for 30 years. In this assumed scenario, bonding is issued every year, and an inflation factor of 2 percent was applied to all costs and revenues subject to inflation.

The O&M costs of the SIP are assumed to be proportional to the capital cost allocated to each category. As a result, the O&M costs of the SIP will gradually increase each year until all SIP projects are fully implemented. In addition, LASAN estimated the current need of O&M cost of existing stormwater quality projects at $44 million dollars per year. Table 8.1 summarizes the amortized cost of the City's obligation at each milestone year. Figure 8.1 illustrates the estimated/projected annual cost obligation throughout the planning period.

Table 8.1 Stormwater Management Annual Cost Obligation
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Milestone Year	PAYGO Capital Cost	Amortized Capital Cost - Financing	SIP O&M Cost	Existing Project O&M Cost	Total Obligation
2017 (First year the of 5-year SIP Phase)	$102	$125	$141	$44	**$411**
2021 (Last year of the 5-year SIP Phase)	$30	$132	$148	$44	**$355**
2022 (First year of the 10-year SIP Phase)	$30	$162	$178	$44	**$414**
2026 (Last year of the 10-year SIP Phase)	$31	$170	$179	$44	**$423**
2027 (First year of the 25-year SIP Phase)	$31	$275	$201	$44	**$550**
2041 (Last year of the 25-year SIP Phase)	$102	$125	$141	$44	**$411**

Notes:
(1) All costs reported in million dollars per year
(2) The total obligation covers the SIP cost only and does not fully cover the City's obligation to the EWMPs. Please see Section 7.4.2 for additional discussion



Note: The total obligation covers the SIP cost only and does not fully cover the City's obligation to the EWMPs. Please see Section 7.4.2 for additional discussion.

Figure 8.1 Amortized Annual SIP Cost through Year 2041

As shown in Table 8.1 and depicted on Figure 8.1, the PAYGO capital cost remains constant during each SIP phase (e.g., it is constant from year 2017 to 2021, from 2022 to 2026 and from 2027 to 2041) and is non-cumulative. Since the bonding is assumed to be issued every year, the amortized capital cost through financing increases on an annual basis.

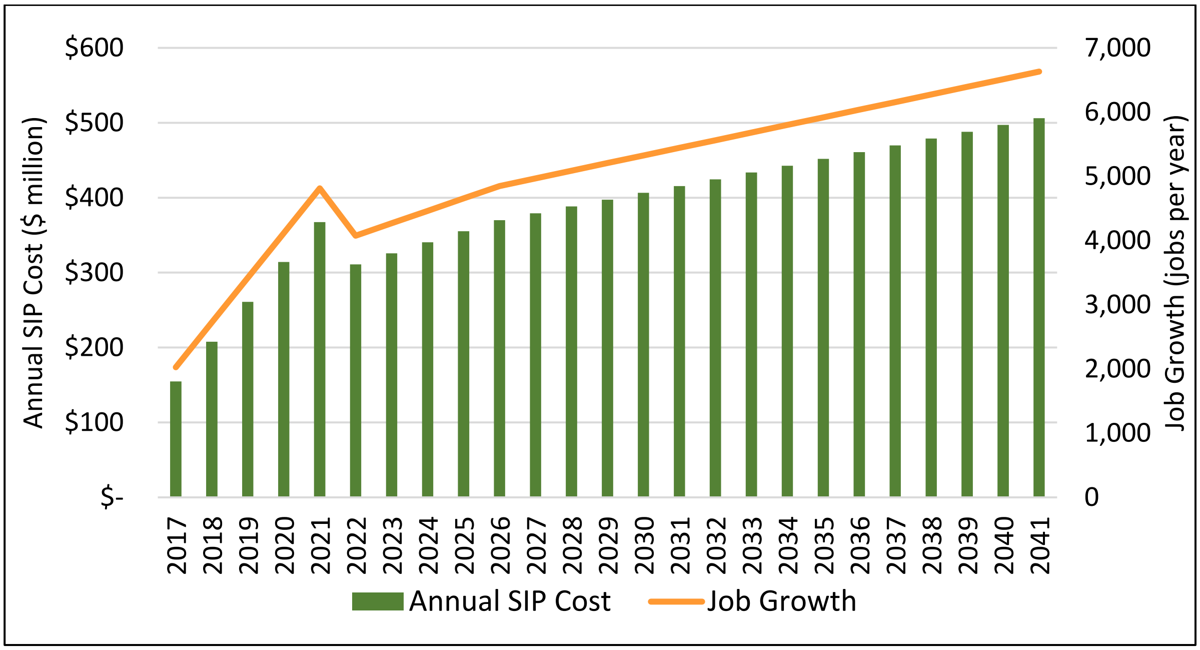
Overall, the beginning annual cost obligation at year 2017 is estimated at $188 million. As the annual SIP O&M cost gradually increases linearly as more projects are implemented each year, the total cost obligation increases to $387 million at year 2021 when the 5-year SIP phase projects are implemented. Starting at year 2022 the capital PAYGO is updated based on the 10-year SIP phase cost. The resultant annual cost obligation for year 2022 is $341 million. As a result of the increasing O&M and amortized financing costs, the annual cost then gradually increases to $403 million by the end of year 2026 when all 10-year SIP phase projects are implemented. Starting at year 2027, the PAYGO capital cost is updated again based on the 25-year SIP phase cost. The resultant annual cost for year 2027 is $403 million. The annual cost obligation reaches a maximum at $549 million at year 2042 when all SIP projects are implemented.

8.2 BENEFITS OF STORMWATER INVESTMENTS

The City could benefit from identifying additional means to fund and implement the stormwater improvement plan. Not only would the City avoid potential compliance penalties amounting to thousands of dollars per day for each TMDL violation, the compliance program offers the following substantial ancillary benefits.

8.2.1 Green Jobs

The Economic Roundtable in 2011 published a report on Water Efficiency and Jobs. This report suggested that each $1 million invested in stormwater projects will create 13.1 jobs in the new green infrastructure economy through direct and indirect employment. Overall the investment was estimated to have a 1.97 to one multiplier, meaning each dollar spent would induce total economic activity in the region by $1.97. The potential employment benefits associated with the Stormwater management program are displayed on Figure 8.2.



Note: The total obligation covers the SIP cost only and does not fully cover the City's obligation to the EWMPs. Please see Section 7.4.2 for additional discussion.

Figure 8.2 Job Growth and Stormwater Investments

8.2.2 Non-Monetary Economic Benefits

While the measurable economic activity described above from the investment in infrastructure would be substantial, LASAN estimates that the total economic value from investment in stormwater projects may be an order of magnitude greater. As shown on Figure 8.3, non-monetary benefits would range from an improvement in public health resulting from improved water quality to economic resiliency to adapt to climate change. Enhanced benefits from new open space and environmental enhancement are difficult to quantify, but could be substantial over the long term promoting a higher quality of life for residents.

To realize these benefits, the City should continue to explore financing options in greater detail, innovate project delivery options; and continue to pursue additional sources of funding. Given the nature of non-monetary economic benefits of stormwater investments, it is necessary for LASAN to facilitate both internal collaboration among City agencies and external collaboration with other public agencies and the City's private sector partners to share the capital and O&M cost of multi-benefit stormwater management projects.

Figure 8.3 Non-Monetary Economic Benefits of Stormwater Investments

8.3 CURRENT FUNDING MECHANISMS

Stormwater management is one of many objectives within LASAN's vast responsibilities. Moreover, the obligation to properly manage stormwater is one of an even larger number of programs funded by the City's General Fund. The City has endeavored to develop sources of revenue for its stormwater management program, but these revenues have not been sufficient to fully fund the program. As such, the City obligations for stormwater management remain a burden on the General Fund. The following steps have been taken to improve this funding deficiency:

- In 1993, the City imposed a Stormwater Pollution Abatement Charge (SPAC) on properties within the City to assist in funding this program.
- In 2004, City voters approved Proposition O which authorized $500 million in General Obligation Bonds to fund stormwater management capital projects.

- The City assigns portions of the fees assessed for review of plans submitted by developers to the stormwater management program.
- The City actively solicits grant funding from outside agencies for stormwater management to supplement its revenues from in-city sources.
- LADWP funds stormwater management projects to the extent that the projects provide an economically attractive source of water supply for the City. Recently, this funding has been applied as cost sharing toward multi-benefit projects.

The existing funding sources of the City's stormwater management program are described below.

8.3.1 Capital Funding

Proposition O, passed by the voters in 2004, authorized General Obligation Bonds of up to $500 million to support capital projects to comply with Federal Clean Water Act requirements, improve the quality of water in local streams, and reduce the discharge of pollutants to the ocean. These bond proceeds have been the principal source of funds for design and construction of the City's stormwater projects, and were instrumental in helping the City comply with all Trash TMDLs, SMB Bacteria TMDL for dry weather, and the TMDLs for Machado Lake and Echo Park Lake. Proposition O projects have also assisted with some other TMDLs to varying degrees. Proposition O bonds are administered by an Administrative Oversight Committee (AOC) and also has a Citizens Oversight Committee. Nearly all the funds authorized by Proposition O have been committed to capital projects already underway or fully completed. Therefore, Proposition O funds will not help address future large-scale funding needs.

The LACFCD under the LACDPW provides essential flood control services for the benefit of the City. They operate and maintain several regional flood control facilities within and upstream of City's boundary, such as Devil's Gate Dam, Big Tujunga Dam, Pacoima Spreading Grounds and Lopez Spreading Grounds. Were it not for the continued functioning of the LACDPW, the stormwater obligations of the City would be substantially higher. Similarly, any future deficiencies in funding for LACDPW would adversely impact the City.

In 2015, LADWP considered the water supply benefits of water quality projects in cooperation with LASAN and provided $15 million in funds for construction of multi-benefit projects. As summarized in Section 4.3, LADWP and LASAN have collaboratively implemented many stormwater capture projects, such as the Woodman Avenue and Laurel Canyon Green Streets projects. Continued cooperation from LADWP for future multi-benefit projects is very important.

LASAN has also partnered with other agencies on multi-benefit projects to lessen the individual burden of stormwater projects by sharing costs and benefits. For example, for EWMP regional project with drainage areas across municipal boundaries, the cost of such project is shared in proportion to the drainage area among involved municipal agencies. Continued collaboration amongst agencies will be very important in the future.

8.3.2 Ongoing Sources of Revenue for Stormwater Management

As discussed in Chapter 6, operational costs for the City's stormwater management program include staff managing compliance activities, analyzing regulations and developing plans for compliance. Moreover, increasingly, ongoing costs for the stormwater management program would include O&M for facilities as they are constructed and need to be maintained. These cost obligations require ongoing sources of revenue to provide funds; they cannot be funded from debt obligations or other sources of funds that can be used only for capital projects which generate long-term value. Thus, it is imperative that the City consider the revenues and needs of the program in light of these long-term O&M obligations. Moreover, the City is facing huge obligations for future capital projects which will achieve benefits over a long useful life of these assets. Conceptually it is appropriate for the City to consider incurring debt in order to fund these capital projects which would provide long-term benefits. Debt financing would tend to lessen the near-term need for revenues to fund the program in a PAYGO manner, but the City would still need to identify long-term sources of stable revenue to repay that debt. Moreover, these capital obligations are significant enough that one must consider the indirect burdens associated with a program to finance with debt obligations backed by the City's General Fund. Thus, the City should consider creating revenue sources that are sufficient to fund O&M and are also sufficient for repayment of debt obligations without requiring a pledge of revenues from the General Fund.

The revenue sources presently used to pay the costs of the City's stormwater management program are summarized in Table 8.2. Each revenue source is explained in the corresponding subsections below.

**Table 8.2 Summary of Existing Sources of Revenues
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan**

Revenue Sources	Annual Revenue ($ million/year)
Stormwater Pollution Abatement Charge	$28
Grants	$2
LID Plan Check	$1.2
General Fund	$13
Total	**$44.2**

8.3.2.1 Stormwater Pollution Abatement Charge

The SPAC established by the City in 1993, assesses a fee to property owners based upon the benefits accruing to those properties from the City's stormwater management program. It was intended at the time that the fee would be updated from time-to-time as the stormwater management program evolved and the nexus for fees changed. However, in 1996, Californians approved Proposition 218 which required voter approval for any adjustments to fees of this type. This essentially froze the existing fee without allowing indexing for future inflation.

The SPAC fee depends on the size and imperviousness of the parcel. The typical residential parcel pays $1.92/month. The SPAC generates approximately $28 million per year in vital funding for the Stormwater management program. As shown in the graph below, when considering the effects of inflation in costs, the fee has essentially been reduced by approximately 50 percent in terms of its "buying power" or its ability to pay the costs of projects and programs. As shown on Figure 8.4, if the fee had been held constant in terms of inflation, it would have been $2.84 in 2008 and $3.55 in 2016.

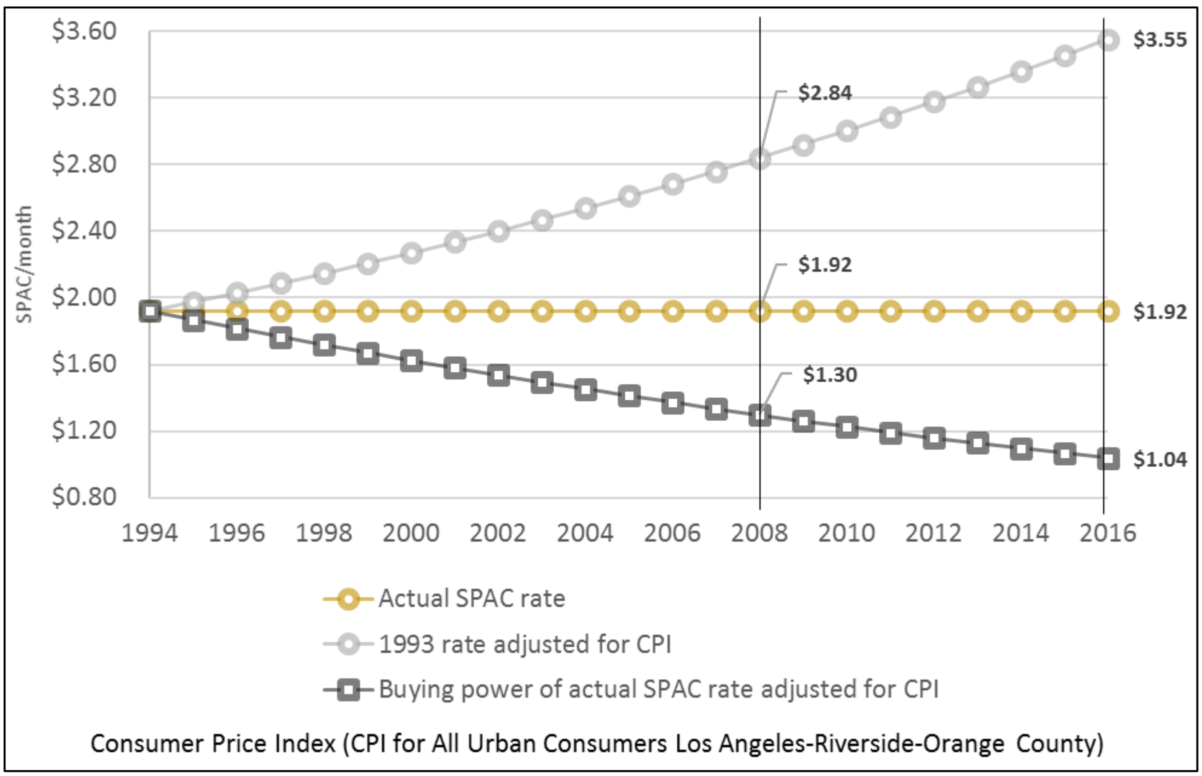


Figure 8.4 SPAC Buying Power

8.3.2.2 Grants

The City has been successful in identifying and obtaining outside grant funding for Stormwater related obligations. On average, the City has been obtaining $2 million annually in outside funding for these obligations. Although they are described herein as a "revenue", grants are subventions that are not as flexible as revenues. Often, grant funds are restricted for limited classes of costs, such as capital, and cannot be applied to all costs. Also, grants often are offered as reimbursement for past expenditures rather than applicable to future expenditures. Finally, the reliance on grants creates administrative costs within the City to obtain grants and comply with grant requirements.

While not as reliable or flexible as dedicated revenue sources, the City anticipates continued success of efforts to obtain grant funds in line with the historic successes. The continued availability of grant funds would lessen the need for future revenues.

8.3.2.3 Low Impact Development Plan Check

Development within City Boundary are required to comply with the City's LID Ordinance. Plan review to ensure compliance is an important part of the City's stormwater management program. The City imposes fees upon developers to recover these costs. Overall the fees generate approximately $1.2 million in constant dollars per year. Fees are adjusted as appropriate to ensure alignment with the City's costs.

8.3.2.4 General Fund

Since the sources of revenue dedicated to paying costs of stormwater management programs are insufficient, the City transfers money from the General Fund to cover the cost of stormwater management programs. In recent years, the burden on the General Fund has been approximately $13 million per year.

In assessing the needs of the stormwater management program for future funding, the amounts of future subsidies from the General Fund are omitted. This assumption is consistent with the vision of One Water LA that the costs and benefits of all water management programs be assessed and apportioned appropriately to areas of benefit from those investments. In projecting the need for funding, contributions from the General Fund are inconsistent with the One Water LA 2040 Plan for the following reasons:

1. The size of obligations for future capital could seriously impact the overall bonding capacity of the City unless those bonds have dedicated revenue sources that are independent of the General Fund.
2. The General Fund is used to pay for other essential City services. The One Water LA 2040 Plan does not suggest a priority for water-related expenditures compared to other essential City services.
3. Changing priorities within the City could severely impact the funds available for stormwater related services in any given year, causing serious disruptions to the stormwater management program.

8.3.3 Projected Deficiencies in Existing Revenue Sources

Figure 8.5 illustrates the combined effect of the existing revenue sources throughout the planning period of the One Water LA 2040 Plan. Figure 8.6 compares the combining effect existing revenue sources with the conceptual annual cost obligation of the City's stormwater management program. As explained previously, the general fund is excluded as a revenue source towards the City's stormwater management needs and is not shown on Figure 8.5 and Figure 8.6.

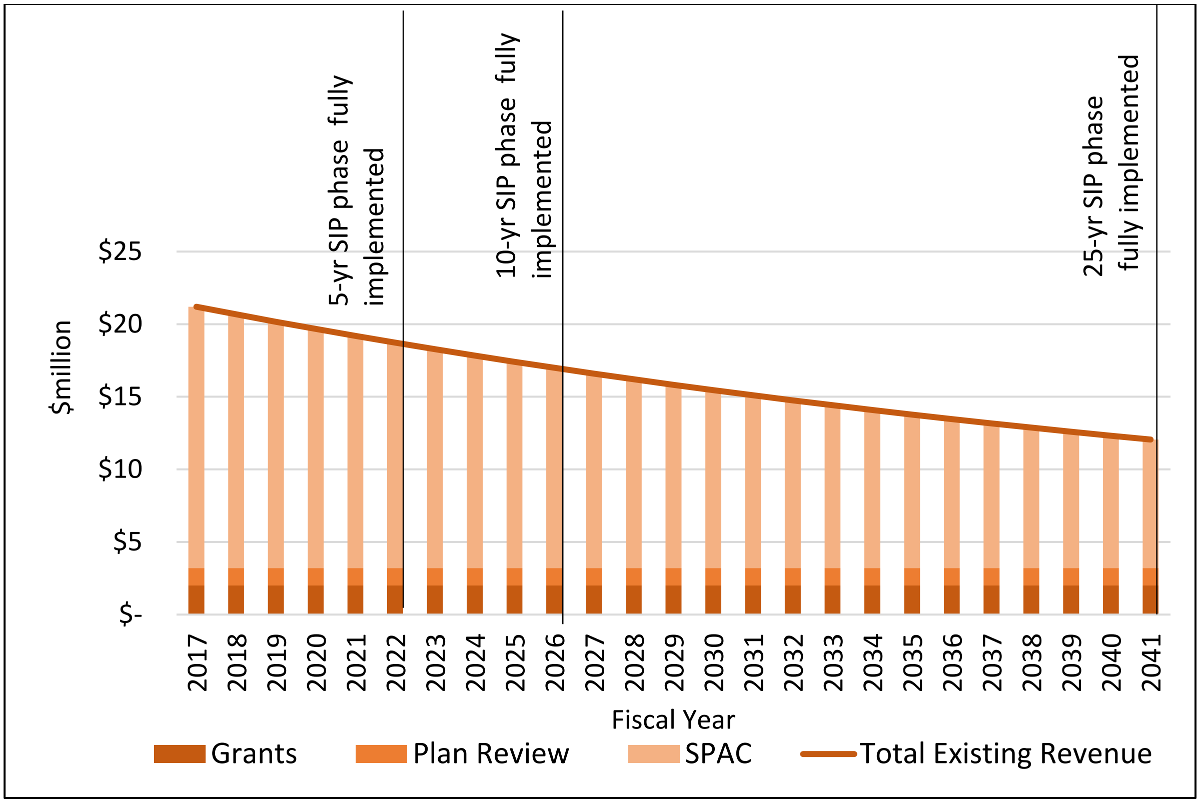
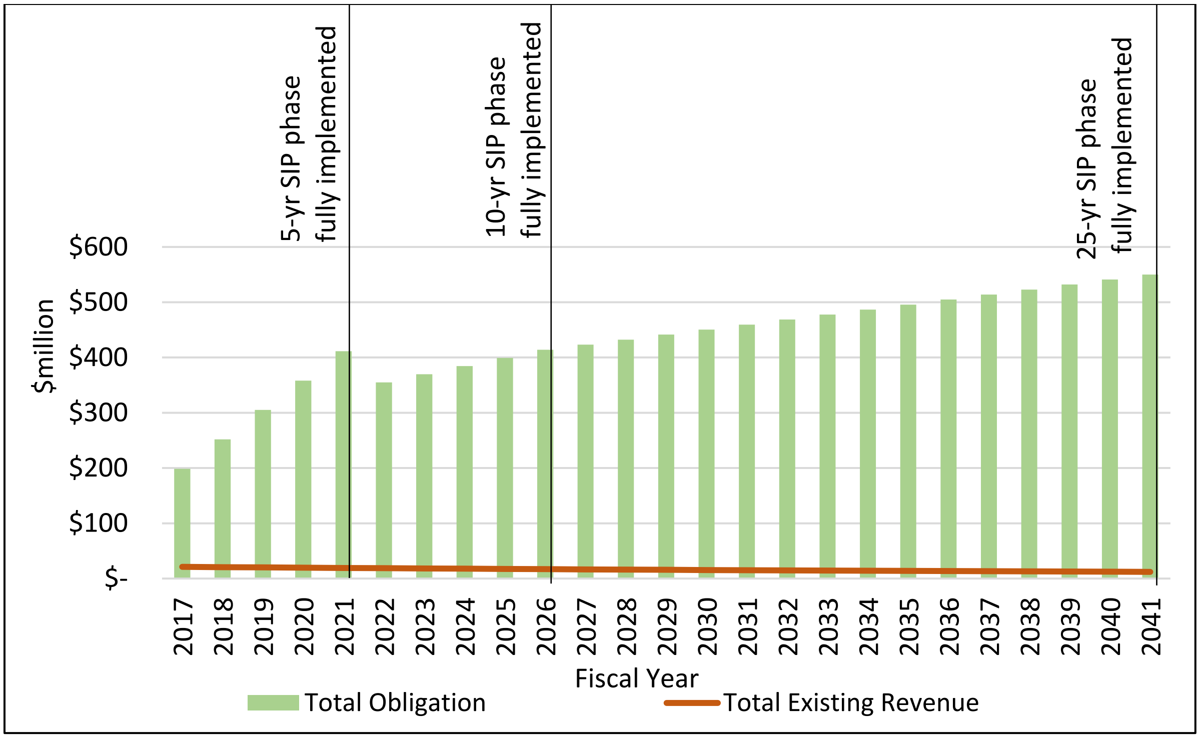


Figure 8.5 Combined Effect of Existing Revenue Sources



Note: The total obligation covers the SIP cost only and does not fully cover the City's obligation to the EWMPs. Please see Section 7.4.2 for additional discussion.

Figure 8.6 Deficiencies between Existing Revenues and Project Costs

As depicted on Figure 8.6, the conceptual five-year SIP and longer-term SIP phases described in Section 8.1 cannot be adequately funded from existing revenue sources. Current revenue sources, plus assumed continued successes in obtaining grant funding will generate approximately $31 million per year, which is less than O&M costs for existing stormwater quality management projects implemented by LASAN/LABOE ($44M/year) and far less than the O&M obligations when considering increased O&M from the SIP. Further, when compared to the estimated future annual cost obligations for Capital and O&M associated with existing programs and future SIP, the deficiency is dramatic. Using the simplified SIP financing assumptions described in Section 8.1, the annual cost obligation exceeds existing revenue sources immediately and the deficiency grows over time as new projects are contemplated and the effects of inflation tend to lessen the buying power of the SPAC fee relative to costs that will increase with inflation.

8.4 ASSUMPTIONS OF FUTURE FUNDING

8.4.1 Ongoing Policy Deliberations regarding EWMP's

In recognition of the funding deficiency described above and a variety of other considerations, in January 2017, the City Council and Mayor's office received recommendations from the City's Administrative Officer to:

1. Acknowledge that a comprehensive funding strategy is needed to address the City's compliance costs and provide direction on which funding options the City shall pursue.
2. Instruct LABOE, LASAN, the City Administrative Officer and the LADWP, as appropriate, to coordinate and identify specific projects that will meet permit compliance.
3. Instruct the City Administrative Officer to work with the Chief Legislative Analyst, Bureau of Sanitation, and other City departments, as necessary, to develop an implementation plan that includes program oversight structure and funding strategies.
4. Instruct the LASAN, LABOE, and the City Administrative Officer to provide and updated project list, including project costs, for the next five years.

This Facilities Plan is providing essential information toward this effort. LASAN management has provided a set of key assumptions of potential future sources to fund the City's SIP, to allow a presentation of pertinent issues and a conceptual description of an approach to future funding. Those assumptions are presented below.

8.4.2 Capital Subventions

8.4.2.1 <u>Los Angeles County Department of Public Works</u>

The SIP presented in Chapter 7 excludes essential flood control and water quality projects being sponsored by the LACDPW. By excluding costs for these essential projects, the City presumes funding sources for the LACDPW program which does not depend upon City revenue programs. Moreover, the ongoing O&M for these projects is presumed to be funded from other sources. This can be thought of as limiting the City's obligations or as a subvention by others toward the City's obligations.

8.4.2.2 <u>Voter-Approved Initiatives</u>

In November 2016, City voters approved Measure A and Measure M, two important programs that were assumed to provide future funding for essential stormwater management program costs. They are described below.

Measure A

Measure A is a Los Angeles County measure passed in November 2016 that authorizes general obligation bonds for construction of new parks and open space, and includes project elements to improve stormwater management in those projects. LASAN has developed several strong partnerships with the LACDPR and LARAP where recreational benefits, open space values and stormwater quality improvement were all realized in multi-benefit projects. It is reasonable to assume that these innovative partnerships will continue and that many of the regional stormwater project needs could be realized in projects that continue this tradition of park projects that provide these multiple benefits. It is assumed that a relatively small portion of Measure A funds would be spent on stormwater improvement projects, but nonetheless the resulting funding for these projects could be on the order of $5 million in constant dollars per year.

Measure M

Measure M is a county-wide sales tax surcharge that will fund improvements to the transportation system in the County. Many of these projects will benefit the City's stormwater compliance obligations, because existing transportation rights of way are significant portions of the impervious surface area within the City, and the development of new transportation facilities will comply with the City's LID Ordinance. Thus, the transportation improvements will offset City needs to fund green streets and other LID initiatives. LASAN currently estimates that City-wide savings compared to the SIP identified in the Facilities Plan could be on the order of $20 million in constant dollars per year.

8.4.3 Funding for Water Supply Benefits

LADWP operates as an enterprise fund, separate from the General Fund obligations of the City. Pursuant to the adoption of the SCMP in 2015, LADWP has embraced policies for the funding of stormwater projects that benefit their ratepayers. This progressive philosophy is emblematic of the objectives of the One Water LA 2040 Plan. In limited instances, the water supply benefits of stormwater capture projects can be fully justified based upon the benefits to LADWP water supply. More often, however, LADWP would contribute to funding projects, but only provide a portion of the total funding required to realize a multi-benefit project.

For purposes of estimating the future contribution of LADWP toward the SIP, the following assumptions were adopted to estimate the water supply benefits funding:

- Projects fully justified by water supply benefits will be funded by LADWP. This action would cover capital costs for this limited set of projects.
- Projects that have substantial water supply benefits to LADWP but require additional sources of funds from other City resources would be partially funded by LADWP in accordance with the water supply benefits they achieve.

- Funds from LADWP are assumed to accrue over time in accordance with the estimated water supply generated each year. That is, the funding would directly offset need for revenues from other sources for this portion of project costs.

- The funding from other, non-LADWP sources necessary to achieve the non-water supply benefits would be realized from other sources. In this manner, the projected LADWP contribution to projects represents the maximum practicable contribution toward the SIP.

It should be noted that the City may be eligible for grant funding from other sources to pay a portion of the costs of stormwater capture projects that create a usable water supply for the LADWP. It is in the best interests of the City to pursue these sources of outside funding which would lessen obligations on LADWP ratepayers.

8.4.4 County-Wide Special Tax

Some cities have recently created new fee structures to address similar deficiencies in revenues to comply with new MS4 regulations. The Los Angeles County Board of Supervisors is considering a county-wide special tax on properties to address this stormwater management need which is shared by all cities in the County.

Details of the proposal are still being formulated by policy makers within the County and cities. Thus, it is not possible to fully describe the proposed new special tax. However, a few key assumptions have been provided by the LASAN management staff:

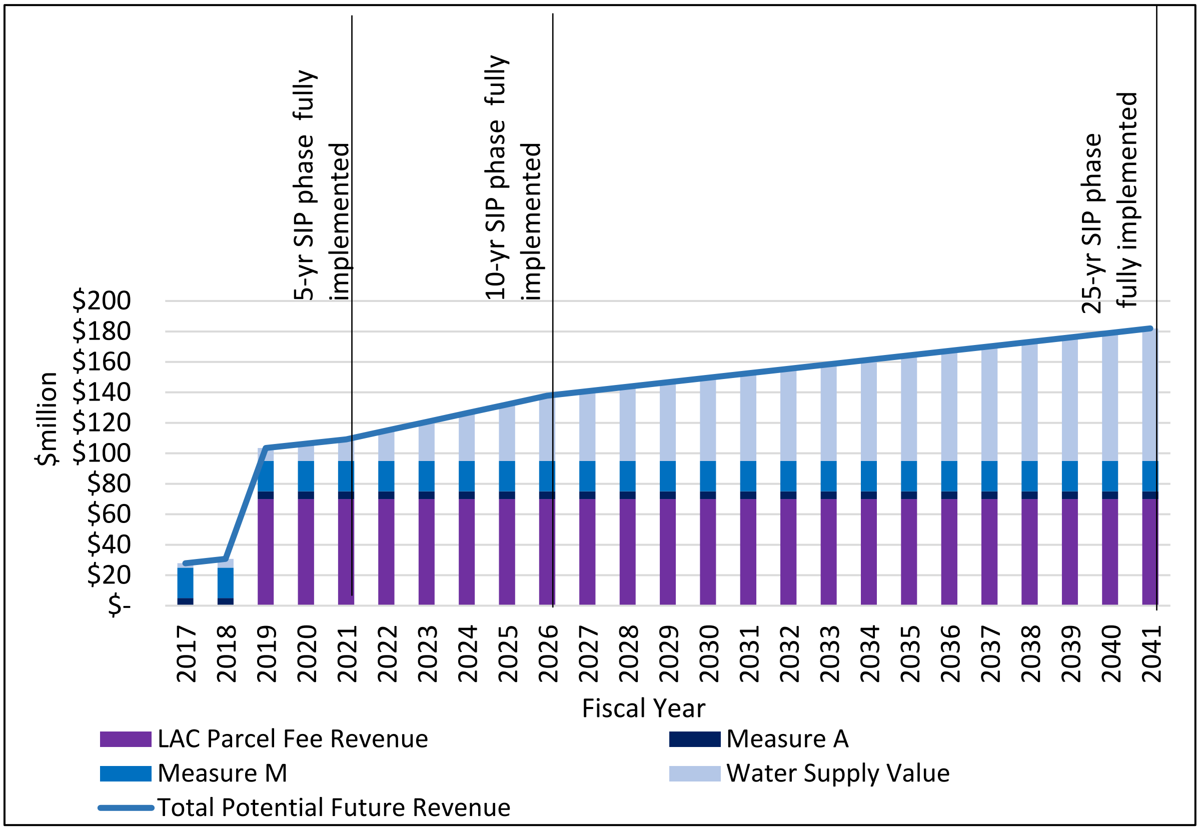
- The revenues generated by the County special tax on parcels within the City would be transferred from the County to the City and the City would manage the application of revenues toward costs.

- Based on assessments of support for such a special tax, it is expected that the County tax would range from about $54 per typical parcel to $72 per typical parcel on average and would become effective in 2019. Further the tax would be indexed to inflation such that it would increase in nominal dollars but remain constant in constant dollar value into the future.

- Although the total amount of revenue to be generated from the special tax is still unknown, for this report, it is assumed that in total the special tax would generate $70 million per year. It is further assumed that the tax would have inflation indexing so that this revenue would be consistent in constant dollars into the future, and that revenues from the special tax could be applied toward any category of City's stormwater related costs including O&M, PAYGO capital and servicing of future debt instruments.

8.4.5 Combined Effect of Potential Future Funding

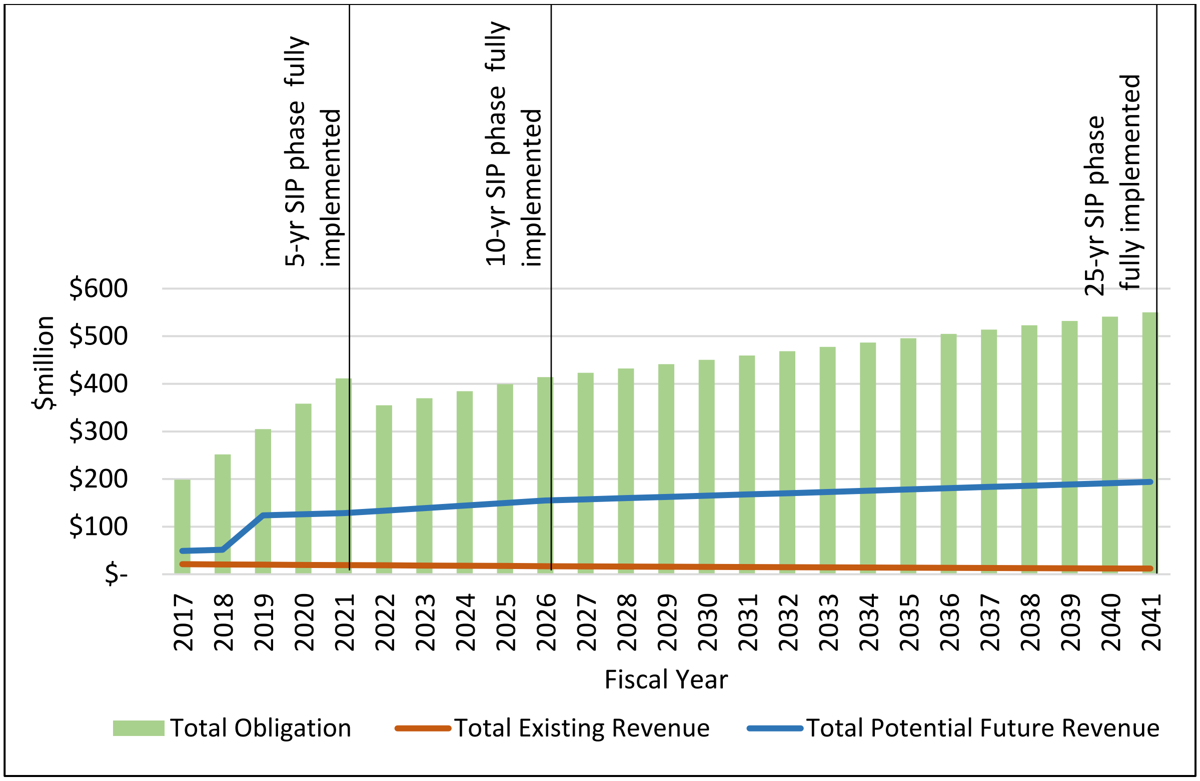
Figure 8.7 illustrates the combined effect of the assumed new revenue sources, use of capital subventions and leveraging of the water supply benefits of the stormwater improvement program makes substantial progress toward addressing the funding needs.



Note: Change Legend to LAC Special Tax Revenue from LAC Parcel Fee

Figure 8.7 Combined Effect of Potential Future Revenue Sources

The assumed new revenue sources, use of capital subventions and leveraging of the water supply benefits of the stormwater improvement program makes substantial progress toward addressing the funding needs. Figure 8.8 demonstrates the application of all sources of revenue and outside funding sources toward the conceptual annual needs for funding from Section 8.1.



Note: The total obligation covers the SIP cost only and does not fully cover the City's obligation to the EWMPs. Please see Section 7.4.2 for additional discussion.

Figure 8.8 Comparison between Potential Funding and Cost Obligation

Depicted on Figure 8.8, currently identified assumptions of future funding, combined with existing sources of funds make substantial progress toward addressing the City's needs, but as of this writing, there have not been sufficient funding identified to address the City's stormwater funding needs. Table 8.3 summarizes the remaining deficit at each milestone year.

As presented in Table 8.3, the deficit between funding sources identified to date and the conceptual annual cost obligation ranges from $150 million in constant dollars at year 2017 to $356 million in constant dollars at year 2041. This results in an estimated cumulative deficit in 2041 of $6.9 billion. On average, the funding sources identified to date would supply approximately 1/3 of the total need and the deficit for the program outlined in this chapter.

Table 8.3 Funding Deficit Summary
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Milestone Year	Total Obligation	Existing Funding Revenues	Future Funding Revenues	Deficit	Cumulative Deficit
2017 (First year the of 5-year SIP Phase)	$199	$21	$28	($150)	($150)
2021 (Last year of the 5-year SIP Phase)	$411	$19	$109	($283)	($1,050)
2022 (First year of the 10-year SIP Phase)	$355	$19	$115	($221)	($1,270)
2026 (Last year of the 10-year SIP Phase)	$414	$17	$138	($259)	($2,250)
2027 (First year of the 25-year SIP Phase)	$423	$17	$141	($266)	($2,510)
2041 (Last year of the 25-year SIP Phase)	$550	$12	$182	($356)	($6,920)

Notes:

(1) All costs reported in million dollars
(2) The total obligation covers the SIP cost only and does not fully cover the City's obligation to the EWMPs. Please see Section 7.4.2 for additional discussion.

8.5 DISCUSSION OF FUTURE FINANCING CONSIDERATIONS

As the City makes progress addressing the City Administrative Officer's (CAO) recommendations above, there will be more thorough examination of the policy considerations and a clearer implementation strategy will emerge. Below are some of the relevant issues that City leaders should consider as progress is made. The fundamental benefits of investment in stormwater programs, the consequences of potential non-compliance, and the balancing of these considerations relative to other City priorities will be an ongoing consideration. Preferred methods of debt financing will be determined and the financing strategy will be articulated in greater detail. The City will undoubtedly pursue new sources of grant funding and may consider additional potential sources of new revenues to pay for stormwater obligations. It is also likely that the State would consider new means of assisting municipalities to comply with Stormwater regulations. Moreover, it is likely that the City will continue its innovation in creating new partnerships to assist in program implementation.

Section 8.5 provides an overall summary of potential funding mechanisms for the City's SIP. As summarized in Table 8.4, the funding mechanisms were generally grouped into four categories – debt financing, grant programs, new State legislative initiatives, and new partnerships opportunities. Each strategy/option is discussed in detail in subsections below.

Table 8.4 Future Funding Considerations
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Future Funding Opportunities	Strategies/Options	Description and/or Examples
Debt Financing	Pledge of new revenue Sources to debt Repayment	Develop new sources of revenues to apply towards the cost of the City's stormwater program. Examples include the City's Municipal Improvement Corporation and debt issuances tied to new taxes.
	Governmental Low-Interest Loans	Utilize governmental low interest loan programs to afford financing at competitive or lower cost than conventional debt offering. Examples include the Clean Water State Resolving Fund and the low-interest loans under the Water Infrastructure Finance and Innovation Act.
	Private Sector Financing	In some cases, developers are afforded the option to finance improvements and the City's pledge of revenues would back new debt obligations undertaken in the private equity markets.
	New Voter-Approved Indebtedness	Building upon on the success of Proposition O, similar new types of initiatives may be undertaken to offer financing for the City's SIP.
Grant Programs	Federal Grants	Examples of federal grants that can potentially fund the City's SIP include the Federal Appropriations under the Water Infrastructure Improvements for the Nation Act and Community Development Block Grants.
	State Grants	State Bond monies authorized by voters for water-supply improvements may also offer grant monies for stormwater projects. Examples of State grants including Propositions 1, 1E, and 84.
New State Legislative Initiatives	Product Impact Fees	Pollutant control fee, such as a "per-tire" zinc control fee, is a potential source of SIP funding.
	Caltrans Cooperative Implementation Agreements	The Agreement is included in Caltrans' MS4 Permit to encourage collaboration with local municipalities to address water quality impairments.

Table 8.4 Future Funding Considerations
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Future Funding Opportunities	Strategies/Options	Description and/or Examples
New Partnership Opportunities	New Partnerships with Private Property Owners	Strategies for encouraging private parcel participation included developing incentive programs, new ordinances, a rewards structure with awards and recognition for private projects that exceed expectations, and partial funding for partner assistance.
	Green Finance	A number of banks and governmental institutions are working on new financing vehicles to power the green economy, including innovative stormwater management programs.
	Commercial Properties	The SWRCB is preparing a draft TMDL amendment into the Industrial General Permit, which can potentially assist the City in meeting its stormwater obligations.
	Public/Private Partnerships (P3)	Increasingly, and on a national basis, cities, counties, and municipalities are considering the use of private investment capital to implement its stormwater related infrastructure under the P3 framework.
	Developer LID Programs including offset mitigation programs.	It is possible that the city might consider allowing developers to take the lead on developing regional projects in lieu of onsite actions that may comply with the LID ordinance.
	Volunteers	The City has seen great response when asking volunteers to undertake and/or maintain projects to enhance the environment and to augment paid-City resources.

Recently, discussion has been had at both a State and local level regarding the potential for revenue generation via rulings related to the MS4 Permit as an "unfunded mandate." The issue of the unfunded mandates began in the early 2000's when the Claims Board decided that the MS4 Permit requirements for trash receptacles and industrial and commercial inspections were unfunded mandates. Since then, the decision of the Claims Board was vacated by the state appellate court (claiming that trash receptacles and industrial inspections are indeed Clean Water Act requirements). However, the California Supreme Court has recently upheld the earlier decision of the Claims Board decision. The recent decision by the California Supreme Court has very little impact on the cost for MS4 Permit compliance and EWMP implementation. The MS4 permit trash and industrial inspection requirements constitute a very small cost as compared to $7.3B for the City and the $20B cost of Countywide EWMPs implementation. In addition, the CA Supreme Court also decided that cities should enact taxes or fees to recover the cost of industrial and commercial inspections, as opposed to filing a claim with the Claims Board. Overall, the recent decision of the CA Supreme Court is not likely to bring a steady and significant funding stream to the City.

8.5.1 Debt Financing

The use of debt financing to fund capital projects is important to pursue for the following reasons:

- The City's stormwater management program involves substantial investment in capital projects with a long useful life, generating benefits over long periods of time. Debt issuance lessens the burden on current residents and spreads those burdens over future residents who will be beneficiaries of the projects.
- Compliance windows for TMDL's are much shorter than the useful life of the projects. The use of debt financing spreads the need to generate revenues over a much longer period, resulting in a far more stable revenue requirement, avoiding needs for spikes in funding needs which can be more disruptive to families on tight budgets who are more able to deal with lower, predictable assessments.

Section 8.1 has used very simplified assumptions of the requirements to issue debt, and the costs and consequences of issuing debt. Moreover, no evaluation is offered of specific debt mechanisms. However, it is recommended that the City conduct more detailed evaluation of these means.

8.5.1.1 Pledge of New Sources of Revenue to Debt Repayment

As the City develops new sources of revenue to apply toward the cost of the City's stormwater management program, these afford opportunities to securitize debt repayment obligations. There are various financing options that would rely on debt issued by other parties that could assist in the financing of the City's SIP. For example, the City's Municipal Improvement Corporation of Los Angeles (MICLA) would work closely with the staff of City departments to evaluate alternative debt vehicles including revenue bonds, lease purchase agreements, variable-rate debt obligations, commercial paper, and other financing vehicles. There are many considerations that are relevant to consider in managing future debt including the timing of debt to take advantage of favorable market conditions.

There are a wide number of potential debt issuances that could be tied to new taxes. New taxes that have been considered by neighboring municipalities that are worth considering include:

- Property Taxes, including Infrastructure Financing Districts;
- Sales Tax Increments;
- Transient Occupancy Taxes;
- Gas Taxes; and
- Taxes on Specific Commodities (commonly sin taxes).

Other taxes may also be worth considering as a revenue source for debt repayment. Policy 30 described in Volume 1 Chapter 9 suggests exploring the establishment of Enhanced Infrastructure Financing District or other appropriate funding mechanism to fund capital projects and sustainable operations and maintenance.

8.5.1.2 Governmental Low-Interest Loans

The State has several low interest loan programs that may afford financing at competitive or lower cost than conventional debt offerings of the MICLA. These include the Clean Water State Revolving fund which can offer long-term financing at interest rates as low as 1 percent annual percentage rate (APR). Moreover, new loan programs pursuant to Proposition 1 and other state-wide bond issuances are being developed. The City should monitor and avail itself of these opportunities.

Clean Water State Revolving Fund

The largest source of low interest loans presently is the Clean Water State Revolving Fund (CWSRF). The SWRCB operates the CWSRF with federal funds from the EPA. This program provides below-market rate financing for the construction of wastewater treatment and water recycling facilities for the implementation of nonpoint source and stormwater pollutant control solutions, and for the development and implementation of estuary plans. There is a wide range of eligible projects, including stormwater reduction and treatment. Since CWSRF funds are federal funds, they can be used for the 50 percent local match required for Proposition 1 stormwater grants. One component of the program involves loan (principal) forgiveness for Green Project Reserve (GPR) projects, which include green infrastructure projects and environmentally innovative activities. All GPR projects must also be CWSRF-eligible projects and may be standalone projects or part of a larger project. The interest rate of the CWSRF is typically calculated based on half of the most recent General Obligation Bond Sale at the time of funding, commencing with a typical range of 2 to 3 percent. This financing program could be useful if the City had a substantial stormwater fee program in place, as it would provide low interest rate loans to reduce debt service repayment obligations, ultimately lowering the overall SIP costs.

Water Infrastructure Finance and Innovation Act

Another option that may offer promise, particularly for projects with enhanced risk management by private sector developers of stormwater projects, are low-interest loans offered by EPA under the Water Infrastructure Finance and Innovation Act (WIFIA). These WIFIA loans are available to reduce debt costs compared to conventional taxable debt issuances, but are generally higher than options available through the MICLA non-taxable debt vehicles.

The WIFIA is administered by the USEPA. It is a financing mechanism for large-scale water-related infrastructure projects[36]. It was passed in 2014 as part of the Water Resources Reform and Development Act as a five-year pilot program which is set to expire in 2019. WIFIA could provide loans of up to 49 percent of the total project costs to eligible projects that have minimum project costs of $20 million for large communities and $5 million for small communities. WIFIA is an enhancement of the SRF program. It is intended to offer financing mechanisms for the non-federal portion of projects that are nationally or regionally significant, and their likelihood of implementation is substantially enhanced through the offering of lower cost financing. The interest rates charged by the WIFIA program are set at no less than the yield on treasury securities of a similar maturity to the loan repayment term. This makes the cost of borrowing through WIFIA higher than SRF, near equal to the cost of tax-exempt financing but lower than typical taxable financing methods. The repayment period for the loan is up to 35 years or the useful life of the project, whichever is less.

In early December 2015, US lawmakers passed legislation that lifts a ban on the use of tax-exempt bonds with loans authorized under WIFIA. Interest groups are currently urging congress to appropriate funds to allow WIFIA to begin addressing the country's large water infrastructure challenge. Should this program become a permanent program and the total available funding for borrowing increase, this financing program could be useful if the City had a substantial stormwater fee program in place.

8.5.1.3 Private Sector Financing

As the City considers innovative means of soliciting competitively bid delivery of projects to the City, some options may appropriately consider delivery in which payments are strictly based upon performance criteria and bidders are afforded options to consider high capital versus high O&M projects and otherwise assume development risk for projects. In some of these options, the developer, not the City would finance improvements and the City's pledge of revenues would back new debt obligations undertaken in the private equity markets.

[36] Defined as eligible projects that have minimum capital cost of $20 million for large communities and $5 million for small communities. There is broad range of project types eligible for WIFIA financing, including flood risk mitigation, improvement of water quality and quantity (including aquifer recharge), and the protection of drinking water (including source water protection).

8.5.1.4 New Voter-Approved Indebtedness

The General Obligation Bonds from Proposition O that were so critical to the progress thus far in the delivery of stormwater capital projects are exemplar of new types of initiatives that may be undertaken by the City, County or State in the future to offer financing for stormwater improvements. Public-opinion polling suggests a continued strong support for well-defined programs that would improve stormwater quality. The City should monitor these conditions and have an opportunity to offer educational materials in support of a voter initiative or referendum in support of new taxes and new financing tied to those taxes.

In these types of debt issuances, voters approve a ceiling amount of debt financing and either a new fee or more often a tax that can provide a reliable source of revenue for repayment of the debt financing. By far the most common of these are General Obligation Bond Issuances where the bond issuance is backed by a revenue pledge backed by a commitment to collect property taxes as necessary to service the debt. These types of debt issuances are typically the lowest cost of all debt issuances because of the exceptional creditworthiness of the revenue pledge. Many of these debt issuances have been rated AAA representing the highest possible rating.

8.5.2 Grant Programs

The assumption of continued reliance on grant funds averaging $2 million per year may understate the opportunity to obtain grant funding in the future to reduce the costs to City residents for compliance with TMDL compliance. Many of these grant programs are detailed in TM 4.1 of the One Water LA 2040 Plan.

8.5.2.1 Federal Grants

Various federal agencies administrate federal grants to assist local agencies to implement large-scale infrastructure projects. Two federal grants that may assist the City in delivering the SIP are described below.

Water Infrastructure Improvements for the Nation Act

The Water Infrastructure Improvement for the Nation Act (WIIN) was enacted in December 2016. Federal appropriations under the WIIN may offer federal subsidies for stormwater projects and/or offer matching funds for revenue pledges from City sources.

Community Development Block Grant

The Community Development Block Grant (CDBG) program has been administered by the U.S. Department of Housing and Urban Development (HUD) since 1974. The program focuses on development of affordable housing, suitable living environments, and jobs through expanding and retaining businesses for disadvantaged communities. In addition to providing funding to housing-related activities, the program also funds projects that are related to planning, construction, reconstruction, or installation of water and sewer facilities, including storm sewers through its Entitlement Program. This program is limited to funding capital costs, not operations and maintenance expenses. In addition to utilizing the allocated grant funding directly, grantees have the option of converting their CDBG funds into federally guaranteed loans to finance these types of infrastructure improvement projects. Given the funding allocation size and the range of projects supported by this funding source, the availability of funding for stormwater-specific projects may be limited.

8.5.2.2 State Grants

State Bond monies authorized by voters for water-supply improvements may also offer grant monies for stormwater projects, and those sources should be further pursued. The City has developed applications that are pending and may have additional opportunities to apply for grants under these voter-approved bonds.

In California, three voter-approved propositions could provide grant funding opportunities for stormwater and flood control related projects. These Propositions are: Proposition 1E: Disaster Preparedness and Flood Protection Bond Act; Proposition 84: Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act; and Proposition 1: Water Quality, Supply, and Infrastructure Improvement Act.

Propositions 1E and 84

Both Propositions 1E and 84 were approved by voters in 2006, with the former focusing on rebuilding and repairing flood control structures while the latter focused on a wide range projects, including safe drinking water, water quality and supply, flood control, waterway and natural resource protection, water pollution and contamination control, state and local park improvements, public access to natural resources, and water conservation efforts. Given the age of Propositions 84 and 1E, the majority of authorized funding has already been committed or spent. According to the Allocation Balance Report published by the California Natural Resources Agency, the non-committed allocation balances for Proposition 84 and Proposition 1E were $132 million as of August 6, 2016 and $34 million as of July 16, 2016, respectively. Within the potential $132 million Proposition 84 grants available, about $75 million (57 percent of the remaining allocated balance) could be used for stormwater and flood control related projects with approximately $2.5 million dedicated to projects in San Diego Bay and adjacent watersheds, while the remainder available statewide. Agencies administering the $75 million of Proposition 84 funding include the DWR, the SWRCB, the State Coastal Conservancy, and the Secretary for Natural Resources. The Proposition 84 IRWM grant program has been exhausted. As for Proposition 1E, only $12 million remains in the uncommitted balance of the allocated fund for flood control and prevention projects and stormwater flood management that could be available for municipalities at a statewide level. This grant funding is administered by the Department of Water Resources. Based on the above, it is anticipated that funding opportunities from Propositions 84 and 1E available for the City would be limited.

Proposition 1

Proposition 1, which was approved by voters in 2014, is the latest and most important grant program for water infrastructure in California. The total allocation of Proposition 1 is $7.5 billion, and is intended to fund investments in water projects and programs. The bond funds will be distributed through a competitive grant process overseen by various state agencies, including the DWR and the SWRCB. Competition for these grant funds is fierce, which serves to limit access for stormwater purposes.

8.5.3 New State Legislative Initiatives

The State may recognize that inadequate funding sources are available in almost every municipal jurisdiction within the State to comply with Municipal Storm Sewer regulations. It is reasonable to speculate that new programs may offer new sources of money in the future and several draft pieces of legislation have been offered.

8.5.3.1 Product Impact Fees

One potential source of funding could be pollutant control fees. For example, studies have demonstrated that almost half of the zinc found in metropolitan area waters can be traced back to vehicular tire wear. If tires are not reformulated in the near future, legislation could be considered to require a "per tire" zinc control fee, with monies made available to local governments for the cost of mitigating zinc pollution. A California Tire Fee administered by the Board of Equalization is already imposed on the purchase of new tires. The fee program is currently administered for the Department of Recycling and Recovery (CalRecycle) and the California Air Resources Board (CARB). The current fee is $1.75 per tire, with 75 cents allocated to support air quality-related programs and $1 allocated to support solid waste programs.

There are a number of other examples of environmental product impact fees implemented in California; however, there is no polluter-pay product impact fee in place for funding stormwater and flood risk management activities, although similar legislation could be considered for toxic chemicals such as pesticide products. These fees might be made available in the future to local agencies like the City to offset a portion of the costs for stormwater compliance.

While there is the potential to develop significant sources of revenue through this approach, the effort would require statewide coordination and significant lead times. In addition, both the likelihood and timing have significant levels of uncertainty.

8.5.3.2 Caltrans Cooperative Implementation Agreement

Caltrans has an alternative project funding mechanism through a Cooperative Implementation Agreement that was added to their Statewide MS4 Permit in 2014. Through this mechanism, Caltrans is credited with one compliance unit from the SWRCB for each $88,000 spent to pay for a water quality project that addresses one or more of eight pollutant categories in a priority waterbody reach. The program was included in the Caltrans Permit to encourage collaboration with municipal MS4 programs to address water quality impairments through TMDLs. The SWRCB encourages Caltrans to enter into Cooperative Implementation Agreements by providing a 50 percent discount in the required expenditure to earn one compliance unit if done through a Cooperative Implementation Agreement rather than through an expenditure in a Caltrans right-of-way. Caltrans has established nine criteria that are considered when deciding whether or not to fund a local project through a Cooperative Implementation Agreement and will not pay operation and maintenance costs. The City may be able to offset some of these costs through this funding channel, assuming that the program is continued.

8.5.4 Innovation in New Partnerships

The implementation of new stormwater management programs will challenge the financial and implementation capabilities of municipalities throughout California, and the City of Los Angeles is no exception. The relatively high number of projects and the relatively small scale of each individual project are challenging not only from a perspective of financing and funding; the development, engineering and implementation of these projects is also a challenge. The City faces unprecedented levels of development risk for these projects owing to their diverse nature and sheer numbers of projects. The City must continue to find innovative ways to partner with others to successfully implement these projects.

8.5.4.1 New Partnerships with Private Property Owners

The City will continue to refine the EWMP's. This may involve new focus on source-control enforcement and or innovative means of obtaining incentives for private participation in the program. As discussed during One Water LA 2040 Plan's Special Topics Groups focusing on stormwater, strategies for encouraging private parcel participation included developing incentive programs, new ordinances, a rewards structure with awards and recognition for private projects that exceed expectations, and partial funding for partner assistance. Details on recommendations for the types of incentives and rewards are included in the Policy Technical Memorandum. Specifically, Policy 5 described in Volume 1 Chapter 9 suggests to develop robust stormwater pollution source control education measures that increase awareness and public participation.

8.5.4.2 Green Finance

It is anticipated that a number of forms of "Green Financing" may arise to help residential property owners within the City finance stormwater management on individual parcels. A number of banks and governmental institutions are working on new financing vehicles to power the green economy, including innovative stormwater management programs.

Fannie Mae offers Federal Loan Guarantees to encourage banks to offer an array of benefits to borrowers including preferential interest rates and additional loan proceeds to allow borrowers to undertake water and energy conservation projects. These include loans to single family and multi-family parcels to help finance these improvements. The market has created innovative packaging of these programs to simplify implementation of water and energy conservation programs at the parcel level. One example of this type of program is Property Assessed Clean Energy (PACE) (www.pacenation.us). As the market creates new and innovative green financing options to expand into stormwater management, City leadership may leverage these opportunities by creating new programs to encourage stormwater management by individual parcel owners.

8.5.4.3 Commercial Regulations

The SWRCB is preparing to submit a draft TMDL amendment for public comment and eventual incorporation into the Statewide Industrial General Permit for Stormwater Discharges (IGP). While the draft amendment has not been publicly released it is understood that it may provide alternative pathways for achieving compliance with TMDL-based limits and receiving water limits. These pathways may include onsite infiltration or capture/re-use and a watershed-based approach that relies on participation in offsite regional BMPs. The IGP, and compliance pathways possibly available for compliance can potentially assist the City in meeting its stormwater obligations.

8.5.4.4 Public/Private Partnerships

Increasingly, and on a national basis, cities, counties, and municipalities are considering the use of alternative delivery options for stormwater. Following the successful record of delivering infrastructure by this means in Canada, the UK, and Australia, U.S. communities are implementing P3s. This delivery mechanism may provide an important option to implement stormwater control projects.

Under a P3s framework, a private consortium (or a community-based consortium with limited partners composed of community residents or non-profits) would undertake design, construction, operations, and maintenance of the facilities under a single contract umbrella. The P3 describes that contract where capital and O&M services would be performed under the performance criteria specified by the enabling public agencies. Payment for these services is normally contingent upon the satisfaction of performance metrics, with penalties for under-performance.

California Government Code Section 5956 authorizes local government agencies to "utilize private investment capital to study, plan, design, construct, develop, finance, maintain, rebuild, improve, repair, or operate, or any combination thereof, fee-producing infrastructure facilities." The eligible types of stormwater-related projects are:

- Irrigation;
- Drainage;
- Water supply, treatment, and distribution;

- Flood control;
- Inland waterways;
- Purification of water; and
- Sewage treatment, disposal, and water recycling.

The use of performance-based bidding processes would encourage innovation, which could lead to cost savings compared to the portfolio of projects currently envisioned to accomplish stormwater management objectives. Moreover, this type of delivery can substantially reduce City risks, particularly during the project-development phases. Also, capital costs for projects may be financed by the private-sector developer utilizing a wide array of potential methods, including conventional financing and federal and state financing programs intended to promote private sector innovation in project delivery.

The structure of P3s contracts may affect how they are considered in evaluating total debt obligations of the City. Thus, the value of utilizing financing from private sources must be carefully evaluated. Nonetheless, private financing may be cost competitive with public financing options. Overall, P3 options have the potential to reduce fee burdens, which should be evaluated. Policy 27 described in Volume 1 Chapter 9 recommends creating a program to evaluate and facilitate P3s for water projects.

8.5.4.5 Developer LID Programs Including Offset Mitigation Programs

Currently, the City collects fees from developers to achieve low-impact development. It is possible that the city might consider allowing developers to take the lead on developing regional projects in lieu of onsite actions that may comply with the LID ordinance but are less cost effective. This may offer greater leverage and better "bang for the buck" than requiring expensive compliance activities strictly at the individual parcel.

8.5.4.6 Volunteers

Angelinos remain civic-minded and active in their communities. The City has seen great response when asking volunteers to undertake projects to enhance the environment. The "Stormwater Special Topic Group", performed through the One Water LA 2040 Plan, identified ways that the citizens can become more involved in helping meet the City's stormwater needs. Beach cleanup days, "plant a tree" days, biological surveys, and many other efforts have enlisted volunteers to help implement important programs. The implementation programs serve to mobilize an important workforce that could augment paid-City resources. The topic group acknowledged the City's goals and objectives can only be met with everyone's involvement. Moreover, the volunteer programs raise awareness of the problem of stormwater management and the value of the City's stormwater management program and other elements of the One Water LA 2040 Plan. Organizing and managing volunteers is not without cost and funding sources and strategic partnerships with volunteer organizations need to be explored further.

CONCLUSIONS AND RECOMMEDATIONS

The Stormwater and Urban Runoff Facilities Plan collectively assists in helping to meet the Mayor's goals of increasing stormwater capture, reducing potable water use, implementing green streets, and building more sustainable and resilient infrastructure. The Plan identifies over 1,200 project opportunities required to help meet these goals while providing improved flood protection, water quality benefits, and/or water supply enhancements. Most of these project opportunities are distributed in nature, with the clear majority being green streets. This focus on green streets moves away from the traditional prioritization of large-scale regional/centralized facilities, allowing a densely-urbanized city like Los Angeles to implement multi-benefit projects without the often impossible-to-find space that these types of projects typically require.

To implement such a broad-reaching plan, significant integration is necessary, both internally and externally. Within the City, integrating management processes for decision making and selection of projects is critical to project implementation. Departments need to work collectively to ensure that there is cohesion and agreement in the entire life of each project, from concept planning, funding, and design through construction, optimization, and operations. Externally, partnerships with nonprofit organizations, businesses, residents, and other local, regional, State, and Federal agencies are critical to the success of this Plan. Such partnerships are critical not only to the funding and implementation of individual projects, but to long-term regulatory compliance, a healthier environment, and the overall well-being of the people and natural resources of Southern California.

9.1 CONCLUSIONS

Developing the City's SIP relied on compiling already-proposed and potential stormwater projects within the City, then adding additional projects to the list. The following summarizes the projects identified:

- A total of 707 unique, planned and potential projects were added to the project database. The compiled project database was distributed to various One Water participating agencies, including LABOE, LASAN, LADWP, LACFCD, and USACE, who reviewed and provided additional project details to improve database accuracy.
- A total of 445 Green Streets Block programs were developed as part of the SIP development. The total estimated capital cost of all Green Streets programs is approximately $1.1 billion, with nearly 60 percent of the cost allocated to the ULAR watershed. In addition, the annual capital O&M cost are estimated to total nearly $70 million.
- As part of the long-term alternatives evaluation, a cursory analysis of City-wide LFD opportunities was conducted that generated 42 new project opportunities. In addition,

a climate resiliency analysis was conducted that identified specific infrastructure improvements for both stormwater and wastewater facilities to improve climate change resiliency. This effort generated 7 new stormwater infrastructure resiliency projects. Hence, a total of 49 new projects were added to the stormwater project database.

- Approximately half (614 projects, or 51 percent) of the 1,201 projects in the stormwater project database provide two benefits. Among these projects, almost all (600 projects, or 98 percent) provide water quality and water supply benefits. 308 projects (26 percent) provide all three benefits and therefore are the top priority projects. For the remaining 279 projects (23 percent) that provide one benefit, 277 of them provide flood risk mitigation benefits.

Successful stormwater infrastructure projects include comprehensive O&M planning throughout the entire project life cycle. O&M planning, which includes close collaboration with the individuals directly responsible for O&M, occurs at every step in the process. A general description of the steps where O&M input is critical includes:

- Project Development Phase – this is the phase of a project when concept-level planning is initiated, partnerships are formed, and funding resources are secured.

- Design Phase – this is the phase of a project when design is advanced from concept-level to final designs and specifications. User agreements between partner agencies should be completed during this phase of development. Project design must always be done in accordance with relevant standard plans, guidelines, and manuals to ensure appropriate uniformity and compliance. Safety of O&M personnel and the public at large must also be considered during project design.

- Construction Phase – following completion of design, this is the phase of a project when the project is built. This phase includes review of project submittals, attendance of meetings by all relevant parties, training of appropriate project staff, and initiation of optimization.

- System Performance Phase – following completion of project construction, this phase of a project covers the start-up and the initial functioning life of a project. Due to project-specific variances, this phase can last for a few months to several years.

As noted in Chapter 7, the SIP will require regular updates to incorporate changes to meet compliance milestones as well as water supply and flood risk mitigation objectives. Hence, the 5-year, 10-year, and 25-year SIP phases will need to be periodically revised by re-executing the project selection methodology described herein.

The magnitude of future funding needs for the Stormwater Management Program dwarf existing revenue sources for this effort. Leadership within the City is addressing this problem with great urgency and has identified future sources of revenue that will partially address this deficiency. New sources of revenue beyond those identified to-date will be needed if the City is going to be successful in complying with all existing and future water quality mandates.

To undertake a program of this size, it is appropriate for the City to consider issuance of debt to finance the exceptional capital costs of the program. Accordingly, this Plan estimates revenue requirements based upon an assumption that 80 percent of the future capital costs would be debt financed. This allows the annualized funding needs to be estimated on a conceptual basis.

To achieve compliance and avoid fines and other enforcement sanctions, the City will need additional revenue sources to cover the deficit presented in Table 8.3 in Section 8.4.5. Within the next 5 years, the City will need revenues on the order of $280 million per year. This compares to existing sources of revenue of $19 million per year and currently-identified sources of potential new revenues of approximately $109 million per year. In the longer term, the funding requirements grow in real terms to approximately $356 million per year.

One potential source of continued funding for stormwater management, which could become very significant in the longer term, is from the value of new water supplies created by the stormwater program. This potential source of funding for stormwater projects could have a value in 20 years of nearly $100 million per year, but realization of this value is at risk, because unless there is sufficient funding for the projects to move forward, the water supply benefits will not be realized. Similarly, significant potential funding from partnerships with transportation agencies and park agencies is threatened if the City does not have funds required for capital matching or to operate and maintain the projects after they are built.

9.2 RECOMMENDATIONS

The following includes a list of recommendations for the City to pursue:

- Continue cooperation with LA County evaluating possible special taxes on parcels to help pay for stormwater management.
- Continue to explore potential sources of funding and monitor legislative developments that may open new avenues for funding. As identified above, both Measure A and Measure M have the potential to provide funding and/or reduce the City's obligation for stormwater management, and the City should aggressively pursue these funds through collaborative processes.
- Continue innovation in partnerships with other public agencies and the private sector that can help fund and implement stormwater management projects. Funding of projects that are matched by others may be given high priority to leverage City revenue sources.

- Continue to re-evaluate the portfolio of City projects and programs to comply with TMDL regulations and ensure that the best "bang for the buck" is realized.

- Refine project cost estimates and value engineer individual projects as development proceeds.

- Develop budgets for stormwater management that are consistent with the strategy developed by the City. These budgets should match future expenditures with future revenues and should consider potential costs from fines and sanctions on the City.

- Consider O&M requirements and corresponding resource allocations during the project planning phase all the way through design, construction, and optimization. Neglect of O&M planning and insufficient resource allocation, such as budget, staff, equipment, and procedure training, will result in inadequate O&M activity, which will lead to shorter project life span, overall reduction in project life cycle benefits, and potential failure to achieve water quality and water supply compliance objectives.

- Collect more detailed project information, which is required to complete accurate cost/benefit analyses for project selection processes. It is understood that as the stormwater program develops and projects get closer to the implementation phase, this information will be refined, allowing for these metrics to be analyzed.

- Pursue One Water LA policies and programs related to stormwater described in Volume 7.

The City's stormwater system will continue to evolve over the next 25 years and beyond, several key opportunities related to O&M should be considered. These include:

- An increased need for resources. As infrastructure grows, particularly green infrastructure, not only is more funding required to finance the construction of projects, but more money and staff with proper training are needed to operate and maintain projects at effective levels.

- An increased demand for monitoring data. More and more projects are being constructed with a requirement for performance to be tracked via monitoring (e.g., water quality monitoring, flow monitoring, etc.). As the stormwater infrastructure network evolves, the need for more data means a need for more resources and more data management and analysis.

- The need for an improved system to evaluate and assess project performance. With strict regulatory requirements in place, a deviation from performance for certain green infrastructure projects may imply immediate non-compliance. Therefore, a need exists for a more robust, automated system to monitor project performance in real-time, thereby allowing system enhancements to occur as soon as possible to maintain performance standards.

As the One Water LA 2040 Plan has progressed, City departments have continued to develop partnership programs and creative means to further drive project implementation. For example, DWP is working directly with RAP to develop stormwater program concepts where park spaces are located in high priority areas for stormwater capture. The LID ordinance, along with any future stormwater ordinances, will be reviewed periodically to assess their overall impact on projects needed to achieve water quality objectives. Other ideas to be pursued include continuing to work closely with the IRWM planning group, pursuing the stormwater block program described above, and partnering with academic institutions, to name a few.

Finally, it should be noted that this effort helps address most, but not all, requests made by the Office of the City Administrative Officer (CAO) in the January 5, 2017 CAO Report under the subject of "Funding Options for the Implementation Strategy for the Enhanced Watershed Management Plans." Still remaining is the development of a program oversight structure with a distinct plan for overall program implementation. These final points are critical for the City to meet its existing and future stormwater needs.

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APPENDIX A – REFERENCES

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APPENDIX B – GLOSSARY

Aerobic	Environmental conditions characterized by the presence of dissolved oxygen; used to describe biological or chemical processes that occur in the presence of oxygen.
Algae	Any organisms of a group of chiefly aquatic microscopic nonvascular plants; most algae have chlorophyll as the primary pigment for carbon fixation. As primary producers, algae serve as the base of the aquatic food web, providing food for zooplankton and fish resources. An overabundance of algae in natural waters is known as eutrophication.
Anaerobic	Environmental condition characterized by zero oxygen levels. Describes biological and chemical processes that occur in the absence of oxygen.
Anoxic	Aquatic environmental conditions containing zero or little dissolved oxygen. See also anaerobic.
Anthropogenic	Pertains to the [environmental] influence of human activities.
Aqueduct	A pipe, conduit, or channel designed to transport water from a remote source, usually by gravity.
Aquifer (Confined)	Soil or rock below the land surface that is saturated with water. There are layers of impermeable material both above and below it and it is under pressure so that when the aquifer is penetrated by a well, the water will rise above the top of the aquifer.
Aquifer (Unconfined)	An aquifer whose upper water surface (water table) is at atmospheric pressure, and thus is able to rise and fall.
Artesian water	Ground water that is under pressure when tapped by a well and is able to rise above the level at which it is first encountered. It may or may not flow out at ground level. The pressure in such an aquifer commonly is called artesian pressure, and the formation containing artesian water is an artesian aquifer or confined aquifer.
Artificial Recharge	Any process where water is put back into ground-water storage from surface-water supplies such as irrigation, or induced infiltration from streams or wells.
Augmentation	The process of adding recycled/reclaimed water that has received advanced treatment to an existing raw water supply (such as a reservoir, lake, river, wetland, and/or groundwater basin) that could eventually be used for drinking water after further treatment.
Base flow	Sustained, low flow discharge rate in a stream derived from groundwater discharge into the stream channel. During extended periods of low precipitation, base flow may account for most, or all, of the stream flow.

Bedrock	The solid rock beneath the soil and superficial rock. A general term for solid rock that lies beneath soil, loose sediments, or other unconsolidated material.
Beneficial uses	Designations for water bodies that (in California) Regional Water Quality Control Boards establish so appropriate water quality objectives can be established for that water body. The designated beneficial uses, together with water quality objectives form water quality standards. Such standards are mandated for all water bodies within the state under the California Water Code. In addition, the federal Clean Water Act mandates standards for all surface waters, including wetlands. In the Los Angeles Region, there are 24 Beneficial Use designations. Example designations include Municipal and Domestic Supply (MUN), Water Contact Recreation (REC-1), Wetland Habitat (WET), and Marine Habitat (MAR).
Best Management Practices (BMP)	Any program, technology, process, siting criteria, operating method, measure, or device that controls, prevents, removes, or reduces pollution.
Big Basin	The first approach at stormwater management, still widely used in the U.S., which involved large retention or detention basins or ponds. The basins detain and slow stormwater, allowing sediment, chemicals, and trash to be filtered out before the water is released into receiving waters. By reducing the velocity of water and controlling discharge rates, ponds reduce the likelihood of flooding and help to reduce the impact that impervious surfaces and development can have on water quality and aquatic habitats. However, these systems are not ideal since they do not manage the stormwater where it falls, often preventing infiltration and groundwater recharge and taking away wildlife habitat and available space for recreation or other site design needs.
Biological Oxygen Demand (BOD)	The amount of oxygen per unit volume of water required to bacterially or chemically oxidize (stabilize) the oxidizeable matter in water. Biochemical oxygen demand measurements are usually conducted over specific time intervals (5, 10, 20, 30, days). The term BOD_5 generally refers to standard 5-day biochemical oxygen demand test.
Black water	Liquid and solid human body waste and the carriage water generated through toilet usage.
Blending	Mixing or combining one water source with another.
Catch Basin	A collection structure below ground designed to collect and convey water into the storm drain system.
Central Basin	Is the underground water basin or reservoir underlying Central Basin Area, the exterior boundaries of which Central Basin are the same as the exterior boundaries of Central Basin Area.

Channel	A stream or river bed; generally refers to the physical form where water commonly flows.
Clean Water Act (CWA)	The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
Collection system	The network of piping and pumping stations that conveys raw wastewater (sewage) from homes, businesses, etc., to a facility for treatment.
Commercial Water Use	Water used for motels, hotels, restaurants, office buildings, other commercial facilities, and institutions. Water for commercial uses comes both from public-supplied sources, such as a county water department, and self-supplied sources, such as local wells.
Confluence	The physical location where a lower order stream or river flows into a higher order stream or river as a tributary.
Conservation	Act of using the resources only when needed for the purpose of protecting from waste or loss of resources.
Conserve	To save a natural resource, such as water, through intelligent management and use.
Constructed wetlands	Wetlands that are designed and built similar to natural wetlands; some are used to treat wastewater. Constructed wetlands for wastewater treatment consist of one or more shallow depressions or cells built into the ground with level bottoms so that the flow of water can be controlled within the cells and from cell to cell. Roots and stems of the wetland plants form a dense mat where biological and physical processes occur to treat the wastewater. Constructed wetlands are being used to treat domestic, agricultural, industrial, and mining wastewaters.
Contamination	The state of being contaminated or impure (not pure) by contact or mixture; the state of having a substance introduced into the air, water, or soil that reduces its usefulness to humans and other organisms in nature.
Conventional pollutants	As specified under the Clean Water Act, conventional contaminants include suspended solids, coliform bacteria, biochemical oxygen demand, pH, and oil and grease.
Costs	The capital and operating expenses of constructing and operating water reuse project. They usually consist of (1) Capital costs, the initial expenditures to design and construct project facilities; and (2) Operating costs, the ongoing annual expenses associated with operating the project, including labor, material, and energy costs.
Council	The City Council of Los Angeles
Decomposition	Metabolic breakdown of organic materials; the by-products formation releases energy and simple organic and inorganic compounds.

Denitrification	Describes the decomposition of ammonia compounds, nitrites, and nitrates (by bacteria) that result in the eventual release of nitrogen gas into the atmosphere.
Detention Basin	Surface or underground basins that capture flow and store it for later release under controlled conditions or reuse thereof, and additionally as to the Department of Water and Power of the City of Los Angeles, water brought into Central Basin area by that party by means of the Owens River Aqueduct.
Detention time	In storage reservoirs, the length of time water will be held before being used.
Direct potable reuse	The addition of advanced treated recycled water (purified water) directly to a potable water distribution system.
Direct runoff	Water that flows over the ground surface or through the ground directly into streams, rivers, or lakes.
Discharge	The volume of water that passes a given point within a given period of time. It is an all-inclusive outflow term, describing a variety of flows such as from a pipe to a stream, or from a stream to a lake or ocean.
Discharge of pollutants	The rate of flow or volume of water passing a point in a given time. Expressed using a unit of volume over time, typically cubic feet per second. Any addition of any pollutant to navigable waters from any point source,
Discharge permits-National Pollutant Discharge Elimination System (NPDES)	A permit issued by the U.S. EPA or a state regulatory agency that sets specific limits on the type and amount of pollutants that a municipality or industry can discharge to a receiving water; it also includes a compliance schedule for achieving those limits It is called the NPDES because the permit process was established under the National Pollutant Discharge Elimination System, under provisions of the Federal Clean Water Act.
Disinfection	Removal or inactivation.
Dissolved oxygen (DO)	The amount of oxygen gas that is dissolved in water. It also refers to a measure of the amount of oxygen available for biochemical activity in water body, and as indicator of the quality of that water.
Domestic water use	Water used for household purposes such as drinking, food preparation, bathing, washing clothes, and dishes, watering lawns and gardens, flushing toilets etc. Also called residential water use.
Downstream	In the direction of a stream's current. For example, in the City of Los Angeles Hyperion Wastewater Treatment Plant is downstream to Donald C. Tillman Plant and the Los Angeles-Glendale Water Reclamation Plant; these plants are able to provide critical hydraulic relief to the City's major sewers downstream

Drainage Basin	Land area where precipitation runs off into streams, rivers, lakes, and reservoirs. It is a land feature that can be identified by tracing a line along the highest elevations between two areas on a map, often a ridge. Large drainage basins, like the area that drains into the Mississippi River contain thousands of smaller drainage basins. Also called a "watershed."
Drawdown	A lowering of the ground-water surface caused by pumping.
Drip Irrigation	A common irrigation method where pipes or tubes filled with water slowly drip onto crops. Drip irrigation is a low-pressure method of irrigation and less water is lost to evaporation than high-pressure spray irrigation.
Drought	A long period of below-average precipitation.
Dry Weather Urban Runoff	Runoff to the storm drain system that occurs when there is no measurable precipitation. Typically includes flows from car washing, landscape irrigation, street washing, dewatering during construction activities, and illicit connections and dumping into the storm drains.
Dry Well	An excavated pit lined with gravel or other porous materials to infiltrate stormwater.
Effluent	Municipal sewage or industrial liquid waste (untreated, partially treated, or completely treated) that flows out of a treatment plant, septic system, pipe, etc.
Environmental Protection Agency (EPA)	The U.S. agency responsible for efforts to control air and water pollution, radiation and pesticide hazards, ecological research, and solid waste disposal.
Erosion	The removal of sediment or rock from a point in the landscape.
Estuary	Brackish-water areas influenced by the ocean tides where the mouth of the river meets the sea.
Eutrophication	Enrichment of an aquatic ecosystem with nutrients (nitrogen, phosphorus nitrates, phosphates) that accelerate biological productivity (growth of algae, periphyton and macrophytes\ weeds) and an undesirable accumulation of plant algal biomass.
Factor of Safety	Coefficient used to account for uncertainties in representing, simulation, or designing a system.
Filtration	A process that separates small particles from water by using a porous barrier to trap the particles and allowing the water through.
First Flush	The delivery of a highly concentrated pollutant loading during the early stages of a storm, due to the washing effect of runoff on pollutants that have accumulated on the land prior to the storm.

Flood	An overflow of water onto lands that are used or usable by man and not normally covered by water. Floods have two essential characteristics: The inundation of land is temporary; and the land is adjacent to and inundated by overflow from a river, stream, lake, or ocean.
Flood Stage	The elevation at which overflow of the natural banks of a stream or body of water begins in the reach or area in which the elevation is measured.
Flood, 100-year	A 100-year flood does not refer to a flood that occurs once every 100 years, but to a flood level with a 1 percent chance of being equaled or exceeded in any given year.
Floodplain	A nearly level alluvial plain that borders a channel and is occasionally inundated by floods (unless artificially protected). This is formed by sediment, transport, and deposition from flows over the stream bank and lateral movement of the stream.
Floodway	The channel of a river or stream and the parts of the floodplain adjoining the channel that is reasonably required to efficiently carry and discharge the flood water or flood flow of a river or stream.
Flowing Well/Spring	A well or spring that taps ground water under pressure so that water rises without pumping. If the water rises above the surface, it is known as a flowing well.
Fluvial	Of or pertaining to streams; produced by stream action.
Freeboard	The vertical difference in elevation between the water level and a referenced point. Examples are the difference between the maximum water surface level behind a dam and the top of a dam, or the difference in elevation between the water surface at a culvert beneath the roadway and the surface of the roadway.
Freshwater	Water that contains less than 1,000 milligrams per liter (mg/L) of dissolved solids. Water that contains more than 500 mg/L of dissolved solids is undesirable for drinking water and many industrial uses.
Gaging station	A specific location on a stream, river, canal, lake, or reservoir where systematic measurements of hydrologic data such as stage height and streamflow are collected. The U.S. Geological Survey (USGS) maintains and operates a network of stream gaging stations to collect hydrologic data for many streams and rivers. Historical streamflow and stage height data is available from the USGS streamflow database (www.waterdata.usgs.gov/nwis-w).
Graywater	Gray water includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

Green Infrastructure	An adaptable term used to describe an array of products, technologies, and practices that use natural-inspired systems and mechanical systems that are designed to retain, infiltrate, and/or treat runoff, thereby providing multiple benefits including, but not limited to, flood protection, water quality improvement, and water supply benefits. As a general principal, Green Infrastructure techniques use soils and vegetation to infiltrate, evapotranspirate, and/or recycle stormwater runoff.
Green Roof	Also known as rooftop gardens, green roofs are planted over existing roof structures, and consist of a waterproof, root-safe membrane that is covered by a drainage system, lightweight growing medium, and plants. Green roofs reduce rooftop and building temperatures, filter pollution, lessen pressure on sewer systems, and reduce the heat island effect.
Grey Infrastructure	Stormwater conveyance and detention infrastructure that has historically been designed to provide flood protection by collecting runoff, detaining collected runoff to attenuate peak discharge rates when necessary, and ultimately conveying runoff away from City property to downstream receiving waters, including oceans, reservoirs, and groundwater aquifers.
Groundwater	(1) Water that flows or seeps downward and saturates soil or rock, supplying springs and wells. The upper surface of the saturate zone is called the water table. (2) Water stored underground in rock crevices and in the pores of geologic materials that make up the Earth's crust.
Groundwater Recharge	Inflow of water to a groundwater reservoir from the surface. Infiltration of precipitation and its movement to the water table is one form of natural recharge. Also, the volume of water added by this process.
Groundwater, Confined	Groundwater under pressure significantly greater than atmospheric, with its upper limit the bottom of a bed with hydraulic conductivity distinctly lower than that of the material in which the confined water occurs.
Groundwater, Unconfined	Water in an aquifer that has a water table that is exposed to the atmosphere.
Hardness	A water-quality indication of the concentration of alkaline salts in water, mainly calcium and magnesium. If the water you use is "hard" then more soap, detergent, or shampoo is necessary to raise a lather.
Headwaters	A graph showing the variation in stage or discharge in a stream or channel, over time, at a specific point along a stream.
Hydrograph	A graphical plot of stream flow data over time.

Hydrologic cycle	The representation of the cycle of water on earth based on all hydrologic processes and the interactions of water between the atmosphere, surface waters, polar ice, glaciers, and groundwater.
Hyetograph	A graphical plot of precipitation data over time.
Impermeable Layer	A layer of solid material, such as rock or clay, which does not allow water to pass through.
Impervious Surface	Description of a material that prevents passage of water into the underlying soils. Examples of impervious surfaces include asphalt, concrete, roof tops, clay, and compacted soils.
Industrial Source Control Program	An established pre-treatment program for industries, which requires removal of constituents from their wastewater before it enters the City's wastewater collection system, i.e., the pollutants are removed or controlled by the generator (or user) rather than by the City.
Industrial Water Use	Water used for industrial purposes in such industries as steel, chemical, paper, and petroleum refining. Nationally, water for industrial uses comes mainly (80%) from self-supplied sources, such as a local wells or withdrawal points in a river, but some water comes from public-supplied sources, such as the county/city water department.
Infiltration	The absorption of water into the ground. The rate at which infiltration occurs is expressed in terms of depth per unit time, such as inches/hour.
Influent	Water volume flow rate or mass loading of a pollutant or other constituent into a water body or wastewater treatment plant.
Injection well	Refers to a well-constructed for the purpose of injecting treated wastewater directly into the ground. Wastewater is generally forced (pumped) into the well for dispersal or storage into a designated aquifer. Injection wells are generally drilled into aquifers that don't deliver drinking water, unused aquifers, or below freshwater levels.
Inorganic	Pertaining to matter that is neither living nor immediately derived from living matter.
Integrated Resource Planning	A method for looking ahead using environmental, engineering, social, financial, and economic considerations; includes using the same criteria to evaluate both supply and demand options while involving customers and other stakeholders in the process.
Interception	In hydrology, the accumulation of precipitation on vegetation and other above-ground surfaces and its evaporation during and after a storm event.
Irrigation	The controlled application of water for agricultural purposes through manmade systems to supply water requirements not satisfied by rainfall.

Irrigation Water Use	Water application on lands to assist in the growing of crops and pastures or to maintain vegetative growth in recreational lands, such as parks and golf courses.
Isohyet	A line on a map along which all points receive the same amount of precipitation.
Low Flow	Minimum instantaneous stream flow during periods of low water runoff.
Low Impact Development (LID)	A sustainable landscaping approach that can be used to replicate or restore natural watershed functions and/or address targeted watershed goals and objectives.
Maintenance Hole	An opening that allows a person to gain access to a structure.
National Pollutant Discharge Elimination System(NPDES)	A provision of the Clean Water Act that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the EPA, a state, or a tribal government on the reservation.
Natural Replenishment	Means and includes all processes other than "Artificial Replenishment" by which water may become a part of the ground water supply of Central Basin. Bottoms so that the flow of water can be controlled within the cells and from cell to cell. Roots and stems of the wetland plants form a dense mat where biological and physical processes occur to treat the wastewater. Constructed wetlands are being used to treat domestic, agricultural, industrial, and mining wastewaters.
Nitrification	Biologically mediated process of the oxidation of ammonium salts to nitrites (via Nitrosomonas bacteria) and the further oxidation of nitrite to nitrate via Nitrobacter bacteria.
Non-Permeable Surfaces	Surfaces that will not allow water to penetrate, such as sidewalks and parking lots.
Nonpoint Source	Pollution that is not released through pipes but rather originates from multiple sources over a relatively large drainage area. Non point sources can be divided into source activities related to either land or water use including failing septic tanks, improper animal-keeping practices, forest practices, and urban and rural runoff from a drainage basin.
Non-Potable	Water that may contain objectionable pollution, contamination, minerals, or infective agents and is considered unsafe and/or unpalatable for drinking.
Nutrient	A primary element necessary for the growth of living organisms. Carbon dioxide, nitrogen, and phosphorus, for example, are required nutrients for phytoplankton (algae) growth.
Nutrient Pollution	Contamination of water resources by excessive inputs of nutrients. In surface waters, excess algal production is a major concern.

Onsite retrofits	Improvements or management practices that manage runoff before it reaches the storm drain system.
Organic Matter	Plant and animal residues, or substances made by living organisms. All are based upon carbon compounds.
Organic Nitrogen	Organic form of nitrogen bound to organic matter.
Outfall	Location point where wastewater or stormwater flows from a conduit, stream, or drainage ditch into natural waters.
Overdraft	The condition of a ground water basin resulting from extractions in any given annual period or periods in excess of the long term average annual quantity of Natural Replenishment, or in excess of that quantity which may be extracted annually without otherwise causing eventual permanent damage to the basin.
Oxygen Demand	Measure of the dissolved oxygen used by a system (microorganisms) and or chemical compounds in the oxidation of organic matter. See also biochemical oxygen demand.
Parts per million (ppm)	Measure of concentration of 1 part solute to 1 million parts water (by weight).
Pathogens	A microorganism capable of producing disease. Pathogens are of great concern to protect human health relative to drinking water, swimming beaches and shellfish beds.
Peak Flow	Maximum instantaneous streamflow during periods of high water runoff.
Per-capita use	The quantity of water used per person per day averaged over a time interval of 1 day; expressed as gallons per capita per day (gpcd).
Percolation	The gradual downward flow of water from the surface of the earth into the soil.
Permeability	The ability of a material to allow the passage of a liquid, such as water through rocks. Permeable materials, such as gravel and sand, allow water to move quickly through them, whereas unpermeable material, such as clay, do not allow water to flow freely.
pH	A measure of acidity indicated by the logarithm of the reciprocal of the hydrogen ion concentration (activity) of a solution. pH values less than 7 are acidic; values greater than 7 are basic; pH of 7 is neutral. pH of natural waters typically ranges from ~6-8.
Phosphorus	A nutrient essential for plant growth that can play a key role in stimulating the growth of aquatic plants in streams, rivers and lakes.

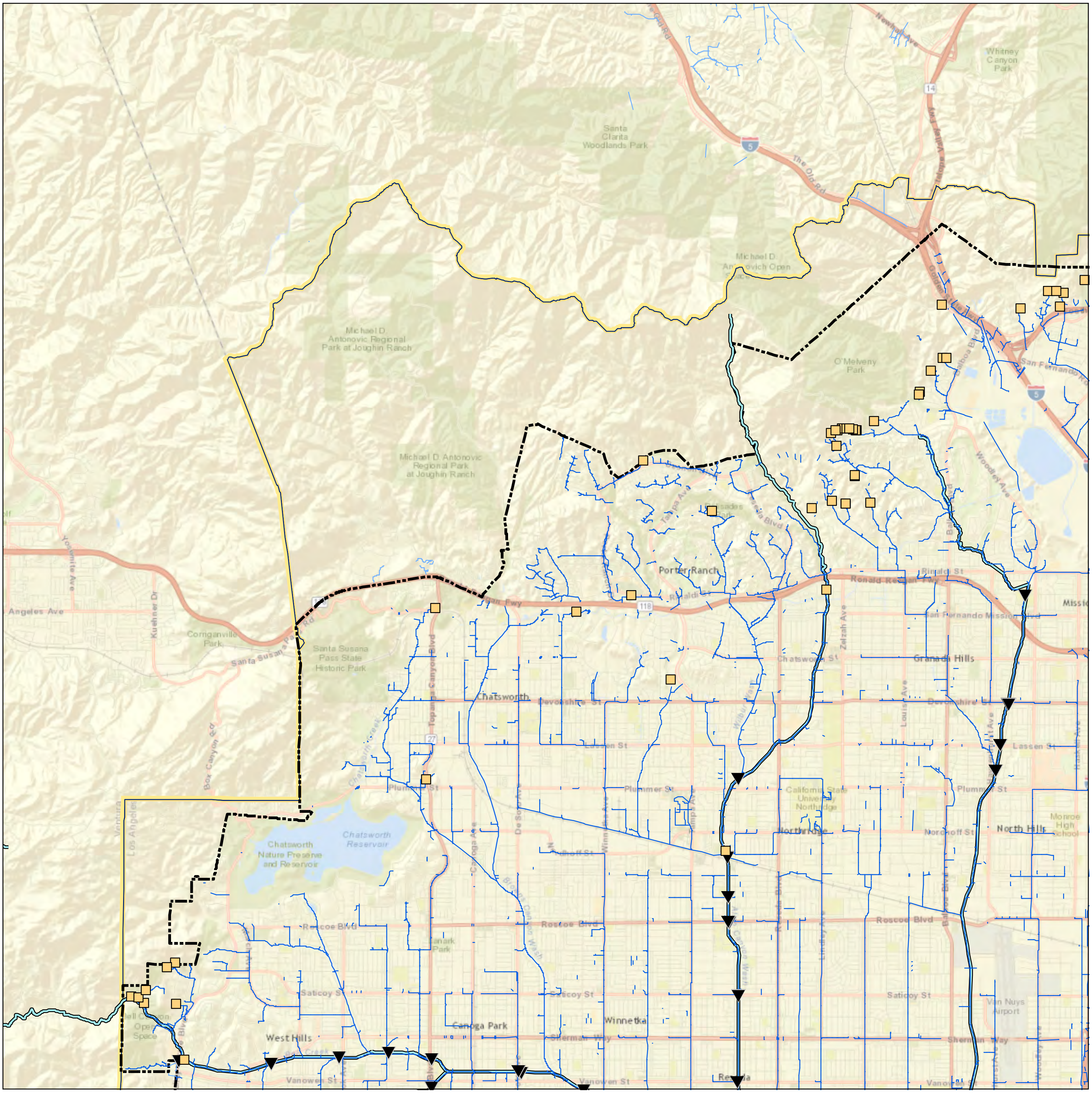
Point source	Pollutant loads discharged at a specific location from pipes, outfalls, and conveyance channels from either municipal wastewater treatment plants or industrial waste treatment facilities. Point sources also include pollutant loads contributed by urban stormwater systems or tributaries to the main receiving water stream or river.
Pollutant	A contaminant in a concentration or amount that adversely alters the physical, chemical, or biological properties of a natural environment. The term includes pathogens, toxic metals, carcinogens, oxygen demanding substances, or other harmful substances.
Porosity	A measure of the water-bearing capacity of subsurface rock.
Porous Pavement	A special type of pavement that allows rain to pass through it and infiltrate into the underlying soil, thereby reducing runoff from the site and surrounding areas.
Potable Water	Water that is satisfactory for drinking and cooking.
Pretreatment	The treatment of wastewater to remove or reduce contaminants prior to discharge into another municipal treatment system or a receiving water.
Public Water Reuse	Water supplied from a public-water supply and used for such purposes as firefighting, street washing, and municipal parks and swimming pools.
Pumping Station	Mechanical devices installed in or water systems or other liquid carrying pipelines that move the liquids to a higher level.
Rain Garden	A rain garden is a depressed area of the ground planted with vegetation, allowing runoff from impervious surfaces such as parking lots and roofs the opportunity to be collected and infiltrated into the groundwater supply or returned to the atmosphere through evaporation and evapotranspiration.
Reach (of a river)	A linear or longitudinal section of a stream or river defined by the upstream and downstream locations of lower stream order tributaries flowing into a higher stream.
Receiving Waters	Creeks, streams, rivers, lakes, estuaries, groundwater formations, or other bodies of water into which surface water and/or treated or untreated wastewater are discharged, either naturally or in man-made.
Recharge	The process by which precipitation seeps into the groundwater.
Reclaimed Wastewater	Treated wastewater that can be used for beneficial purposes, such as irrigating certain plants.
Reclaimed Water	The end product of wastewater reclamation that meets water quality requirements for biodegradable materials, suspended matter, toxicants, and pathogens. Reclaimed water is sometimes another name for recycled water.

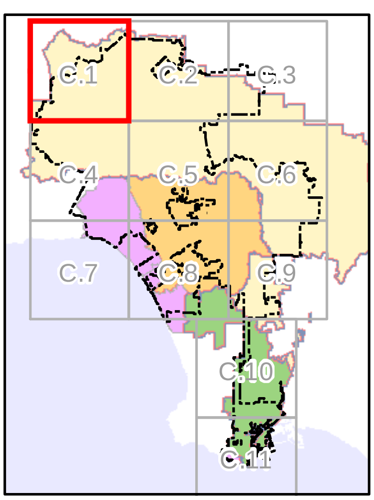
Recycled Water	Reclaimed water that meets appropriate water quality requirements and is reused for a specific purpose.
Repurified Water	Recycled water treated to an advanced level suitable for augmentation to a drinking water source.
Residence Time	See Detention Time.
Residential Water Use	See domestic water use.
Retaining Wall	A wall built to hold back or confine a mass of earth or body of water.
Retention Basin	Surface or underground basin that captures flow and retain it until water infiltrates into the soil.
Reverse Osmosis Reject Water	Waste water released from the reverse osmosis process.
Riparian Area	Land that borders a stream or river.
River Basin	See watershed.
Runoff	The excess portion of precipitation that does not infiltrate into the ground, but "runs off" and reaches a stream, water body or storm drain.
Safe Drinking Water Act (SDWA)	Federal legislation passed in 1974 that regulates the treatment of water for human consumption and requires testing for and elimination of contaminants that might be present in the water.
Secondary Drinking Water Standards	Non-enforceable federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.
Sediment	Particulate organic and inorganic matter that accumulates in a loose, unconsolidated form on the bottom of natural waters.
Sediment Oxygen Demand(SOD)	The solids discharged to a receiving water partly organics, and upon settling to the bottom, they decompose anaerobically as well as aerobically, depending on the conditions. The amount of oxygen consumed in the sediment bed during aerobic decomposition of detrital organic carbon deposited at the bottom of a waterbody; represents another dissolved oxygen loss\sink for the waterbody.
Seepage	The slow movement of water through small cracks, pores, Interstices, etc., of a material into or out of a body of surface or subsurface water. (2) The loss of water by infiltration into the soil from a canal, ditches, laterals, watercourse, reservoir, storage facilities, or other body of water, or from a field.
Source Water	Water in its natural state, prior to any treatment for drinking.
Stakeholders	Individuals and organizations that are involved in or may be affected by a proposed action, such as construction and operation of a water recycling project.

Station (monitoring)	Specific location in a waterbody chosen to collect water samples for the measurement of water quality constituents. Stations are identified by an alphanumeric code identifying the agency source responsible for the collection of the data and a unique identifier code designating the location. Station measurements can be recorded from either discrete grab samples or continuous automated data acquisition systems. Station locations are typically sampled by state, federal or local agencies at periodic intervals (e.g., weekly, monthly, annual etc.) as part of a routine water quality monitoring program to track trends. Station locations can also be sampled only for a period of time needed to collect data for an intensive survey or a special monitoring program.
Storm runoff	Rainfall that does not evaporate or infiltrate into the ground because of impervious land surfaces or a soil infiltration rate lower than rainfall intensity, but instead flows onto adjacent land or waterbodies or is routed into a drain or sewer system.
Surface waters	Water that is present above the substrate or soil surface. Usually refers to natural waterbodies such as streams, rivers, lakes and impoundments, and estuaries and coastal ocean.
Total Coliform Bacteria	A particular group of bacteria that are used as indicators of possible sewage pollution.
Total Dissolved Solids	A quantitative measure of the residual minerals dissolved in water that remain after evaporation of a solution. Usually expressed in milligrams per liter.
Total Dissolved Solids (TDS)	A measure of the amount of material dissolved in water (mostly inorganic salts). An important use of the measure involves the examination of the quality of drinking water. Usually expressed in milligrams per liter (mg/L).
Total Maximum Daily Load (TMDL)	The sum of the individual waste load allocations and load allocations. A margin of safety is included with the two types of allocations so that any additional loading, regardless of source, would not produce a violation of water quality standards.
Transport of pollutants (in water)	Transport of pollutants in water involves two main process: (1) advection, resulting from the flow of water, and (2) diffusion, or transport due to turbulence mixing in the water.
Tributary	A lower order stream compared to a receiving waterbody. "Tributary to" indicates the largest stream into which the reported stream or tributary flows.
Turbidity	Measure of the amount of suspended material in water.
Ultraviolet Treatment (UV)	The use of ultraviolet light for disinfection.
Urban Drainage	Water derived from surface runoff or shallow groundwater discharge from urban land use areas.

Waste load allocation (WLA)	The portion of a receiving water's total maximum daily load that is allocated to one of its existing or future point sources of pollution.
Wastewater	Usually refers to effluent from an industrial or municipal sewage treatment plant. See also domestic wastewater.
Water pollution	Any condition of a waterbody that reflects unacceptable water quality or ecological conditions. Water pollution is usually the result of discharges of waste material from human activities into a waterbody.
Water quality	A term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.
Water Reclamation	(1) The treatment of water of impaired quality, including brackish water and seawater, to produce a water of suitable quality for the intended use. (2) A term synonymous with water recycling.
Water Recycling	The process of treating wastewater for beneficial use, storing and distributing recycled water, and the actual use of recycled water. Water Reuse: Synonymous with water recycling.
Water Table	The top of the water surface in the saturated part of an aquifer.
Watershed	The area or region of land draining into a common outlet such as a river or body of water. Synonymous with river basin or drainage basin.
Well	An artificial excavation put down by any method for the purposes of withdrawing water from the underground aquifers. A bored, drilled, or driven shaft, or a dug hole whose depth is greater than the largest surface dimension and whose purpose is to reach underground water supplies or oil, or to store or bury fluids below ground.
Wet Weather Green Infrastructure	Infrastructure associated with stormwater management and low impact development that encompasses approaches and technologies to infiltrate, evapotranspire, capture, and reuse stormwater to maintain or restore natural hydrologies.
Wetland	An area periodically inundated by surface water or groundwater. Wetlands support plant and animal life, filter pollutants in stream courses, provide flood control and erosion prevention, and may provide recreational opportunities.

APPENDIX C – FIGURES OF EXISTING GREY INFRASTRUCTURE IN CITY OF LOS ANGELES





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Stormwater Conveyance System in City of LA

Stormwater Conveyance System Outside of City of LA

National Hydrography Dataset Flowline

Dam

Major Outfall

Debris Basin

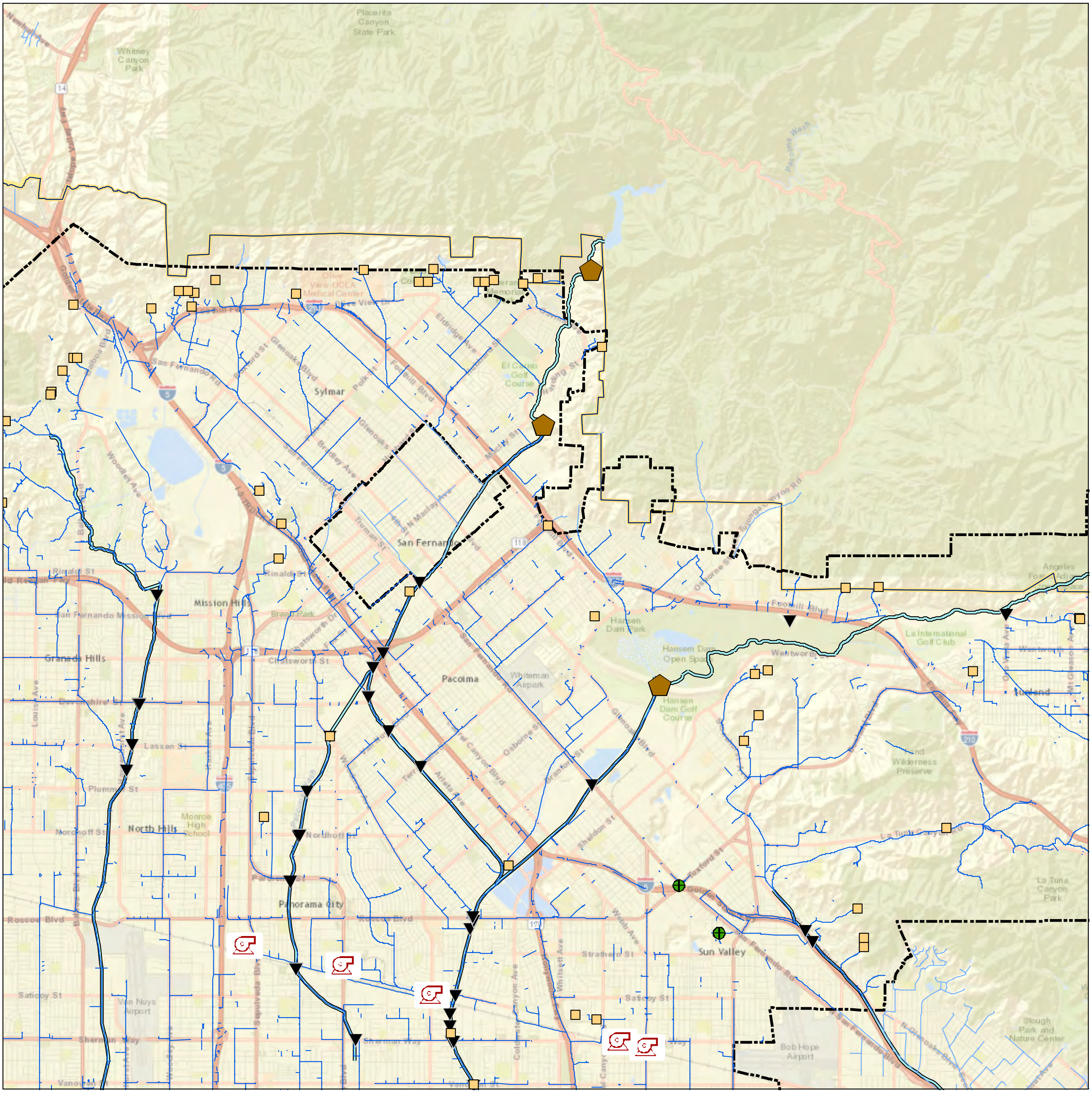
Low Flow Diversion

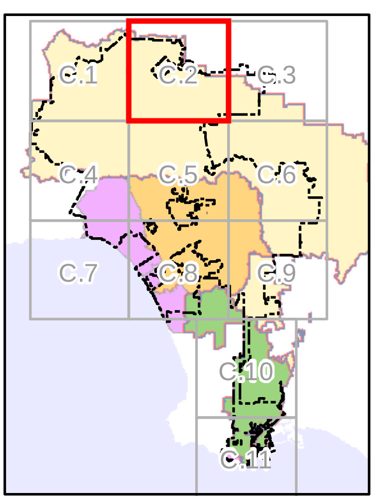
Stormwater Pump Station

Figure C.1
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
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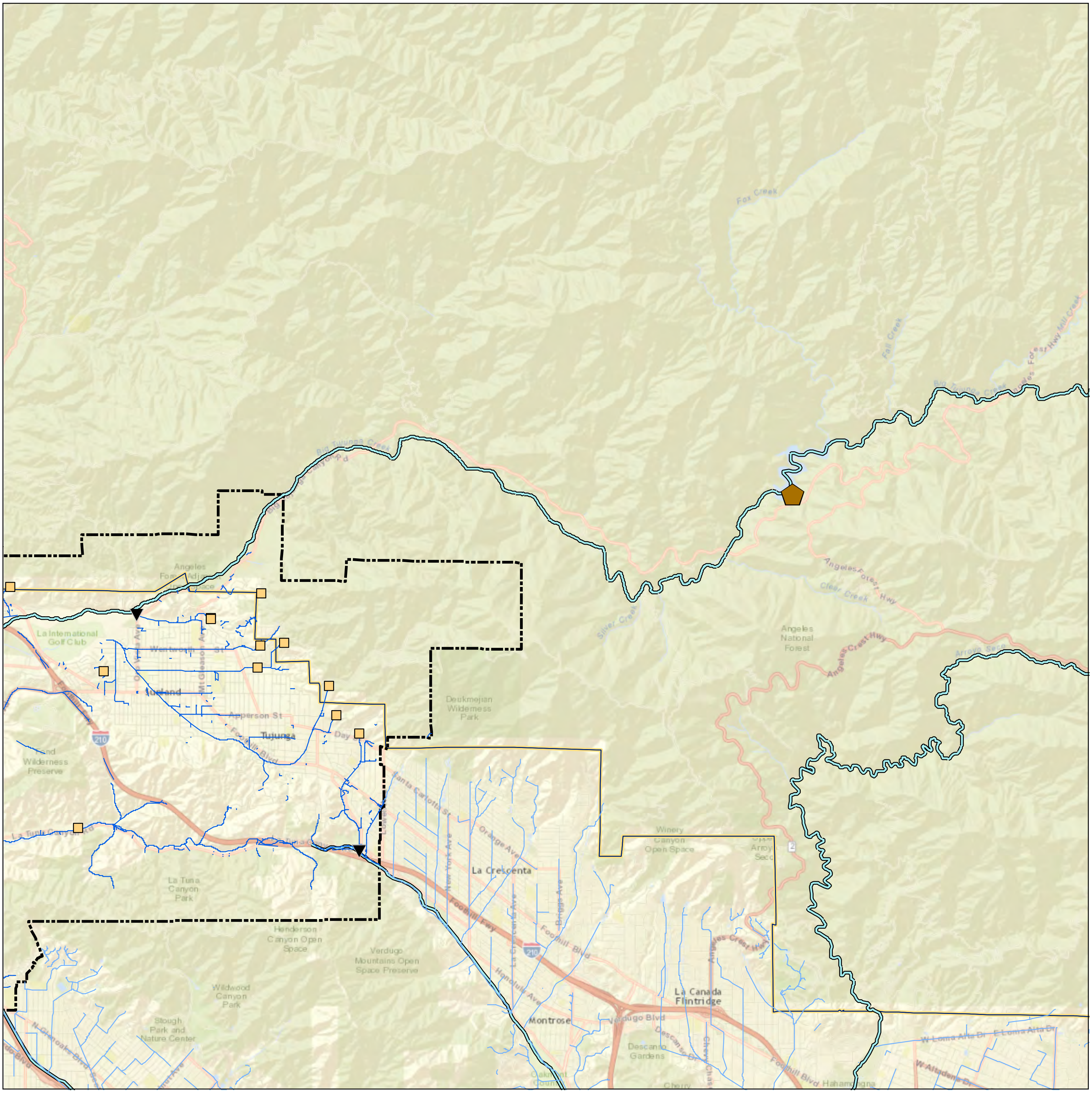
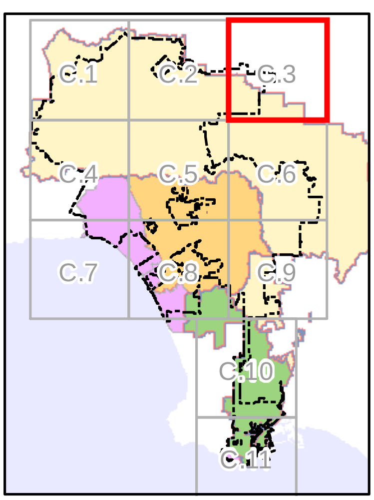
- Dam
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

Figure C.2
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

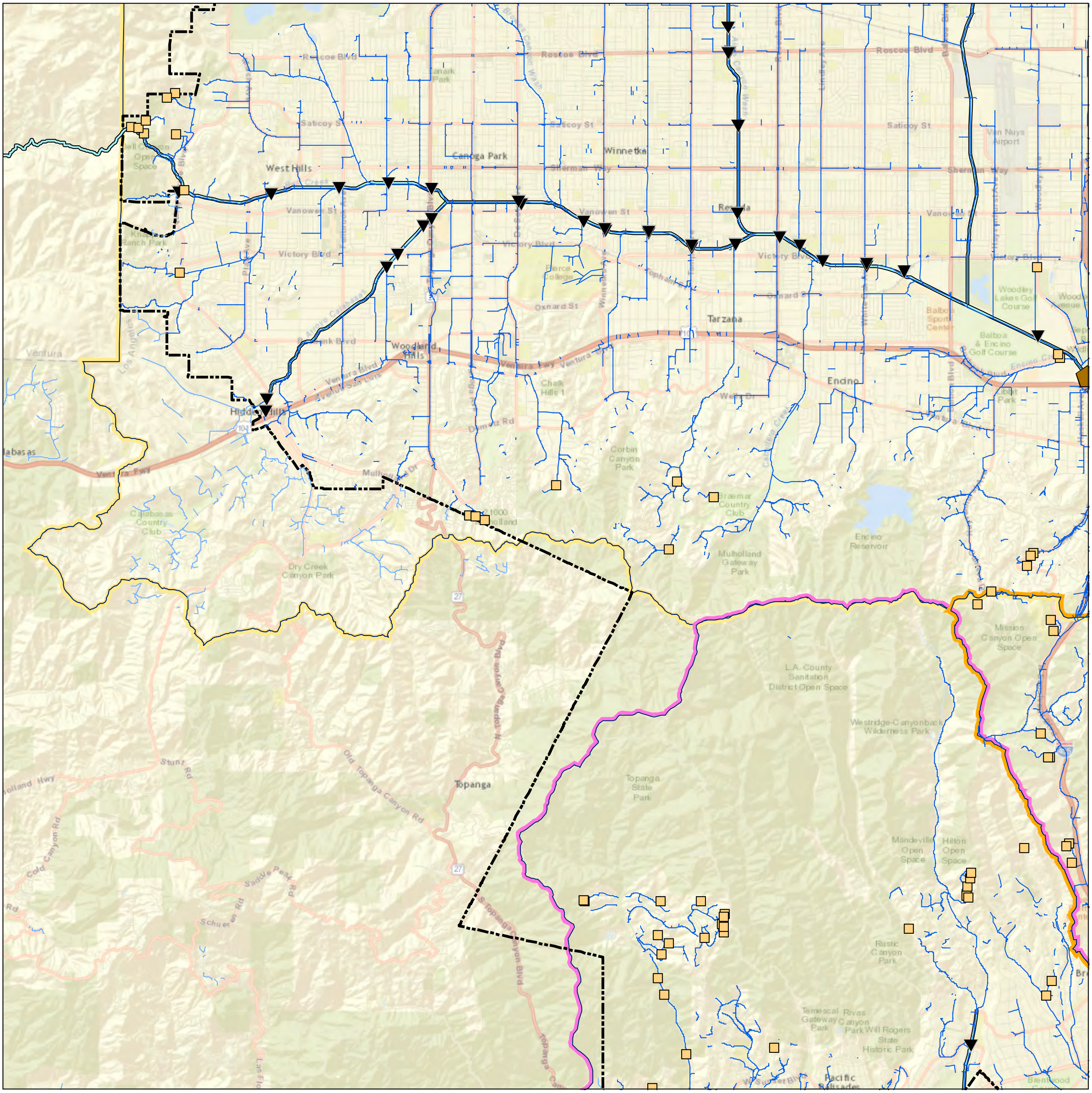
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

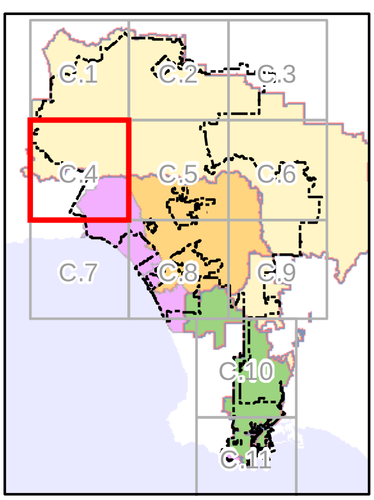
- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
- National Hydrography Dataset Flowline
- Dam
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

Figure C.3
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- City of LA Boundary

WMA Boundary

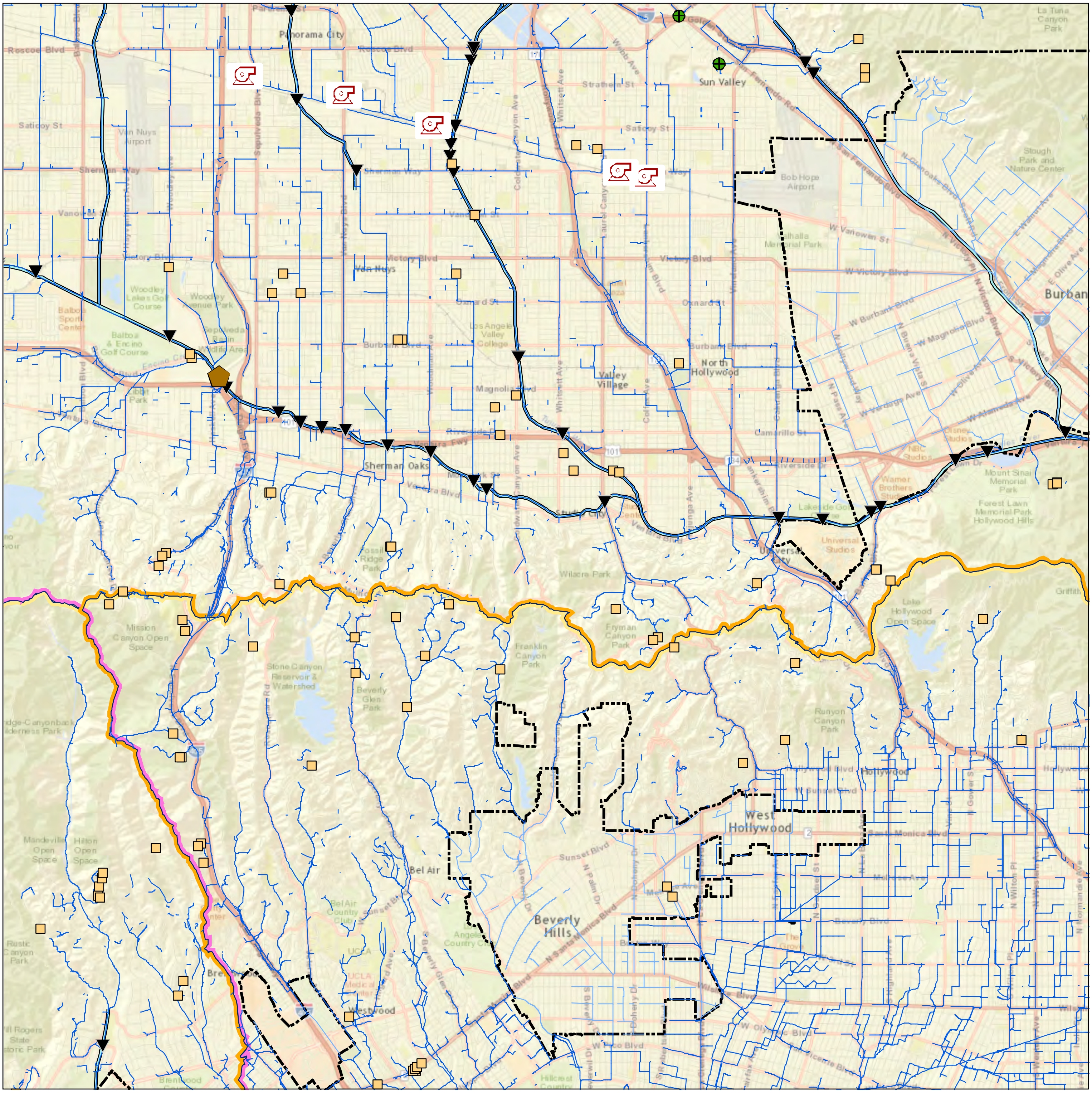
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River
- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
- National Hydrography Dataset Flowline
- Dam
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

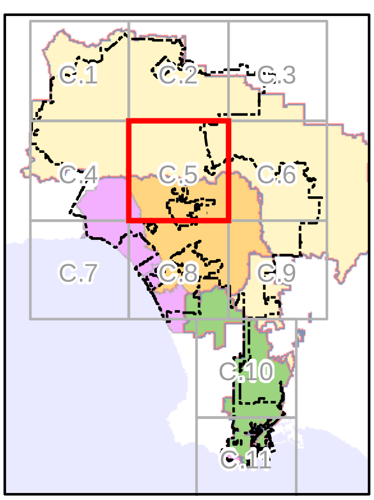
Figure C.4
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

N

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

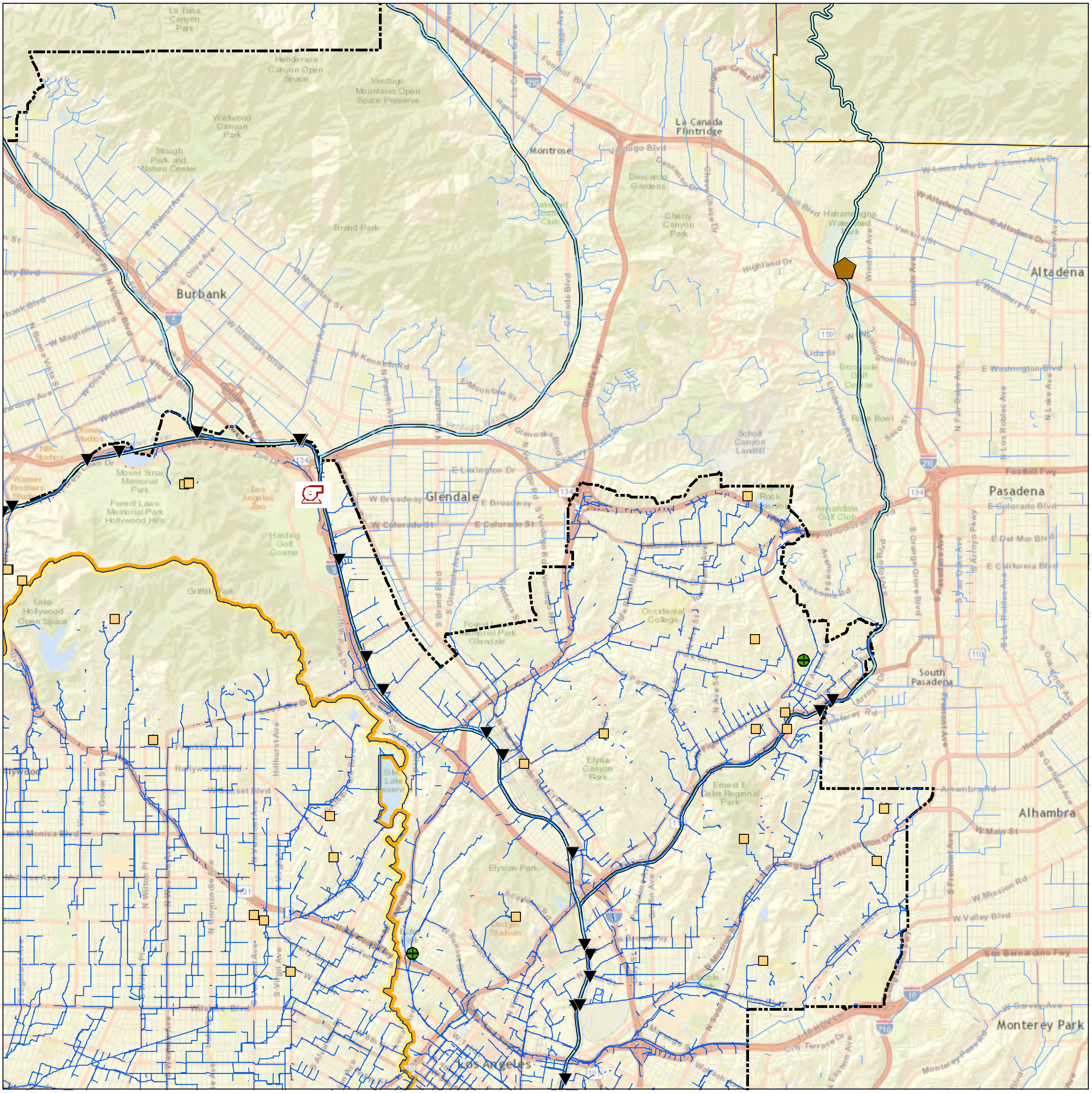
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

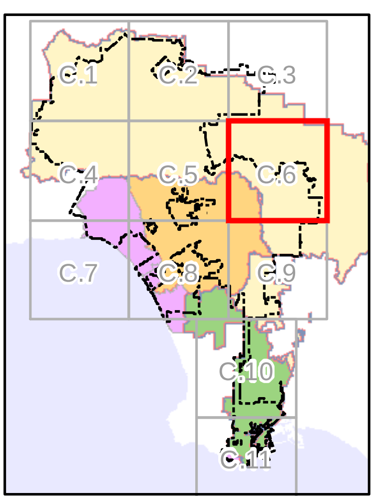
- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
- National Hydrography Dataset Flowline
- Dam
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

Figure C.5
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

Ballona Creek

Dominguez Channel

Santa Monica Bay

Upper Los Angeles River

Stormwater Conveyance System in City of LA

Stormwater Conveyance System Outside of City of LA

National Hydrography Dataset Flowline

Dam

Major Outfall

Debris Basin

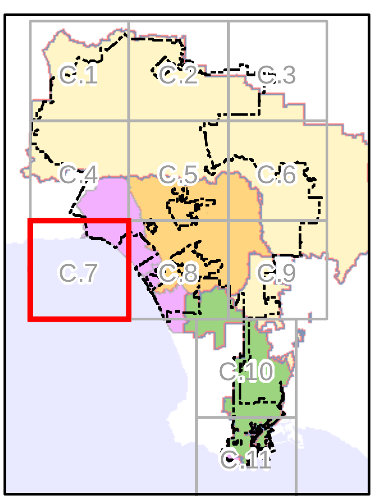
Low Flow Diversion

Stormwater Pump Station

Figure C.6
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants



Legend

City of LA Boundary

WMA Boundary

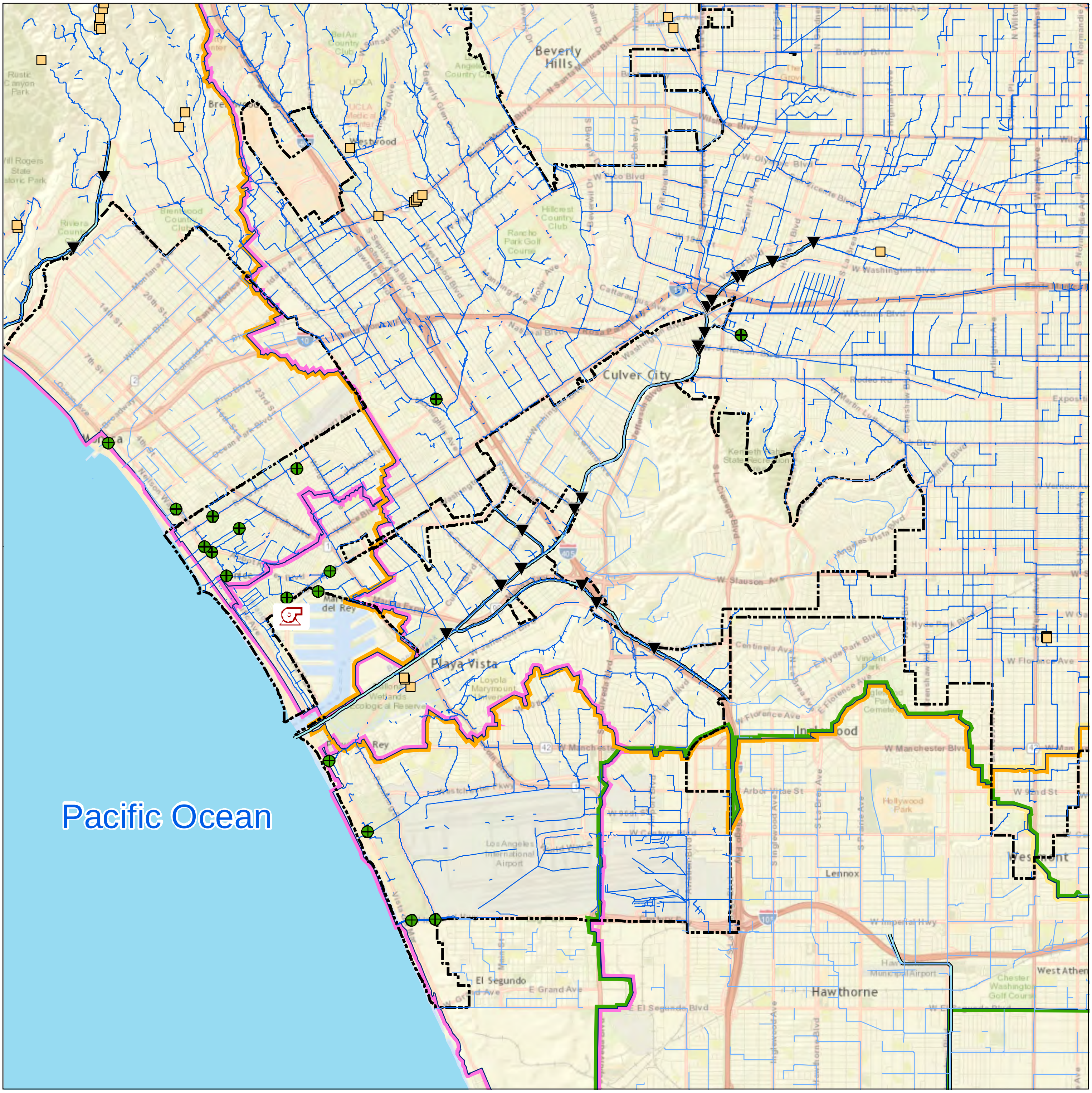
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

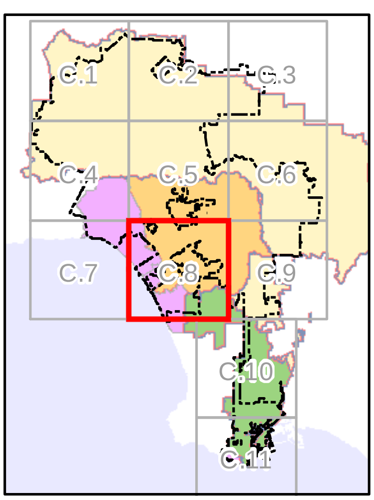
- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
- National Hydrography Dataset Flowline
- Dam
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

Figure C.7
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

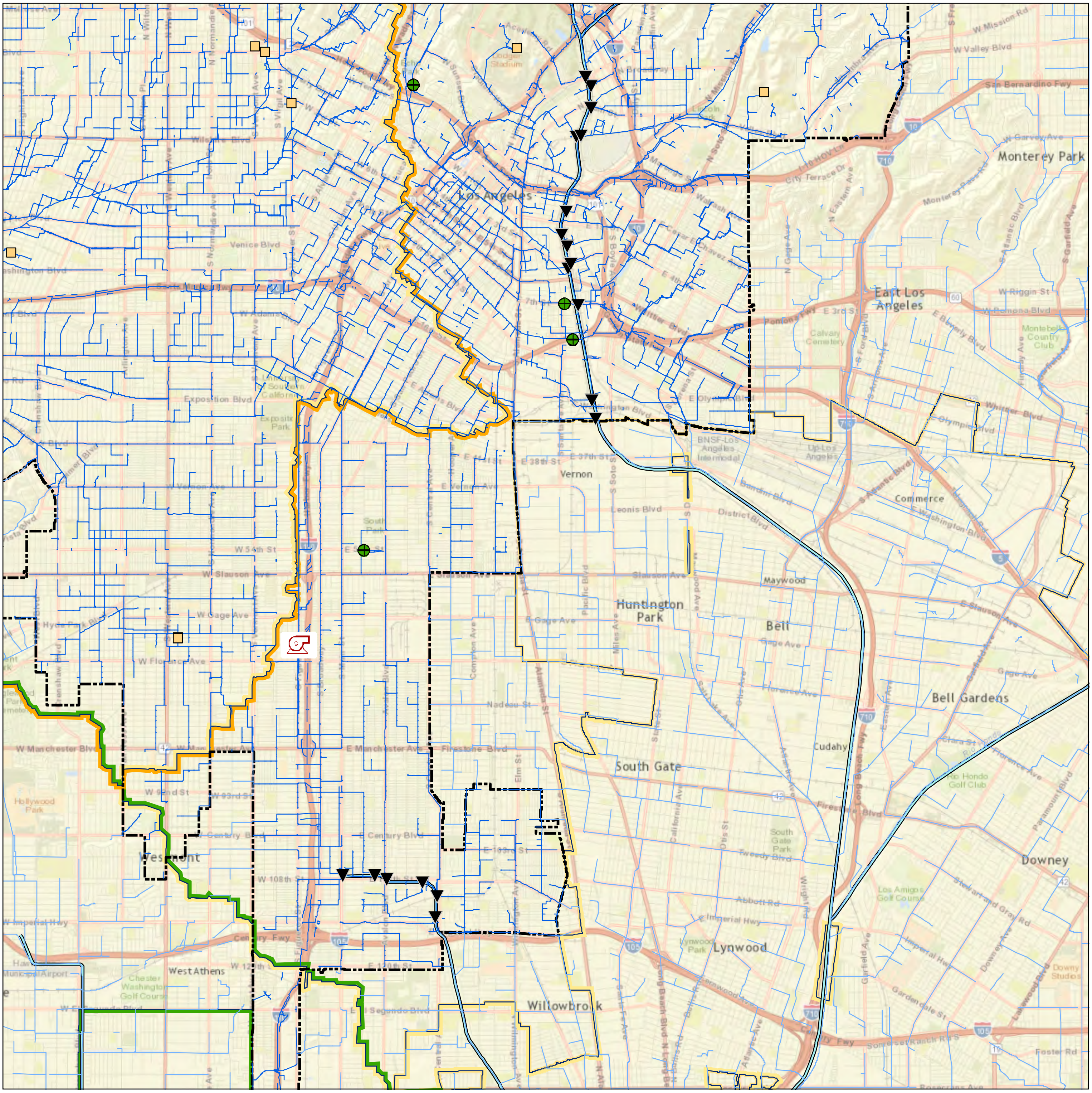
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

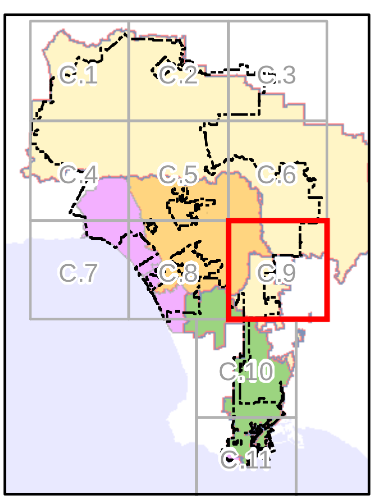
- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
- National Hydrography Dataset Flowline
- Dam
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

Figure C.8
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

Ballona Creek

Dominguez Channel

Santa Monica Bay

Upper Los Angeles River

Stormwater Conveyance System in City of LA

Stormwater Conveyance System Outside of City of LA

National Hydrography Dataset Flowline

Dam

Major Outfall

Debris Basin

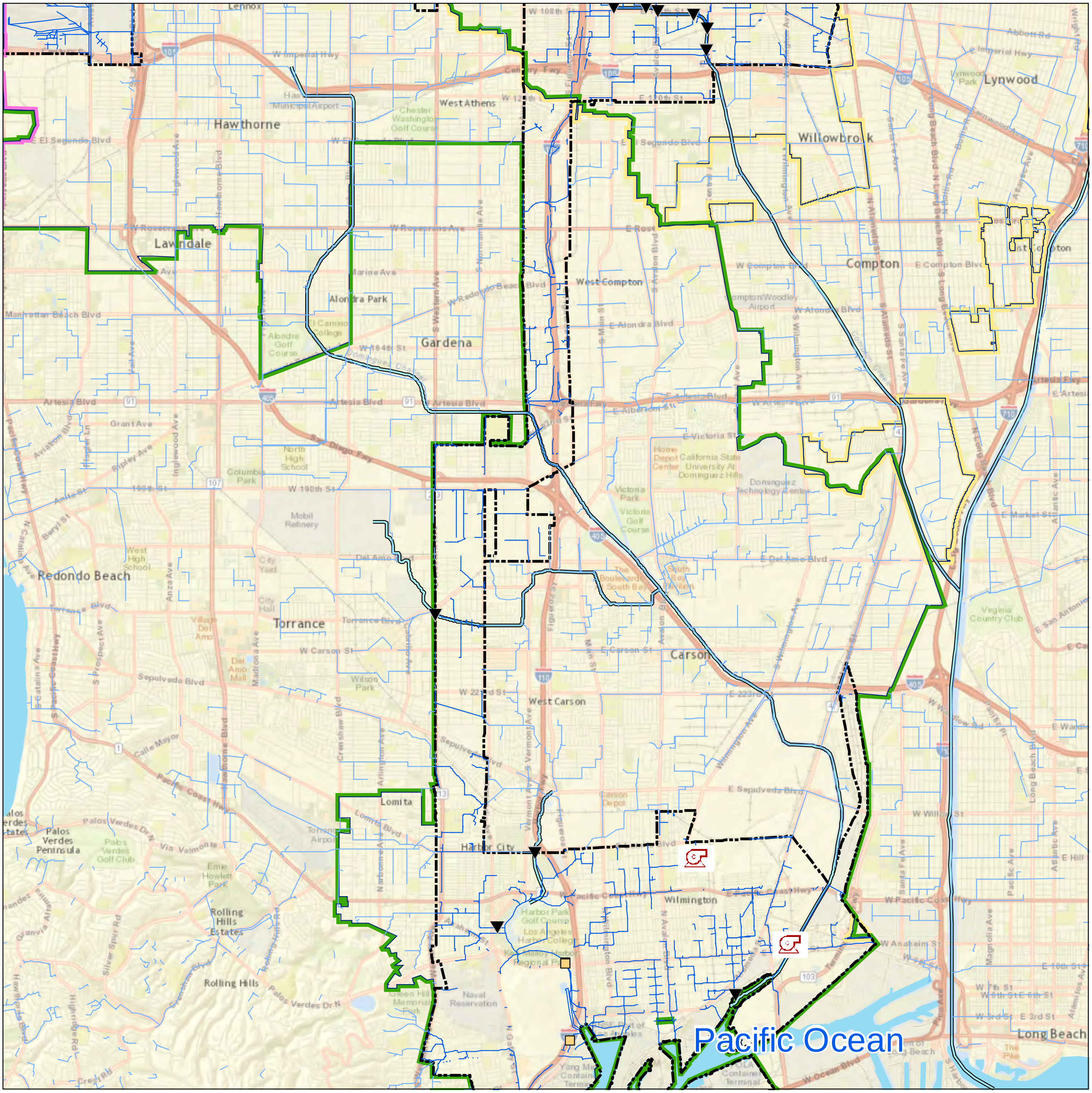
Low Flow Diversion

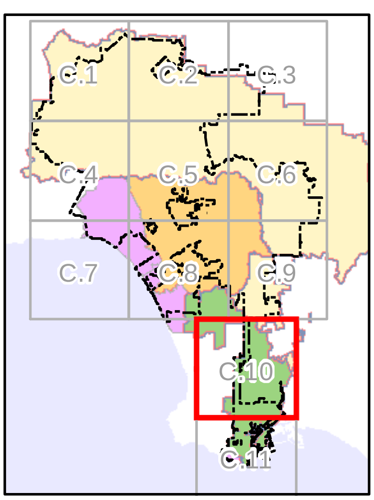
Stormwater Pump Station

Figure C.9
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

Ballona Creek

Dominguez Channel

Santa Monica Bay

Upper Los Angeles River

Stormwater Conveyance System in City of LA

Stormwater Conveyance System Outside of City of LA

National Hydrography Dataset Flowline

Dam

Major Outfall

Debris Basin

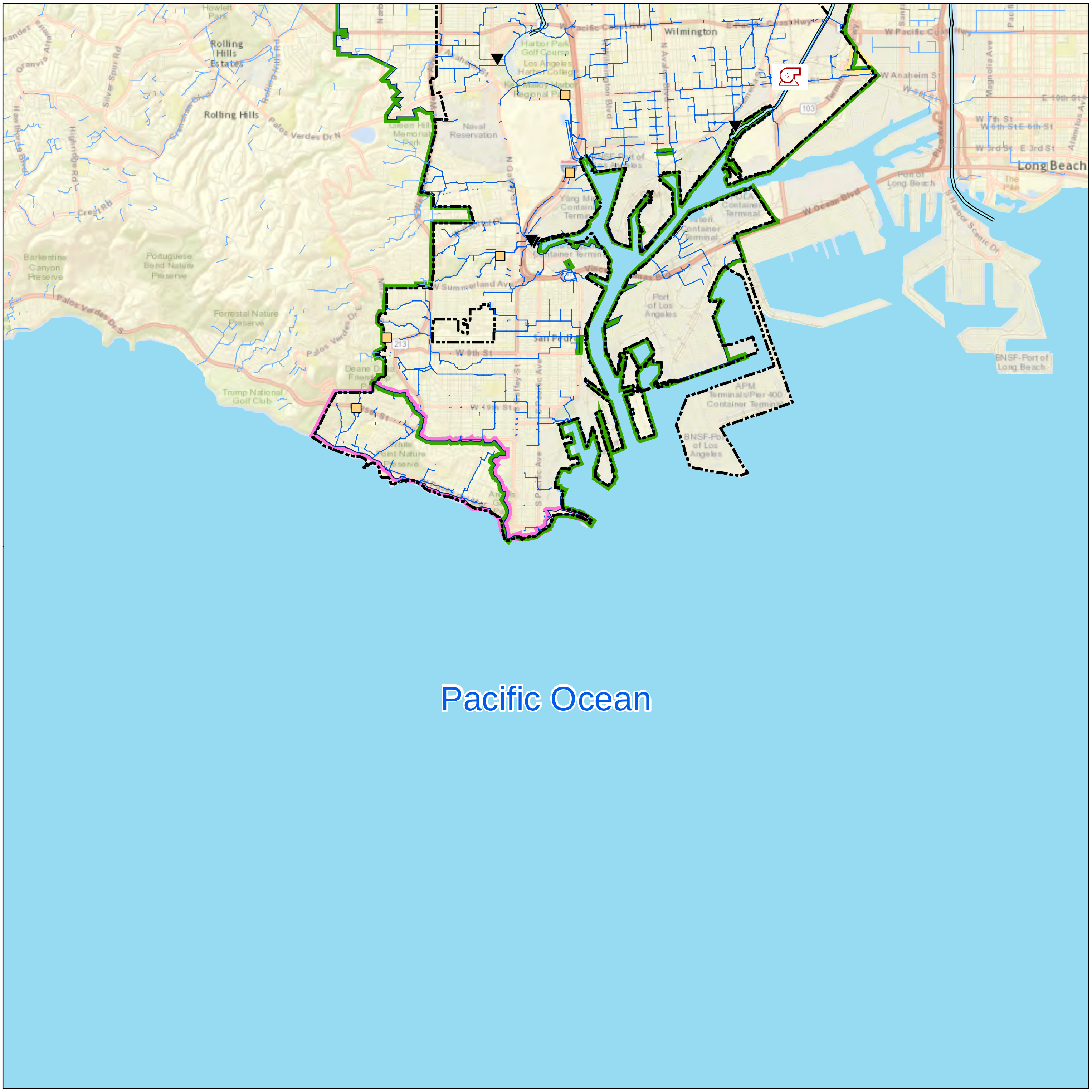
Low Flow Diversion

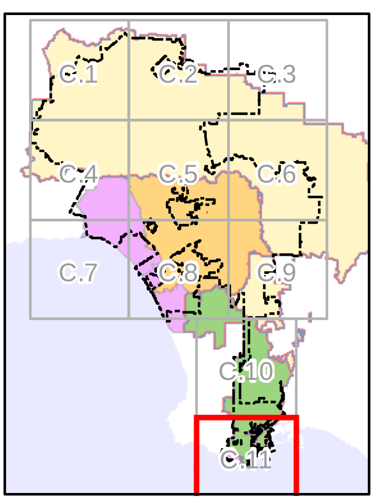
Stormwater Pump Station

Figure C.10
Existing Grey Infrastructure in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River
- Stormwater Conveyance System in City of LA
- Stormwater Conveyance System Outside of City of LA
- National Hydrography Dataset Flowline
- Dam
- Major Outfall
- Debris Basin
- Low Flow Diversion
- Stormwater Pump Station

Figure C.11
Existing Grey Infrastructure in City of Los Angeles

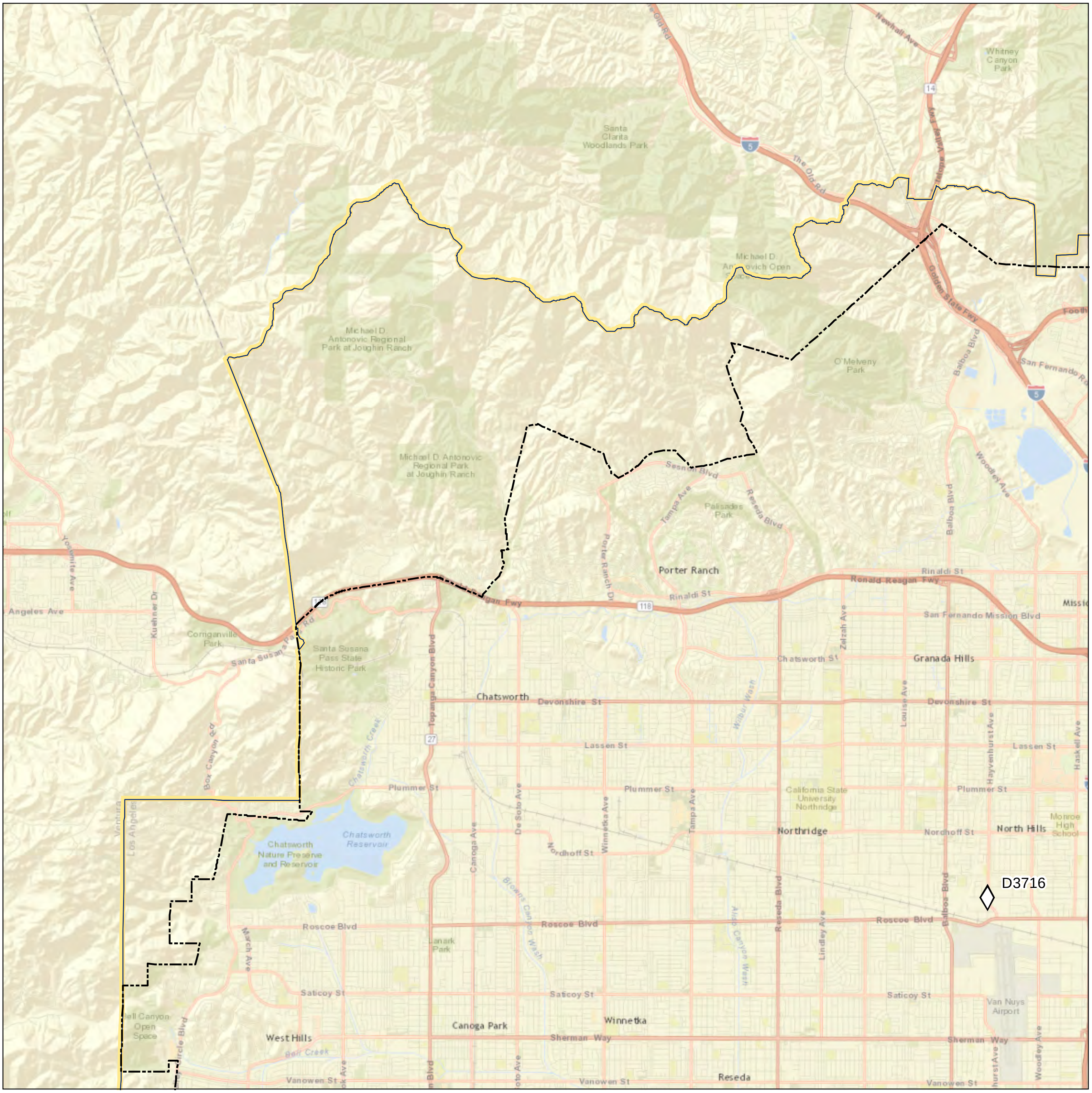
0 1 2 Miles

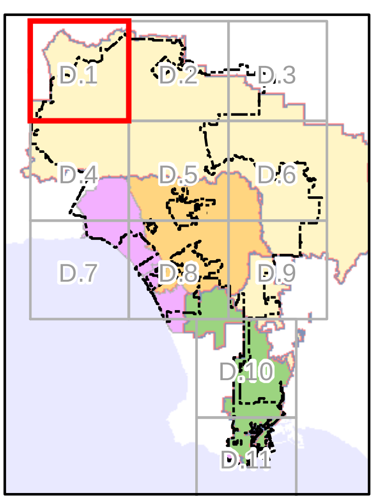
Geosyntec consultants

APPENDIX D – FIGURES AND LIST OF EXISTING GREEN INFRASTRUCTURE PROJECTS IN CITY OF LOS ANGELES

Existing Green Infrastructure Projects	ID Shown on Maps	WMA
Avalon Green Alley South	LASAN_203	ULAR
Big Tujunga Dam Seismic Retrofit	DWP103	ULAR
Broadway Neighborhood Stormwater Greenway	ULAR25	ULAR
Cesar Chavez Ground Water Improvements (Sheldon Arleta Park)	ULAR9	ULAR
City Hall Park Restoration - North Lawn	DWP 8	ULAR
Echo Park Lake Rehabilitation Project	ULAR2	ULAR
Elmer Ave Green Street	D22	ULAR
Elmer Ave Phase II: Elmer Paseo	LASAN_214	ULAR
Garvanza Park Rainwater Capture and Reuse	ULAR6	ULAR
GlenOaks Stormwater Infiltration (Glenoaks-Sunland)	D3704	ULAR
Grand Blvd I&II	RBMP01b/21b	SMB
Hansen Dam Wetlands Restoration	ULAR10	ULAR
Hansen Spreading Grounds Upgrade	DWP101	ULAR
Humboldt St.Priority Greenway	D3709	ULAR
Imperial Hwy Sunken Median	RBMP02	SMB
Inner Cabrillo Beach Bacterial Water Quality Improvement	LASAN_220	DC
LA River Sixth Street Bridge Greenway	D3714	ULAR
LA Zoo Parking Lot: Demonstration on Environmental Sustainability	LASAN_221	ULAR
Lake Machado Ecosystem Rehabilitation	LASAN_222	DC
Machado Lake-Phase I (Wilmington Drain)	LASAN_223	DC
Mar Vista Recreation Center Stormwater BMP	LASAN_225	BC
North Atwater Creek River Park	LASAN_226	ULAR
North Hollywood Alley Infiltration	D21	ULAR
Old Oak Road	RBMP43	SMB
Oros Green Street	D23	ULAR
Oxford Retention Basin Enhancement Project	MdR_E10	SMB

Existing Green Infrastructure Projects	ID Shown on Maps	WMA
Peck Park Canyon Enhancement	LASAN_230	DC
Penmar Water Quality Improvement Ph I	RBMP10a	SMB
Penmar Water Quality Improvement Ph II	RBMP10	SMB
Riverdale Green street	D20	ULAR
Rosecrans Recreational Center Stormwater Enhancements	LASAN_234	DC
South Los Angeles Wetlands Park	ULAR1	BC
Sun Valley EDA	DWP10	ULAR
Sun Valley Park Infiltration	ULAR8	ULAR
Temescal Canyon Stormwater BMP Phase I	RBMP 08a	SMB
Temescal Canyon Stormwater BMP Phase II	RBMP08	SMB
Tujunga Spreading Grounds Optimization	ULAR64	ULAR
Tujunga Wash Greenway and Stream Restoration	ULAR57	ULAR
University Park Neighborhood Rain Gardens	BC_GS2	BC
Vermont Avenue Stromwater Capture and Green Streets Project	BC_GS3	BC
Westminster Dog Park	RBMP03	SMB
Westside Park Irrigation	LASAN_241	BC
Woodman Stormwater Greenway	D3703	ULAR





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

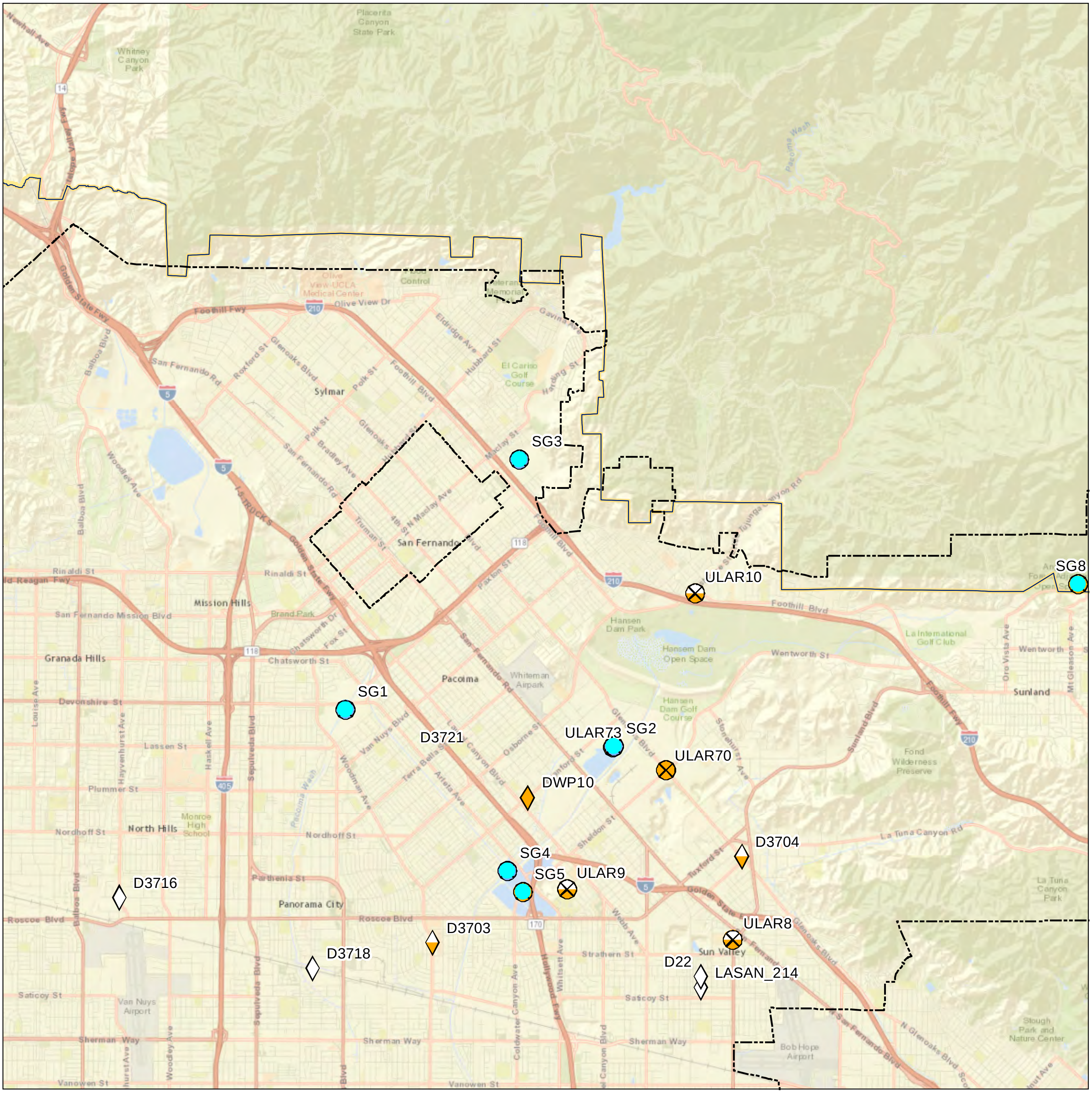
Centralized- Regional Project by Agency

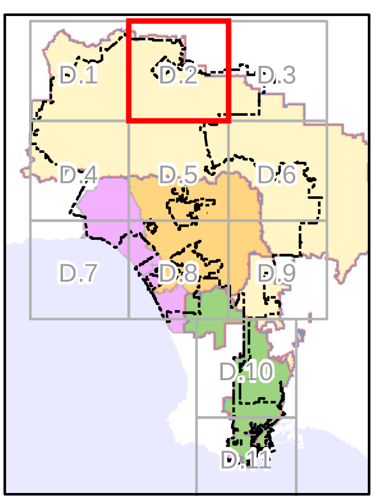
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.1
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

Ballona Creek

Dominguez Channel

Santa Monica Bay

Upper Los Angeles River

Distributed Project by Agency

LASAN

LASAN/LADWP

LADWP

Centralized- Regional Project by Agency

LASAN

LASAN/LADWP

LADWP

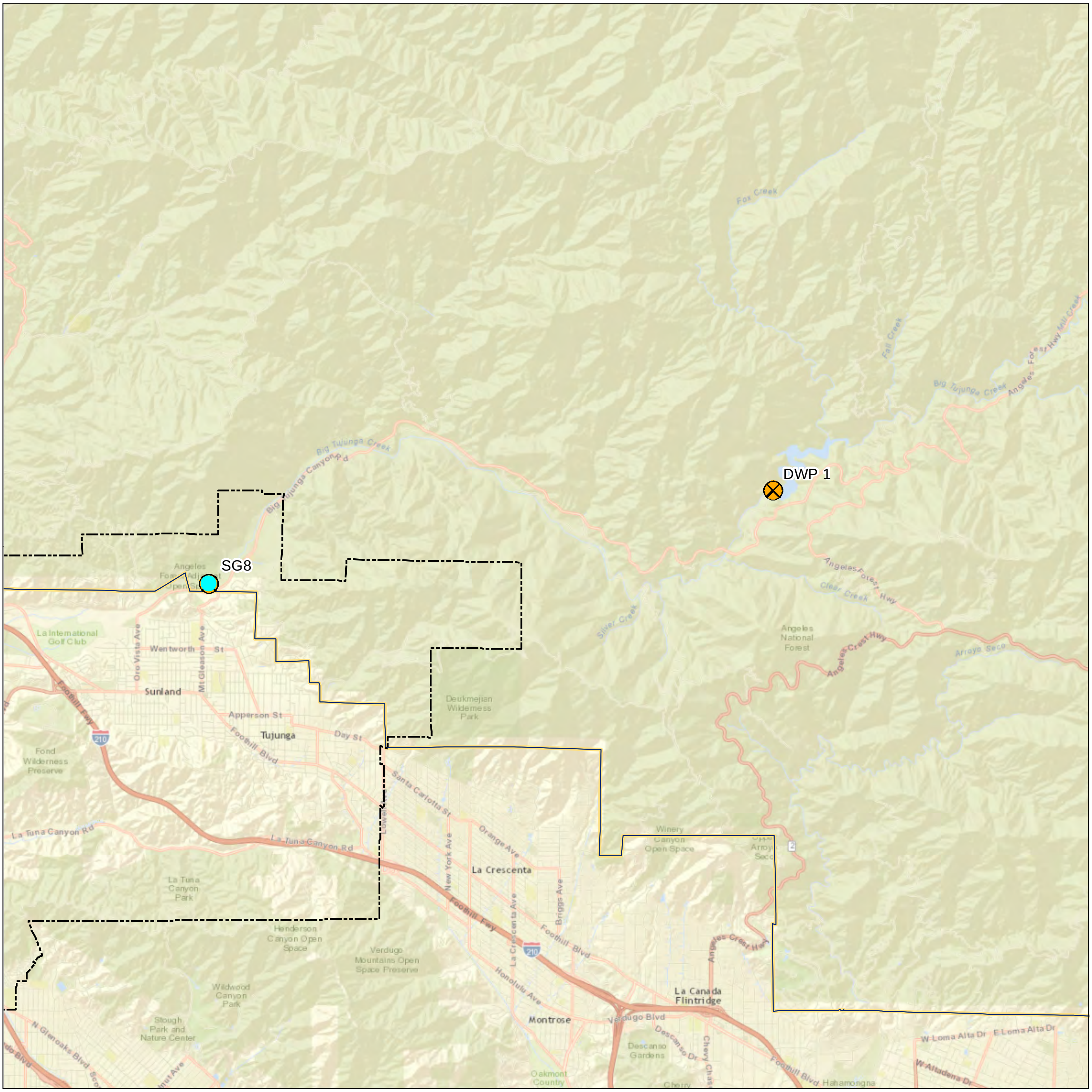
City of LA Agency other than LASAN and LADWP

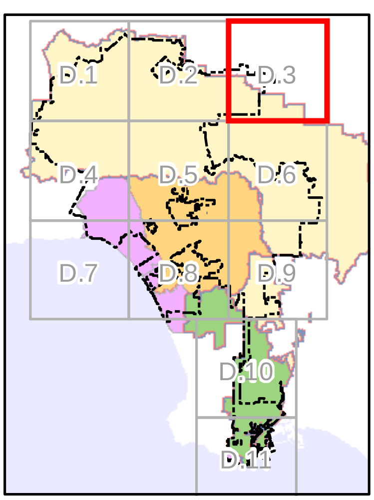
LA County (LACFCD and LACDPW)

Figure D.2
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

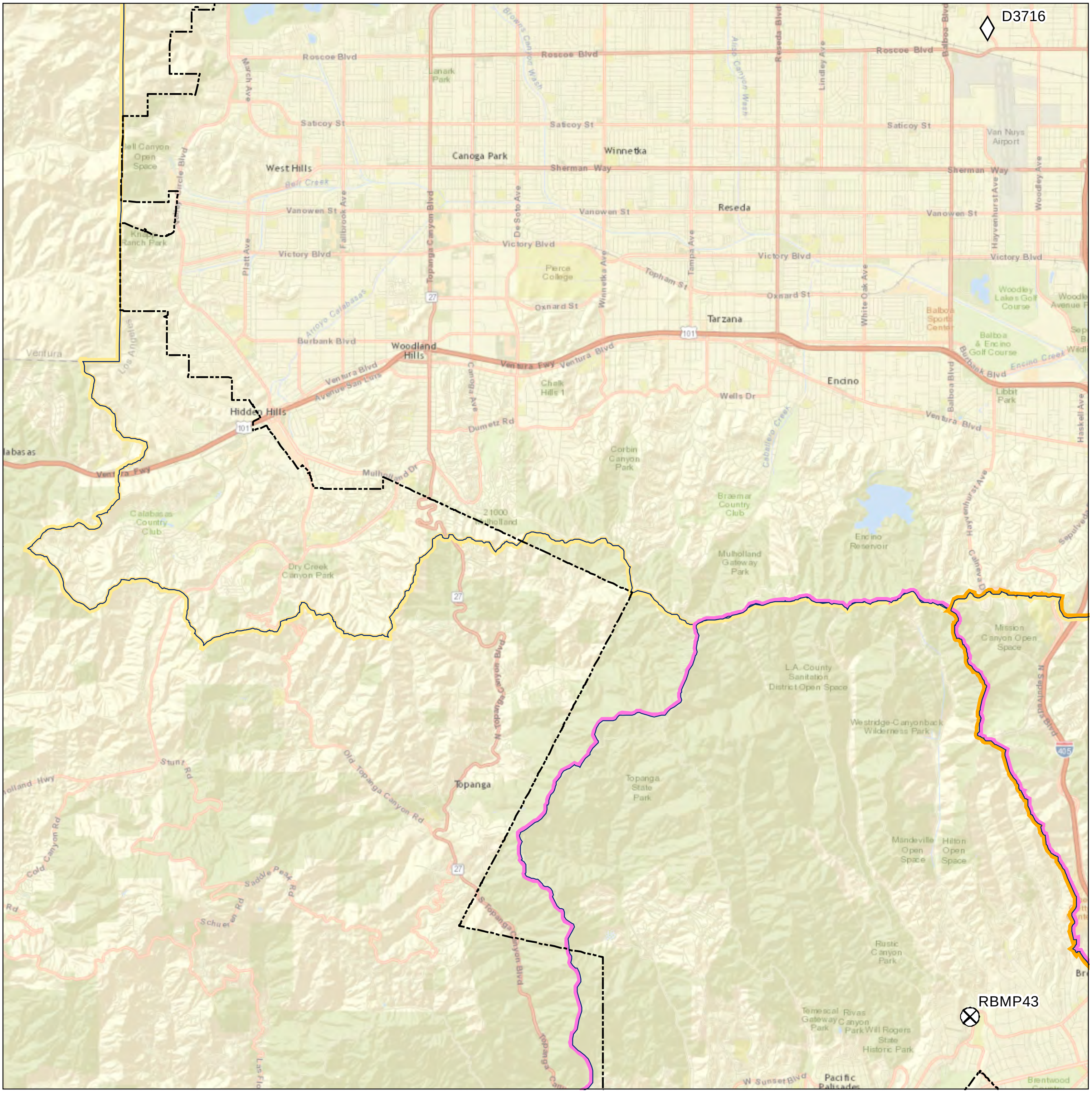
Centralized- Regional Project by Agency

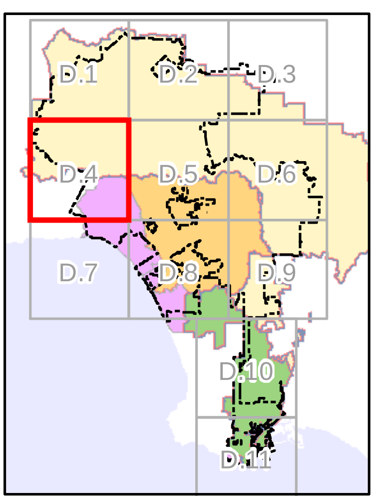
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.3
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

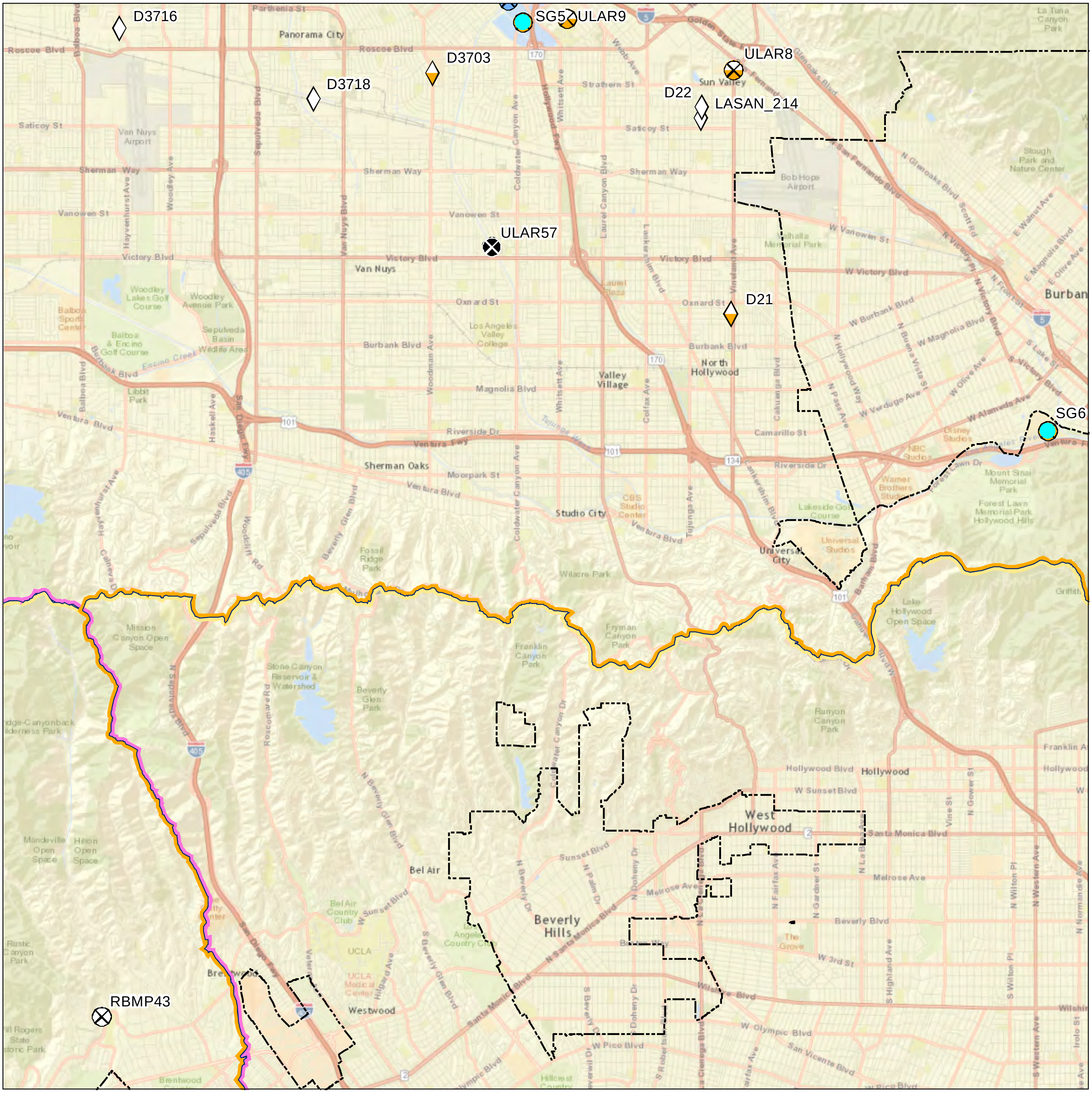
Centralized- Regional Project by Agency

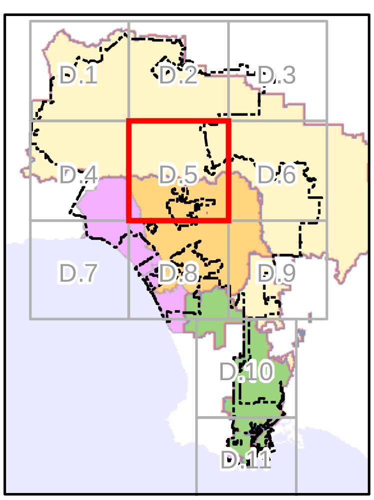
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.4
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

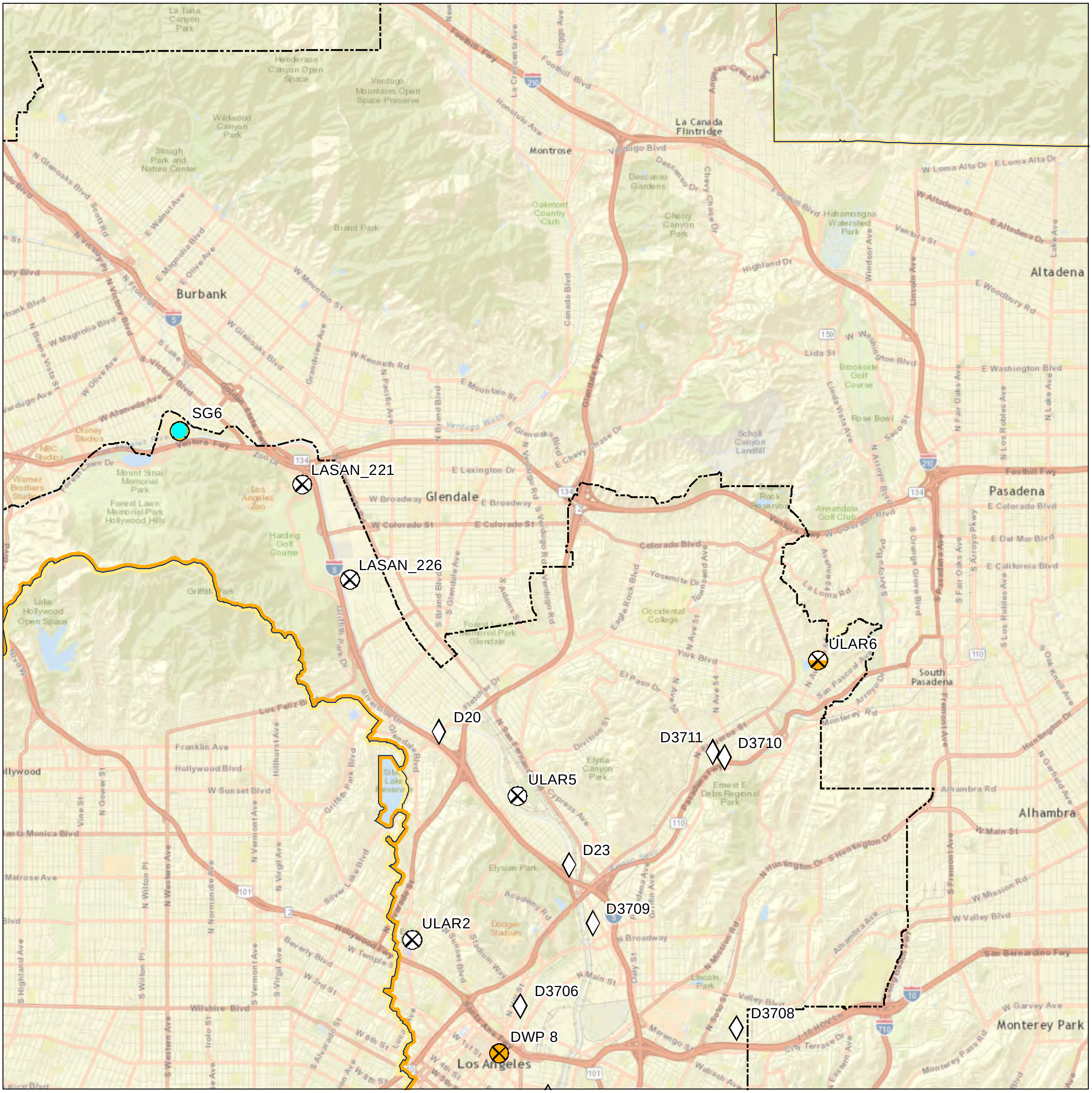
Centralized- Regional Project by Agency

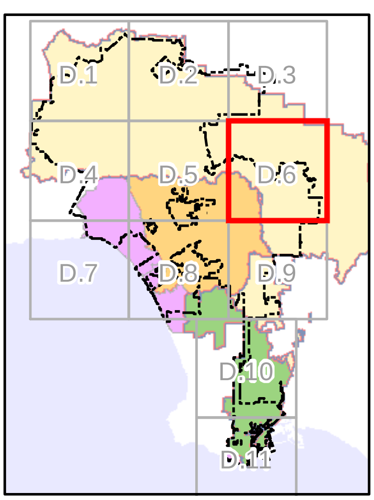
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.5 Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

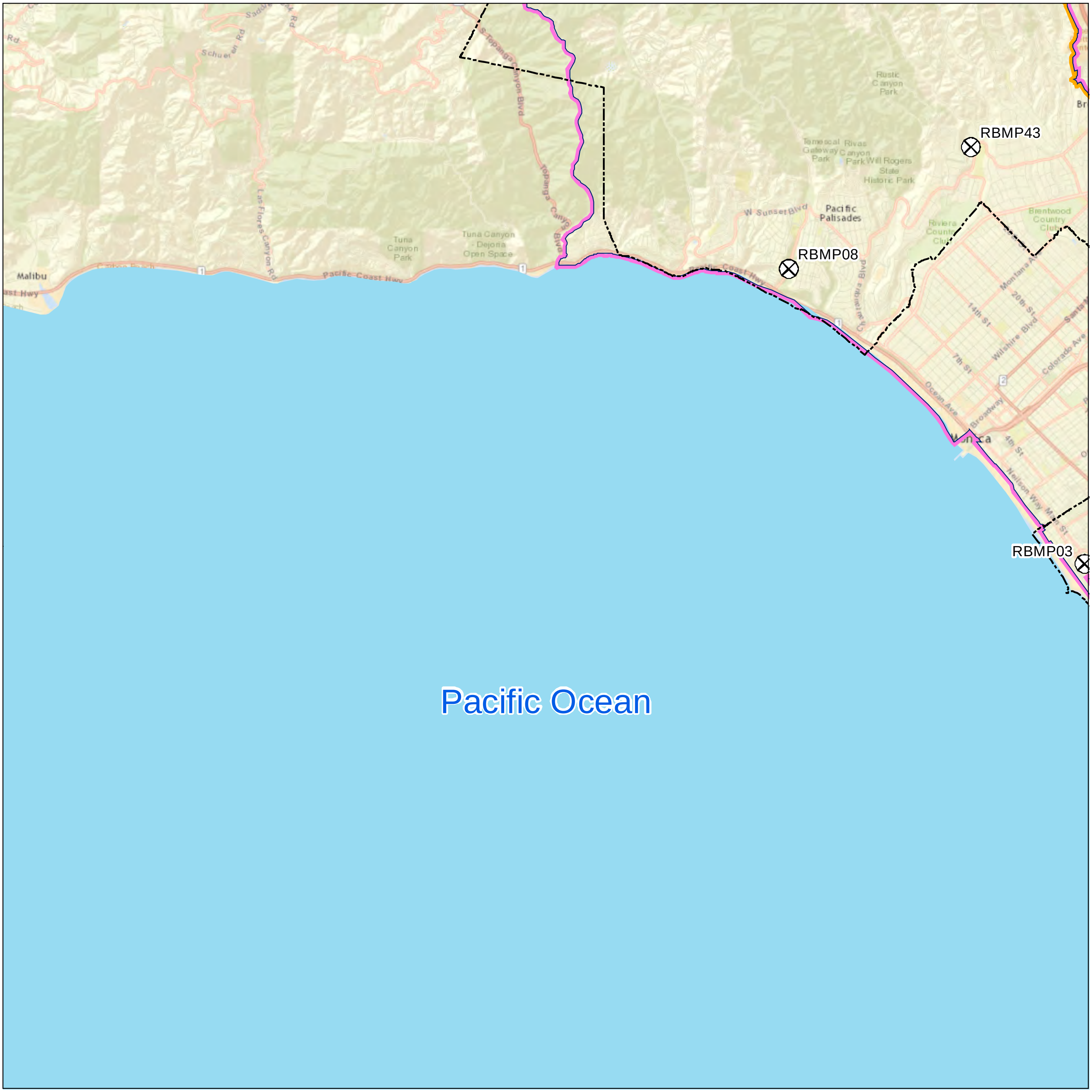
Centralized- Regional Project by Agency

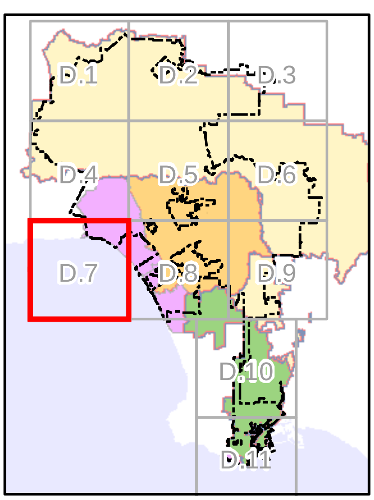
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

0 1 2 Miles

Figure D.6 Existing Green Infrastructure Projects in City of Los Angeles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

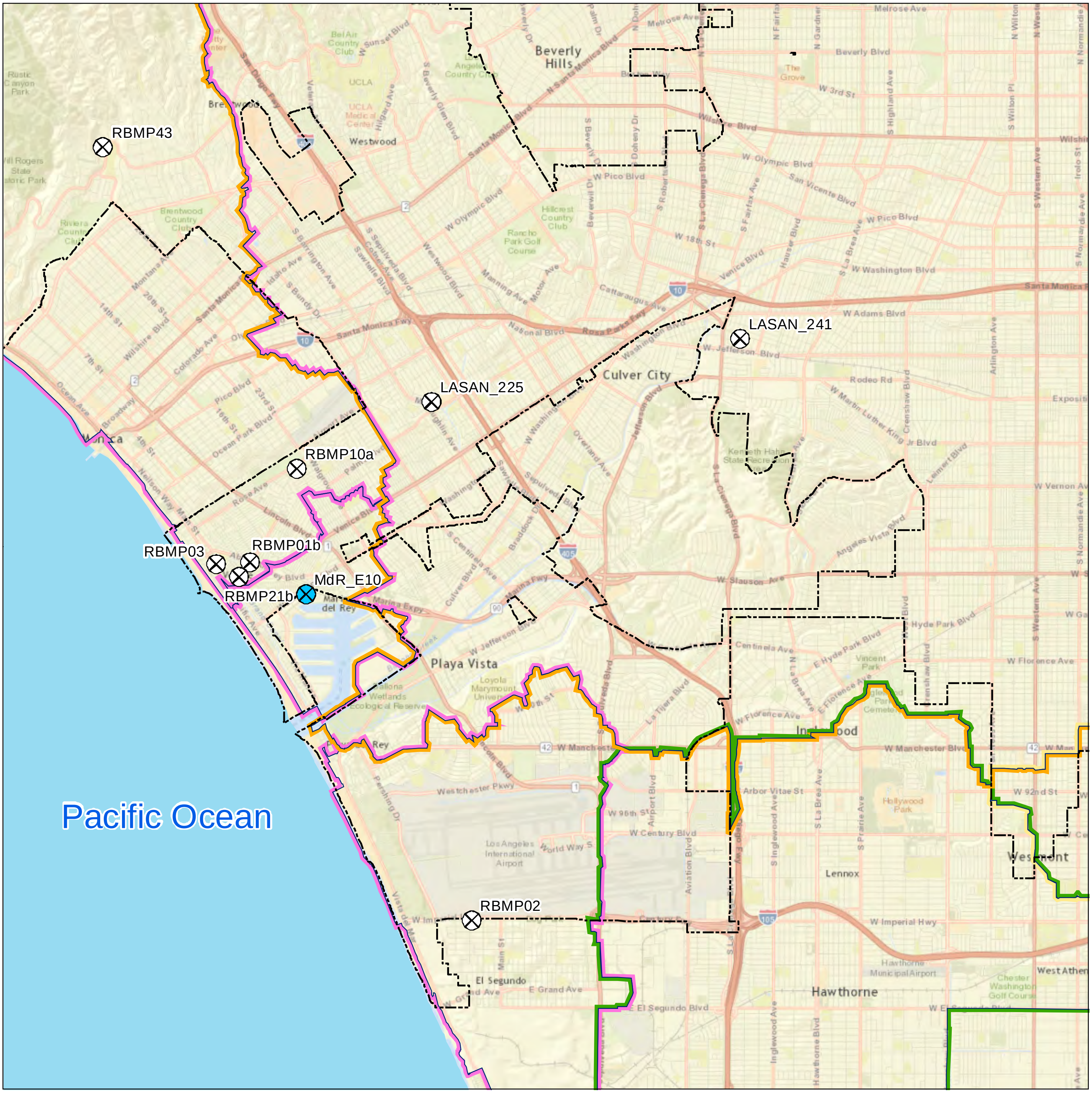
Centralized- Regional Project by Agency

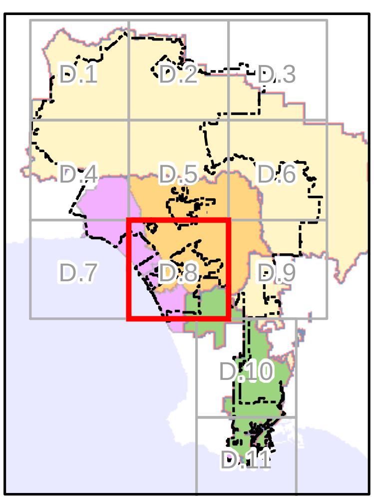
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.7
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

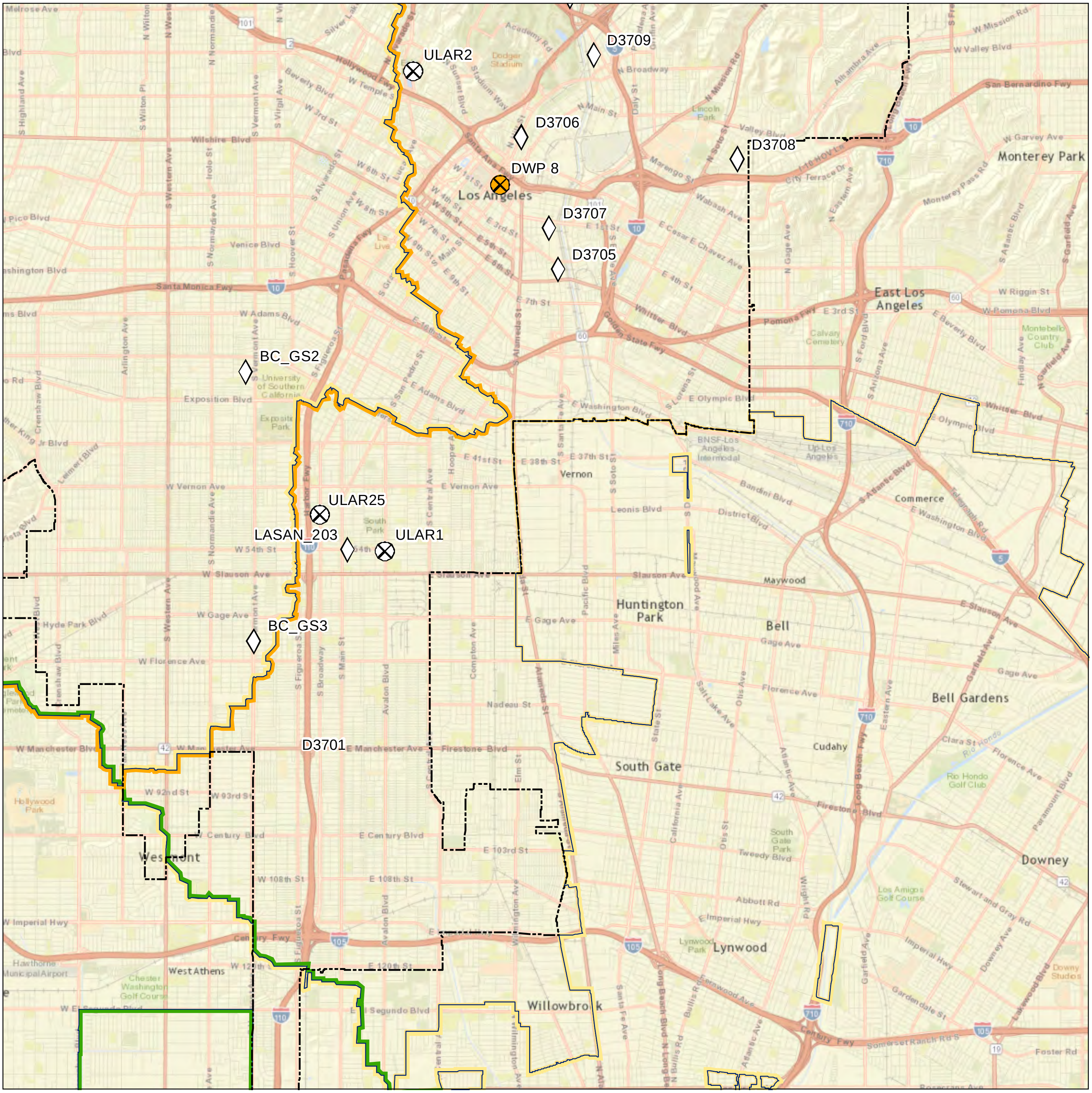
Distributed Project by Agency
- LASAN
- LASAN/LADWP
- LADWP

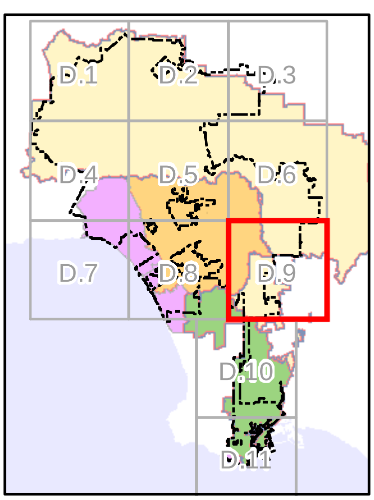
Centralized- Regional Project by Agency
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.8
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

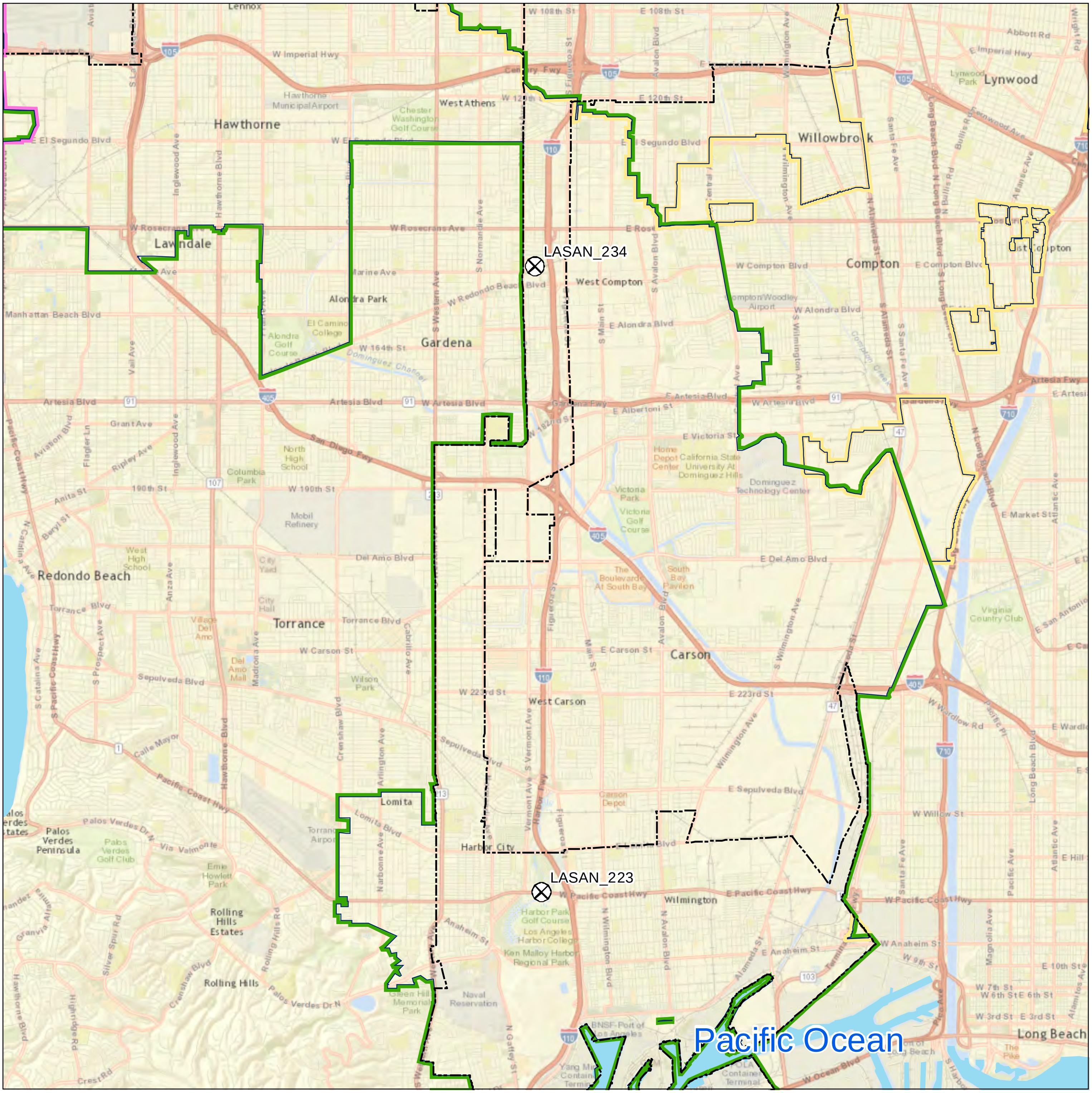
Centralized- Regional Project by Agency

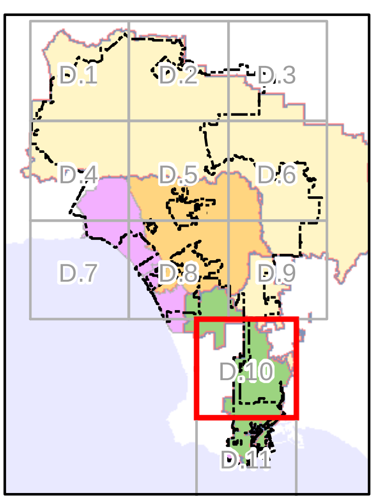
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.9
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

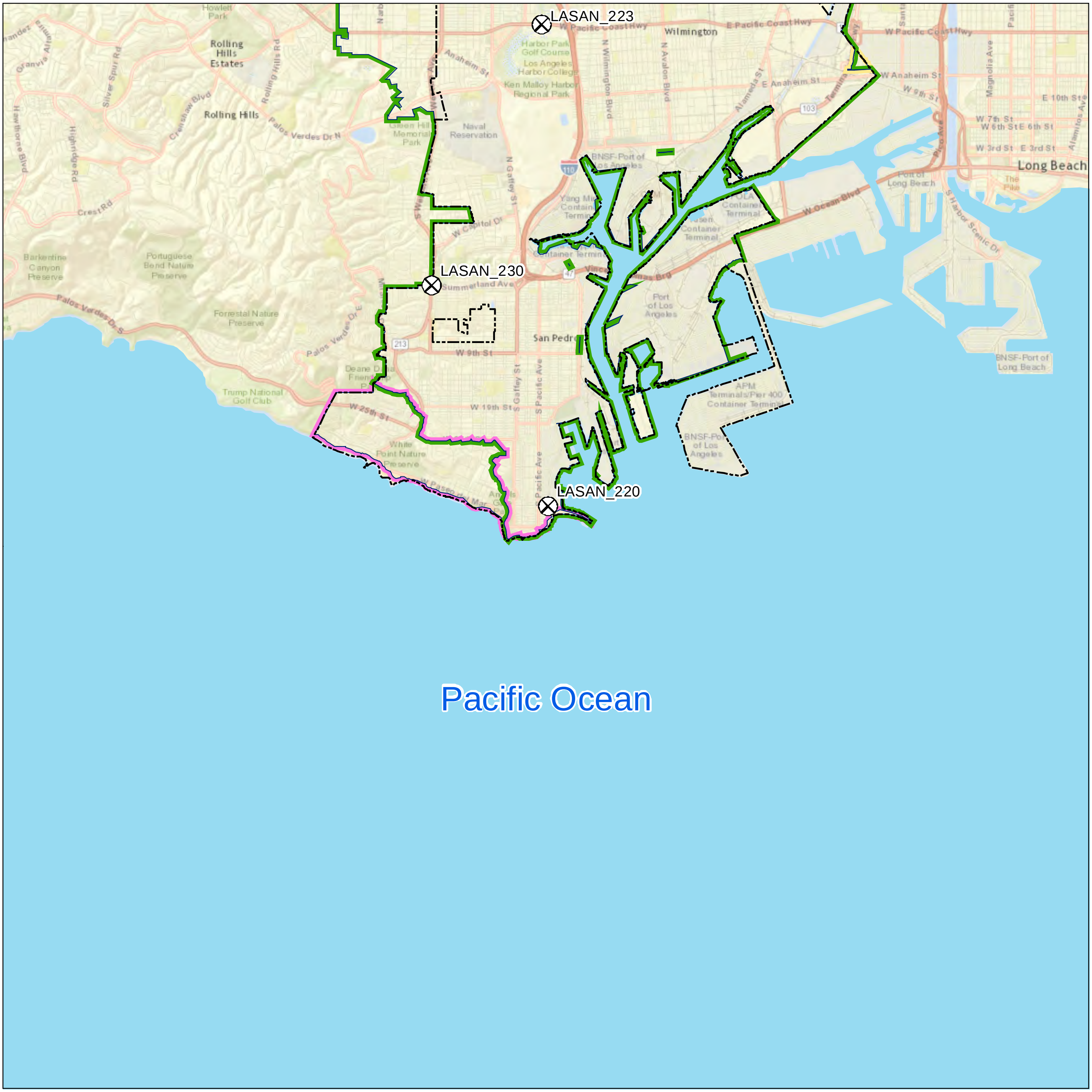
Centralized- Regional Project by Agency

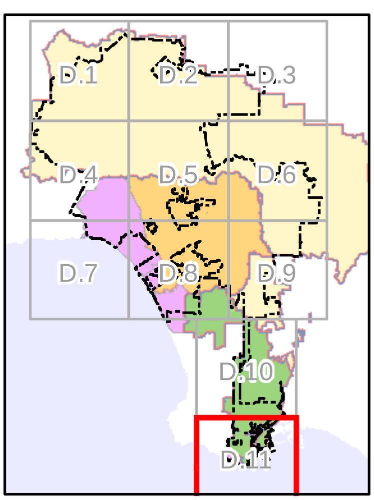
- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

Figure D.10
Existing Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Distributed Project by Agency

- LASAN
- LASAN/LADWP
- LADWP

Centralized- Regional Project by Agency

- LASAN
- LASAN/LADWP
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACFCD and LACDPW)

0 1 2 Miles

Figure D.11
Existing Green Infrastructure Projects in City of Los Angeles

Geosyntec consultants

APPENDIX E – CITY-WIDE GREEN STREETS PROGRAM

E.1 PROGRAM DEVELOPMENT METHODOLOGY

Step 1: Establish a City-wide Green Streets implementation tracking metric

The term "Green Streets" generally refers to a nexus of distributed green infrastructure implemented within or along right-of-ways, including components such as bioswales, bioretention units, and/or permeable pavement. Green Streets are a critical component to the City's stormwater management system since they allow for the development of stormwater projects on a distributed basis. Each of the five City-led EWMPs presented planning-level targets for Green Streets implementation, based on EWMP-specific implementation metrics and spatial resolution. Table E.1 summarizes the implementation requirements of the five EWMPs.

As summarized in Table E.1, different EWMPs expressed watershed-specific Green Streets implementation targets as area- or volume-based quantitative metrics. Without setting a defined Green Streets configuration, the EWMP implementation targets cannot be directly translated into defined green infrastructure projects. For example, it is difficult to estimate the quantity of green infrastructure required to provide one acre-feet of static capture volume given the possible variations in green infrastructure type, depth of fill media, street width, and many other variables. For the same reason, converting one implementation target to another (e.g. from length to static capture volume) cannot be justified without a consistent Green Streets configuration.

To overcome numerous variables and develop a singular, City-wide Green Streets implementation metric, a length-based target was developed to assess Green Streets projects and programs within the One Water framework. Utilizing the City’s Standard Plans, a standardized Green Streets cross-section was developed to represent a typical Green Streets configuration. Figure E.1 provides a conceptual illustration of the proposed Green Streets configuration. Details of this configuration are provided in Table E.2. The resultant unit linear foot of Green Streets can provide 30 cubic feet of static capture volume. This conversion factor has been adopted by the City to develop Green Streets projects in the 5-year stormwater and green infrastructure CIP phase. It serves as the foundation of converting volume-based Green Streets implementation targets, which were used in the BC, DC, SMB J2/3, and ULAR EWMPs, to an equivalent length-based target. Additional assumptions were made to convert the area-based implementation target, which was used in the MdR EWMP, to an equivalent length-based target. Based on the five Green Streets case studies conducted in the MdR EWMP, a 220 feet/acre conversion ratio (220 feet of Green Streets can treat runoff from 1 acre of tributary area) was applied.

Table E.1 EWMP Green Streets Implementation Requirements Summary Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

EWMP Watershed	Implementation Target	Location Screening Resolution	Schedule
Ballona Creek (BC)	Expressed as static capture volume. According to the EWMP, the City will be implementing Green Streets with a total static capture capacity of 278 AF within the City's jurisdiction.	By catchment	All proposed Green Streets are planned to be built by 2021.
Dominguez Channel (DC)	Expressed as static capture volume. Per the EWMP, the City will be implementing Green Streets with a total static capture capacity of 96 AF within the City's jurisdiction.	By subwatershed(1)	32% of proposed Green Streets are planned to be built by 2026; the remainder are planned to be built by 2032.
Marina del Rey (MdR)	Expressed as tributary area coverage. Per the EWMP, the City will be implementing sufficient Green Streets along LADOT right-of-way to capture and treat runoff from 607 acres of the following land use areas: single family residential (SFR), multi-family residential (MFR), commercial (COM), industrial (IND).	By subwatershed	All proposed Green Streets are planned to be built by 2018.
Santa Monica Bay (SMB)	Expressed as static capture volume. Per the EWMP, the City will be implementing Green Streets with a total static capture capacity of 64.7 AF within the City's jurisdiction.	By subwatershed	All proposed Green Streets are planned to be built by 2021.
Upper Los Angeles River (ULAR)	Expressed as static capture volume. Per the EWMP, the City will be implementing Green Streets with a total static capture capacity of 606.9 AF within the City's jurisdiction.	By catchment	All proposed Green Streets are planned to be built by 2028.

Note:

(1) Typically, a subwatershed contains multiple catchments

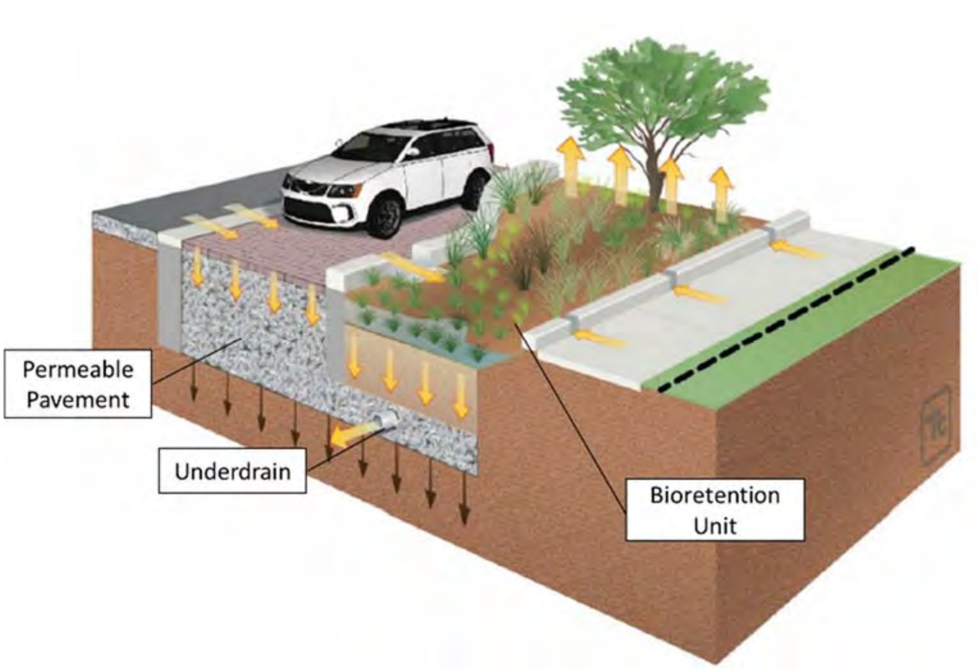


Figure E.1 Illustration of Standardized Green Streets Configuration
Image courtesy of the Upper Los Angeles River Enhanced Watershed Management Plan

Table E.2 Standardized Green Streets Configuration for Unit Length Conversion
Stormwater and Urban Runoff Facilities Plan
One Water LA 2040 Plan

Specification	Quantity
Bioretention Width (ft)	4
Bioretention Media Depth (ft)	3
Bioretention Media Porosity (%)	0.3
Bioretention Ponding Depth (ft)	1.5
Permeable Pavement Width (ft)	8
Permeable Pavement Gravel Depth (ft)	4
Permeable Pavement Gravel Porosity (ft)	0.4
Underdrain Depth (ft)	1.5
Ponding Depth (ft)	1.5

The Green Streets configuration presented in Table E.2 serves as a general guideline and can be implemented with flexibility. For example, the required width of the bioretention unit can be implemented either entirely on one side of a street or can be distributed on both sides of the street, depending on drainage. In addition, the configuration in Table E.2 is not the only acceptable Green Streets configuration to support the conversion factors listed above. For example, a configuration consisting entirely of porous pavement may also be sufficient if the porous pavement alone can provide 30 cubic feet of static capture volume.

Finally, converting length-based implementation targets to EWMP compliance metrics (e.g. annual volume managed) will be necessary for the City to demonstrate EWMP compliance to the LARWQCB. Such conversion can be done in the future using the EWMP compliance toolbox that LASAN is currently developing.

Step 2: Update EWMP-defined Green Streets implementation targets and opportunities by catchment or subwatershed

Since some Green Streets projects have already been planned or proposed throughout the City, it was necessary to account for these projects in the implementation target estimates. After converting EWMP-specific implementation targets to length-based implementation targets via Step 1, the length of already-proposed Green Streets projects was estimated for each catchment. If design details for the proposed project were not included, this number was estimated based on available project descriptions. Once calculated, this number was deducted from the implementation target in each catchment.

In addition to developing Green Streets implementation targets, each EWMP conducted a preliminary Green Streets opportunity screening to identify streets that are potentially suitable for Green Streets projects. In order to support future Green Streets projects planning, the length of Green Streets opportunities by catchment or subwatershed was computed and summarized in the database.

Step 3: Determine Green Streets implementation schedule in accordance with EWMP implementation plan

The catchment- or subwatershed- specific, length-based Green Streets implementation targets were further refined by separating the implementation targets into multiple projects based on the implementation schedule. The City developed generalized stormwater project implementation milestone years ("Blocks"), which are based on applicable regulatory compliance milestones. The blocks are defined in Table E.3.

Table E.3 Green Streets Implementation Schedule Comparison Stormwater and Urban Runoff Facilities Plan One Water LA 2040 Plan

Green Streets Block	EWMP Milestone Schedule	WMA	Regulatory Compliance Attainment
Block A	2021	BC	BC Metal and Bacteria TMDLs - 100%
		SMB	SMB J2/3 - SMB Beach Bacteria TMDL -100% MdR Mother's Beach and Back Basins Bacteria TMDL - 100%
	2024	ULAR	LA River Metals TMDL - 50%
Block B	2026	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 50%
	2028	ULAR	LA River Metals TMDL - 100%(1)
Block C	2032	DC	DC/LA Harbor Waters Toxic Pollutant TMDL - 100%
		ULAR	LA River Bacteria TMDL - 44.5%(2)
Block D	2037	ULAR	LA River Bacteria TMDL - 100%

Notes:
(1) Block definitions for the ULAR WMA is based on two TMDLs. According to the ULAR EWMP, all Green Streets are required to meet the LA River Metals TMDL. Hence, the Green Streets programs in the ULAR WMA are separated into Block A and Block B
(2) This milestone is not based on regulatory deadlines, but was estimated by interpolating between the end of Block B (2028) and the final LA River Bacterial TMDL compliance attainment at the end of Block D (2037)

Step 4: Compute the Green Streets Programs Cost

The EWMP Green Streets implementation targets, different EWMPs utilized different methodologies and assumptions to estimate the Green Streets costs. For example, the BC EWMP estimated the capital Green Streets cost as a linear function of four design parameters[1]. In contrast, the SMB J2/3 EWMP estimated the Green Streets cost through a detailed, itemized cost analysis. Based on the assumed configuration and the cost estimate to the City's Green Streets Standard Plans (LABOE, 2011), the unit foot of the standardized Green Streets section presented in Table E.1 was estimated as $1,000 per foot of Green Streets[2]. The unit cost was used to compute the capital cost of the Green Streets programs.

[1] Green Streets footprint, static capture volume, volume of fill media, and underdrain volume.
[2] This unit cost is consistent with the unit cost used estimated Green Streets project in Stormwater and Green Infrastructure 5-Year CIP developed by LASAN in 2015.

Step 5: Integrating Green Streets projects into the Stormwater Improvement Program

The results of the Green Streets screening analysis - City-wide Green Streets program showing length of required Green Streets projects to be implemented - were added to the project database and were subject to the project selection process.

It should be noted that the developed Green Streets programs are meant to change over time. Once a new Green Streets project is proposed by the City or others, the length of the project should be evaluated by repeating Step 2, and the applicable implementation target should be updated accordingly.

Reference:

City of Los Angeles Bureau of Engineering (LABOE). 2011. *Cost Estimate Spreadsheet of Standard Plan S457, S481-484 Confidential Data Set]* (Confidential). Retrieved from Los City of Angeles Bureau of Sanitation (LASAN) in April 2017.

City of Los Angeles Bureau of Sanitation (LASAN). 2015. *City of Los Angeles Stormwater and Green Infrastructure 5-Year Capital Improvement.* December.

E.2 GREEN STREETS PROGRAMS LIST

WMA	Catchment ID	Block	Incremental Implementation Percentage by Block	EWMP Green Streets Implementation Target (ac-ft)	Converted Implementation Target (ft)	Length of Near Term Green Streets Projects (ft)	Remaining Green Streets Implementation Target (ft)	Preliminary EWMP Green Streets Opportunity (ft)	Green Streets Opporrunity Utilization Requirement	Capital Cost ($)	Annual O&M Cost ($ per year)
BC	103249	Block A	100%	23.94	34,761	4,800	29,961	345,493	8.8%	$28,912,257	$1,734,735.44
BC	108449	Block A	100%	22.80	33,106	4,584	28,521	365,075	7.9%	$27,523,123	$1,651,387.39
BC	100449	Block A	100%	0.42	610	0	610	39,375	1.5%	$588,496	$35,309.74
BC	101349	Block A	100%	0.76	1,104	0	1,104	28,126	3.9%	$1,064,897	$63,893.81
BC	101849	Block A	100%	2.80	4,066	0	4,066	70,053	5.8%	$3,923,304	$235,398.24
BC	102049	Block A	100%	1.56	2,265	773	1,492	70,578	2.1%	$1,439,798	$86,387.87
BC	102249	Block A	100%	1.88	2,730	0	2,730	78,639	3.5%	$2,634,218	$158,053.10
BC	102649	Block A	100%	2.08	3,020	0	3,020	29,140	10.4%	$2,914,454	$174,867.26
BC	103049	Block A	100%	0.52	755	2,793	0	66,614	0.0%	$0	$0.00
BC	103349	Block A	100%	1.83	2,657	0	2,657	37,895	7.0%	$2,564,159	$153,849.56
BC	103449	Block A	100%	0.03	44	3,247	0	345,801	0.0%	$0	$0.00
BC	103549	Block A	100%	0.01	15	0	15	22,289	0.1%	$14,012	$840.71
BC	103749	Block A	100%	2.66	3,862	0	3,862	39,297	9.8%	$3,727,139	$223,628.33
BC	103849	Block A	100%	0.98	1,423	0	1,423	16,747	8.5%	$1,373,156	$82,389.38
BC	103949	Block A	100%	0.62	900	0	900	12,871	7.0%	$868,732	$52,123.90
BC	104049	Block A	100%	1.59	2,309	0	2,309	15,015	15.4%	$2,227,876	$133,672.57
BC	104149	Block A	100%	0.24	348	0	348	12,710	2.7%	$336,283	$20,176.99
BC	104349	Block A	100%	1.86	2,701	400	2,301	16,849	14.0%	$2,220,196	$133,211.75
BC	104449	Block A	100%	0.37	537	6,747	0	25,382	0.0%	$0	$0.00
BC	105049	Block A	100%	1.56	2,265	0	2,265	17,914	12.6%	$2,185,841	$131,150.45
BC	105149	Block A	100%	2.89	4,196	0	4,196	39,817	10.5%	$4,049,410	$242,964.61
BC	106149	Block A	100%	0.00	1	315	0	218,290	0.0%	$0	$0.00
BC	106349	Block A	100%	2.03	2,948	0	2,948	21,094	14.0%	$2,844,395	$170,663.72
BC	106749	Block A	100%	0.06	87	300	0	247,494	0.0%	$0	$0.00
BC	106949	Block A	100%	0.28	407	0	407	4,100	9.9%	$392,330	$23,539.82
BC	107349	Block A	100%	2.48	3,601	3,304	297	446,400	0.1%	$286,191	$17,171.47
BC	107849	Block A	100%	0.00	1	501	0	241,274	0.0%	$0	$0.00
BC	107949	Block A	100%	0.01	15	0	15	199,081	0.0%	$14,012	$840.71
BC	108049	Block A	100%	0.01	15	9,309	0	437,108	0.0%	$0	$0.00
BC	108149	Block A	100%	1.41	2,047	0	2,047	88,310	2.3%	$1,975,664	$118,539.83
BC	108249	Block A	100%	0.96	1,394	0	1,394	38,919	3.6%	$1,345,133	$80,707.97
BC	108349	Block A	100%	1.45	2,105	0	2,105	18,136	11.6%	$2,031,711	$121,902.66
BC	108549	Block A	100%	1.33	1,931	0	1,931	12,840	15.0%	$1,863,569	$111,814.16
BC	108649	Block A	100%	0.04	58	0	58	9,503	0.6%	$56,047	$3,362.83
BC	108749	Block A	100%	0.80	1,162	0	1,162	7,349	15.8%	$1,120,944	$67,256.64
BC	108949	Block A	100%	0.07	102	0	102	3,363	3.0%	$98,083	$5,884.96
BC	109149	Block A	100%	2.62	3,804	0	3,804	29,922	12.7%	$3,671,092	$220,265.50
BC	109249	Block A	100%	2.78	4,037	0	4,037	29,958	13.5%	$3,895,280	$233,716.82
BC	109449	Block A	100%	0.00	1	0	1	150,679	0.0%	$1,401	$84.07
BC	109649	Block A	100%	1.66	2,410	730	1,680	32,525	5.3%	$1,621,394	$97,283.65
BC	109749	Block A	100%	1.39	2,018	0	2,018	18,143	11.1%	$1,947,640	$116,858.41
BC	109849	Block A	100%	2.21	3,209	0	3,209	23,348	13.7%	$3,096,608	$185,796.47
BC	110049	Block A	100%	2.36	3,427	0	3,427	24,781	13.8%	$3,306,785	$198,407.09
BC	110149	Block A	100%	1.93	2,802	0	2,802	110,013	2.5%	$2,704,277	$162,256.64
BC	110649	Block A	100%	2.35	3,412	5,731	0	102,075	0.0%	$0	$0.00
BC	110749	Block A	100%	0.92	1,336	0	1,336	26,191	5.1%	$1,289,086	$77,345.14
BC	110949	Block A	100%	2.12	3,078	687	2,392	79,696	3.0%	$2,307,981	$138,478.88
BC	111049	Block A	100%	0.05	73	4,844	0	408,626	0.0%	$0	$0.00
BC	111149	Block A	100%	0.11	160	902	0	101,532	0.0%	$0	$0.00
BC	111449	Block A	100%	1.53	2,222	0	2,222	63,319	3.5%	$2,143,805	$128,628.32
BC	102849	Block A	100%	3.67	5,329	0	5,329	36,266	14.7%	$5,142,331	$308,539.84
BC	102949	Block A	100%	10.26	14,898	2,000	12,898	139,800	9.4%	$12,446,111	$746,766.65
BC	103149	Block A	100%	7.48	10,861	114,602	0	81,601	0.0%	$0	$0.00
BC	103649	Block A	100%	8.56	12,429	0	12,429	102,003	12.2%	$11,994,101	$719,646.05
BC	104949	Block A	100%	6.00	8,712	0	8,712	75,476	11.5%	$8,407,080	$504,424.80
BC	106249	Block A	100%	3.25	4,719	0	4,719	34,786	13.6%	$4,553,835	$273,230.10
BC	107149	Block A	100%	4.35	6,316	0	6,316	149,708	4.2%	$6,095,133	$365,707.98

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BC	107449	Block A	100%	3.49	5,067	0	5,067	77,576	6.5%	$4,890,118	$293,407.09
BC	107549	Block A	100%	5.09	7,391	1,889	5,502	179,403	3.1%	$5,309,225	$318,553.52
BC	107649	Block A	100%	8.09	11,747	0	11,747	85,562	13.7%	$11,335,546	$680,132.77
BC	108849	Block A	100%	18.85	27,370	12,078	15,292	274,270	5.8%	$14,756,752	$885,405.12
BC	109049	Block A	100%	6.84	9,932	0	9,932	76,126	13.0%	$9,584,071	$575,044.27
BC	109549	Block A	100%	6.18	8,973	0	8,973	65,686	13.7%	$8,659,292	$519,557.54
BC	109949	Block A	100%	4.09	5,939	0	5,939	58,107	10.2%	$5,730,826	$343,849.57
BC	110249	Block A	100%	17.35	25,192	1,819	23,373	217,216	10.9%	$22,555,126	$1,353,307.56
BC	110349	Block A	100%	4.67	6,781	5,358	1,423	109,716	1.4%	$1,373,434	$82,406.03
BC	110449	Block A	100%	5.92	8,596	672	7,924	77,806	10.3%	$7,646,291	$458,777.48
BC	110549	Block A	100%	8.66	12,574	0	12,574	144,961	8.7%	$12,134,219	$728,053.13
BC	110849	Block A	100%	9.68	14,055	0	14,055	146,806	9.6%	$13,563,422	$813,805.34
BC	111249	Block A	100%	5.35	7,768	2,433	5,335	152,575	3.6%	$5,148,141	$308,888.46
BC	111349	Block A	100%	13.80	20,038	5,295	14,743	255,206	5.9%	$14,226,609	$853,596.54
BC	117549	Block A	100%	11.80	17,134	37,668	0	142,093	0.0%	$0	$0.00
DC	Dominguez Channel Estuary	Block B	50%	13.50	19,602	4,369	15,233	132,693	11.9%	$14,700,107	$882,006.43
DC	LA LB Harbor	Block B	50%	25.00	36,300	90,393	0	667,581	0.0%	$0	$0.00
DC	Dominguez Channel	Block B	50%	9.50	13,794	5,901	7,893	168,313	4.9%	$7,616,561	$456,993.65
SMB	MdR Subwatershed 4	Block A	100%	14.42	20,937	188,261	0	116,920	0.0%	$0	$0.00
SMB	MdR Subwatershed 2	Block A	100%	4.30	6,248	22,291	0	102,101	0.0%	$0	$0.00
SMB	MdR Subwatershed 3	Block A	100%	2.48	3,608	19,534	0	18,413	0.0%	$0	$0.00
SMB	_3-04	Block A	100%	35.40	51,401	11,836	39,565	270,153	15.3%	$38,179,789	$2,290,787.34
SMB	_2-01	Block A	100%	1.49	2,163	0	2,163	9,119	23.7%	$2,087,758	$125,265.49
SMB	_2-01_2-02	Block A	100%	0.30	436	0	436	2,032	21.4%	$420,354	$25,221.24
SMB	_2-03	Block A	100%	0.58	842	0	842	11,016	7.6%	$812,684	$48,761.06
SMB	_2-04_2-06	Block A	100%	0.43	624	0	624	5,333	11.7%	$602,507	$36,150.44
SMB	_2-05	Block A	100%	1.70	2,468	0	2,468	19,267	12.8%	$2,382,006	$142,920.36
SMB	_2-06	Block A	100%	0.40	581	0	581	25,020	2.3%	$560,472	$33,628.32
SMB	_2-07_3-01	Block A	100%	0.17	247	0	247	1,082	22.8%	$238,201	$14,292.04
SMB	_2-10	Block A	100%	1.10	1,597	0	1,597	35,722	4.5%	$1,541,298	$92,477.88
SMB	_2-10_2-11	Block A	100%	0.27	392	0	392	14,625	2.7%	$378,319	$22,699.12
SMB	_2-11	Block A	100%	1.49	2,163	1,567	596	326,957	0.2%	$575,576	$34,534.58
SMB	_3-06	Block A	100%	2.86	4,153	71	4,082	71,129	5.7%	$3,939,050	$236,342.98
SMB	_3-08	Block A	100%	0.10	145	18,541	0	25,705	0.0%	$0	$0.00
SMB	_2-02	Block A	100%	6.05	8,785	0	8,785	45,280	19.4%	$8,477,139	$508,628.34
SMB	_2-04	Block A	100%	6.71	9,743	0	9,743	49,981	19.5%	$9,401,918	$564,115.07
SMB	_2-06_2-07	Block A	100%	5.60	8,131	4,383	3,748	72,503	5.5%	$3,616,958	$217,017.49
ULAR	604349	Block A	50%	11.47	16,654	5,229	11,425	83,255	14.6%	$11,025,519	$661,531.15
ULAR	638449	Block A	50%	10.66	15,478	1,260	14,218	91,216	15.8%	$13,720,450	$823,226.98
ULAR	664949	Block A	50%	11.96	17,366	0	17,366	166,134	10.5%	$16,758,113	$1,005,486.77
ULAR	692849	Block A	50%	16.16	23,464	6,117	17,348	152,407	11.9%	$16,740,462	$1,004,427.72
ULAR	603649	Block A	50%	0.80	1,162	0	1,162	9,795	11.9%	$1,120,944	$67,256.64
ULAR	603949	Block A	50%	0.05	65	0	65	630	10.4%	$63,053	$3,783.19
ULAR	604149	Block A	50%	0.91	1,321	0	1,321	11,468	11.5%	$1,275,074	$76,504.43
ULAR	604249	Block A	50%	0.42	603	0	603	5,561	10.8%	$581,490	$34,889.38
ULAR	604449	Block A	50%	0.98	1,416	0	1,416	29,546	4.8%	$1,366,151	$81,969.03
ULAR	604949	Block A	50%	0.77	1,118	0	1,118	21,626	5.2%	$1,078,909	$64,734.52
ULAR	605849	Block A	50%	1.44	2,091	0	2,091	12,893	16.2%	$2,017,699	$121,061.95
ULAR	606349	Block A	50%	0.79	1,147	0	1,147	10,652	10.8%	$1,106,932	$66,415.93
ULAR	606449	Block A	50%	1.06	1,539	0	1,539	14,017	11.0%	$1,485,251	$89,115.05
ULAR	635849	Block A	50%	0.01	15	0	15	129	11.2%	$14,012	$840.71
ULAR	635949	Block A	50%	0.33	472	0	472	7,835	6.0%	$455,384	$27,323.01
ULAR	636849	Block A	50%	0.01	15	0	15	24,996	0.1%	$14,012	$840.71
ULAR	637049	Block A	50%	0.01	7	0	7	382	1.9%	$7,006	$420.35
ULAR	638249	Block A	50%	0.01	15	0	15	3,949	0.4%	$14,012	$840.71
ULAR	639149	Block A	50%	1.30	1,880	17,909	0	40,639	0.0%	$0	$0.00

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ULAR	639449	Block A	50%	0.73	1,053	0	1,053	82,266	1.3%	$1,015,856	$60,951.33
ULAR	639549	Block A	50%	0.81	1,169	0	1,169	21,909	5.3%	$1,127,950	$67,676.99
ULAR	639749	Block A	50%	0.49	711	0	711	7,452	9.5%	$686,578	$41,194.69
ULAR	639949	Block A	50%	0.06	87	0	87	2,437	3.6%	$84,071	$5,044.25
ULAR	640049	Block A	50%	0.08	109	0	109	2,336	4.7%	$105,089	$6,305.31
ULAR	640749	Block A	50%	1.45	2,098	0	2,098	17,211	12.2%	$2,024,705	$121,482.31
ULAR	640849	Block A	50%	1.49	2,163	523	1,641	21,913	7.7%	$1,583,157	$94,989.40
ULAR	640949	Block A	50%	0.22	312	0	312	3,269	9.6%	$301,254	$18,075.22
ULAR	641049	Block A	50%	0.82	1,183	0	1,183	8,859	13.4%	$1,141,962	$68,517.70
ULAR	641149	Block A	50%	0.35	501	0	501	3,142	15.9%	$483,407	$29,004.43
ULAR	647549	Block A	50%	0.62	900	4,298	0	22,132	0.0%	$0	$0.00
ULAR	647649	Block A	50%	0.53	770	0	770	11,007	7.0%	$742,625	$44,557.52
ULAR	649149	Block A	50%	0.06	80	0	80	1,602	5.0%	$77,065	$4,623.89
ULAR	649449	Block A	50%	0.10	138	0	138	1,465	9.4%	$133,112	$7,986.73
ULAR	649549	Block A	50%	0.85	1,227	0	1,227	10,673	11.5%	$1,183,997	$71,039.83
ULAR	649649	Block A	50%	0.43	617	0	617	11,847	5.2%	$595,502	$35,730.09
ULAR	651249	Block A	50%	0.13	189	0	189	2,336	8.1%	$182,153	$10,929.20
ULAR	656949	Block A	50%	0.09	131	241	0	1,702	0.0%	$0	$0.00
ULAR	657149	Block A	50%	0.22	312	0	312	2,324	13.4%	$301,254	$18,075.22
ULAR	660349	Block A	50%	0.57	820	0	820	7,488	11.0%	$791,667	$47,500.00
ULAR	661049	Block A	50%	0.02	29	0	29	554	5.2%	$28,024	$1,681.42
ULAR	661249	Block A	50%	0.56	806	0	806	15,363	5.2%	$777,655	$46,659.29
ULAR	661749	Block A	50%	0.21	305	0	305	10,222	3.0%	$294,248	$17,654.87
ULAR	661849	Block A	50%	0.64	922	0	922	12,930	7.1%	$889,749	$53,384.96
ULAR	662149	Block A	50%	0.64	929	2,617	0	17,898	0.0%	$0	$0.00
ULAR	662249	Block A	50%	0.19	276	0	276	7,651	3.6%	$266,224	$15,973.45
ULAR	662949	Block A	50%	0.84	1,212	0	1,212	12,780	9.5%	$1,169,985	$70,199.12
ULAR	663549	Block A	50%	0.02	29	0	29	222	13.1%	$28,024	$1,681.42
ULAR	663649	Block A	50%	0.16	225	0	225	7,564	3.0%	$217,183	$13,030.97
ULAR	663749	Block A	50%	0.22	319	0	319	2,186	14.6%	$308,260	$18,495.58
ULAR	663849	Block A	50%	0.01	7	0	7	263	2.8%	$7,006	$420.35
ULAR	664349	Block A	50%	0.91	1,321	6,361	0	34,671	0.0%	$0	$0.00
ULAR	664649	Block A	50%	0.57	820	0	820	10,545	7.8%	$791,667	$47,500.00
ULAR	664749	Block A	50%	0.93	1,350	0	1,350	13,407	10.1%	$1,303,097	$78,185.84
ULAR	665349	Block A	50%	0.45	646	0	646	11,377	5.7%	$623,525	$37,411.51
ULAR	665549	Block A	50%	0.40	581	0	581	7,494	7.8%	$560,472	$33,628.32
ULAR	665749	Block A	50%	0.04	51	0	51	796	6.4%	$49,041	$2,942.48
ULAR	665949	Block A	50%	0.71	1,024	0	1,024	16,919	6.1%	$987,832	$59,269.91
ULAR	666149	Block A	50%	1.06	1,539	0	1,539	13,933	11.0%	$1,485,251	$89,115.05
ULAR	666249	Block A	50%	1.30	1,888	99	1,789	24,501	7.3%	$1,726,189	$103,571.31
ULAR	666349	Block A	50%	0.39	566	0	566	13,710	4.1%	$546,460	$32,787.61
ULAR	666449	Block A	50%	1.34	1,938	1,600	338	40,705	0.9%	$326,575	$19,594.52
ULAR	666549	Block A	50%	0.26	370	0	370	49,742	0.7%	$357,301	$21,438.05
ULAR	667849	Block A	50%	0.01	7	0	7	155	4.7%	$7,006	$420.35
ULAR	667949	Block A	50%	0.09	131	0	131	2,749	4.8%	$126,106	$7,566.37
ULAR	668249	Block A	50%	0.31	443	2,200	0	10,209	0.0%	$0	$0.00
ULAR	668449	Block A	50%	1.47	2,134	1,000	1,134	38,809	3.0%	$1,094,735	$65,684.08
ULAR	669349	Block A	50%	0.86	1,249	0	1,249	16,735	7.5%	$1,205,015	$72,300.89
ULAR	669749	Block A	50%	0.04	58	0	58	15,780	0.4%	$56,047	$3,362.83
ULAR	672849	Block A	50%	0.01	7	0	7	208	3.5%	$7,006	$420.35
ULAR	673949	Block A	50%	0.01	15	0	15	156	9.3%	$14,012	$840.71
ULAR	682949	Block A	50%	0.30	436	0	436	4,582	9.5%	$420,354	$25,221.24
ULAR	683049	Block A	50%	0.12	167	0	167	16,328	1.0%	$161,136	$9,668.14
ULAR	683149	Block A	50%	0.68	980	0	980	21,017	4.7%	$945,797	$56,747.79
ULAR	683649	Block A	50%	0.73	1,053	0	1,053	8,180	12.9%	$1,015,856	$60,951.33
ULAR	685049	Block A	50%	0.62	893	1,300	0	87,321	0.0%	$0	$0.00
ULAR	685349	Block A	50%	0.31	443	0	443	3,406	13.0%	$427,360	$25,641.59

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ULAR	686049	Block A	50%	0.01	7	0	7	346	2.1%	$7,006	$420.35
ULAR	686249	Block A	50%	0.64	929	0	929	9,974	9.3%	$896,755	$53,805.31
ULAR	686449	Block A	50%	0.07	94	0	94	8,762	1.1%	$91,077	$5,464.60
ULAR	686649	Block A	50%	0.19	269	0	269	13,923	1.9%	$259,218	$15,553.10
ULAR	686849	Block A	50%	0.78	1,133	0	1,133	11,833	9.6%	$1,092,920	$65,575.22
ULAR	687049	Block A	50%	0.15	211	2,140	0	17,607	0.0%	$0	$0.00
ULAR	687249	Block A	50%	1.45	2,098	0	2,098	24,555	8.5%	$2,024,705	$121,482.31
ULAR	687349	Block A	50%	0.08	109	0	109	882	12.4%	$105,089	$6,305.31
ULAR	687449	Block A	50%	0.09	131	0	131	9,082	1.4%	$126,106	$7,566.37
ULAR	687549	Block A	50%	1.43	2,069	0	2,069	52,285	4.0%	$1,996,682	$119,800.89
ULAR	687849	Block A	50%	0.28	399	0	399	17,051	2.3%	$385,325	$23,119.47
ULAR	688049	Block A	50%	0.01	7	0	7	159,856	0.0%	$7,006	$420.35
ULAR	688549	Block A	50%	1.08	1,561	0	1,561	32,895	4.7%	$1,506,269	$90,376.11
ULAR	688749	Block A	50%	0.64	922	0	922	106,831	0.9%	$889,749	$53,384.96
ULAR	688849	Block A	50%	0.80	1,154	0	1,154	16,089	7.2%	$1,113,938	$66,836.29
ULAR	688949	Block A	50%	0.95	1,372	0	1,372	28,517	4.8%	$1,324,115	$79,446.91
ULAR	689349	Block A	50%	0.07	102	0	102	12,536	0.8%	$98,083	$5,884.96
ULAR	690249	Block A	50%	0.55	791	0	791	6,227	12.7%	$763,643	$45,818.59
ULAR	691149	Block A	50%	0.09	131	0	131	702	18.6%	$126,106	$7,566.37
ULAR	691249	Block A	50%	0.91	1,314	0	1,314	9,751	13.5%	$1,268,068	$76,084.07
ULAR	691349	Block A	50%	0.03	44	0	44	2,314	1.9%	$42,035	$2,522.12
ULAR	691549	Block A	50%	0.29	414	0	414	3,804	10.9%	$399,336	$23,960.18
ULAR	691649	Block A	50%	1.50	2,178	0	2,178	21,985	9.9%	$2,101,770	$126,106.20
ULAR	691849	Block A	50%	0.05	73	0	73	1,058	6.9%	$70,059	$4,203.54
ULAR	692049	Block A	50%	0.49	704	5,282	0	10,917	0.0%	$0	$0.00
ULAR	692149	Block A	50%	0.01	7	0	7	7,506	0.1%	$7,006	$420.35
ULAR	692249	Block A	50%	0.57	828	0	828	23,403	3.5%	$798,673	$47,920.36
ULAR	692449	Block A	50%	1.00	1,452	0	1,452	28,188	5.2%	$1,401,180	$84,070.80
ULAR	693449	Block A	50%	0.27	392	0	392	50,427	0.8%	$378,319	$22,699.12
ULAR	694149	Block A	50%	0.01	7	0	7	91	7.9%	$7,006	$420.35
ULAR	694249	Block A	50%	0.52	748	0	748	23,844	3.1%	$721,608	$43,296.46
ULAR	694349	Block A	50%	1.28	1,851	0	1,851	16,975	10.9%	$1,786,505	$107,190.27
ULAR	694449	Block A	50%	0.66	958	0	958	53,331	1.8%	$924,779	$55,486.73
ULAR	694549	Block A	50%	0.64	929	0	929	38,781	2.4%	$896,755	$53,805.31
ULAR	694649	Block A	50%	0.86	1,241	0	1,241	22,598	5.5%	$1,198,009	$71,880.53
ULAR	694849	Block A	50%	0.26	370	0	370	16,137	2.3%	$357,301	$21,438.05
ULAR	694949	Block A	50%	1.13	1,641	0	1,641	28,760	5.7%	$1,583,333	$95,000.00
ULAR	695049	Block A	50%	0.04	58	0	58	2,837	2.0%	$56,047	$3,362.83
ULAR	695149	Block A	50%	1.50	2,171	0	2,171	66,490	3.3%	$2,094,764	$125,685.85
ULAR	695249	Block A	50%	0.10	138	0	138	2,795	4.9%	$133,112	$7,986.73
ULAR	695349	Block A	50%	0.10	145	0	145	16,493	0.9%	$140,118	$8,407.08
ULAR	695449	Block A	50%	0.07	94	0	94	398	23.7%	$91,077	$5,464.60
ULAR	695549	Block A	50%	0.02	22	0	22	2,581	0.8%	$21,018	$1,261.06
ULAR	695849	Block A	50%	0.24	348	0	348	8,127	4.3%	$336,283	$20,176.99
ULAR	695949	Block A	50%	0.05	65	0	65	697	9.4%	$63,053	$3,783.19
ULAR	697449	Block A	50%	0.57	828	0	828	5,844	14.2%	$798,673	$47,920.36
ULAR	697549	Block A	50%	1.35	1,960	0	1,960	24,664	7.9%	$1,891,593	$113,495.58
ULAR	698049	Block A	50%	1.00	1,452	0	1,452	8,545	17.0%	$1,401,180	$84,070.80
ULAR	698149	Block A	50%	0.21	305	0	305	19,584	1.6%	$294,248	$17,654.87
ULAR	698249	Block A	50%	0.80	1,162	0	1,162	15,721	7.4%	$1,120,944	$67,256.64
ULAR	698349	Block A	50%	1.31	1,895	0	1,895	23,123	8.2%	$1,828,540	$109,712.39
ULAR	698549	Block A	50%	1.24	1,800	0	1,800	22,753	7.9%	$1,737,463	$104,247.79
ULAR	698649	Block A	50%	0.37	530	0	530	10,783	4.9%	$511,431	$30,685.84
ULAR	698749	Block A	50%	0.25	363	0	363	15,915	2.3%	$350,295	$21,017.70
ULAR	698849	Block A	50%	0.07	102	0	102	3,386	3.0%	$98,083	$5,884.96
ULAR	699149	Block A	50%	0.22	312	0	312	18,467	1.7%	$301,254	$18,075.22
ULAR	699649	Block A	50%	0.91	1,321	0	1,321	49,258	2.7%	$1,275,074	$76,504.43

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ULAR	699749	Block A	50%	0.17	247	0	247	17,263	1.4%	$238,201	$14,292.04
ULAR	699849	Block A	50%	0.13	182	0	182	1,676	10.8%	$175,148	$10,508.85
ULAR	700049	Block A	50%	0.40	581	0	581	31,563	1.8%	$560,472	$33,628.32
ULAR	700249	Block A	50%	0.46	668	0	668	82,910	0.8%	$644,543	$38,672.57
ULAR	700349	Block A	50%	0.12	167	0	167	20,391	0.8%	$161,136	$9,668.14
ULAR	700449	Block A	50%	0.04	51	0	51	5,054	1.0%	$49,041	$2,942.48
ULAR	700649	Block A	50%	0.78	1,133	0	1,133	14,022	8.1%	$1,092,920	$65,575.22
ULAR	700849	Block A	50%	0.28	399	0	399	2,496	16.0%	$385,325	$23,119.47
ULAR	602449	Block A	50%	4.36	6,323	0	6,323	51,324	12.3%	$6,102,139	$366,128.33
ULAR	604049	Block A	50%	2.57	3,732	0	3,732	25,786	14.5%	$3,601,033	$216,061.96
ULAR	604549	Block A	50%	2.43	3,528	0	3,528	25,721	13.7%	$3,404,867	$204,292.04
ULAR	604649	Block A	50%	1.81	2,621	0	2,621	36,417	7.2%	$2,529,130	$151,747.79
ULAR	604749	Block A	50%	2.78	4,029	0	4,029	29,895	13.5%	$3,888,275	$233,296.47
ULAR	605049	Block A	50%	7.26	10,534	0	10,534	93,155	11.3%	$10,165,561	$609,933.65
ULAR	605149	Block A	50%	1.51	2,193	0	2,193	20,151	10.9%	$2,115,782	$126,946.91
ULAR	605249	Block A	50%	4.36	6,331	0	6,331	38,103	16.6%	$6,109,145	$366,548.69
ULAR	605349	Block A	50%	3.94	5,721	1,088	4,633	30,750	15.6%	$4,470,433	$268,225.99
ULAR	605449	Block A	50%	4.87	7,071	0	7,071	40,190	17.6%	$6,823,747	$409,424.80
ULAR	605549	Block A	50%	7.29	10,578	0	10,578	62,276	17.0%	$10,207,596	$612,455.78
ULAR	605649	Block A	50%	1.64	2,381	0	2,381	21,747	10.9%	$2,297,935	$137,876.11
ULAR	605749	Block A	50%	8.58	12,458	1,890	10,568	89,498	12.1%	$10,198,237	$611,894.22
ULAR	605949	Block A	50%	2.44	3,543	0	3,543	18,455	19.2%	$3,418,879	$205,132.75
ULAR	606149	Block A	50%	2.51	3,645	0	3,645	27,383	13.3%	$3,516,962	$211,017.71
ULAR	606249	Block A	50%	1.69	2,447	0	2,447	19,345	12.6%	$2,360,988	$141,659.30
ULAR	637749	Block A	50%	5.63	8,175	0	8,175	48,770	16.8%	$7,888,643	$473,318.60
ULAR	638349	Block A	50%	3.59	5,205	0	5,205	39,432	13.2%	$5,023,230	$301,393.82
ULAR	638549	Block A	50%	5.17	7,500	0	7,500	54,524	13.8%	$7,237,095	$434,225.68
ULAR	638849	Block A	50%	1.74	2,519	0	2,519	18,427	13.7%	$2,431,047	$145,862.84
ULAR	639049	Block A	50%	1.51	2,193	40,200	0	21,814	0.0%	$0	$0.00
ULAR	639249	Block A	50%	1.62	2,352	0	2,352	16,451	14.3%	$2,269,912	$136,194.70
ULAR	640249	Block A	50%	1.68	2,439	0	2,439	22,079	11.0%	$2,353,982	$141,238.94
ULAR	640649	Block A	50%	2.23	3,231	0	3,231	19,274	16.8%	$3,117,626	$187,057.53
ULAR	661949	Block A	50%	2.34	3,390	1,700	1,690	26,571	6.8%	$1,631,255	$97,875.32
ULAR	662049	Block A	50%	1.92	2,788	2,177	611	25,289	2.6%	$589,266	$35,355.97
ULAR	663949	Block A	50%	3.01	4,363	1,400	2,963	61,761	4.9%	$2,859,546	$171,572.75
ULAR	664049	Block A	50%	1.70	2,461	0	2,461	18,294	13.5%	$2,375,000	$142,500.01
ULAR	664149	Block A	50%	2.44	3,536	3,100	436	31,592	1.5%	$420,373	$25,222.40
ULAR	664549	Block A	50%	3.01	4,371	2,700	1,671	33,778	5.4%	$1,612,052	$96,723.11
ULAR	665049	Block A	50%	2.02	2,926	0	2,926	44,661	6.6%	$2,823,378	$169,402.66
ULAR	665149	Block A	50%	7.14	10,367	10,400	0	82,627	0.0%	$0	$0.00
ULAR	667649	Block A	50%	8.53	12,386	0	12,386	146,120	8.5%	$11,952,065	$717,123.92
ULAR	668749	Block A	50%	8.34	12,110	3,600	8,510	94,668	9.3%	$8,211,841	$492,710.47
ULAR	668849	Block A	50%	2.37	3,434	4,024	0	30,167	0.0%	$0	$0.00
ULAR	683449	Block A	50%	1.90	2,759	0	2,759	17,152	16.1%	$2,662,242	$159,734.52
ULAR	685649	Block A	50%	4.10	5,953	0	5,953	39,744	15.0%	$5,744,838	$344,690.28
ULAR	689149	Block A	50%	1.78	2,585	0	2,585	17,902	14.4%	$2,494,100	$149,646.02
ULAR	689249	Block A	50%	1.72	2,490	0	2,490	25,667	9.7%	$2,403,024	$144,181.42
ULAR	691449	Block A	50%	1.98	2,875	1,240	1,635	64,705	2.6%	$1,577,736	$94,664.18
ULAR	691949	Block A	50%	2.72	3,949	0	3,949	49,356	8.0%	$3,811,210	$228,672.58
ULAR	692349	Block A	50%	3.72	5,401	0	5,401	35,498	15.2%	$5,212,390	$312,743.38
ULAR	692549	Block A	50%	3.57	5,184	2,335	2,849	73,000	4.0%	$2,749,126	$164,947.58
ULAR	692749	Block A	50%	3.33	4,828	0	4,828	33,237	14.5%	$4,658,924	$279,535.41
ULAR	695649	Block A	50%	3.43	4,980	0	4,980	73,143	6.8%	$4,806,047	$288,362.84
ULAR	695749	Block A	50%	3.49	5,067	0	5,067	61,222	8.3%	$4,890,118	$293,407.09
ULAR	696049	Block A	50%	1.91	2,766	0	2,766	20,150	13.7%	$2,669,248	$160,154.87
ULAR	697649	Block A	50%	4.59	6,657	0	6,657	47,566	14.0%	$6,424,410	$385,464.62
ULAR	697749	Block A	50%	1.57	2,280	0	2,280	18,437	12.4%	$2,199,853	$131,991.16

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ULAR	697849	Block A	50%	1.82	2,635	0	2,635	16,755	15.7%	$2,543,142	$152,588.50
ULAR	697949	Block A	50%	3.01	4,371	0	4,371	38,524	11.3%	$4,217,552	$253,053.11
ULAR	699449	Block A	50%	1.71	2,483	0	2,483	24,115	10.3%	$2,396,018	$143,761.07
ULAR	699549	Block A	50%	2.39	3,470	0	3,470	36,996	9.4%	$3,348,820	$200,929.21
ULAR	699949	Block A	50%	2.06	2,991	0	2,991	18,018	16.6%	$2,886,431	$173,185.85
ULAR	700549	Block A	50%	7.79	11,304	19,784	0	78,148	0.0%	$0	$0.00
DC	Dominguez Channel Estuary	Block C	50%	13.50	19,602	4,369	15,233	132,693	11.9%	$14,700,107	$882,006.43
DC	LA LB Harbor	Block C	50%	25.00	36,300	90,393	0	667,581	0.0%	$0	$0.00
DC	Dominguez Channel	Block C	50%	9.50	13,794	5,901	7,893	168,313	4.9%	$7,616,561	$456,993.65
ULAR	604349	Block B	50%	11.47	16,654	5,229	11,425	83,255	14.6%	$11,025,519	$661,531.15
ULAR	638449	Block B	50%	10.66	15,478	1,260	14,218	91,216	15.8%	$13,720,450	$823,226.98
ULAR	664949	Block B	50%	11.96	17,366	0	17,366	166,134	10.5%	$16,758,113	$1,005,486.77
ULAR	692849	Block B	50%	16.16	23,464	6,117	17,348	152,407	11.9%	$16,740,462	$1,004,427.72
ULAR	603649	Block B	50%	0.80	1,162	0	1,162	9,795	11.9%	$1,120,944	$67,256.64
ULAR	603949	Block B	50%	0.05	65	0	65	630	10.4%	$63,053	$3,783.19
ULAR	604149	Block B	50%	0.91	1,321	0	1,321	11,468	11.5%	$1,275,074	$76,504.43
ULAR	604249	Block B	50%	0.42	603	0	603	5,561	10.8%	$581,490	$34,889.38
ULAR	604449	Block B	50%	0.98	1,416	0	1,416	29,546	4.8%	$1,366,151	$81,969.03
ULAR	604949	Block B	50%	0.77	1,118	0	1,118	21,626	5.2%	$1,078,909	$64,734.52
ULAR	605849	Block B	50%	1.44	2,091	0	2,091	12,893	16.2%	$2,017,699	$121,061.95
ULAR	606349	Block B	50%	0.79	1,147	0	1,147	10,652	10.8%	$1,106,932	$66,415.93
ULAR	606449	Block B	50%	1.06	1,539	0	1,539	14,017	11.0%	$1,485,251	$89,115.05
ULAR	635849	Block B	50%	0.01	15	0	15	129	11.2%	$14,012	$840.71
ULAR	635949	Block B	50%	0.33	472	0	472	7,835	6.0%	$455,384	$27,323.01
ULAR	636849	Block B	50%	0.01	15	0	15	24,996	0.1%	$14,012	$840.71
ULAR	637049	Block B	50%	0.01	7	0	7	382	1.9%	$7,006	$420.35
ULAR	638249	Block B	50%	0.01	15	0	15	3,949	0.4%	$14,012	$840.71
ULAR	639149	Block B	50%	1.30	1,880	17,909	0	40,639	0.0%	$0	$0.00
ULAR	639449	Block B	50%	0.73	1,053	0	1,053	82,266	1.3%	$1,015,856	$60,951.33
ULAR	639549	Block B	50%	0.81	1,169	0	1,169	21,909	5.3%	$1,127,950	$67,676.99
ULAR	639749	Block B	50%	0.49	711	0	711	7,452	9.5%	$686,578	$41,194.69
ULAR	639949	Block B	50%	0.06	87	0	87	2,437	3.6%	$84,071	$5,044.25
ULAR	640049	Block B	50%	0.08	109	0	109	2,336	4.7%	$105,089	$6,305.31
ULAR	640749	Block B	50%	1.45	2,098	0	2,098	17,211	12.2%	$2,024,705	$121,482.31
ULAR	640849	Block B	50%	1.49	2,163	523	1,641	21,913	7.7%	$1,583,157	$94,989.40
ULAR	640949	Block B	50%	0.22	312	0	312	3,269	9.6%	$301,254	$18,075.22
ULAR	641049	Block B	50%	0.82	1,183	0	1,183	8,859	13.4%	$1,141,962	$68,517.70
ULAR	641149	Block B	50%	0.35	501	0	501	3,142	15.9%	$483,407	$29,004.43
ULAR	647549	Block B	50%	0.62	900	4,298	0	22,132	0.0%	$0	$0.00
ULAR	647649	Block B	50%	0.53	770	0	770	11,007	7.0%	$742,625	$44,557.52
ULAR	649149	Block B	50%	0.06	80	0	80	1,602	5.0%	$77,065	$4,623.89
ULAR	649449	Block B	50%	0.10	138	0	138	1,465	9.4%	$133,112	$7,986.73
ULAR	649549	Block B	50%	0.85	1,227	0	1,227	10,673	11.5%	$1,183,997	$71,039.83
ULAR	649649	Block B	50%	0.43	617	0	617	11,847	5.2%	$595,502	$35,730.09
ULAR	651249	Block B	50%	0.13	189	0	189	2,336	8.1%	$182,153	$10,929.20
ULAR	656949	Block B	50%	0.09	131	241	0	1,702	0.0%	$0	$0.00
ULAR	657149	Block B	50%	0.22	312	0	312	2,324	13.4%	$301,254	$18,075.22
ULAR	660349	Block B	50%	0.57	820	0	820	7,488	11.0%	$791,667	$47,500.00
ULAR	661049	Block B	50%	0.02	29	0	29	554	5.2%	$28,024	$1,681.42
ULAR	661249	Block B	50%	0.56	806	0	806	15,363	5.2%	$777,655	$46,659.29
ULAR	661749	Block B	50%	0.21	305	0	305	10,222	3.0%	$294,248	$17,654.87
ULAR	661849	Block B	50%	0.64	922	0	922	12,930	7.1%	$889,749	$53,384.96
ULAR	662149	Block B	50%	0.64	929	2,617	0	17,898	0.0%	$0	$0.00
ULAR	662249	Block B	50%	0.19	276	0	276	7,651	3.6%	$266,224	$15,973.45
ULAR	662949	Block B	50%	0.84	1,212	0	1,212	12,780	9.5%	$1,169,985	$70,199.12
ULAR	663549	Block B	50%	0.02	29	0	29	222	13.1%	$28,024	$1,681.42

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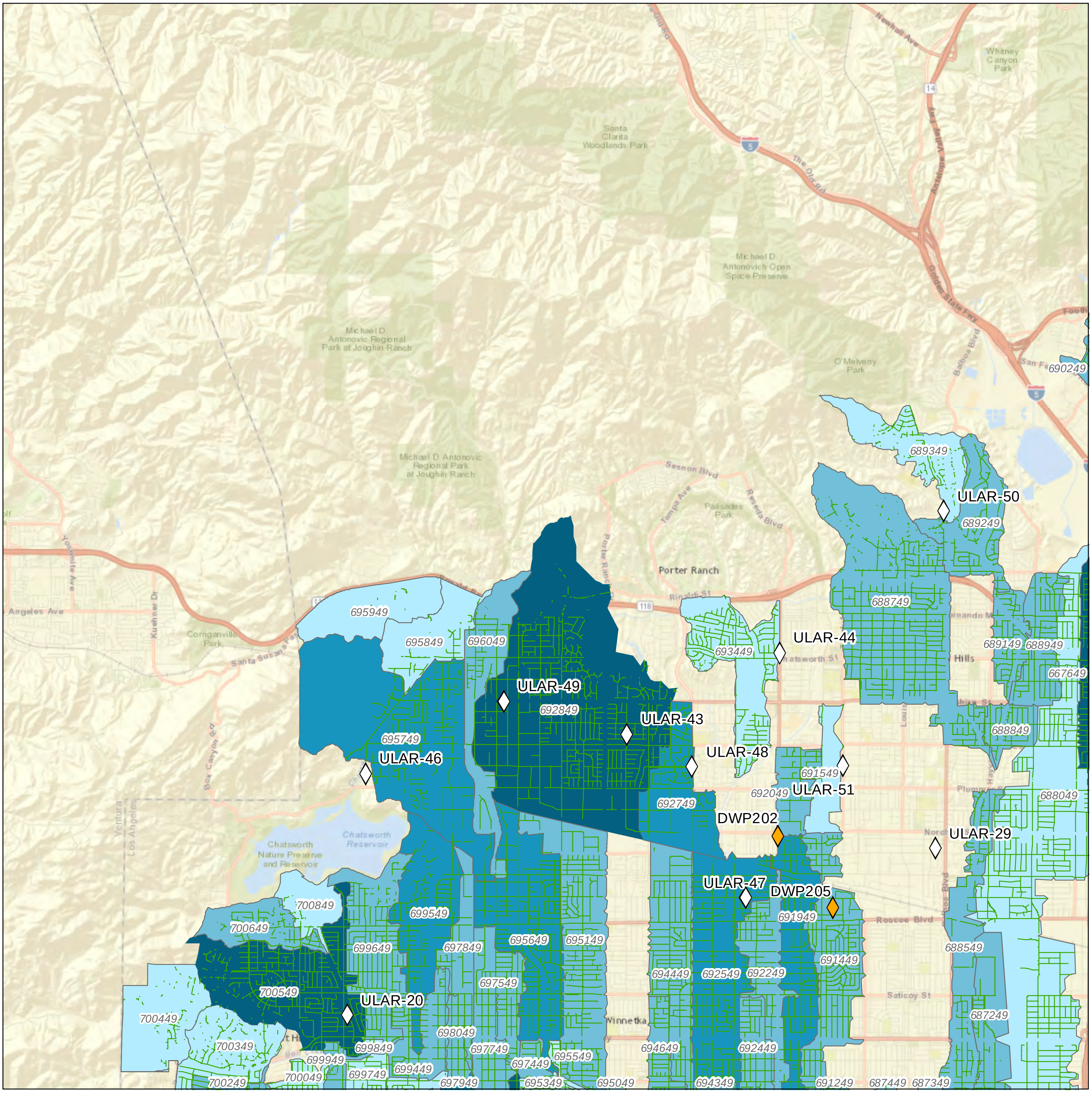
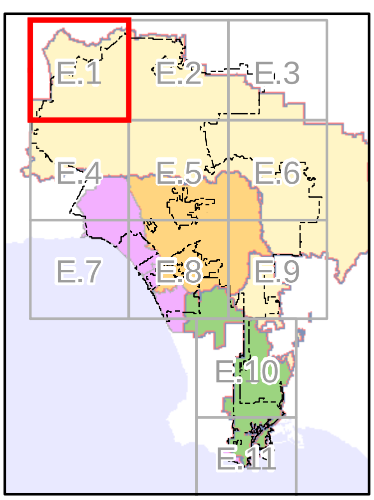
ULAR	663649	Block B	50%	0.16	225	0	225	7,564	3.0%	$217,183	$13,030.97
ULAR	663749	Block B	50%	0.22	319	0	319	2,186	14.6%	$308,260	$18,495.58
ULAR	663849	Block B	50%	0.01	7	0	7	263	2.8%	$7,006	$420.35
ULAR	664349	Block B	50%	0.91	1,321	6,361	0	34,671	0.0%	$0	$0.00
ULAR	664649	Block B	50%	0.57	820	0	820	10,545	7.8%	$791,667	$47,500.00
ULAR	664749	Block B	50%	0.93	1,350	0	1,350	13,407	10.1%	$1,303,097	$78,185.84
ULAR	665349	Block B	50%	0.45	646	0	646	11,377	5.7%	$623,525	$37,411.51
ULAR	665549	Block B	50%	0.40	581	0	581	7,494	7.8%	$560,472	$33,628.32
ULAR	665749	Block B	50%	0.04	51	0	51	796	6.4%	$49,041	$2,942.48
ULAR	665949	Block B	50%	0.71	1,024	0	1,024	16,919	6.1%	$987,832	$59,269.91
ULAR	666149	Block B	50%	1.06	1,539	0	1,539	13,933	11.0%	$1,485,251	$89,115.05
ULAR	666249	Block B	50%	1.30	1,888	99	1,789	24,501	7.3%	$1,726,189	$103,571.31
ULAR	666349	Block B	50%	0.39	566	0	566	13,710	4.1%	$546,460	$32,787.61
ULAR	666449	Block B	50%	1.34	1,938	1,600	338	40,705	0.9%	$326,575	$19,594.52
ULAR	666549	Block B	50%	0.26	370	0	370	49,742	0.7%	$357,301	$21,438.05
ULAR	667849	Block B	50%	0.01	7	0	7	155	4.7%	$7,006	$420.35
ULAR	667949	Block B	50%	0.09	131	0	131	2,749	4.8%	$126,106	$7,566.37
ULAR	668249	Block B	50%	0.31	443	2,200	0	10,209	0.0%	$0	$0.00
ULAR	668449	Block B	50%	1.47	2,134	1,000	1,134	38,809	3.0%	$1,094,735	$65,684.08
ULAR	669349	Block B	50%	0.86	1,249	0	1,249	16,735	7.5%	$1,205,015	$72,300.89
ULAR	669749	Block B	50%	0.04	58	0	58	15,780	0.4%	$56,047	$3,362.83
ULAR	672849	Block B	50%	0.01	7	0	7	208	3.5%	$7,006	$420.35
ULAR	673949	Block B	50%	0.01	15	0	15	156	9.3%	$14,012	$840.71
ULAR	682949	Block B	50%	0.30	436	0	436	4,582	9.5%	$420,354	$25,221.24
ULAR	683049	Block B	50%	0.12	167	0	167	16,328	1.0%	$161,136	$9,668.14
ULAR	683149	Block B	50%	0.68	980	0	980	21,017	4.7%	$945,797	$56,747.79
ULAR	683649	Block B	50%	0.73	1,053	0	1,053	8,180	12.9%	$1,015,856	$60,951.33
ULAR	685049	Block B	50%	0.62	893	1,300	0	87,321	0.0%	$0	$0.00
ULAR	685349	Block B	50%	0.31	443	0	443	3,406	13.0%	$427,360	$25,641.59
ULAR	686049	Block B	50%	0.01	7	0	7	346	2.1%	$7,006	$420.35
ULAR	686249	Block B	50%	0.64	929	0	929	9,974	9.3%	$896,755	$53,805.31
ULAR	686449	Block B	50%	0.07	94	0	94	8,762	1.1%	$91,077	$5,464.60
ULAR	686649	Block B	50%	0.19	269	0	269	13,923	1.9%	$259,218	$15,553.10
ULAR	686849	Block B	50%	0.78	1,133	0	1,133	11,833	9.6%	$1,092,920	$65,575.22
ULAR	687049	Block B	50%	0.15	211	2,140	0	17,607	0.0%	$0	$0.00
ULAR	687249	Block B	50%	1.45	2,098	0	2,098	24,555	8.5%	$2,024,705	$121,482.31
ULAR	687349	Block B	50%	0.08	109	0	109	882	12.4%	$105,089	$6,305.31
ULAR	687449	Block B	50%	0.09	131	0	131	9,082	1.4%	$126,106	$7,566.37
ULAR	687549	Block B	50%	1.43	2,069	0	2,069	52,285	4.0%	$1,996,682	$119,800.89
ULAR	687849	Block B	50%	0.28	399	0	399	17,051	2.3%	$385,325	$23,119.47
ULAR	688049	Block B	50%	0.01	7	0	7	159,856	0.0%	$7,006	$420.35
ULAR	688549	Block B	50%	1.08	1,561	0	1,561	32,895	4.7%	$1,506,269	$90,376.11
ULAR	688749	Block B	50%	0.64	922	0	922	106,831	0.9%	$889,749	$53,384.96
ULAR	688849	Block B	50%	0.80	1,154	0	1,154	16,089	7.2%	$1,113,938	$66,836.29
ULAR	688949	Block B	50%	0.95	1,372	0	1,372	28,517	4.8%	$1,324,115	$79,446.91
ULAR	689349	Block B	50%	0.07	102	0	102	12,536	0.8%	$98,083	$5,884.96
ULAR	690249	Block B	50%	0.55	791	0	791	6,227	12.7%	$763,643	$45,818.59
ULAR	691149	Block B	50%	0.09	131	0	131	702	18.6%	$126,106	$7,566.37
ULAR	691249	Block B	50%	0.91	1,314	0	1,314	9,751	13.5%	$1,268,068	$76,084.07
ULAR	691349	Block B	50%	0.03	44	0	44	2,314	1.9%	$42,035	$2,522.12
ULAR	691549	Block B	50%	0.29	414	0	414	3,804	10.9%	$399,336	$23,960.18
ULAR	691649	Block B	50%	1.50	2,178	0	2,178	21,985	9.9%	$2,101,770	$126,106.20
ULAR	691849	Block B	50%	0.05	73	0	73	1,058	6.9%	$70,059	$4,203.54
ULAR	692049	Block B	50%	0.49	704	5,282	0	10,917	0.0%	$0	$0.00
ULAR	692149	Block B	50%	0.01	7	0	7	7,506	0.1%	$7,006	$420.35
ULAR	692249	Block B	50%	0.57	828	0	828	23,403	3.5%	$798,673	$47,920.36
ULAR	692449	Block B	50%	1.00	1,452	0	1,452	28,188	5.2%	$1,401,180	$84,070.80

WMA	Catchment ID	Block	Incremental Implementation Percentage by Block	EWMP Green Streets Implementation Target (ac-ft)	Converted Implementation Target (ft)	Length of Near Term Green Streets Projects (ft)	Remaining Green Streets Implementation Target (ft)	Preliminary EWMP Green Streets Opportunity (ft)	Green Streets Opporrunity Utilization Requirement	Capital Cost ($)	Annual O&M Cost ($ per year)
ULAR	693449	Block B	50%	0.27	392	0	392	50,427	0.8%	$378,319	$22,699.12
ULAR	694149	Block B	50%	0.01	7	0	7	91	7.9%	$7,006	$420.35
ULAR	694249	Block B	50%	0.52	748	0	748	23,844	3.1%	$721,608	$43,296.46
ULAR	694349	Block B	50%	1.28	1,851	0	1,851	16,975	10.9%	$1,786,505	$107,190.27
ULAR	694449	Block B	50%	0.66	958	0	958	53,331	1.8%	$924,779	$55,486.73
ULAR	694549	Block B	50%	0.64	929	0	929	38,781	2.4%	$896,755	$53,805.31
ULAR	694649	Block B	50%	0.86	1,241	0	1,241	22,598	5.5%	$1,198,009	$71,880.53
ULAR	694849	Block B	50%	0.26	370	0	370	16,137	2.3%	$357,301	$21,438.05
ULAR	694949	Block B	50%	1.13	1,641	0	1,641	28,760	5.7%	$1,583,333	$95,000.00
ULAR	695049	Block B	50%	0.04	58	0	58	2,837	2.0%	$56,047	$3,362.83
ULAR	695149	Block B	50%	1.50	2,171	0	2,171	66,490	3.3%	$2,094,764	$125,685.85
ULAR	695249	Block B	50%	0.10	138	0	138	2,795	4.9%	$133,112	$7,986.73
ULAR	695349	Block B	50%	0.10	145	0	145	16,493	0.9%	$140,118	$8,407.08
ULAR	695449	Block B	50%	0.07	94	0	94	398	23.7%	$91,077	$5,464.60
ULAR	695549	Block B	50%	0.02	22	0	22	2,581	0.8%	$21,018	$1,261.06
ULAR	695849	Block B	50%	0.24	348	0	348	8,127	4.3%	$336,283	$20,176.99
ULAR	695949	Block B	50%	0.05	65	0	65	697	9.4%	$63,053	$3,783.19
ULAR	697449	Block B	50%	0.57	828	0	828	5,844	14.2%	$798,673	$47,920.36
ULAR	697549	Block B	50%	1.35	1,960	0	1,960	24,664	7.9%	$1,891,593	$113,495.58
ULAR	698049	Block B	50%	1.00	1,452	0	1,452	8,545	17.0%	$1,401,180	$84,070.80
ULAR	698149	Block B	50%	0.21	305	0	305	19,584	1.6%	$294,248	$17,654.87
ULAR	698249	Block B	50%	0.80	1,162	0	1,162	15,721	7.4%	$1,120,944	$67,256.64
ULAR	698349	Block B	50%	1.31	1,895	0	1,895	23,123	8.2%	$1,828,540	$109,712.39
ULAR	698549	Block B	50%	1.24	1,800	0	1,800	22,753	7.9%	$1,737,463	$104,247.79
ULAR	698649	Block B	50%	0.37	530	0	530	10,783	4.9%	$511,431	$30,685.84
ULAR	698749	Block B	50%	0.25	363	0	363	15,915	2.3%	$350,295	$21,017.70
ULAR	698849	Block B	50%	0.07	102	0	102	3,386	3.0%	$98,083	$5,884.96
ULAR	699149	Block B	50%	0.22	312	0	312	18,467	1.7%	$301,254	$18,075.22
ULAR	699649	Block B	50%	0.91	1,321	0	1,321	49,258	2.7%	$1,275,074	$76,504.43
ULAR	699749	Block B	50%	0.17	247	0	247	17,263	1.4%	$238,201	$14,292.04
ULAR	699849	Block B	50%	0.13	182	0	182	1,676	10.8%	$175,148	$10,508.85
ULAR	700049	Block B	50%	0.40	581	0	581	31,563	1.8%	$560,472	$33,628.32
ULAR	700249	Block B	50%	0.46	668	0	668	82,910	0.8%	$644,543	$38,672.57
ULAR	700349	Block B	50%	0.12	167	0	167	20,391	0.8%	$161,136	$9,668.14
ULAR	700449	Block B	50%	0.04	51	0	51	5,054	1.0%	$49,041	$2,942.48
ULAR	700649	Block B	50%	0.78	1,133	0	1,133	14,022	8.1%	$1,092,920	$65,575.22
ULAR	700849	Block B	50%	0.28	399	0	399	2,496	16.0%	$385,325	$23,119.47
ULAR	602449	Block B	50%	4.36	6,323	0	6,323	51,324	12.3%	$6,102,139	$366,128.33
ULAR	604049	Block B	50%	2.57	3,732	0	3,732	25,786	14.5%	$3,601,033	$216,061.96
ULAR	604549	Block B	50%	2.43	3,528	0	3,528	25,721	13.7%	$3,404,867	$204,292.04
ULAR	604649	Block B	50%	1.81	2,621	0	2,621	36,417	7.2%	$2,529,130	$151,747.79
ULAR	604749	Block B	50%	2.78	4,029	0	4,029	29,895	13.5%	$3,888,275	$233,296.47
ULAR	605049	Block B	50%	7.26	10,534	0	10,534	93,155	11.3%	$10,165,561	$609,933.65
ULAR	605149	Block B	50%	1.51	2,193	0	2,193	20,151	10.9%	$2,115,782	$126,946.91
ULAR	605249	Block B	50%	4.36	6,331	0	6,331	38,103	16.6%	$6,109,145	$366,548.69
ULAR	605349	Block B	50%	3.94	5,721	1,088	4,633	30,750	15.6%	$4,470,433	$268,225.99
ULAR	605449	Block B	50%	4.87	7,071	0	7,071	40,190	17.6%	$6,823,747	$409,424.80
ULAR	605549	Block B	50%	7.29	10,578	0	10,578	62,276	17.0%	$10,207,596	$612,455.78
ULAR	605649	Block B	50%	1.64	2,381	0	2,381	21,747	10.9%	$2,297,935	$137,876.11
ULAR	605749	Block B	50%	8.58	12,458	1,890	10,568	89,498	12.1%	$10,198,237	$611,894.22
ULAR	605949	Block B	50%	2.44	3,543	0	3,543	18,455	19.2%	$3,418,879	$205,132.75
ULAR	606149	Block B	50%	2.51	3,645	0	3,645	27,383	13.3%	$3,516,962	$211,017.71
ULAR	606249	Block B	50%	1.69	2,447	0	2,447	19,345	12.6%	$2,360,988	$141,659.30
ULAR	637749	Block B	50%	5.63	8,175	0	8,175	48,770	16.8%	$7,888,643	$473,318.60
ULAR	638349	Block B	50%	3.59	5,205	0	5,205	39,432	13.2%	$5,023,230	$301,393.82
ULAR	638549	Block B	50%	5.17	7,500	0	7,500	54,524	13.8%	$7,237,095	$434,225.68
ULAR	638849	Block B	50%	1.74	2,519	0	2,519	18,427	13.7%	$2,431,047	$145,862.84

WMA	Catchment ID	Block	Incremental Implementation Percentage by Block	EWMP Green Streets Implementation Target (ac-ft)	Converted Implementation Target (ft)	Length of Near Term Green Streets Projects (ft)	Remaining Green Streets Implementation Target (ft)	Preliminary EWMP Green Streets Opportunity (ft)	Green Streets Opporrunity Utilization Requirement	Capital Cost ($)	Annual O&M Cost ($ per year)
ULAR	639049	Block B	50%	1.51	2,193	40,200	0	21,814	0.0%	$0	$0.00
ULAR	639249	Block B	50%	1.62	2,352	0	2,352	16,451	14.3%	$2,269,912	$136,194.70
ULAR	640249	Block B	50%	1.68	2,439	0	2,439	22,079	11.0%	$2,353,982	$141,238.94
ULAR	640649	Block B	50%	2.23	3,231	0	3,231	19,274	16.8%	$3,117,626	$187,057.53
ULAR	661949	Block B	50%	2.34	3,390	1,700	1,690	26,571	6.8%	$1,631,255	$97,875.32
ULAR	662049	Block B	50%	1.92	2,788	2,177	611	25,289	2.6%	$589,266	$35,355.97
ULAR	663949	Block B	50%	3.01	4,363	1,400	2,963	61,761	4.9%	$2,859,546	$171,572.75
ULAR	664049	Block B	50%	1.70	2,461	0	2,461	18,294	13.5%	$2,375,000	$142,500.01
ULAR	664149	Block B	50%	2.44	3,536	3,100	436	31,592	1.5%	$420,373	$25,222.40
ULAR	664549	Block B	50%	3.01	4,371	2,700	1,671	33,778	5.4%	$1,612,052	$96,723.11
ULAR	665049	Block B	50%	2.02	2,926	0	2,926	44,661	6.6%	$2,823,378	$169,402.66
ULAR	665149	Block B	50%	7.14	10,367	10,400	0	82,627	0.0%	$0	$0.00
ULAR	667649	Block B	50%	8.53	12,386	0	12,386	146,120	8.5%	$11,952,065	$717,123.92
ULAR	668749	Block B	50%	8.34	12,110	3,600	8,510	94,668	9.3%	$8,211,841	$492,710.47
ULAR	668849	Block B	50%	2.37	3,434	4,024	0	30,167	0.0%	$0	$0.00
ULAR	683449	Block B	50%	1.90	2,759	0	2,759	17,152	16.1%	$2,662,242	$159,734.52
ULAR	685649	Block B	50%	4.10	5,953	0	5,953	39,744	15.0%	$5,744,838	$344,690.28
ULAR	689149	Block B	50%	1.78	2,585	0	2,585	17,902	14.4%	$2,494,100	$149,646.02
ULAR	689249	Block B	50%	1.72	2,490	0	2,490	25,667	9.7%	$2,403,024	$144,181.42
ULAR	691449	Block B	50%	1.98	2,875	1,240	1,635	64,705	2.6%	$1,577,736	$94,664.18
ULAR	691949	Block B	50%	2.72	3,949	0	3,949	49,356	8.0%	$3,811,210	$228,672.58
ULAR	692349	Block B	50%	3.72	5,401	0	5,401	35,498	15.2%	$5,212,390	$312,743.38
ULAR	692549	Block B	50%	3.57	5,184	2,335	2,849	73,000	4.0%	$2,749,126	$164,947.58
ULAR	692749	Block B	50%	3.33	4,828	0	4,828	33,237	14.5%	$4,658,924	$279,535.41
ULAR	695649	Block B	50%	3.43	4,980	0	4,980	73,143	6.8%	$4,806,047	$288,362.84
ULAR	695749	Block B	50%	3.49	5,067	0	5,067	61,222	8.3%	$4,890,118	$293,407.09
ULAR	696049	Block B	50%	1.91	2,766	0	2,766	20,150	13.7%	$2,669,248	$160,154.87
ULAR	697649	Block B	50%	4.59	6,657	0	6,657	47,566	14.0%	$6,424,410	$385,464.62
ULAR	697749	Block B	50%	1.57	2,280	0	2,280	18,437	12.4%	$2,199,853	$131,991.16
ULAR	697849	Block B	50%	1.82	2,635	0	2,635	16,755	15.7%	$2,543,142	$152,588.50
ULAR	697949	Block B	50%	3.01	4,371	0	4,371	38,524	11.3%	$4,217,552	$253,053.11
ULAR	699449	Block B	50%	1.71	2,483	0	2,483	24,115	10.3%	$2,396,018	$143,761.07
ULAR	699549	Block B	50%	2.39	3,470	0	3,470	36,996	9.4%	$3,348,820	$200,929.21
ULAR	699949	Block B	50%	2.06	2,991	0	2,991	18,018	16.6%	$2,886,431	$173,185.85
ULAR	700549	Block B	50%	7.79	11,304	19,784	0	78,148	0.0%	$0	$0.00
Subtotal				**1,066.56**	**1,548,645**	**1,009,220**	**1,183,272**	**20,974,154**	**5.9%**	**$1,141,857,573**	**$68,511,454**





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

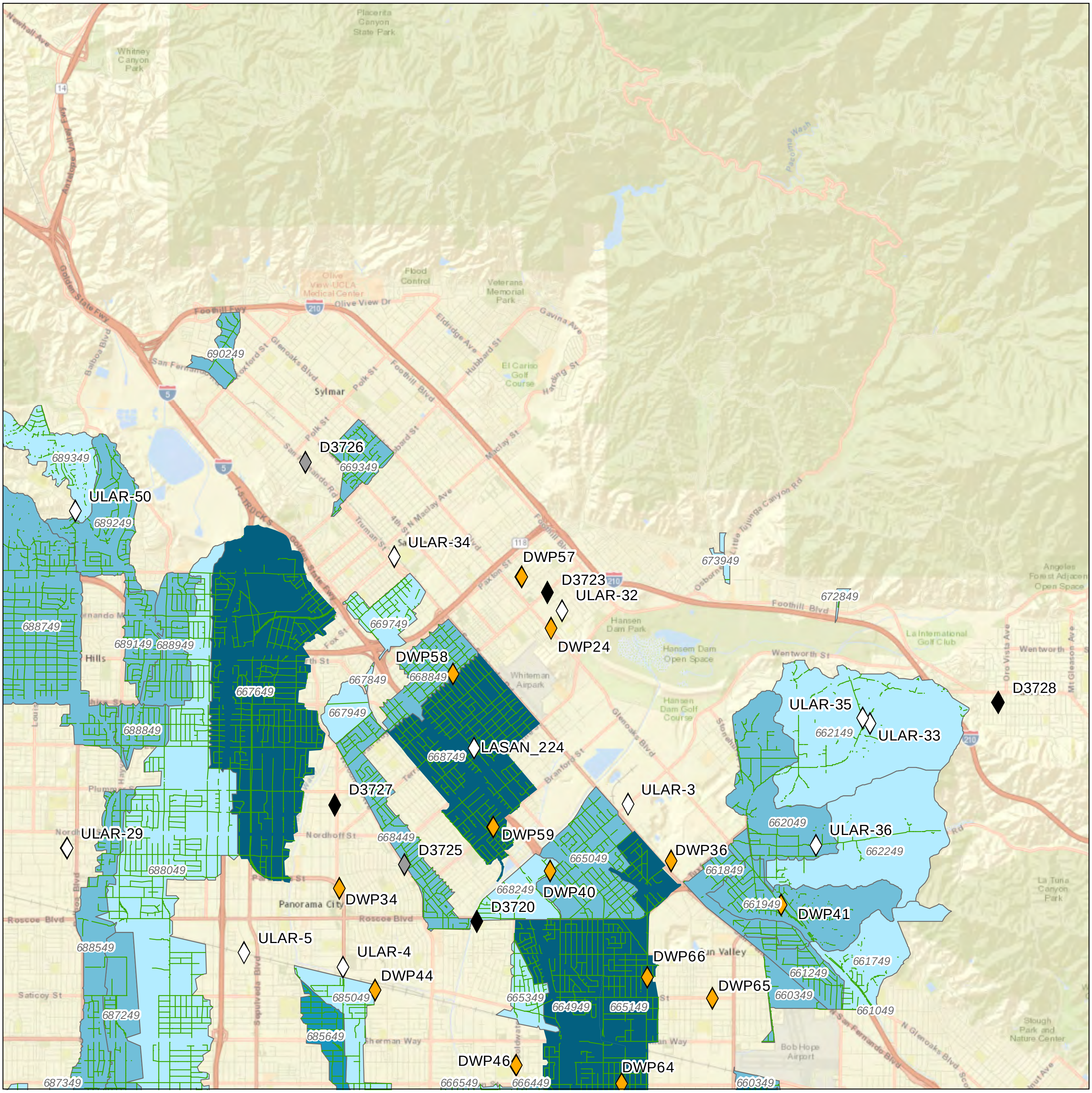
Green Streets Implementation Target

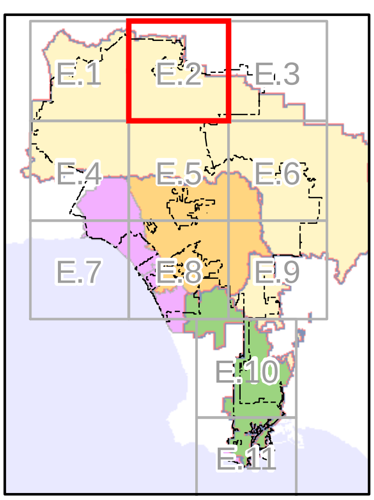
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.1
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

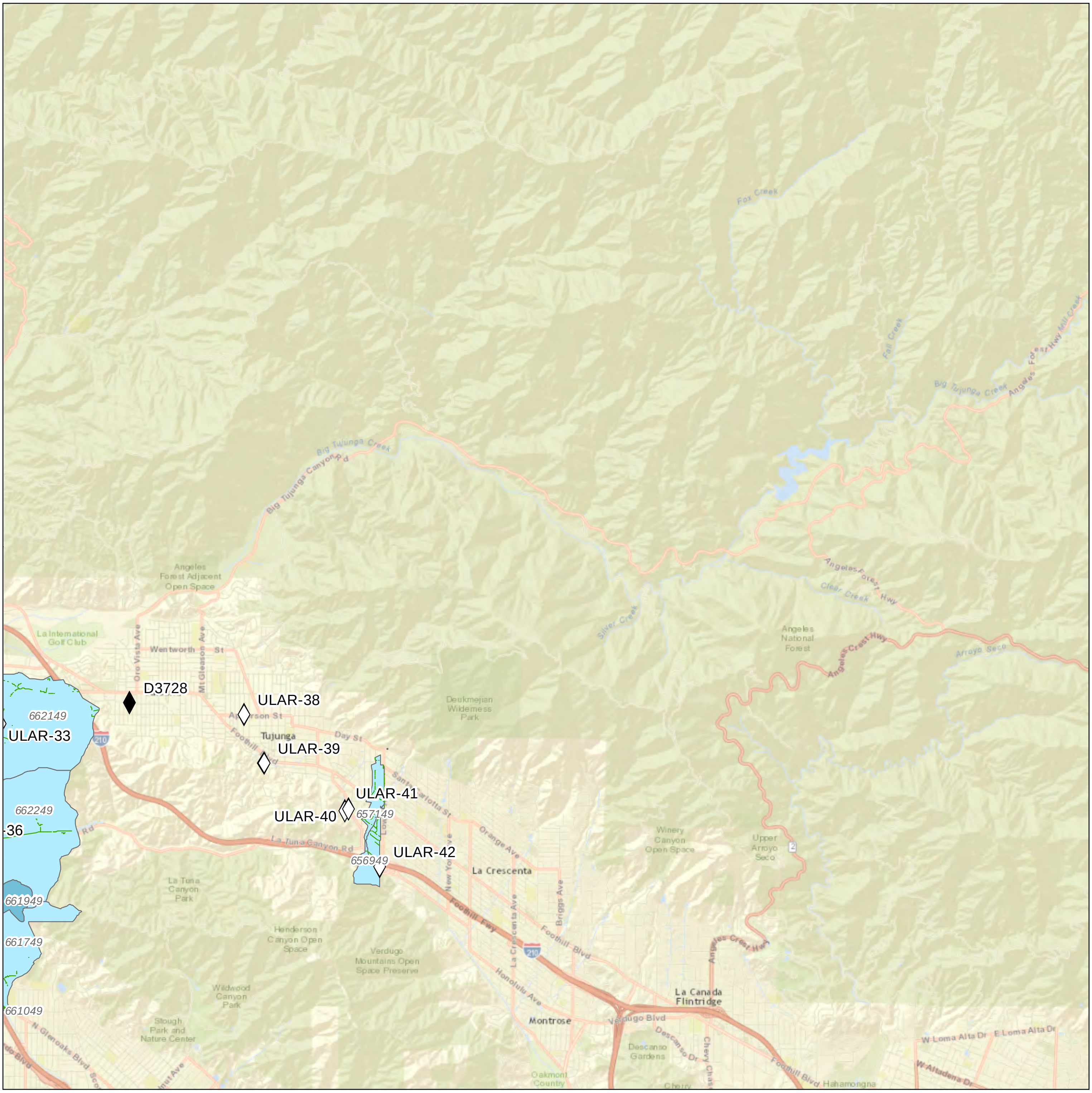
Green Streets Implementation Target

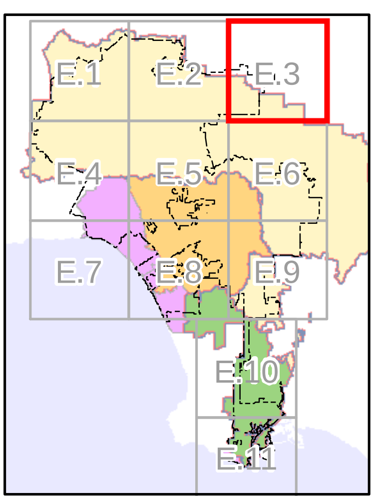
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.2
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

LASAN

LADWP

City of LA Agency other than LASAN and LADWP

Other Agency (NGO)

Green Streets Implementation Target

> 10 mi

5 - 10 mi

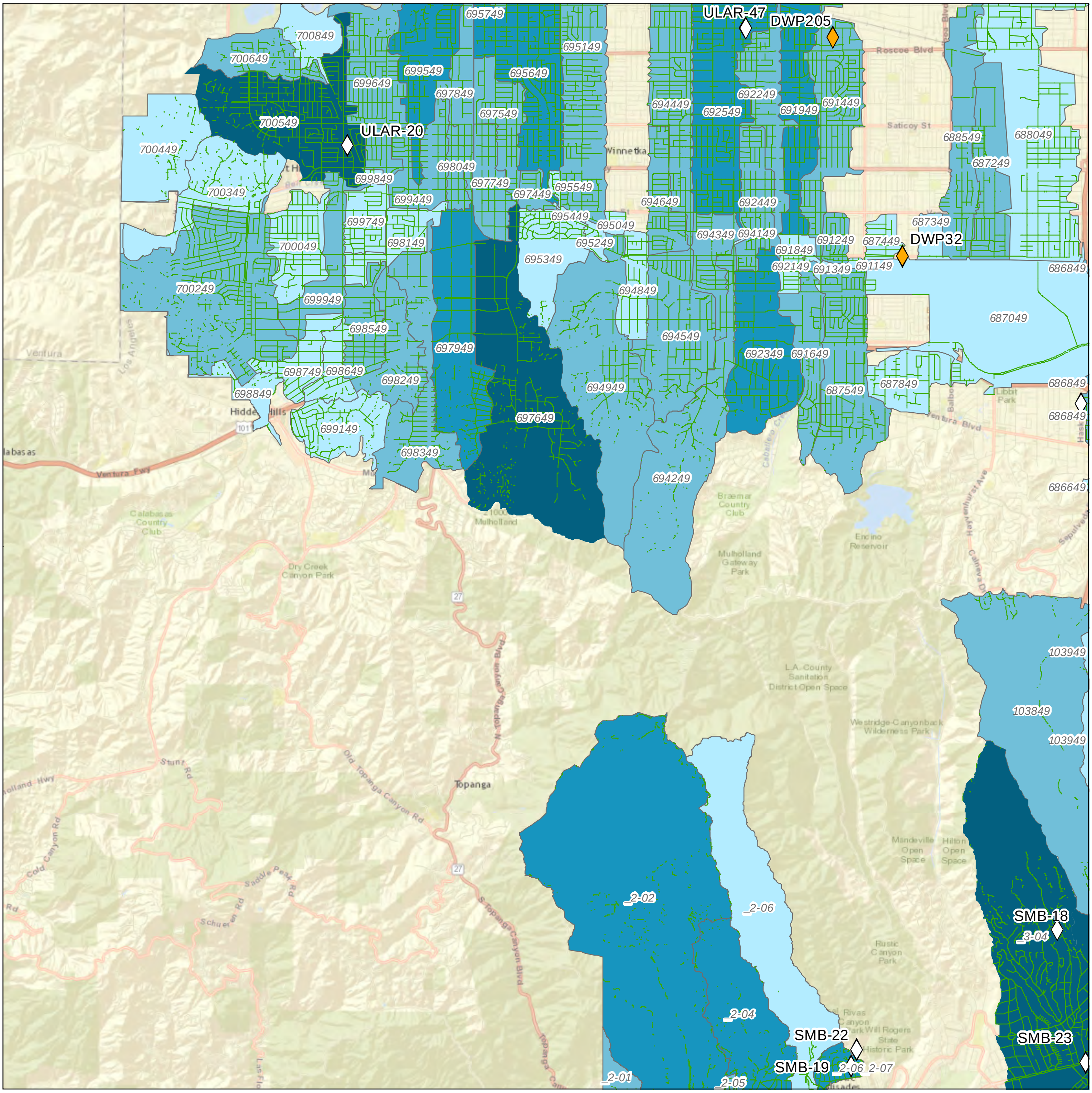
1 - 5 mi

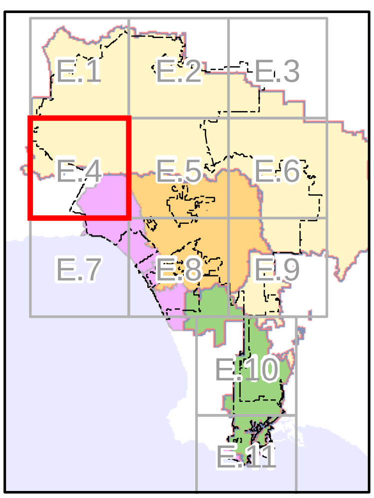
<1 mi

Figure E.3
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

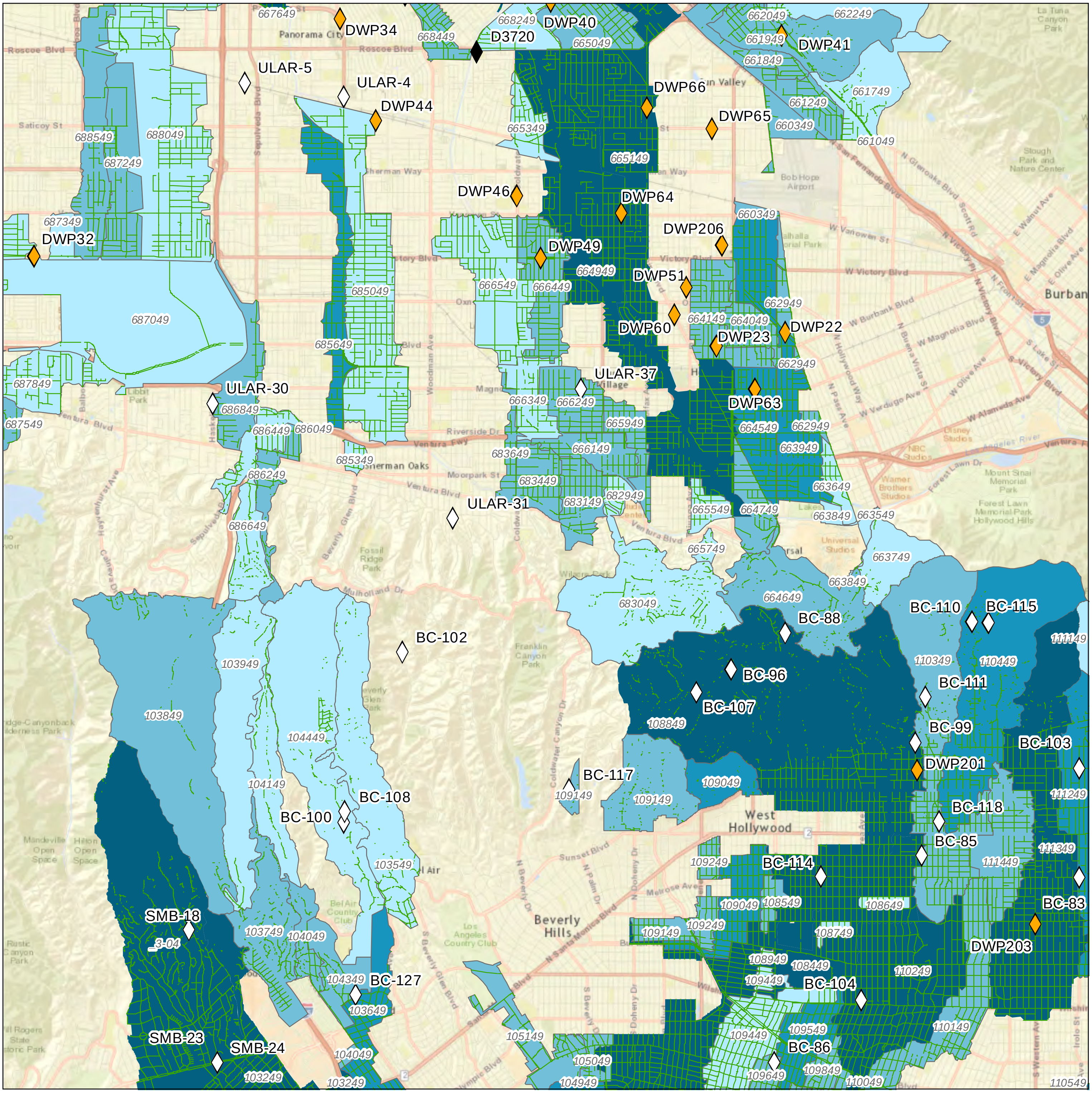
Green Streets Implementation Target

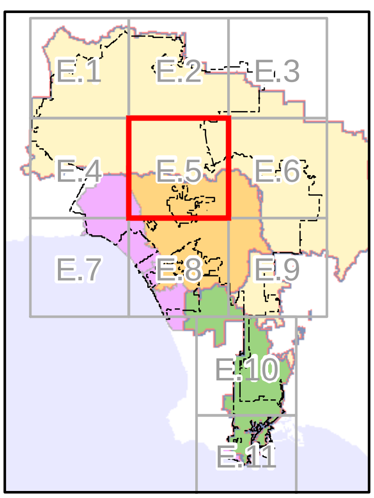
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.4
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

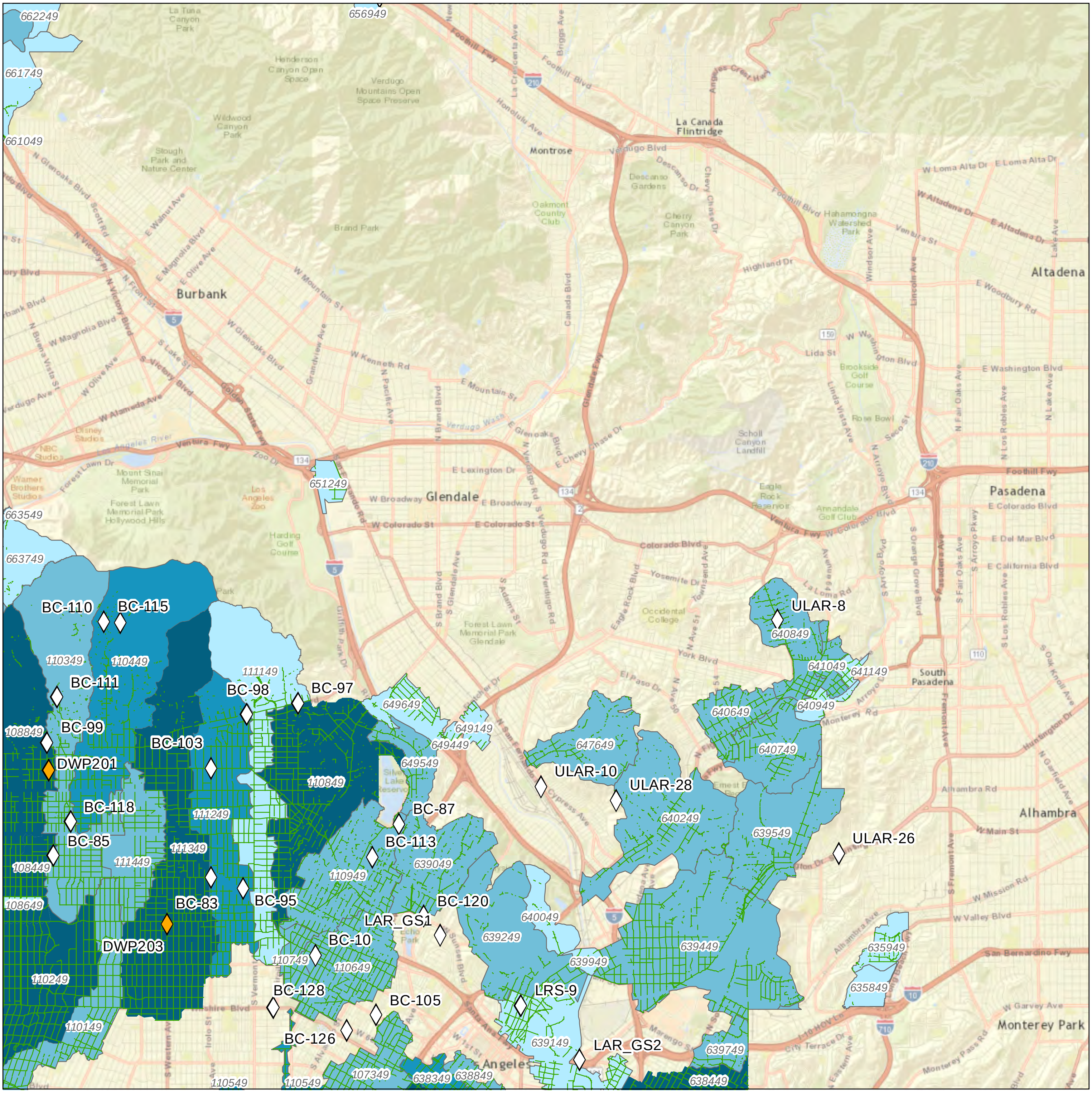
Green Streets Implementation Target

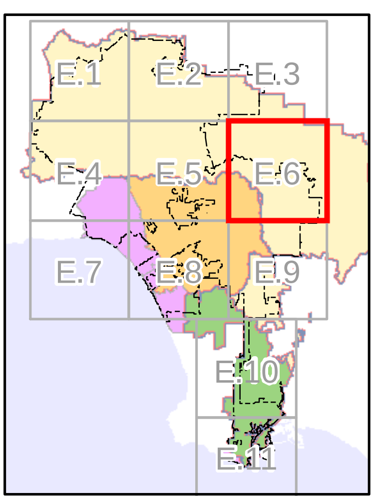
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.5
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

Green Streets Implementation Target

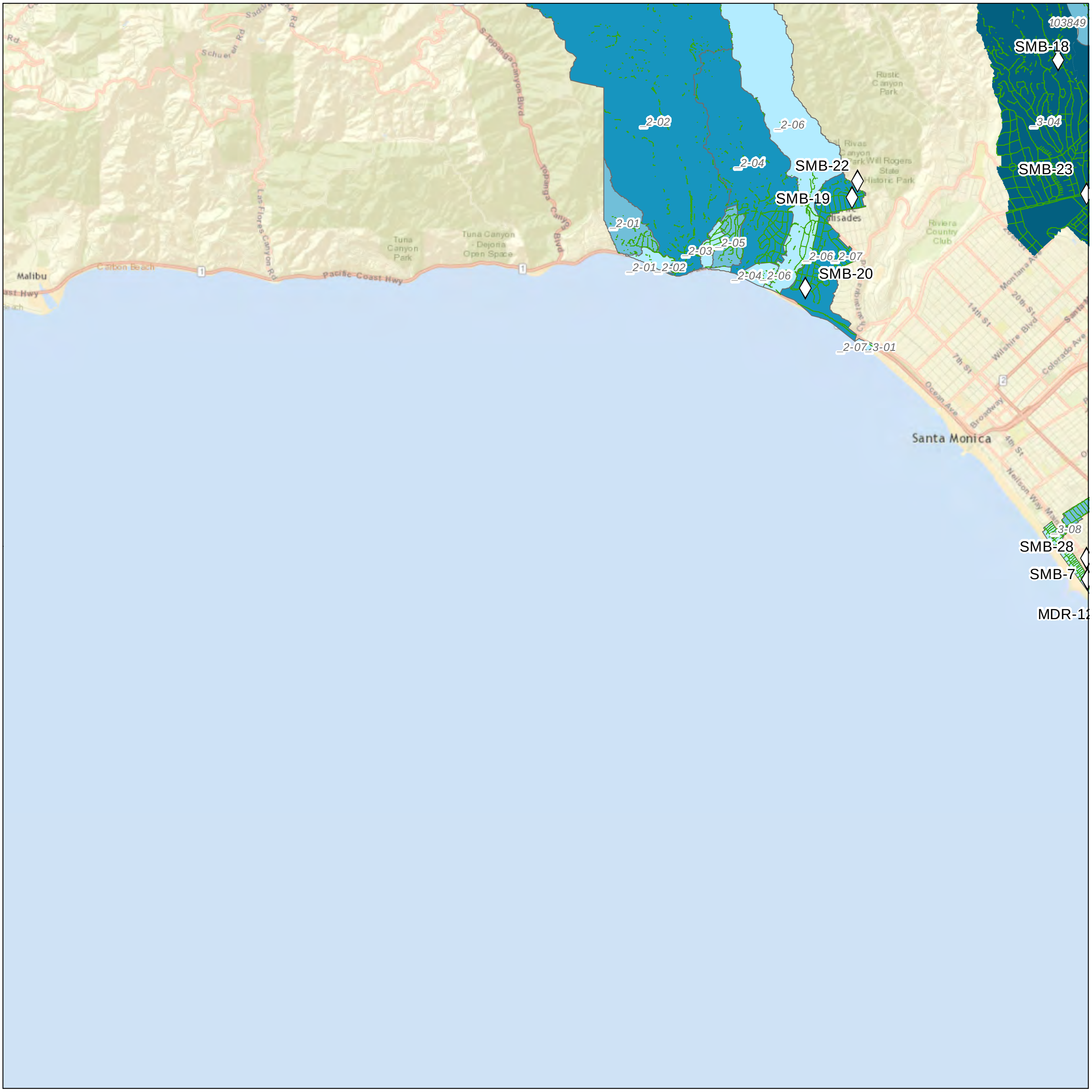
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

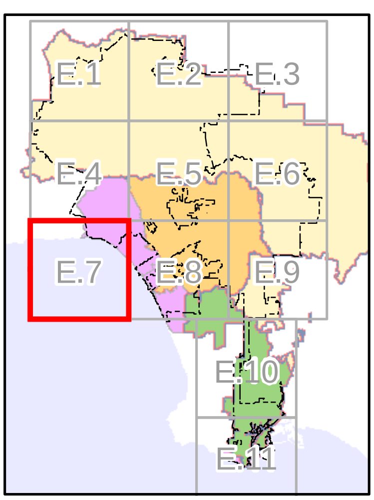
Figure E.6
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

N

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

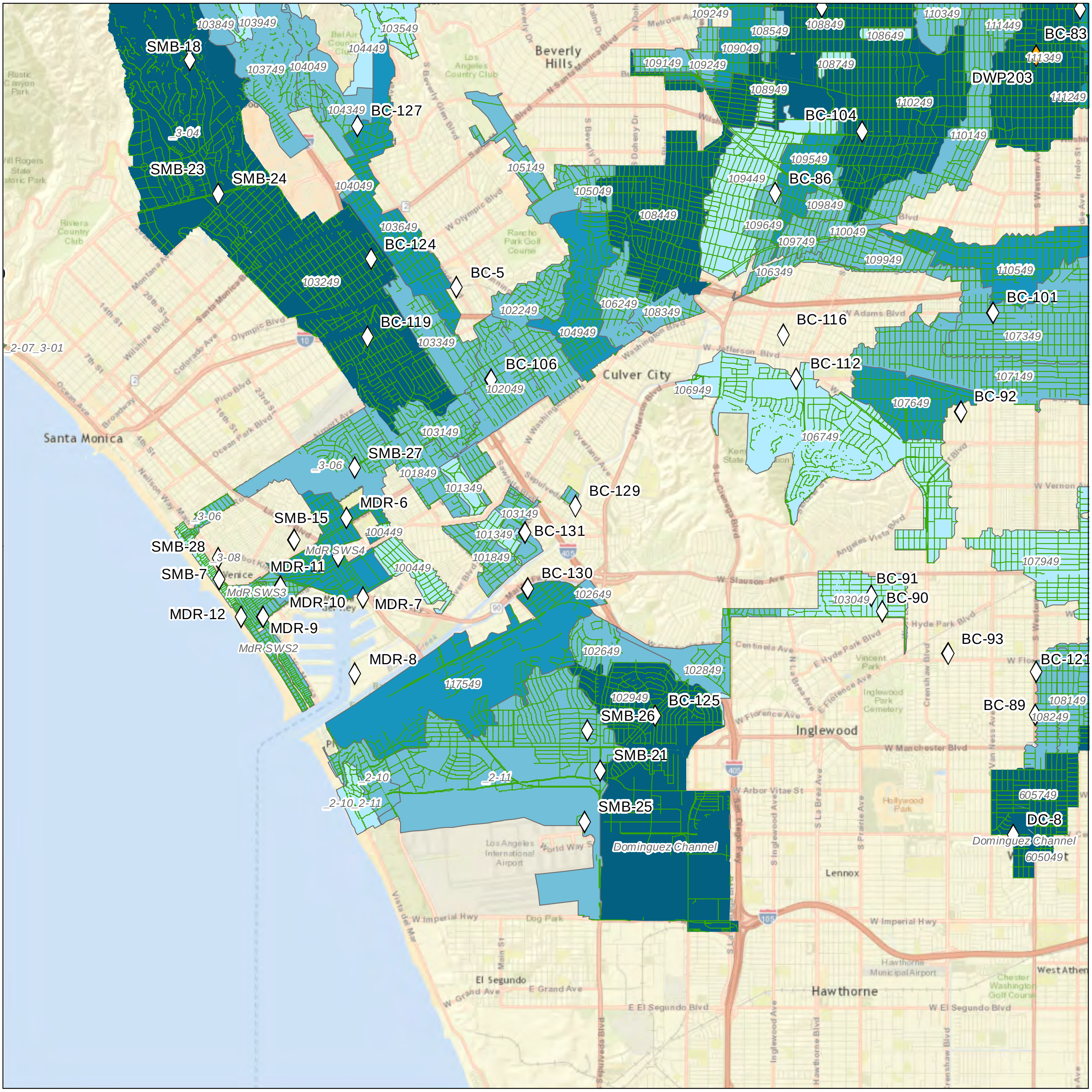
Green Streets Implementation Target

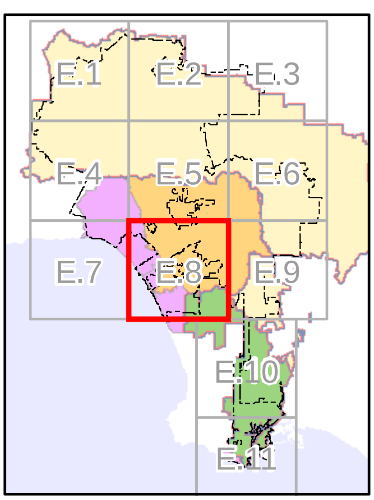
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.7
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

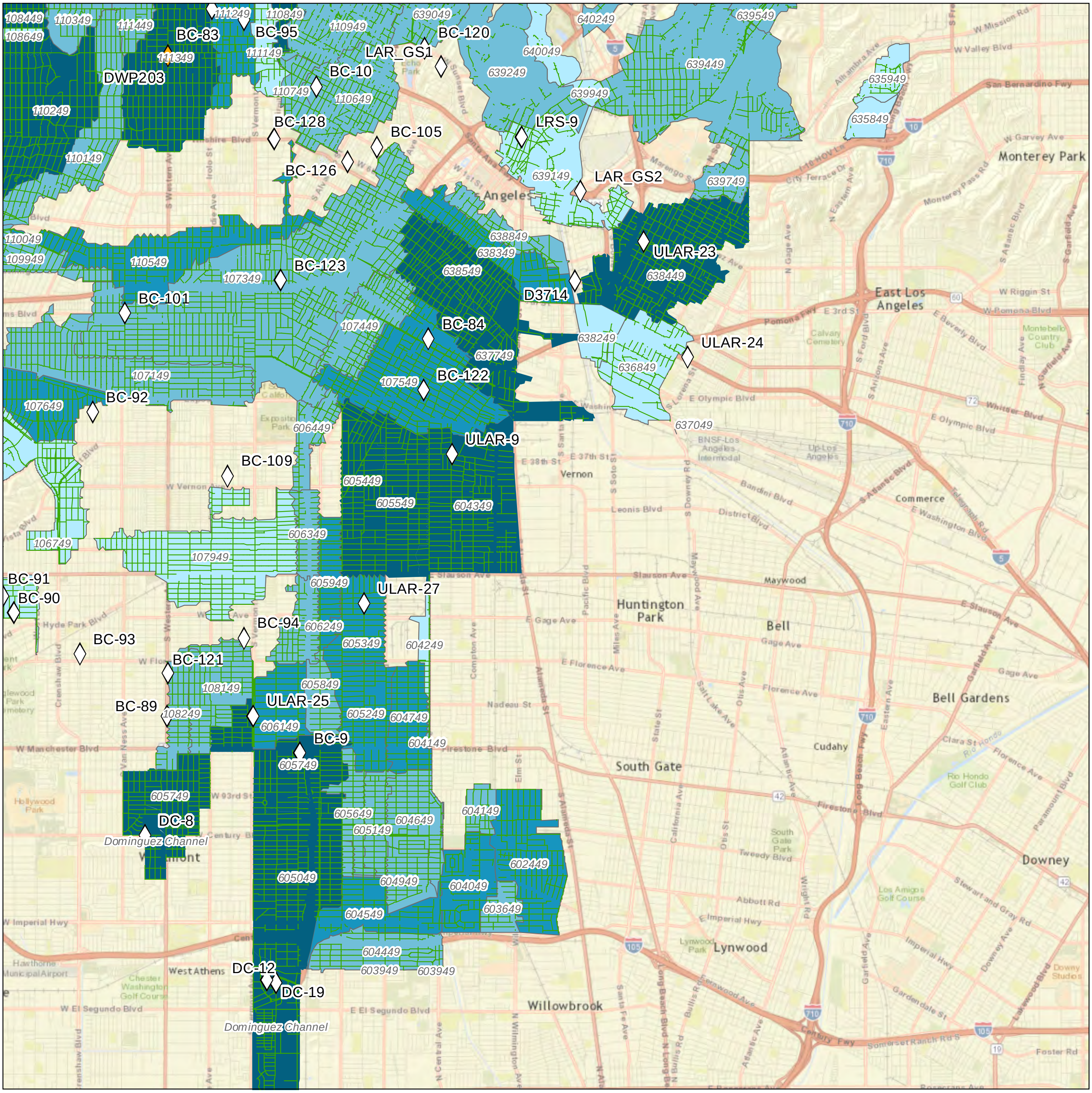
Green Streets Implementation Target

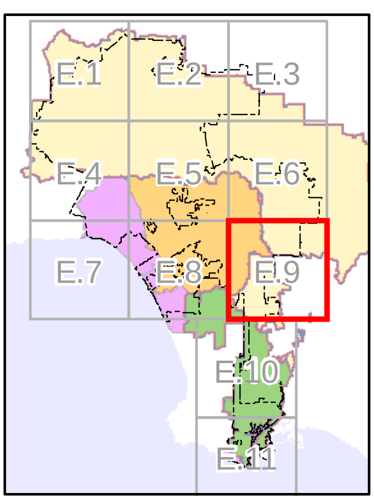
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.8
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

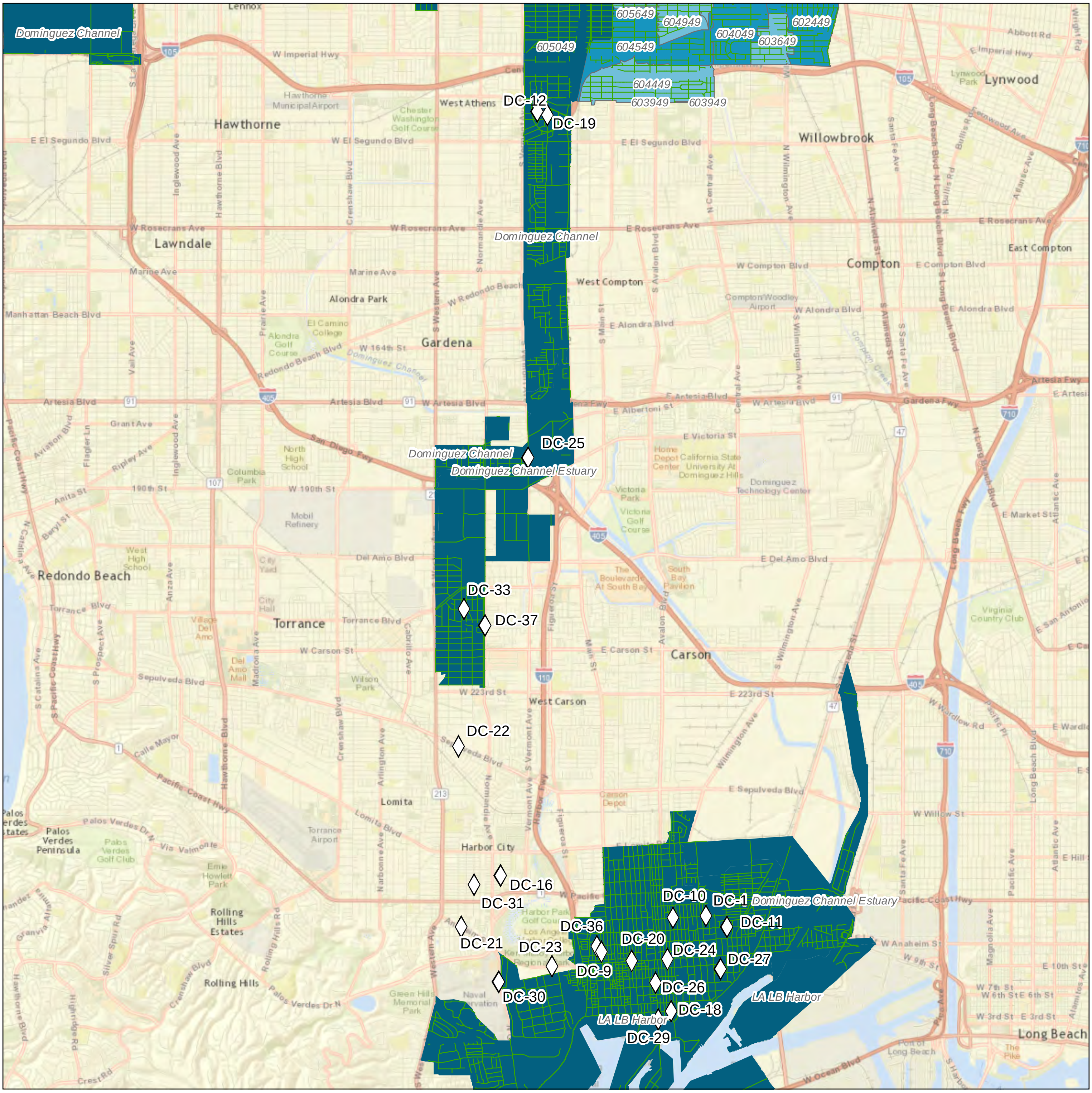
Green Streets Implementation Target

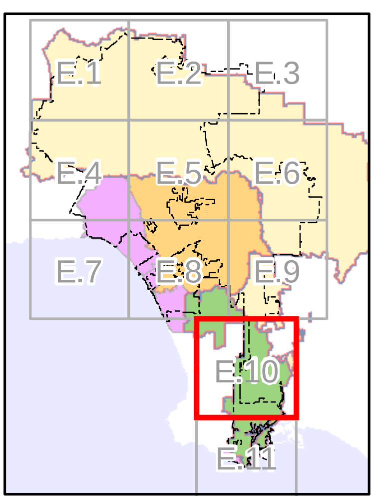
- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.9
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

Green Streets Implementation Target

- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

0 1 2 Miles

Figure E.10
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

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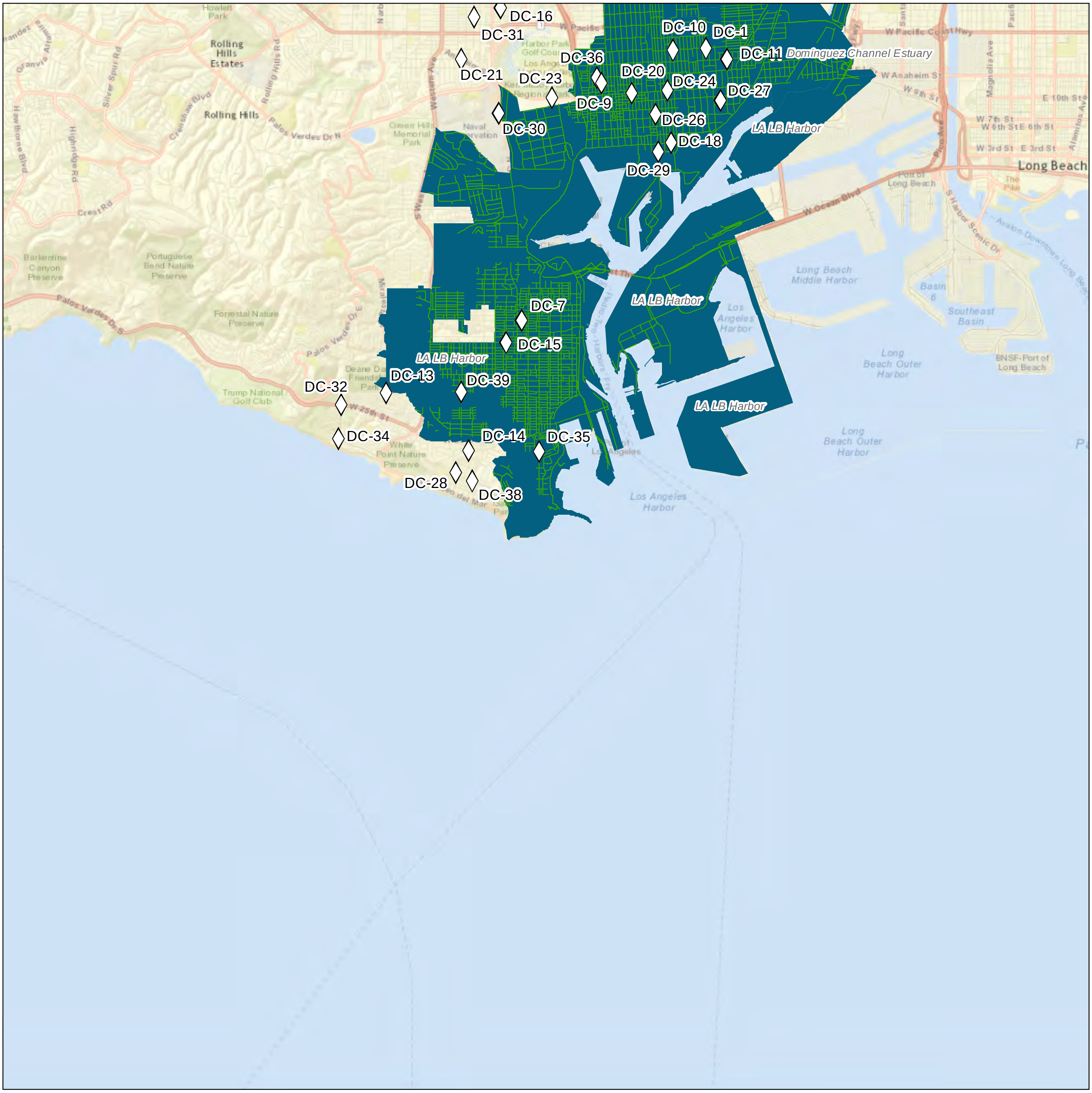

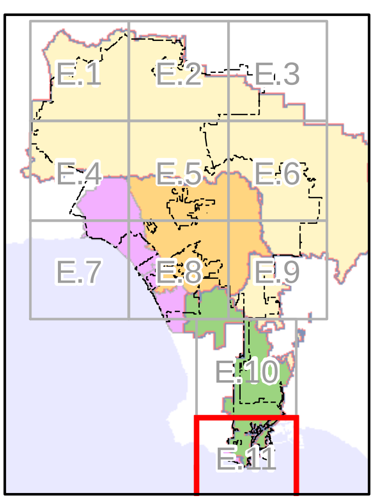

Legend

Green Streets Opportunity

Near Term Green Streets Project

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- Other Agency (NGO)

Green Streets Implementation Target

- > 10 mi
- 5 - 10 mi
- 1 - 5 mi
- <1 mi

Figure E.11
Planned Distributed Green Infrastructure Projects and Green Streets Programs in City of Los Angeles

0 1 2 Miles

N

Geosyntec consultants

APPENDIX F – STORMWATER IMPROVEMENT PROGRAM SELECTION

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Lafayette Park	BC-1	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 26,833,381	$ -	$ 1,341,669	1	5 Year
Westlake EWMP Regional Project 1	BC-11	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 4,914,204	$ -	$ 245,710	1	5 Year
Wilshire EWMP Regional Project 1	BC-14	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,722,501	$ -	$ 136,125	1	5 Year
Wilshire EWMP Regional Project 2	BC-17	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,628,495	$ -	$ 131,425	1	5 Year
South Los Angeles EWMP Regional Project 2	BC-18	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 4,184,084	$ -	$ 209,204	1	5 Year
Wilshire EWMP Regional Project 3	BC-21	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 3,813,562	$ -	$ 190,678	1	5 Year
Southeast Los Angeles EWMP Regional Project 1	BC-24	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 3,353,197	$ -	$ 167,660	1	5 Year
Westlake EWMP Regional Project 2	BC-27	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 3,353,196	$ -	$ 167,660	1	5 Year
Wilshire EWMP Regional Project 4	BC-33	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,858,547	$ -	$ 92,927	1	5 Year
South Los Angeles EWMP Regional Project 5	BC-35	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,048,186	$ -	$ 52,409	1	5 Year
South Los Angeles EWMP Regional Project 6	BC-36	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,808,987	$ -	$ 140,449	1	5 Year
South Los Angeles EWMP Regional Project 7	BC-38	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,624,499	$ -	$ 131,225	1	5 Year
Wilshire EWMP Regional Project 5	BC-39	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,634,427	$ -	$ 131,721	1	5 Year
Poinsettia Park	BC-4	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 14,860,528	$ -	$ 743,026	1	5 Year
Hollywood EWMP Regional Project 1	BC-40	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 3,069,712	$ -	$ 153,486	1	5 Year
Hollywood EWMP Regional Project 2	BC-41	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 3,069,712	$ -	$ 153,486	1	5 Year
South Los Angeles EWMP Regional Project 8	BC-42	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,514,321	$ -	$ 125,716	1	5 Year
Westlake EWMP Regional Project 3	BC-44	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,297,473	$ -	$ 114,874	1	5 Year
South Los Angeles EWMP Regional Project 9	BC-48	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,240,406	$ -	$ 112,020	1	5 Year
South Los Angeles EWMP Regional Project 10	BC-49	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,243,042	$ -	$ 112,152	1	5 Year
Wilshire EWMP Regional Project 6	BC-52	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 482,990	$ -	$ 24,150	1	5 Year
Wilshire EWMP Regional Project 7	BC-53	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 363,548	$ -	$ 18,177	1	5 Year
Hollywood EWMP Regional Project 3	BC-57	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,225,580	$ -	$ 111,279	1	5 Year
Westlake EWMP Regional Project 4	BC-59	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 289,685	$ -	$ 14,484	1	5 Year
West Adams EWMP Regional Project 12	BC-61	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,965,317	$ -	$ 98,266	1	5 Year
Westlake EWMP Regional Project 5	BC-64	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,039,729	$ -	$ 101,986	1	5 Year
Wilshire EWMP Regional Project 9	BC-65	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,791,401	$ -	$ 89,570	1	5 Year
West Adams EWMP Regional Project 13	BC-66	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,780,949	$ -	$ 89,047	1	5 Year
South Los Angeles EWMP Regional Project 16	BC-68	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,774,701	$ -	$ 88,735	1	5 Year
Vermont Square Park Stormwater Treatment and Infiltration Project	BC-7	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,113,088	$ -	$ 105,654	1	5 Year
Hollywood EWMP Regional Project 4	BC-70	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 218,755	$ -	$ 10,938	1	5 Year
Southeast Los Angeles EWMP Regional Project 2	BC-71	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,734,988	$ -	$ 86,749	1	5 Year
Hollywood EWMP Regional Project 6	BC-75	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,728,626	$ -	$ 86,431	1	5 Year
Wilshire EWMP Regional Project 11	BC-76	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,748,334	$ -	$ 87,417	1	5 Year
Hollywood EWMP Regional Project 8	BC-77	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,739,972	$ -	$ 86,999	1	5 Year
National Boulevard Runoff Treatment Project	BC-8	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 14,111,000	$ -	$ 705,550	1	5 Year
Hollywood EWMP Regional Project 10	BC-80	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,692,946	$ -	$ 84,647	1	5 Year
Hollywood EWMP Regional Project 11	BC-81	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,691,758	$ -	$ 84,588	1	5 Year
Wilshire EWMP Regional Project 13	BC-82	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 1,672,617	$ -	$ 83,631	1	5 Year
LA River Segment B Urban Runoff Project No. 1	LRS-1	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 7,809,000	$ -	$ 390,450	1	5 Year
LA River Segment B Urban Runoff Project No. 2	LRS-2	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 7,398,000	$ -	$ 369,900	1	5 Year
2-2 Parking Lot	SMB-11	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 5,334,119	$ -	$ 266,706	1	5 Year
Rustic Canyon Recreation Center	SMB-2	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 3,150,439	$ -	$ 157,522	1	5 Year
North Hollywood Park Project	ULAR-1	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 6,067,730	$ -	$ 303,387	1	5 Year
Southeast Los Angeles EWMP Project 1	ULAR-11	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 4,110,000	$ -	$ 205,500	1	5 Year
Sunland EWMP Regional Project 1	ULAR-12	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 5,428,026	$ -	$ 271,401	1	5 Year
Sun Valley EWMP Regional Project 1	ULAR-13	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 2,452,026	$ -	$ 122,601	1	5 Year
Sun Valley EWMP Regional Project 2	ULAR-14	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 4,832,753	$ -	$ 241,638	1	5 Year
Reseda EWMP Regional Project 1	ULAR-15	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F1**	Funding	**IWR1**	$ 288,325	$ -	$ 14,416	1	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
North Hollywood EWMP Regional Project 2	ULAR-16	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 9,387,523	$ -	$ 469,376	1	5 Year
Reseda EWMP Regional Project 2	ULAR-17	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 3,516,106	$ -	$ 175,805	1	5 Year
North Hollywood EWMP Regional Project 3	ULAR-18	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 7,619,640	$ -	$ 380,982	1	5 Year
Sun Valley EWMP Project 5	ULAR-19	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 3,476,256	$ -	$ 173,813	1	5 Year
Chase St. Priority Greenway + Bull Creek Park	ULAR-2	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 3,145,839	$ -	$ 157,292	1	5 Year
Canoga Park EWMP Regional Project 1	ULAR-20	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 3,070,170	$ -	$ 153,509	1	5 Year
Reseda EWMP Regional Project 3	ULAR-21	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 18,917,242	$ -	$ 945,862	1	5 Year
Encino EWMP Regional Project 2	ULAR-22	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 5,518,228	$ -	$ 275,911	1	5 Year
Aliso Creek - Limeklin Creek Restoration	ULAR-6	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 6,287,740	$ -	$ 314,387	1	5 Year
Boyle Heights Jonit Use Community Center	ULAR-7	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding	IWR1	$ 10,275,000	$ -	$ 513,750	1	5 Year
Fernangeles Park/Recreation Center	DWP67	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 14,000,000	$ -	$ 700,000	1	5 Year
Old Pacoima Wash Stormwater Capture	DWP33	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 40,000,000	$ -	$ 2,000,000	1	5 Year
Hancock Park Drainage Improvement Project	LA901	BC	LACFCD/LABOE	Partner	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Open Space and Recreation	IWR1	$ 10,000,000	$ -	$ 500,000	1	5 Year
Storm Drain Mining (Inject)	DWP109	BC	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding-LADWP	IWR1	$ 300,000		$ 15,000	1	5 Year
Arundo Donax Removal Project - Phase I	DWP105a	ULAR	Others - NFF/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 6,300,000	$ -	$ 315,000	2	5 Year
Arundo Donax Removal Project - Phase II	DWP105b	ULAR	Others - NFF/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 2,340,000	$ -	$ 117,000	2	5 Year
East Valley Baseball Park (Strathern Park)	ULAR60	ULAR	LASAN/LADWP/RAP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR1	$ 12,000,000	$ -	$ 44,450	3	5 Year
San Fernando Gardens SWCP	DWP56	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR1	$ 1,062,500	$ -	$ 53,125	3	5 Year
San Fernando Regional Park	DWP68	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR1	$ 10,000,000	$ -	$ 500,000	3	5 Year
Whitsett Sports Field	DWP47	ULAR	LASAN/LADWP/RAP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR1	$ 13,000,000	$ -	$ 40,000	3	5 Year
Bradley Plaza	DWP55	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a		IWR1	$ 500,000	$ -	$ 25,000	3	5 Year
Whitnall Highwall Power Line Easement Recharge	ULAR96	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a		IWR1	$ 30,000,000	$ -	$ 100,000	3	5 Year
Palms EWMP Regional Project 1	BC-12	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 12,026,075	$ -	$ 601,304	4	5 Year
South Los Angeles EWMP Regional Project 1	BC-13	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 3,229,412	$ -	$ 161,471	4	5 Year
West Adams EWMP Regional Project 1	BC-15	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 7,730,833	$ -	$ 386,542	4	5 Year
West Los Angeles EWMP Regional Project 1	BC-16	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 6,150,441	$ -	$ 307,522	4	5 Year
West Adams EWMP Regional Project 2	BC-19	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 2,053,915	$ -	$ 102,696	4	5 Year
Queen Anne Recreation Center	BC-2	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 36,485,036	$ -	$ 1,824,252	4	5 Year
West Adams EWMP Regional Project 3	BC-20	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 5,420,202	$ -	$ 271,010	4	5 Year
West Adams EWMP Regional Project 4	BC-22	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 4,569,195	$ -	$ 228,460	4	5 Year
West Los Angeles EWMP Regional Project 2	BC-23	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 4,112,530	$ -	$ 205,627	4	5 Year
Palms EWMP Regional Project 2	BC-25	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 1,429,801	$ -	$ 71,490	4	5 Year
West Los Angeles EWMP Regional Project 3	BC-26	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 1,553,317	$ -	$ 77,666	4	5 Year
South Los Angeles EWMP Regional Project 3	BC-28	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 3,195,652	$ -	$ 159,783	4	5 Year
West Los Angeles EWMP Regional Project 4	BC-29	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 3,243,304	$ -	$ 162,165	4	5 Year
Rancho Park Golf Course	BC-3	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 17,838,568	$ -	$ 891,928	4	5 Year
West Adams EWMP Regional Project 5	BC-30	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 1,272,923	$ -	$ 63,646	4	5 Year
West Adams EWMP Regional Project 6	BC-31	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 1,141,797	$ -	$ 57,090	4	5 Year
West Los Angeles EWMP Regional Project 5	BC-32	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 3,558,279	$ -	$ 177,914	4	5 Year
South Los Angeles EWMP Regional Project 4	BC-34	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 1,175,007	$ -	$ 58,750	4	5 Year
West Los Angeles EWMP Regional Project 6	BC-37	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 3,044,104	$ -	$ 152,205	4	5 Year
West Adams EWMP Regional Project 7	BC-43	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 552,077	$ -	$ 27,604	4	5 Year
West Los Angeles EWMP Regional Project 7	BC-45	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 2,502,661	$ -	$ 125,133	4	5 Year
Silver Lake EWMP Regional Project 1	BC-46	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 3,011,731	$ -	$ 150,587	4	5 Year
Palms EWMP Regional Project 3	BC-47	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 470,108	$ -	$ 23,505	4	5 Year
West Adams EWMP Regional Project 8	BC-50	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 579,012	$ -	$ 28,951	4	5 Year
West Adams EWMP Regional Project 9	BC-51	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 349,029	$ -	$ 17,451	4	5 Year
South Los Angeles EWMP Regional Project 11	BC-54	BC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding	IWR1	$ 2,049,722	$ -	$ 102,486	4	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
West Adams EWMP Regional Project 10	BC-55	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 323,072	$ -	$ 16,154	4	5 Year
West Adams EWMP Regional Project 11	BC-56	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 2,233,457	$ -	$ 111,673	4	5 Year
South Los Angeles EWMP Regional Project 12	BC-58	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 307,840	$ -	$ 15,392	4	5 Year
South Los Angeles EWMP Regional Project 13	BC-60	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 276,909	$ -	$ 13,845	4	5 Year
South Los Angeles EWMP Regional Project 14	BC-62	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,934,319	$ -	$ 96,716	4	5 Year
Palms EWMP Regional Project 4	BC-63	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 296,394	$ -	$ 14,820	4	5 Year
West Los Angeles EWMP Regional Project 9	BC-67	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 183,476	$ -	$ 9,174	4	5 Year
Westchester EWMP Regional Project 2	BC-69	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,767,931	$ -	$ 88,397	4	5 Year
Palms EWMP Regional Project 6	BC-72	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,754,106	$ -	$ 87,705	4	5 Year
West Adams EWMP Regional Project 14	BC-73	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,716,934	$ -	$ 85,847	4	5 Year
South Los Angeles EWMP Regional Project 19	BC-74	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,732,116	$ -	$ 86,606	4	5 Year
West Los Angeles EWMP Regional Project 11	BC-78	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,683,719	$ -	$ 84,186	4	5 Year
West Adams EWMP Regional Project 16	BC-79	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,670,986	$ -	$ 83,549	4	5 Year
Wilmington Recreation Center Project Site	DC-17	DC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 1,013,239	$ -	$ 50,662	4	5 Year
Averill Park Project Site	DC-3	DC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 29,548,160	$ -	$ 1,477,408	4	5 Year
Via Dolce Park	MDR-1	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 9,117,877	$ -	$ 455,894	4	5 Year
Canal Park	MDR-2	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 467,757	$ -	$ 23,388	4	5 Year
Triangle Park	MDR-3	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 95,251	$ -	$ 4,763	4	5 Year
Venice of America Centennial Park	MDR-4	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 592,826	$ -	$ 29,641	4	5 Year
Mandeville	SMB-12	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 2,965,161	$ -	$ 148,258	4	5 Year
Brentwood Country Club	SMB-3	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 62,835,255	$ -	$ 3,141,763	4	5 Year
Riviera Country Club	SMB-4	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 7,661,069	$ -	$ 383,053	4	5 Year
Santa Monica Bay Low Flow Diversion Enhancement Project	SMB-5	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 7,144,530	$ -	$ 357,227	4	5 Year
Santa Ynez Canyon BMP Project	SMB-6	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 72,750	$ -	$ 3,638	4	5 Year
Westchester Recreation Center	SMB-13	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 17,729,143	$ -	$ 886,457	4	5 Year
NOTF/LFTF-1 Phase I	TSO-1	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 17,971,391	$ -	$ 898,570	4	5 Year
Sepulveda Channel Diversion BMP Project	TSO-2	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	Yes	**F1**	Funding	**IWR1**	$ 16,968,820	$ -	$ 848,441	4	5 Year
Proposed LFD - Pump 609	L-609	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 3,000,000	$ 150,000	5	5 Year
Proposed LFD - Pump 617	L-617	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 3,000,000	$ 150,000	5	5 Year
Proposed LFD - Pump 619	L-619	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 3,000,000	$ 150,000	5	5 Year
Proposed LFD - Pump 620	L-620	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 3,000,000	$ 150,000	5	5 Year
Proposed LFD - Pump 678	L-678	DC	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 3,000,000	$ 150,000	5	5 Year
Proposed LFD - Pump 692	L-692	DC	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 3,000,000	$ 150,000	5	5 Year
Proposed LFD - Conceptual Location of Potential LFD in Ballonca Creek Waterhsed	L-BC1	BC	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Conceptual Location of Potential LFD in Ballonca Creek Waterhsed	L-BC2	BC	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Haskell Ave, Los Angeles, CA	L-E01	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Peach Ave, Los Angeles, CA	L-E02	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Kester Ave, Los Angeles, CA	L-E03	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Cedros Ave, Los Angeles, CA	L-E04	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Van Nuys Blvd, Los Angeles, CA	L-E05	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Hazeltine Ave, Los Angeles, CA	L-E06	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Tujunga Wash, Los Angeles, CA	L-E07	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Hollywood FWY, Los Angeles, CA	L-E08	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Lankershim Blvd, Los Angeles, CA	L-E09	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Tujunga Ave, Los Angeles, CA	L-E10	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Vineland Ave, Los Angeles, CA	L-E11	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - 2nd st & Santa Fe Ave, Los Angeles, CA	L-O1	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
posed LFD - Missoon rd & Cesar Chavez Ave, Los Angeles, CA	L-O2	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Proposed LFD - Palmetto st & Santa Fe Ave, Los Angeles, CA	L-O3	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Conceptual Location of Potential LFD in Los Angeles River Watershed	L-UL1	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Conceptual Location of Potential LFD in Los Angeles River Watershed	L-UL2	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Conceptual Location of Potential LFD in Los Angeles River Watershed	L-UL3	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Conceptual Location of Potential LFD in Los Angeles River Watershed	L-UL4	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Woodly Ave, Los Angeles, CA	L-W01	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Hayvenhurst Ave, Los Angeles, CA	L-W02	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Louise Ave, Los Angeles, CA	L-W03	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & White Oak Ave, Los Angeles, CA	L-W04	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Lindley Ave, Los Angeles, CA	L-W05	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - LA River & Etiwanda Ave, Los Angeles, CA	L-W06	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Vanowen Street & Reseda Blvd, Los Angeles, CA	L-W07	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Vanowen Street & Aliso Canyon Wash, Los Angeles, CA	L-W08	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Vanowen Street & Tampa Ave, Los Angeles, CA	L-W09	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Vanowen Street & Corbin Ave, Los Angeles, CA	L-W10	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Vanowen Street & Winnetka Ave, Los Angeles, CA	L-W11	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Vanowen Street & De Soto Ave, Los Angeles, CA	L-W12	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Friar Street & Victory Blvd, Los Angeles, CA	L-W13	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Tampa Ave, Los Angeles, CA	L-W14	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Wilbur Ave, Los Angeles, CA	L-W15	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Proposed LFD - Victory Blvd & Caballero Creek, Los Angeles, CA	L-W16	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S3**	No	**n/a**	Funding	**IWR1**	$ -	$ 1,500,000	$ 75,000	5	5 Year
Del Rey Lagoon Water Quality Improvement Project	BC-6	BC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 1,441,832	$ -	$ 72,092	6	5 Year
Dominguez Channel Urban Runoff Project No. 1	DC-4	DC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 3,014,000	$ -	$ 150,700	6	5 Year
Dominguez Channel Urban Runoff Project No. 2	DC-5	DC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 1,411,100	$ -	$ 70,555	6	5 Year
Dominguez Channel Urban Runoff Project No. 3	DC-6	DC	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 775,420	$ -	$ 38,771	6	5 Year
LA River Segment B Urban Runoff Project No. 3	LRS-3	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 5,343,000	$ -	$ 267,150	6	5 Year
Arroyo Seco Urban Runoff Project No. 1	LRS-4	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 280,850	$ -	$ 14,043	6	5 Year
Arroyo Seco Urban Runoff Project No. 2	LRS-5	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 2,457,506	$ -	$ 122,875	6	5 Year
Arroyo Seco Urban Runoff Project No. 3	LRS-6	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 1,737,112	$ -	$ 86,856	6	5 Year
Arroyo Seco Urban Runoff Project No. 4	LRS-7	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 4,795,000	$ -	$ 239,750	6	5 Year
Arroyo Seco Urban Runoff Project No. 5	LRS-8	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 342,500	$ -	$ 17,125	6	5 Year
Marina del Rey Tree Wells Project	MDR-5	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 253,942	$ -	$ 12,697	6	5 Year
Oakwood Recreation Center	SMB-1	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 3,254,019	$ -	$ 162,701	6	5 Year
Argo Drain Sub-basin Facility	SMB-14	SMB	LASAN	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**	Funding	**IWR1**	$ 3,022,664	$ -	$ 151,133	6	5 Year
West Adams Green Streets Project 5	BC-101	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 1,629,740	$ -	$ 97,784	7	5 Year
Hollywood Green Streets Project 7	BC-103	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 246,040	$ -	$ 14,762	7	5 Year
Wilshire Green Streets Project 5	BC-104	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 1,739,340	$ -	$ 104,360	7	5 Year
South Los Angeles Green Streets Project 3	BC-109	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 478,940	$ -	$ 28,736	7	5 Year
Wilshire Green Streets Project 1	BC-83	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 1,396,840	$ -	$ 83,810	7	5 Year
Southeast Los Angeles Green Streets Project 1	BC-84	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 1,232,440	$ -	$ 73,946	7	5 Year
Hollywood Green Streets Project 1	BC-85	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 4,383,440	$ -	$ 263,006	7	5 Year
South Los Angeles Green Streets Project 1	BC-89	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 1,725,640	$ -	$ 103,538	7	5 Year
West Adams Green Streets Project 1	BC-90	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 232,540	$ -	$ 13,952	7	5 Year
West Adams Green Streets Project 2	BC-91	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 2,438,040	$ -	$ 146,282	7	5 Year
West Adams Green Streets Project 4	BC-93	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 5,452,040	$ -	$ 327,122	7	5 Year
Wilshire Green Streets Project 3	BC-95	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	Yes	**F1**	Funding	**IWR1**	$ 355,640	$ -	$ 21,338	7	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Harbor Gateway Green Streets Project 1	DC-12	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 1,903,740	$ -	$ 114,224	7	5 Year
Boyle Heights Green Streets Project 1	ULAR-23	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 6,097,149	$ -	$ 365,829	7	5 Year
Boyle Heights Green Streets Project 2	ULAR-24	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 1,205,039	$ -	$ 72,302	7	5 Year
South Los Angeles Green Streets Project 5	ULAR-25	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 807,739	$ -	$ 48,464	7	5 Year
Southeast Los Angeles Green Streets Project 5	ULAR-27	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 725,539	$ -	$ 43,532	7	5 Year
Arleta Green Streets Project 1	ULAR-29	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 889,939	$ -	$ 53,396	7	5 Year
Sheldon St. Priority Greenway	ULAR-3	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 2,040,740	$ -	$ 122,444	7	5 Year
Encino Green Streets Project 1	ULAR-30	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 5,891,000	$ -	$ 353,460	7	5 Year
Sherman Oaks Green Streets Project 2	ULAR-31	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 159,951	$ -	$ 9,597	7	5 Year
Arleta Green Streets Project 2	ULAR-32	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 96,901	$ -	$ 5,814	7	5 Year
Sun Valley Green Streets Project 1	ULAR-36	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 242,401	$ -	$ 14,544	7	5 Year
North Hollywood Green Streets Project 1	ULAR-37	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 2,081,840	$ -	$ 124,910	7	5 Year
Sunland Green Streets Project 3	ULAR-38	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 94,476	$ -	$ 5,669	7	5 Year
Sunland Green Streets Project 4	ULAR-39	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 155,101	$ -	$ 9,306	7	5 Year
Chatsworth Green Streets Project 5	ULAR-43	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 230,276	$ -	$ 13,817	7	5 Year
Northridge Green Streets Project 9	ULAR-44	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 4,068,340	$ -	$ 244,100	7	5 Year
Canoga Park Green Streets Project 19	ULAR-45	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 4,314,940	$ -	$ 258,896	7	5 Year
Chatsworth Green Streets Project 8	ULAR-48	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 2,232,540	$ -	$ 133,952	7	5 Year
Chatsworth Green Streets Project 9	ULAR-49	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 3,383,340	$ -	$ 203,000	7	5 Year
Granada Hills Green Streets Project 5	ULAR-50	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 3,986,741	$ -	$ 239,204	7	5 Year
Northridge Green Streets Project 11	ULAR-51	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding	IWR1	$ 794,040	$ -	$ 47,642	7	5 Year
Burbank Blvd. BMP	DWP23	ULAR	LABOE/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding - LADWP	IWR1	$ 8,000,000	$ -	$ 480,000	7	5 Year
Victory-Vineland Stormwater Capture	DWP206	ULAR	LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Open Space and Recreation	IWR1	$ 3,000,000	$ -	$ 180,000	7	5 Year
Occidental Blvd Green Streets	BC-10	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 5,480,000	$ -	$ 328,800	8	5 Year
Hollywood Green Streets Project 13	BC-118	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 4,780,991	$ -	$ 286,859	8	5 Year
Southeast Los Angeles Green Streets Project 2	BC-122	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 573,719	$ -	$ 34,423	8	5 Year
West Adams - Baldwin Hills - Leimert Green Streets Project 1	BC-123	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 1,529,917	$ -	$ 91,795	8	5 Year
Westlake Green Streets Project 2	BC-126	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 191,239	$ -	$ 11,474	8	5 Year
Wilshire Green Streets Project 6	BC-128	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 4,016,033	$ -	$ 240,962	8	5 Year
Upgrades to Pump Plant 647 and Associated Stormwater Treatment Opportunities	SMB-7	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 2,822,200	$ -	$ 169,332	8	5 Year
Upgrades to Pump Plant 621 and Associated Stormwater Treatment Opportunities	ULAR-4	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 84,776	$ -	$ 5,087	8	5 Year
Upgrades to Pump Plant 622 and Associated Stormwater Treatment Opportunities	ULAR-5	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 1,780,440	$ -	$ 106,826	8	5 Year
Hooper Ave Greenway Alley	ULAR-9	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding	IWR1	$ 5,000,000	$ -	$ 300,000	8	5 Year
Agnes-Vanowen	DWP64	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 3,000,000	$ -	$ 150,000	8	5 Year
Branford Street: Laurel Canyon to Pacoima Wash SWCP	DWP59	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 5,400,000	$ -	$ 324,000	8	5 Year
Glenoaks-Filmore SWCP	DWP57	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 3,240,000	$ -	$ 194,400	8	5 Year
Glenoaks-Nettleton Median SWCP	DWP41	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 1,875,000	$ -	$ 112,500	8	5 Year
Lankershim Great Street	DWP60	ULAR	LASAN/LADWP/LA Mayor's Office	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 3,780,000	$ -	$ 226,800	8	5 Year
Lankershim SWCP - Tuxford to Sherman	DWP66	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 9,375,000	$ -	$ 562,500	8	5 Year
Saticoy SWCP - Tujunga to Vineland	DWP65	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 3,500,000	$ -	$ 210,000	8	5 Year
Van Nuys Great Street (Laurel Canyon to San Fernando)	DWP58	ULAR	LASAN/LADWP/LA Mayor's Office	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 3,360,000	$ -	$ 201,600	8	5 Year
Victory-Goodland Median	DWP49	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR1	$ 4,000,000	$ -	$ 240,000	8	5 Year
BC_103249_Block A Green Streets Program	103249	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 28,912,257	$ -	$ 1,734,735	9	5 Year
BC_108449_Block A Green Streets Program	108449	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 27,523,123	$ -	$ 1,651,387	9	5 Year
BC_100449_Block A Green Streets Program	100449	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 588,496	$ -	$ 35,310	9	5 Year
BC_101349_Block A Green Streets Program	101349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 1,064,897	$ -	$ 63,894	9	5 Year
BC_101849_Block A Green Streets Program	101849	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 3,923,304	$ -	$ 235,398	9	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
BC_102049_Block A Green Streets Program	102049	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,439,798	$ -	$ 86,388	9	5 Year
BC_102249_Block A Green Streets Program	102249	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,634,218	$ -	$ 158,053	9	5 Year
BC_102649_Block A Green Streets Program	102649	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,914,454	$ -	$ 174,867	9	5 Year
BC_103349_Block A Green Streets Program	103349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,564,159	$ -	$ 153,850	9	5 Year
BC_103549_Block A Green Streets Program	103549	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 14,012	$ -	$ 841	9	5 Year
BC_103749_Block A Green Streets Program	103749	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 3,727,139	$ -	$ 223,628	9	5 Year
BC_103849_Block A Green Streets Program	103849	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,373,156	$ -	$ 82,389	9	5 Year
BC_103949_Block A Green Streets Program	103949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 868,732	$ -	$ 52,124	9	5 Year
BC_104049_Block A Green Streets Program	104049	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,227,876	$ -	$ 133,673	9	5 Year
BC_104149_Block A Green Streets Program	104149	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 336,283	$ -	$ 20,177	9	5 Year
BC_104349_Block A Green Streets Program	104349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,220,196	$ -	$ 133,212	9	5 Year
BC_105049_Block A Green Streets Program	105049	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,185,841	$ -	$ 131,150	9	5 Year
BC_105149_Block A Green Streets Program	105149	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 4,049,410	$ -	$ 242,965	9	5 Year
BC_106349_Block A Green Streets Program	106349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,844,395	$ -	$ 170,664	9	5 Year
BC_106949_Block A Green Streets Program	106949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 392,330	$ -	$ 23,540	9	5 Year
BC_107349_Block A Green Streets Program	107349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 286,191	$ -	$ 17,171	9	5 Year
BC_107949_Block A Green Streets Program	107949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 14,012	$ -	$ 841	9	5 Year
BC_108149_Block A Green Streets Program	108149	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,975,664	$ -	$ 118,540	9	5 Year
BC_108249_Block A Green Streets Program	108249	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,345,133	$ -	$ 80,708	9	5 Year
BC_108349_Block A Green Streets Program	108349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,031,711	$ -	$ 121,903	9	5 Year
BC_108549_Block A Green Streets Program	108549	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,863,569	$ -	$ 111,814	9	5 Year
BC_108649_Block A Green Streets Program	108649	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 56,047	$ -	$ 3,363	9	5 Year
BC_108749_Block A Green Streets Program	108749	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,120,944	$ -	$ 67,257	9	5 Year
BC_108949_Block A Green Streets Program	108949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 98,083	$ -	$ 5,885	9	5 Year
BC_109149_Block A Green Streets Program	109149	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 3,671,092	$ -	$ 220,265	9	5 Year
BC_109249_Block A Green Streets Program	109249	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 3,895,280	$ -	$ 233,717	9	5 Year
BC_109449_Block A Green Streets Program	109449	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,401	$ -	$ 84	9	5 Year
BC_109649_Block A Green Streets Program	109649	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,621,394	$ -	$ 97,284	9	5 Year
BC_109749_Block A Green Streets Program	109749	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,947,640	$ -	$ 116,858	9	5 Year
BC_109849_Block A Green Streets Program	109849	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 3,096,608	$ -	$ 185,796	9	5 Year
BC_110049_Block A Green Streets Program	110049	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 3,306,785	$ -	$ 198,407	9	5 Year
BC_110149_Block A Green Streets Program	110149	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,704,277	$ -	$ 162,257	9	5 Year
BC_110749_Block A Green Streets Program	110749	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 1,289,086	$ -	$ 77,345	9	5 Year
BC_110949_Block A Green Streets Program	110949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,307,981	$ -	$ 138,479	9	5 Year
BC_111449_Block A Green Streets Program	111449	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 2,143,805	$ -	$ 128,628	9	5 Year
BC_102849_Block A Green Streets Program	102849	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 5,142,331	$ -	$ 308,540	9	5 Year
BC_102949_Block A Green Streets Program	102949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 12,446,111	$ -	$ 746,767	9	5 Year
BC_103649_Block A Green Streets Program	103649	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 11,994,101	$ -	$ 719,646	9	5 Year
BC_104949_Block A Green Streets Program	104949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 8,407,080	$ -	$ 504,425	9	5 Year
BC_106249_Block A Green Streets Program	106249	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 4,553,835	$ -	$ 273,230	9	5 Year
BC_107149_Block A Green Streets Program	107149	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 6,095,133	$ -	$ 365,708	9	5 Year
BC_107449_Block A Green Streets Program	107449	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 4,890,118	$ -	$ 293,407	9	5 Year
BC_107549_Block A Green Streets Program	107549	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 5,309,225	$ -	$ 318,554	9	5 Year
BC_107649_Block A Green Streets Program	107649	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 11,335,546	$ -	$ 680,133	9	5 Year
BC_108849_Block A Green Streets Program	108849	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 14,756,752	$ -	$ 885,405	9	5 Year
BC_109049_Block A Green Streets Program	109049	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 9,584,071	$ -	$ 575,044	9	5 Year
BC_109549_Block A Green Streets Program	109549	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 8,659,292	$ -	$ 519,558	9	5 Year
BC_109949_Block A Green Streets Program	109949	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 5,730,826	$ -	$ 343,850	9	5 Year
BC_110249_Block A Green Streets Program	110249	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**	Funding	**IWR1**	$ 22,555,126	$ -	$ 1,353,308	9	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
BC_110349_Block A Green Streets Program	110349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 1,373,434	$ -	$ 82,406	9	5 Year
BC_110449_Block A Green Streets Program	110449	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 7,646,291	$ -	$ 458,777	9	5 Year
BC_110549_Block A Green Streets Program	110549	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 12,134,219	$ -	$ 728,053	9	5 Year
BC_110849_Block A Green Streets Program	110849	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 13,563,422	$ -	$ 813,805	9	5 Year
BC_111249_Block A Green Streets Program	111249	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 5,148,141	$ -	$ 308,888	9	5 Year
BC_111349_Block A Green Streets Program	111349	BC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 14,226,609	$ -	$ 853,597	9	5 Year
SMB__3-04_Block A Green Streets Program	_3-04	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 38,179,789	$ -	$ 2,290,787	9	5 Year
SMB__2-01_Block A Green Streets Program	_2-01	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 2,087,758	$ -	$ 125,265	9	5 Year
SMB__2-01_2-02_Block A Green Streets Program	_2-01_2-02	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 420,354	$ -	$ 25,221	9	5 Year
SMB__2-03_Block A Green Streets Program	_2-03	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 812,684	$ -	$ 48,761	9	5 Year
SMB__2-04_2-06_Block A Green Streets Program	_2-04_2-06	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 602,507	$ -	$ 36,150	9	5 Year
SMB__2-05_Block A Green Streets Program	_2-05	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 2,382,006	$ -	$ 142,920	9	5 Year
SMB__2-06_Block A Green Streets Program	_2-06	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 560,472	$ -	$ 33,628	9	5 Year
SMB__2-07_3-01_Block A Green Streets Program	_2-07_3-01	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 238,201	$ -	$ 14,292	9	5 Year
SMB__2-10_Block A Green Streets Program	_2-10	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 1,541,298	$ -	$ 92,478	9	5 Year
SMB__2-10_2-11_Block A Green Streets Program	_2-10_2-11	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 378,319	$ -	$ 22,699	9	5 Year
SMB__2-11_Block A Green Streets Program	_2-11	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 575,576	$ -	$ 34,535	9	5 Year
SMB__3-06_Block A Green Streets Program	_3-06	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 3,939,050	$ -	$ 236,343	9	5 Year
SMB__2-02_Block A Green Streets Program	_2-02	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 8,477,139	$ -	$ 508,628	9	5 Year
SMB__2-04_Block A Green Streets Program	_2-04	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 9,401,918	$ -	$ 564,115	9	5 Year
SMB__2-06_2-07_Block A Green Streets Program	_2-06_2-07	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a	Funding	IWR1	$ 3,616,958	$ -	$ 217,017	9	5 Year
Bel Air Green Streets Project 1	BC-100	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 5,972,640	$ -	$ 358,358	10	5 Year
Bel Air Green Streets Project 2	BC-102	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 4,465,640	$ -	$ 267,938	10	5 Year
Westlake Green Streets Project 1	BC-105	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 424,140	$ -	$ 25,448	10	5 Year
Palms Green Streets Project 1	BC-106	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 739,240	$ -	$ 44,354	10	5 Year
Hollywood Green Streets Project 8	BC-107	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 232,340	$ -	$ 13,940	10	5 Year
Bel Air Green Streets Project 3	BC-108	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 478,940	$ -	$ 28,736	10	5 Year
Hollywood Green Streets Project 9	BC-110	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 204,940	$ -	$ 12,296	10	5 Year
Hollywood Green Streets Project 10	BC-111	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 341,939	$ -	$ 20,516	10	5 Year
West Adams Green Streets Project 6	BC-112	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 287,139	$ -	$ 17,228	10	5 Year
Silver Lake Green Streets Project 2	BC-113	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 204,939	$ -	$ 12,296	10	5 Year
Hollywood Green Streets Project 11	BC-114	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 711,839	$ -	$ 42,710	10	5 Year
Hollywood Green Streets Project 12	BC-115	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 437,839	$ -	$ 26,270	10	5 Year
West Adams Green Streets Project 7	BC-116	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 300,839	$ -	$ 18,050	10	5 Year
Wilshire Green Streets Project 2	BC-86	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 698,140	$ -	$ 41,888	10	5 Year
Silver Lake Green Streets Project 1	BC-87	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 451,540	$ -	$ 27,092	10	5 Year
Hollywood Green Streets Project 2	BC-88	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 2,944,940	$ -	$ 176,696	10	5 Year
West Adams Green Streets Project 3	BC-92	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 1,122,840	$ -	$ 67,370	10	5 Year
South Los Angeles Green Streets Project 2	BC-94	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 958,440	$ -	$ 57,506	10	5 Year
Hollywood Green Streets Project 3	BC-96	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 246,040	$ -	$ 14,762	10	5 Year
Hollywood Green Streets Project 4	BC-97	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 862,540	$ -	$ 51,752	10	5 Year
Hollywood Green Streets Project 5	BC-98	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 328,240	$ -	$ 19,694	10	5 Year
Hollywood Green Streets Project 6	BC-99	BC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 218,640	$ -	$ 13,118	10	5 Year
Wilmington-Harbor City Green Streets Project 2	DC-1	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 29,324,850	$ -	$ 1,759,491	10	5 Year
Wilmington-Harbor City Green Streets Project 4	DC-10	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 931,040	$ -	$ 55,862	10	5 Year
Wilmington-Harbor City Green Streets Project 5	DC-11	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 70,226	$ -	$ 4,214	10	5 Year
San Pedro Green Streets Project 1	DC-13	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 903,640	$ -	$ 54,218	10	5 Year
San Pedro Green Streets Project 2	DC-14	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 2,109,239	$ -	$ 126,554	10	5 Year
San Pedro Green Streets Project 3	DC-15	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	1W1	Yes	2S4	Yes	F1	Funding	IWR1	$ 1,109,140	$ -	$ 66,548	10	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Wilmington - Harbor City Green Streets Project 12	DC-16	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 3,766,939	$ -	$ 226,016	10	5 Year
Wilmington - Harbor City Green Streets Project 6	DC-18	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 7,137,139	$ -	$ 428,228	10	5 Year
Harbor Gateway Green Streets Project 2	DC-19	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,383,139	$ -	$ 82,988	10	5 Year
Wilmington - Harbor City Green Streets Project 7	DC-20	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 5,397,239	$ -	$ 323,834	10	5 Year
Wilmington - Harbor City Green Streets Project 8	DC-21	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,739,339	$ -	$ 104,360	10	5 Year
Wilmington - Harbor City Green Streets Project 9	DC-22	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 3,657,339	$ -	$ 219,440	10	5 Year
Wilmington - Harbor City Green Streets Project 10	DC-23	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,205,139	$ -	$ 132,308	10	5 Year
Wilmington - Harbor City Green Streets Project 11	DC-24	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 6,411,039	$ -	$ 384,662	10	5 Year
Harbor Gateway Green Streets Project 3	DC-25	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 3,903,939	$ -	$ 234,236	10	5 Year
Wilmington-Harbor City Green Streets Project 1	DC-26	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,095,439	$ -	$ 65,726	10	5 Year
Wilmington - Harbor City Green Streets Project 13	DC-27	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,205,139	$ -	$ 132,308	10	5 Year
San Pedro Green Streets Project 4	DC-28	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 3,068,239	$ -	$ 184,094	10	5 Year
Wilmington - Harbor City Green Streets Project 14	DC-29	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 8,918,139	$ -	$ 535,088	10	5 Year
Wilmington - Harbor City Green Streets Project 15	DC-30	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 8,589,339	$ -	$ 515,360	10	5 Year
Wilmington - Harbor City Green Streets Project 16	DC-31	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,451,739	$ -	$ 147,104	10	5 Year
San Pedro Green Streets Project 5	DC-32	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,068,039	$ -	$ 64,082	10	5 Year
Harbor Gateway Green Streets Project 4	DC-33	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 273,439	$ -	$ 16,406	10	5 Year
San Pedro Green Streets Project 6	DC-34	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 7,219,339	$ -	$ 433,160	10	5 Year
San Pedro Green Streets Project 7	DC-35	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,342,039	$ -	$ 80,522	10	5 Year
Wilmington - Harbor City Green Streets Project 17	DC-36	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,150,339	$ -	$ 129,020	10	5 Year
Harbor Gateway Green Streets Project 5	DC-37	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,944,939	$ -	$ 176,696	10	5 Year
San Pedro Green Streets Project 8	DC-38	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,629,739	$ -	$ 97,784	10	5 Year
San Pedro Green Streets Project 9	DC-39	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,273,639	$ -	$ 136,418	10	5 Year
South Los Angeles Green Streets Project 6	DC-8	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,355,840	$ -	$ 141,350	10	5 Year
Wilmington-Harbor City Green Streets Project 3	DC-9	DC	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 8,068,739	$ -	$ 484,124	10	5 Year
Venice Green Streets Project 1	MDR-12	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 5,369,839	$ -	$ 322,190	10	5 Year
Brentwood - Pacific Palisades Green Streets Project 1	SMB-18	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 5,000,000	$ -	$ 300,000	10	5 Year
Brentwood - Pacific Palisades Green Streets Project 2	SMB-19	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,712,040	$ -	$ 162,722	10	5 Year
Brentwood - Pacific Palisades Green Streets Project 3	SMB-20	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 4,583,741	$ -	$ 275,024	10	5 Year
Brentwood - Pacific Palisades Green Streets Project 4	SMB-21	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,040,640	$ -	$ 62,438	10	5 Year
Brentwood - Pacific Palisades Green Streets Project 5	SMB-22	SMB	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,396,839	$ -	$ 83,810	10	5 Year
Northeast Los Angeles Green Streets Project 4	ULAR-26	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,026,939	$ -	$ 61,616	10	5 Year
Northeast Los Angeles Green Streets Project 6	ULAR-28	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 1,040,639	$ -	$ 62,438	10	5 Year
Sunland Green Streets Project 1	ULAR-33	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,520,240	$ -	$ 151,214	10	5 Year
Arleta Green Streets Project 4	ULAR-34	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,259,940	$ -	$ 135,596	10	5 Year
Sunland Green Streets Project 2	ULAR-35	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,575,040	$ -	$ 154,502	10	5 Year
Sunland Green Streets Project 5	ULAR-40	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 3,839,644	$ -	$ 230,379	10	5 Year
Sunland Green Streets Project 7	ULAR-41	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 60,526	$ -	$ 3,632	10	5 Year
Sunland Green Streets Project 8	ULAR-42	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 77,501	$ -	$ 4,650	10	5 Year
Chatsworth Green Streets Project 6	ULAR-46	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 2,191,440	$ -	$ 131,486	10	5 Year
Northridge Green Streets Project 10	ULAR-47	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 725,540	$ -	$ 43,532	10	5 Year
Burwood & Figueroa SW Capture Greenway	ULAR-8	ULAR	LASAN	City	Green - Grey Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	Yes	**F1**	Funding	**IWR1**	$ 5,000,000	$ -	$ 300,000	10	5 Year
Bel Air - Beverly Crest Green Streets Project 1	BC-117	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 191,239	$ -	$ 11,474	11	5 Year
Palms - Mar Vista - Del Rey Green Streets Project 1	BC-119	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 1,147,438	$ -	$ 68,846	11	5 Year
Silver Lake - Echo Park - Elysian Valley Green Streets Project 1	BC-120	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 191,239	$ -	$ 11,474	11	5 Year
South Los Angeles Green Streets Project 4	BC-121	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 764,958	$ -	$ 45,897	11	5 Year
West Los Angeles Green Streets Project 14	BC-124	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 3,442,314	$ -	$ 206,539	11	5 Year
Westchester - Playa del Rey Green Streets Project 1	BC-125	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 1,912,396	$ -	$ 114,744	11	5 Year
Westwood Green Streets Project 1	BC-127	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 382,479	$ -	$ 22,949	11	5 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Green Streets Distributed within BC above Sawtelle Blvd	BC-129	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 468,073,972	$ -	$ 28,084,438	11	5 Year
Green Streets Distributed within Centinela Creek	BC-130	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 36,018,124	$ -	$ 2,161,087	11	5 Year
Green Streets Distributed within Sepulveda Channel	BC-131	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 109,582,415	$ -	$ 6,574,945	11	5 Year
Westwood Neighborhood Greenway Project	BC-5	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 3,104,420	$ -	$ 186,265	11	5 Year
Manchester Neighborhood Greenway Project	BC-9	BC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 780,316	$ -	$ 46,819	11	5 Year
San Pedro and 3rd SW Capture Greenway	DC-7	DC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 10,000,000	$ -	$ 600,000	11	5 Year
4th St & Santa Fe Priority Greenway + Sustainable Little Tokyo	LRS-9	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 17,125,000	$ -	$ 1,027,500	11	5 Year
Marina del Rey Green Streets Project 4	MDR-10	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 18,678,807	$ -	$ 1,120,728	11	5 Year
Marina del Rey Green Streets Project 5	MDR-11	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 98,944,616	$ -	$ 5,936,677	11	5 Year
Venice Blvd. Neighborhood Green Streets	MDR-6	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 81,070,737	$ -	$ 4,864,244	11	5 Year
Marina del Rey Green Streets Project 1	MDR-7	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 1,666,097	$ -	$ 99,966	11	5 Year
Marina del Rey Green Streets Project 2	MDR-8	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 3,361,567	$ -	$ 201,694	11	5 Year
Marina del Rey Green Streets Project 3	MDR-9	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 15,944,378	$ -	$ 956,663	11	5 Year
Oakwood Ave Green Alley	SMB-15	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 42,196,000	$ -	$ 2,531,760	11	5 Year
Brentwood - Pacific Palisades Green Streets Project 6	SMB-23	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 533,740	$ -	$ 32,024	11	5 Year
Brentwood - Pacific Palisades Green Streets Project 7	SMB-24	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 3,824,793	$ -	$ 229,488	11	5 Year
Los Angeles International Airport Green Streets Project 1	SMB-25	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 4,780,991	$ -	$ 286,859	11	5 Year
Westchester - Playa del Rey Green Streets Project 2	SMB-26	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 33,851	$ -	$ 2,031	11	5 Year
Palms - Mar Vista - Del Rey Green Streets Project 2	SMB-27	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 67,702	$ -	$ 4,062	11	5 Year
Green Streets Distributed within SMB	SMB-28	SMB	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 67,702	$ -	$ 4,062	11	5 Year
San Fernando Rd from Elm St to Eagle Rock Blvd	ULAR-10	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Funding	**IWR1**	$ 56,042,590	$ -	$ 3,362,555	11	5 Year
Tuxford Pumping Plant No. 614 Climate Change Impact Retrofit	CCLF1	SMB	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F1**	Cimate Change	**IWR1**	$ -	$ 1,110,000	$ 55,500	12	5 Year
Westside Park Pumping Plant No. 740 Climate Change Impact Retrofit	CCLF2	BC	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F1**	Cimate Change	**IWR1**	$ -	$ 580,000	$ 29,000	12	5 Year
Los Angeles Zoo Pumping Plant Climate Change Impact Retrofit	CCLF3	ULAR	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F1**	Cimate Change	**IWR1**	$ -	$ 7,250,000	$ 362,500	12	5 Year
Santa Moncia Pumping Plant No.733 Climate Change Impact Retrofit	CCLF4	SMB	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F1**	Cimate Change	**IWR1**	$ -	$ 5,210,000	$ 260,500	12	5 Year
Temescal Pumping Plant 734	CCLF5	SMB	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F1**	Cimate Change	**IWR1**	$ -	$ 2,470,000	$ 123,500	12	5 Year
Southerland Pumping Plant No. 692 Climate Change Impact Retrofit	CCSW1	BC	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F1**	Cimate Change	**IWR1**	$ -	$ 15,750,000	$ 787,500	12	5 Year
Kinney Circle Pumping Plant 647 Climate Change Impact Retrofit	CCSW2	SMB	LASAN	City	Grey Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F1**	Cimate Change	**IWR1**	$ -	$ 1,910,000	$ 95,500	12	5 Year
DC_Dominguez Channel Estuary_Block B Green Streets Program	Dominguez Channel Estuary	DC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,700,107	$ -	$ 882,006	13	10 Year
DC_Dominguez Channel_Block B Green Streets Program	Dominguez Channel	DC	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,616,561	$ -	$ 456,994	13	10 Year
ULAR_604349_Block A Green Streets Program	604349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 11,025,519	$ -	$ 661,531	13	10 Year
ULAR_638449_Block A Green Streets Program	638449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 13,720,450	$ -	$ 823,227	13	10 Year
ULAR_664949_Block A Green Streets Program	664949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 16,758,113	$ -	$ 1,005,487	13	10 Year
ULAR_692849_Block A Green Streets Program	692849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 16,740,462	$ -	$ 1,004,428	13	10 Year
ULAR_603649_Block A Green Streets Program	603649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,120,944	$ -	$ 67,257	13	10 Year
ULAR_603949_Block A Green Streets Program	603949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 63,053	$ -	$ 3,783	13	10 Year
ULAR_604149_Block A Green Streets Program	604149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,275,074	$ -	$ 76,504	13	10 Year
ULAR_604249_Block A Green Streets Program	604249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 581,490	$ -	$ 34,889	13	10 Year
ULAR_604449_Block A Green Streets Program	604449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,366,151	$ -	$ 81,969	13	10 Year
ULAR_604949_Block A Green Streets Program	604949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,078,909	$ -	$ 64,735	13	10 Year
ULAR_605849_Block A Green Streets Program	605849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,017,699	$ -	$ 121,062	13	10 Year
ULAR_606349_Block A Green Streets Program	606349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,106,932	$ -	$ 66,416	13	10 Year
ULAR_606449_Block A Green Streets Program	606449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,485,251	$ -	$ 89,115	13	10 Year
ULAR_635849_Block A Green Streets Program	635849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	13	10 Year
ULAR_635949_Block A Green Streets Program	635949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 455,384	$ -	$ 27,323	13	10 Year
ULAR_636849_Block A Green Streets Program	636849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	13	10 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
ULAR_637049_Block A Green Streets Program	637049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	13	10 Year
ULAR_638249_Block A Green Streets Program	638249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	13	10 Year
ULAR_639449_Block A Green Streets Program	639449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,015,856	$ -	$ 60,951	13	10 Year
ULAR_639549_Block A Green Streets Program	639549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,127,950	$ -	$ 67,677	13	10 Year
ULAR_639749_Block A Green Streets Program	639749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 686,578	$ -	$ 41,195	13	10 Year
ULAR_639949_Block A Green Streets Program	639949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 84,071	$ -	$ 5,044	13	10 Year
ULAR_640049_Block A Green Streets Program	640049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 105,089	$ -	$ 6,305	13	10 Year
ULAR_640749_Block A Green Streets Program	640749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,024,705	$ -	$ 121,482	13	10 Year
ULAR_640849_Block A Green Streets Program	640849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,583,157	$ -	$ 94,989	13	10 Year
ULAR_640949_Block A Green Streets Program	640949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 301,254	$ -	$ 18,075	13	10 Year
ULAR_641049_Block A Green Streets Program	641049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,141,962	$ -	$ 68,518	13	10 Year
ULAR_641149_Block A Green Streets Program	641149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 483,407	$ -	$ 29,004	13	10 Year
ULAR_647649_Block A Green Streets Program	647649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 742,625	$ -	$ 44,558	13	10 Year
ULAR_649149_Block A Green Streets Program	649149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 77,065	$ -	$ 4,624	13	10 Year
ULAR_649449_Block A Green Streets Program	649449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 133,112	$ -	$ 7,987	13	10 Year
ULAR_649549_Block A Green Streets Program	649549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,183,997	$ -	$ 71,040	13	10 Year
ULAR_649649_Block A Green Streets Program	649649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 595,502	$ -	$ 35,730	13	10 Year
ULAR_651249_Block A Green Streets Program	651249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 182,153	$ -	$ 10,929	13	10 Year
ULAR_657149_Block A Green Streets Program	657149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 301,254	$ -	$ 18,075	13	10 Year
ULAR_660349_Block A Green Streets Program	660349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 791,667	$ -	$ 47,500	13	10 Year
ULAR_661049_Block A Green Streets Program	661049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 28,024	$ -	$ 1,681	13	10 Year
ULAR_661249_Block A Green Streets Program	661249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 777,655	$ -	$ 46,659	13	10 Year
ULAR_661749_Block A Green Streets Program	661749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 294,248	$ -	$ 17,655	13	10 Year
ULAR_661849_Block A Green Streets Program	661849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 889,749	$ -	$ 53,385	13	10 Year
ULAR_662249_Block A Green Streets Program	662249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 266,224	$ -	$ 15,973	13	10 Year
ULAR_662949_Block A Green Streets Program	662949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,169,985	$ -	$ 70,199	13	10 Year
ULAR_663549_Block A Green Streets Program	663549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 28,024	$ -	$ 1,681	13	10 Year
ULAR_663649_Block A Green Streets Program	663649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 217,183	$ -	$ 13,031	13	10 Year
ULAR_663749_Block A Green Streets Program	663749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 308,260	$ -	$ 18,496	13	10 Year
ULAR_663849_Block A Green Streets Program	663849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	13	10 Year
ULAR_664649_Block A Green Streets Program	664649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 791,667	$ -	$ 47,500	13	10 Year
ULAR_664749_Block A Green Streets Program	664749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,303,097	$ -	$ 78,186	13	10 Year
ULAR_665349_Block A Green Streets Program	665349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 623,525	$ -	$ 37,412	13	10 Year
ULAR_665549_Block A Green Streets Program	665549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 560,472	$ -	$ 33,628	13	10 Year
ULAR_665749_Block A Green Streets Program	665749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 49,041	$ -	$ 2,942	13	10 Year
ULAR_665949_Block A Green Streets Program	665949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 987,832	$ -	$ 59,270	13	10 Year
ULAR_666149_Block A Green Streets Program	666149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,485,251	$ -	$ 89,115	13	10 Year
ULAR_666249_Block A Green Streets Program	666249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,726,189	$ -	$ 103,571	13	10 Year
ULAR_666349_Block A Green Streets Program	666349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 546,460	$ -	$ 32,788	13	10 Year
ULAR_666449_Block A Green Streets Program	666449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 326,575	$ -	$ 19,595	13	10 Year
ULAR_666549_Block A Green Streets Program	666549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 357,301	$ -	$ 21,438	13	10 Year
ULAR_667849_Block A Green Streets Program	667849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	13	10 Year
ULAR_667949_Block A Green Streets Program	667949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 126,106	$ -	$ 7,566	13	10 Year
ULAR_668449_Block A Green Streets Program	668449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,094,735	$ -	$ 65,684	13	10 Year
ULAR_669349_Block A Green Streets Program	669349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,205,015	$ -	$ 72,301	13	10 Year
ULAR_669749_Block A Green Streets Program	669749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 56,047	$ -	$ 3,363	13	10 Year
ULAR_672849_Block A Green Streets Program	672849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	13	10 Year
ULAR_673949_Block A Green Streets Program	673949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	13	10 Year
ULAR_682949_Block A Green Streets Program	682949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 420,354	$ -	$ 25,221	13	10 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
ULAR_683049_Block A Green Streets Program	683049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 161,136	$ -	$ 9,668	13	10 Year
ULAR_683149_Block A Green Streets Program	683149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 945,797	$ -	$ 56,748	13	10 Year
ULAR_683649_Block A Green Streets Program	683649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,015,856	$ -	$ 60,951	13	10 Year
ULAR_685349_Block A Green Streets Program	685349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 427,360	$ -	$ 25,642	13	10 Year
ULAR_686049_Block A Green Streets Program	686049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 7,006	$ -	$ 420	13	10 Year
ULAR_686249_Block A Green Streets Program	686249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 896,755	$ -	$ 53,805	13	10 Year
ULAR_686449_Block A Green Streets Program	686449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 91,077	$ -	$ 5,465	13	10 Year
ULAR_686649_Block A Green Streets Program	686649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 259,218	$ -	$ 15,553	13	10 Year
ULAR_686849_Block A Green Streets Program	686849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,092,920	$ -	$ 65,575	13	10 Year
ULAR_687249_Block A Green Streets Program	687249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,024,705	$ -	$ 121,482	13	10 Year
ULAR_687349_Block A Green Streets Program	687349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 105,089	$ -	$ 6,305	13	10 Year
ULAR_687449_Block A Green Streets Program	687449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 126,106	$ -	$ 7,566	13	10 Year
ULAR_687549_Block A Green Streets Program	687549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,996,682	$ -	$ 119,801	13	10 Year
ULAR_687849_Block A Green Streets Program	687849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 385,325	$ -	$ 23,119	13	10 Year
ULAR_688049_Block A Green Streets Program	688049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 7,006	$ -	$ 420	13	10 Year
ULAR_688549_Block A Green Streets Program	688549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,506,269	$ -	$ 90,376	13	10 Year
ULAR_688749_Block A Green Streets Program	688749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 889,749	$ -	$ 53,385	13	10 Year
ULAR_688849_Block A Green Streets Program	688849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,113,938	$ -	$ 66,836	13	10 Year
ULAR_688949_Block A Green Streets Program	688949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,324,115	$ -	$ 79,447	13	10 Year
ULAR_689349_Block A Green Streets Program	689349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 98,083	$ -	$ 5,885	13	10 Year
ULAR_690249_Block A Green Streets Program	690249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 763,643	$ -	$ 45,819	13	10 Year
ULAR_691149_Block A Green Streets Program	691149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 126,106	$ -	$ 7,566	13	10 Year
ULAR_691249_Block A Green Streets Program	691249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,268,068	$ -	$ 76,084	13	10 Year
ULAR_691349_Block A Green Streets Program	691349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 42,035	$ -	$ 2,522	13	10 Year
ULAR_691549_Block A Green Streets Program	691549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 399,336	$ -	$ 23,960	13	10 Year
ULAR_691649_Block A Green Streets Program	691649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,101,770	$ -	$ 126,106	13	10 Year
ULAR_691849_Block A Green Streets Program	691849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 70,059	$ -	$ 4,204	13	10 Year
ULAR_692149_Block A Green Streets Program	692149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 7,006	$ -	$ 420	13	10 Year
ULAR_692249_Block A Green Streets Program	692249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 798,673	$ -	$ 47,920	13	10 Year
ULAR_692449_Block A Green Streets Program	692449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,401,180	$ -	$ 84,071	13	10 Year
ULAR_693449_Block A Green Streets Program	693449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 378,319	$ -	$ 22,699	13	10 Year
ULAR_694149_Block A Green Streets Program	694149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 7,006	$ -	$ 420	13	10 Year
ULAR_694249_Block A Green Streets Program	694249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 721,608	$ -	$ 43,296	13	10 Year
ULAR_694349_Block A Green Streets Program	694349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,786,505	$ -	$ 107,190	13	10 Year
ULAR_694449_Block A Green Streets Program	694449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 924,779	$ -	$ 55,487	13	10 Year
ULAR_694549_Block A Green Streets Program	694549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 896,755	$ -	$ 53,805	13	10 Year
ULAR_694649_Block A Green Streets Program	694649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,198,009	$ -	$ 71,881	13	10 Year
ULAR_694849_Block A Green Streets Program	694849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 357,301	$ -	$ 21,438	13	10 Year
ULAR_694949_Block A Green Streets Program	694949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,583,333	$ -	$ 95,000	13	10 Year
ULAR_695049_Block A Green Streets Program	695049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 56,047	$ -	$ 3,363	13	10 Year
ULAR_695149_Block A Green Streets Program	695149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,094,764	$ -	$ 125,686	13	10 Year
ULAR_695249_Block A Green Streets Program	695249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 133,112	$ -	$ 7,987	13	10 Year
ULAR_695349_Block A Green Streets Program	695349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 140,118	$ -	$ 8,407	13	10 Year
ULAR_695449_Block A Green Streets Program	695449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 91,077	$ -	$ 5,465	13	10 Year
ULAR_695549_Block A Green Streets Program	695549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 21,018	$ -	$ 1,261	13	10 Year
ULAR_695849_Block A Green Streets Program	695849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 336,283	$ -	$ 20,177	13	10 Year
ULAR_695949_Block A Green Streets Program	695949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 63,053	$ -	$ 3,783	13	10 Year
ULAR_697449_Block A Green Streets Program	697449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 798,673	$ -	$ 47,920	13	10 Year
ULAR_697549_Block A Green Streets Program	697549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,891,593	$ -	$ 113,496	13	10 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
ULAR_698049_Block A Green Streets Program	698049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,401,180	$ -	$ 84,071	13	10 Year
ULAR_698149_Block A Green Streets Program	698149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 294,248	$ -	$ 17,655	13	10 Year
ULAR_698249_Block A Green Streets Program	698249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,120,944	$ -	$ 67,257	13	10 Year
ULAR_698349_Block A Green Streets Program	698349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,828,540	$ -	$ 109,712	13	10 Year
ULAR_698549_Block A Green Streets Program	698549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,737,463	$ -	$ 104,248	13	10 Year
ULAR_698649_Block A Green Streets Program	698649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 511,431	$ -	$ 30,686	13	10 Year
ULAR_698749_Block A Green Streets Program	698749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 350,295	$ -	$ 21,018	13	10 Year
ULAR_698849_Block A Green Streets Program	698849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 98,083	$ -	$ 5,885	13	10 Year
ULAR_699149_Block A Green Streets Program	699149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 301,254	$ -	$ 18,075	13	10 Year
ULAR_699649_Block A Green Streets Program	699649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,275,074	$ -	$ 76,504	13	10 Year
ULAR_699749_Block A Green Streets Program	699749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 238,201	$ -	$ 14,292	13	10 Year
ULAR_699849_Block A Green Streets Program	699849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 175,148	$ -	$ 10,509	13	10 Year
ULAR_700049_Block A Green Streets Program	700049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 560,472	$ -	$ 33,628	13	10 Year
ULAR_700249_Block A Green Streets Program	700249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 644,543	$ -	$ 38,673	13	10 Year
ULAR_700349_Block A Green Streets Program	700349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 161,136	$ -	$ 9,668	13	10 Year
ULAR_700449_Block A Green Streets Program	700449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 49,041	$ -	$ 2,942	13	10 Year
ULAR_700649_Block A Green Streets Program	700649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,092,920	$ -	$ 65,575	13	10 Year
ULAR_700849_Block A Green Streets Program	700849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 385,325	$ -	$ 23,119	13	10 Year
ULAR_602449_Block A Green Streets Program	602449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 6,102,139	$ -	$ 366,128	13	10 Year
ULAR_604049_Block A Green Streets Program	604049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,601,033	$ -	$ 216,062	13	10 Year
ULAR_604549_Block A Green Streets Program	604549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,404,867	$ -	$ 204,292	13	10 Year
ULAR_604649_Block A Green Streets Program	604649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,529,130	$ -	$ 151,748	13	10 Year
ULAR_604749_Block A Green Streets Program	604749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,888,275	$ -	$ 233,296	13	10 Year
ULAR_605049_Block A Green Streets Program	605049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 10,165,561	$ -	$ 609,934	13	10 Year
ULAR_605149_Block A Green Streets Program	605149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,115,782	$ -	$ 126,947	13	10 Year
ULAR_605249_Block A Green Streets Program	605249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 6,109,145	$ -	$ 366,549	13	10 Year
ULAR_605349_Block A Green Streets Program	605349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 4,470,433	$ -	$ 268,226	13	10 Year
ULAR_605449_Block A Green Streets Program	605449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 6,823,747	$ -	$ 409,425	13	10 Year
ULAR_605549_Block A Green Streets Program	605549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 10,207,596	$ -	$ 612,456	13	10 Year
ULAR_605649_Block A Green Streets Program	605649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,297,935	$ -	$ 137,876	13	10 Year
ULAR_605749_Block A Green Streets Program	605749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 10,198,237	$ -	$ 611,894	13	10 Year
ULAR_605949_Block A Green Streets Program	605949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,418,879	$ -	$ 205,133	13	10 Year
ULAR_606149_Block A Green Streets Program	606149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,516,962	$ -	$ 211,018	13	10 Year
ULAR_606249_Block A Green Streets Program	606249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,360,988	$ -	$ 141,659	13	10 Year
ULAR_637749_Block A Green Streets Program	637749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,888,643	$ -	$ 473,319	13	10 Year
ULAR_638349_Block A Green Streets Program	638349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 5,023,230	$ -	$ 301,394	13	10 Year
ULAR_638549_Block A Green Streets Program	638549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,237,095	$ -	$ 434,226	13	10 Year
ULAR_638849_Block A Green Streets Program	638849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,431,047	$ -	$ 145,863	13	10 Year
ULAR_639249_Block A Green Streets Program	639249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,269,912	$ -	$ 136,195	13	10 Year
ULAR_640249_Block A Green Streets Program	640249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,353,982	$ -	$ 141,239	13	10 Year
ULAR_640649_Block A Green Streets Program	640649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,117,626	$ -	$ 187,058	13	10 Year
ULAR_661949_Block A Green Streets Program	661949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,631,255	$ -	$ 97,875	13	10 Year
ULAR_662049_Block A Green Streets Program	662049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 589,266	$ -	$ 35,356	13	10 Year
ULAR_663949_Block A Green Streets Program	663949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,859,546	$ -	$ 171,573	13	10 Year
ULAR_664049_Block A Green Streets Program	664049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,375,000	$ -	$ 142,500	13	10 Year
ULAR_664149_Block A Green Streets Program	664149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 420,373	$ -	$ 25,222	13	10 Year
ULAR_664549_Block A Green Streets Program	664549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,612,052	$ -	$ 96,723	13	10 Year
ULAR_665049_Block A Green Streets Program	665049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,823,378	$ -	$ 169,403	13	10 Year
ULAR_667649_Block A Green Streets Program	667649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 11,952,065	$ -	$ 717,124	13	10 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
ULAR_668749_Block A Green Streets Program	668749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 8,211,841	$ -	$ 492,710	13	10 Year
ULAR_683449_Block A Green Streets Program	683449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,662,242	$ -	$ 159,735	13	10 Year
ULAR_685649_Block A Green Streets Program	685649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 5,744,838	$ -	$ 344,690	13	10 Year
ULAR_689149_Block A Green Streets Program	689149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,494,100	$ -	$ 149,646	13	10 Year
ULAR_689249_Block A Green Streets Program	689249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,403,024	$ -	$ 144,181	13	10 Year
ULAR_691449_Block A Green Streets Program	691449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 1,577,736	$ -	$ 94,664	13	10 Year
ULAR_691949_Block A Green Streets Program	691949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 3,811,210	$ -	$ 228,673	13	10 Year
ULAR_692349_Block A Green Streets Program	692349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 5,212,390	$ -	$ 312,743	13	10 Year
ULAR_692549_Block A Green Streets Program	692549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,749,126	$ -	$ 164,948	13	10 Year
ULAR_692749_Block A Green Streets Program	692749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 4,658,924	$ -	$ 279,535	13	10 Year
ULAR_695649_Block A Green Streets Program	695649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 4,806,047	$ -	$ 288,363	13	10 Year
ULAR_695749_Block A Green Streets Program	695749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 4,890,118	$ -	$ 293,407	13	10 Year
ULAR_696049_Block A Green Streets Program	696049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,669,248	$ -	$ 160,155	13	10 Year
ULAR_697649_Block A Green Streets Program	697649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 6,424,410	$ -	$ 385,465	13	10 Year
ULAR_697749_Block A Green Streets Program	697749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,199,853	$ -	$ 131,991	13	10 Year
ULAR_697849_Block A Green Streets Program	697849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,543,142	$ -	$ 152,589	13	10 Year
ULAR_697949_Block A Green Streets Program	697949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 4,217,552	$ -	$ 253,053	13	10 Year
ULAR_699449_Block A Green Streets Program	699449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,396,018	$ -	$ 143,761	13	10 Year
ULAR_699549_Block A Green Streets Program	699549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 3,348,820	$ -	$ 200,929	13	10 Year
ULAR_699949_Block A Green Streets Program	699949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 2,886,431	$ -	$ 173,186	13	10 Year
Los Angeles River Natural Park	ULAR50	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 64,000,000	$ -	$ 3,200,000	14	10 Year
Albion Dairy Riverside Park	ULAR31	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Open Space and Recreation	IWR1	$ 31,699,355	$ -	$ 1,584,968	14	10 Year
Bandini Power Line Easement	DWP118	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 100,000	$ -	$ 5,000	14	10 Year
Boulevard Pit Stormwater Capture Project	ULAR71	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 118,000,000	$ -	$ 1,300,000	14	10 Year
Branford Spreading Basin Cleanout and Pump	ULAR18	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 1,500,000	$ -	$ 36,000	14	10 Year
Bull Creek Los Angeles Reservoir Water Quality Improvement Project (Bull Creek Pipeline)	ULAR21	ULAR	LACFCD/LADWP	Partner	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 75,000,000	$ -	$ 3,750,000	14	10 Year
Cal Mat Pit	ULAR136	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding-LADWP	IWR1	$ 10,000,000	$ -	$ 500,000	14	10 Year
Debris Basin Retrofit #1 (pilot)	DWP107a	ULAR	LASAN/LADWP	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 2,000,000	$ -	$ 100,000	14	10 Year
Debris Basin Retrofit #2	DWP107b	ULAR	LASAN/LADWP	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 2,000,000	$ -	$ 100,000	14	10 Year
Debris Basin Retrofit #3	DWP115	ULAR	LASAN/LADWP	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 2,000,000	$ -	$ 100,000	14	10 Year
Headworks Ecosystem Restoration	ULAR32	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Habitat Restoration	IWR1	$ 14,000,000	$ -	$ 250,000	14	10 Year
LA Forebay Recharge System - LAR Full Scale	DWP111a	ULAR	LADWP/LACFCD	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding-LADWP	IWR1	$ 15,000,000	$ -	$ 750,000	14	10 Year
LA Forebay Recharge System - LAR Pilot	DWP111b	ULAR	LADWP/LACFCD	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding-LADWP	IWR1	$ 3,000,000	$ -	$ 150,000	14	10 Year
Lakeside Debris Basin	DWP69	ULAR	LASAN/LADWP	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 333,000	$ -	$ 16,650	14	10 Year
Panorama City Creek Restoration	ULAR3724	ULAR	LA City CD6	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Habitat Restoration	IWR1	$ 5,000,000	$ -	$ 100,000	14	10 Year
Parkway Retrofit TRP	DWP119	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 5,700,000	$ -	$ 342,000	14	10 Year
Roscoe Power Facility project	DWP120	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 500,000	$ -	$ 30,000	14	10 Year
Sepulveda Basin - Hansen SG Pipe Line 54"	DWP117	ULAR	LASAN/LADWP	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 6,600,000	$ -	$ 330,000	14	10 Year
Sepulveda Basin Sports Complex Multi-Purpose Open Space Project	ULAR54	ULAR	LABOE	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Open Space and Recreation	IWR1	$ 18,000,000	$ -	$ 900,000	14	10 Year
Sun Valley Parking Lot Infiltration	DWP48	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 100,000	$ -	$ 5,000	14	10 Year
Valley Generating Station (LADWPSteam) Stormwater Capture - Ph I	ULAR84a	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Funding - LADWP	IWR1	$ 2,000,000	$ -	$ 30,000	14	10 Year
Wenworth Park	ULAR93	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Open Space and Recreation	IWR1	$ 500,000	$ -	$ 25,000	14	10 Year
Hansen Dam Water Conservation and Supply	ULAR78	ULAR	LACFCD/USACE/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F2	Funding - LADWP	IWR1	$ 6,000,000	$ -	$ 100,000	15	10 Year
Big T & Pacoima Dam to LA Filtration Plant	DWP114	ULAR	LACFCD/LADWP	Partner	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 80,000,000	$ -	$ 4,000,000	16	25 Year
Lopez Spreading Grounds Improvement	ULAR20	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 5,500,000	$ -	$ 50,000	16	25 Year
New Tujunga Spreading Grounds	NSG2	ULAR	LACFCD/LADWP	Partner	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 394,650,187	$ -	$ 3,771,385	16	25 Year
Pacoima Reservoir Sediment Removal	ULAR75	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 85,000,000	$ -	$ -	16	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Pacoima Spreading Grounds Enhancements	ULAR76	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 32,000,000	$ -	$ 70,000	16	25 Year
Sheldon Pit Multiuse	ULAR65	ULAR	LACFCD/LADWP	Partner	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 75,000,000	$ -	$ 1,300,000	16	25 Year
Spreading Grounds Optimization	DWP106	ULAR	LACFCD/LADWP	Partner	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Funding - LADWP	IWR1	$ 1,000,000	$ -	$ 50,000	16	25 Year
Storm Drain Mining (Capture and Use)	DWP110	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F1	Funding-LADWP	IWR1	$ 3,000,000		$ 150,000	17	25 Year
Hansen Dam Wildlife Lake Improvement	ULAR80	ULAR	RAP/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F1	Habitat Restoration	IWR1	$ 50,000,000	$ -	$ 300,000	18	25 Year
Humboldt Stormwater Greenway	ULAR34	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F1	Community Beautification	IWR1	$ 5,258,635	$ -	$ 30,000	18	25 Year
Lopez Canyon Basin	DWP62	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F1	Funding-LADWP	IWR1	$ 5,000,000	$ -	$ 250,000	18	25 Year
Stonehurst Park	ULAR69	ULAR	LASAN	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F1	Open Space and Recreation	IWR1	$ 500,000	$ -	$ 25,000	18	25 Year
Verdugo Hills Golf Course Green Infrastructure	ULAR66	ULAR	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F1	Open Space and Recreation	IWR1	$ 34,948,764	$ -	$ 90,000	18	25 Year
Hollywood Ave - La Brea to Gower Great Street	DWP201	BC	LASAN/LADWP/LA Mayor's Office	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding - LADWP	IWR1	$ 3,000,000	$ -	$ 180,000	19	25 Year
Reseda Blvd - Plummer to Parthenia Great Street	DWP202	ULAR	LASAN/LADWP/LA Mayor's Office	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding - LADWP	IWR1	$ 3,000,000	$ -	$ 180,000	19	25 Year
Western Ave - Melores to 3rd Great Street	DWP203	ULAR	LASAN/LADWP/LA Mayor's Office	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding - LADWP	IWR1	$ 3,000,000	$ -	$ 180,000	19	25 Year
Whitnall Gardens	DWP22	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F1	Funding - LADWP	IWR1	$ 2,000,000	$ -	$ 120,000	19	25 Year
Maclay Middle School	DWP204	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F4	Funding - LADWP	IWR1	$ 100,000	$ -	$ 6,000	20	25 Year
Northbridge Middle School	DWP205	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	Yes	F4	Funding - LADWP	IWR1	$ 100,000	$ -	$ 6,000	20	25 Year
Canterbury Powerline Easement Stormwater Capture	DWP35	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 29,000,000	$ -	$ 55,540	21	25 Year
East Valley District Headquarters	DWP45	ULAR	LABOE/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 2,000,000	$ -	$ 100,000	21	25 Year
LA Forebay Recharge System - Upper Ballona	DWP116	ULAR	LADWP/LACFCD	City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Fuding-LADWP	IWR2	$ 3,000,000	$ -	$ 150,000	21	25 Year
North Hollywood Powerline	DWP50	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 5,000,000	$ -	$ 250,000	21	25 Year
Park Retrofit #2	DWP112a	ULAR	RAP/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Open Space and Recreation	IWR2	$ 3,000,000	$ -	$ 150,000	21	25 Year
Park Retrofit #3	DWP112b	ULAR	RAP/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Open Space and Recreation	IWR2	$ 3,000,000	$ -	$ 150,000	21	25 Year
Silver Lake Stormwater Capture Project	DWP108	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 5,000,000	$ -	$ 250,000	21	25 Year
Tujunga wash Outdoor Classroom	ULAR103	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Community Beautification	IWR2	$ 1,000,000	$ -	$ 50,000	21	25 Year
Valley Center Yard SWCP	DWP43	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 1,000,000	$ -	$ 50,000	21	25 Year
Valley Generating Station Stormwater Capture - II	ULAR84b	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 10,000,000	$ -	$ 500,000	21	25 Year
Van Norman Stormwater Capture	DWP61	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 40,000,000	$ -	$ 2,000,000	21	25 Year
Van Nuys Airport	DWP113	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 16,000,000	$ -	$ 800,000	21	25 Year
Whiteman Airport (Roger Jessup Park)	DWP54	ULAR	LASAN/LADWP	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	No	n/a	Funding - LADWP	IWR2	$ 7,500,000	$ -	$ 375,000	21	25 Year
Harbor City Park	DCLA01	DC	LASAN	City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	No	n/a	Open Space and Recreation	IWR2	$ 71,994,000	$ -	$ 3,599,700	22	25 Year
Taylor Yard River Park - Parcel G2	ULAR5	ULAR	LABOE/USACE	Partner	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	No	n/a	Habitat Restoration	IWR2	$ 272,000,000	$ -	$ 230,000	22	25 Year
Erwin Well Lot Infiltration Basin	DWP51	ULAR	LABOE/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR2	$ 1,500,000	$ -	$ 90,000	23	25 Year
Grace Community Church of the Valley Parking Retrofit	D3720	ULAR	LA City CD6	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Community Beautification	IWR2	$ 300,000	$ -	$ 18,000	23	25 Year
Laurel Canyon Boulevard Green Street Project	LASAN_224	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR2	$ 3,000,000	$ -	$ 180,000	23	25 Year
Magnolia - Vineland to Cahuenga	DWP63	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Community Beautification	IWR2	$ 3,000,000	$ -	$ 180,000	23	25 Year
Pacoima Median and Bike Trial	D3723	ULAR	LA City CD7	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Community Beautification	IWR2	$ 3,000,000	$ -	$ 100,000	23	25 Year
San Fernando Road Swales	DWP36	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR2	$ 6,000,000	$ -	$ 300,000	23	25 Year
Sheldon Green Street	DWP40	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR2	$ 9,375,000	$ -	$ 562,500	23	25 Year
Subwatershed R2-G Green Streets	LAR_GS1	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Community Beautification	IWR2	$ 10,700,000	$ -	$ 642,000	23	25 Year
Subwatershed R2-J Green Streets	LAR_GS2	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Community Beautification	IWR2	$ 10,700,000	$ -	$ 642,000	23	25 Year
Tyrone Yard Property	DWP44	ULAR	LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR2	$ 3,000,000	$ -	$ 180,000	23	25 Year
Van Nuys Blvd Pocket Parks	D3727	ULAR	LA City CD7	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Community Beautification	IWR2	$ 5,000,000	$ -	$ 100,000	23	25 Year
Van Nuys Blvd. Median Infiltration	DWP34	ULAR	LASAN/LADWP	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR2	$ 2,000,000	$ -	$ 120,000	23	25 Year
Victory-Encino Median SWCP	DWP32	ULAR	LASAN/LADWP/LABSS	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Funding - LADWP	IWR2	$ 2,300,000	$ -	$ 138,000	23	25 Year
Wyngate Street Pocket Park	D3728	ULAR	LA City CD2	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S1	No	n/a	Community Beautification	IWR2	$ 5,000,000	$ -	$ 100,000	23	25 Year
DC_Dominguez Channel Estuary_Block C Green Streets Program	Dominguez Channel Estuary	DC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 14,700,107	$ -	$ 882,006	24	25 Year
DC_Dominguez Channel_Block C Green Streets Program	Dominguez Channel	DC	LASAN	City	Green Infrastructure	Distributed	Yes	1W1	Yes	2S3	No	n/a		IWR2	$ 7,616,561	$ -	$ 456,994	24	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
ULAR_604349_Block B Green Streets Program	604349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 11,025,519	$ -	$ 661,531	24	25 Year
ULAR_638449_Block B Green Streets Program	638449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 13,720,450	$ -	$ 823,227	24	25 Year
ULAR_664949_Block B Green Streets Program	664949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 16,758,113	$ -	$ 1,005,487	24	25 Year
ULAR_692849_Block B Green Streets Program	692849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 16,740,462	$ -	$ 1,004,428	24	25 Year
ULAR_603649_Block B Green Streets Program	603649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,120,944	$ -	$ 67,257	24	25 Year
ULAR_603949_Block B Green Streets Program	603949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 63,053	$ -	$ 3,783	24	25 Year
ULAR_604149_Block B Green Streets Program	604149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,275,074	$ -	$ 76,504	24	25 Year
ULAR_604249_Block B Green Streets Program	604249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 581,490	$ -	$ 34,889	24	25 Year
ULAR_604449_Block B Green Streets Program	604449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,366,151	$ -	$ 81,969	24	25 Year
ULAR_604949_Block B Green Streets Program	604949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,078,909	$ -	$ 64,735	24	25 Year
ULAR_605849_Block B Green Streets Program	605849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,017,699	$ -	$ 121,062	24	25 Year
ULAR_606349_Block B Green Streets Program	606349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,106,932	$ -	$ 66,416	24	25 Year
ULAR_606449_Block B Green Streets Program	606449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,485,251	$ -	$ 89,115	24	25 Year
ULAR_635849_Block B Green Streets Program	635849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	24	25 Year
ULAR_635949_Block B Green Streets Program	635949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 455,384	$ -	$ 27,323	24	25 Year
ULAR_636849_Block B Green Streets Program	636849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	24	25 Year
ULAR_637049_Block B Green Streets Program	637049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year
ULAR_638249_Block B Green Streets Program	638249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	24	25 Year
ULAR_639449_Block B Green Streets Program	639449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,015,856	$ -	$ 60,951	24	25 Year
ULAR_639549_Block B Green Streets Program	639549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,127,950	$ -	$ 67,677	24	25 Year
ULAR_639749_Block B Green Streets Program	639749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 686,578	$ -	$ 41,195	24	25 Year
ULAR_639949_Block B Green Streets Program	639949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 84,071	$ -	$ 5,044	24	25 Year
ULAR_640049_Block B Green Streets Program	640049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 105,089	$ -	$ 6,305	24	25 Year
ULAR_640749_Block B Green Streets Program	640749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,024,705	$ -	$ 121,482	24	25 Year
ULAR_640849_Block B Green Streets Program	640849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,583,157	$ -	$ 94,989	24	25 Year
ULAR_640949_Block B Green Streets Program	640949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 301,254	$ -	$ 18,075	24	25 Year
ULAR_641049_Block B Green Streets Program	641049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,141,962	$ -	$ 68,518	24	25 Year
ULAR_641149_Block B Green Streets Program	641149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 483,407	$ -	$ 29,004	24	25 Year
ULAR_647649_Block B Green Streets Program	647649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 742,625	$ -	$ 44,558	24	25 Year
ULAR_649149_Block B Green Streets Program	649149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 77,065	$ -	$ 4,624	24	25 Year
ULAR_649449_Block B Green Streets Program	649449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 133,112	$ -	$ 7,987	24	25 Year
ULAR_649549_Block B Green Streets Program	649549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,183,997	$ -	$ 71,040	24	25 Year
ULAR_649649_Block B Green Streets Program	649649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 595,502	$ -	$ 35,730	24	25 Year
ULAR_651249_Block B Green Streets Program	651249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 182,153	$ -	$ 10,929	24	25 Year
ULAR_657149_Block B Green Streets Program	657149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 301,254	$ -	$ 18,075	24	25 Year
ULAR_660349_Block B Green Streets Program	660349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 791,667	$ -	$ 47,500	24	25 Year
ULAR_661049_Block B Green Streets Program	661049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 28,024	$ -	$ 1,681	24	25 Year
ULAR_661249_Block B Green Streets Program	661249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 777,655	$ -	$ 46,659	24	25 Year
ULAR_661749_Block B Green Streets Program	661749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 294,248	$ -	$ 17,655	24	25 Year
ULAR_661849_Block B Green Streets Program	661849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 889,749	$ -	$ 53,385	24	25 Year
ULAR_662249_Block B Green Streets Program	662249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 266,224	$ -	$ 15,973	24	25 Year
ULAR_662949_Block B Green Streets Program	662949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,169,985	$ -	$ 70,199	24	25 Year
ULAR_663549_Block B Green Streets Program	663549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 28,024	$ -	$ 1,681	24	25 Year
ULAR_663649_Block B Green Streets Program	663649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 217,183	$ -	$ 13,031	24	25 Year
ULAR_663749_Block B Green Streets Program	663749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 308,260	$ -	$ 18,496	24	25 Year
ULAR_663849_Block B Green Streets Program	663849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year
ULAR_664649_Block B Green Streets Program	664649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 791,667	$ -	$ 47,500	24	25 Year
ULAR_664749_Block B Green Streets Program	664749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,303,097	$ -	$ 78,186	24	25 Year
ULAR_665349_Block B Green Streets Program	665349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 623,525	$ -	$ 37,412	24	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
ULAR_665549_Block B Green Streets Program	665549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 560,472	$ -	$ 33,628	24	25 Year
ULAR_665749_Block B Green Streets Program	665749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 49,041	$ -	$ 2,942	24	25 Year
ULAR_665949_Block B Green Streets Program	665949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 987,832	$ -	$ 59,270	24	25 Year
ULAR_666149_Block B Green Streets Program	666149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,485,251	$ -	$ 89,115	24	25 Year
ULAR_666249_Block B Green Streets Program	666249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,726,189	$ -	$ 103,571	24	25 Year
ULAR_666349_Block B Green Streets Program	666349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 546,460	$ -	$ 32,788	24	25 Year
ULAR_666449_Block B Green Streets Program	666449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 326,575	$ -	$ 19,595	24	25 Year
ULAR_666549_Block B Green Streets Program	666549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 357,301	$ -	$ 21,438	24	25 Year
ULAR_667849_Block B Green Streets Program	667849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year
ULAR_667949_Block B Green Streets Program	667949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 126,106	$ -	$ 7,566	24	25 Year
ULAR_668449_Block B Green Streets Program	668449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,094,735	$ -	$ 65,684	24	25 Year
ULAR_669349_Block B Green Streets Program	669349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,205,015	$ -	$ 72,301	24	25 Year
ULAR_669749_Block B Green Streets Program	669749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 56,047	$ -	$ 3,363	24	25 Year
ULAR_672849_Block B Green Streets Program	672849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year
ULAR_673949_Block B Green Streets Program	673949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 14,012	$ -	$ 841	24	25 Year
ULAR_682949_Block B Green Streets Program	682949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 420,354	$ -	$ 25,221	24	25 Year
ULAR_683049_Block B Green Streets Program	683049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 161,136	$ -	$ 9,668	24	25 Year
ULAR_683149_Block B Green Streets Program	683149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 945,797	$ -	$ 56,748	24	25 Year
ULAR_683649_Block B Green Streets Program	683649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,015,856	$ -	$ 60,951	24	25 Year
ULAR_685349_Block B Green Streets Program	685349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 427,360	$ -	$ 25,642	24	25 Year
ULAR_686049_Block B Green Streets Program	686049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year
ULAR_686249_Block B Green Streets Program	686249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 896,755	$ -	$ 53,805	24	25 Year
ULAR_686449_Block B Green Streets Program	686449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 91,077	$ -	$ 5,465	24	25 Year
ULAR_686649_Block B Green Streets Program	686649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 259,218	$ -	$ 15,553	24	25 Year
ULAR_686849_Block B Green Streets Program	686849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,092,920	$ -	$ 65,575	24	25 Year
ULAR_687249_Block B Green Streets Program	687249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,024,705	$ -	$ 121,482	24	25 Year
ULAR_687349_Block B Green Streets Program	687349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 105,089	$ -	$ 6,305	24	25 Year
ULAR_687449_Block B Green Streets Program	687449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 126,106	$ -	$ 7,566	24	25 Year
ULAR_687549_Block B Green Streets Program	687549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,996,682	$ -	$ 119,801	24	25 Year
ULAR_687849_Block B Green Streets Program	687849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 385,325	$ -	$ 23,119	24	25 Year
ULAR_688049_Block B Green Streets Program	688049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year
ULAR_688549_Block B Green Streets Program	688549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,506,269	$ -	$ 90,376	24	25 Year
ULAR_688749_Block B Green Streets Program	688749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 889,749	$ -	$ 53,385	24	25 Year
ULAR_688849_Block B Green Streets Program	688849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,113,938	$ -	$ 66,836	24	25 Year
ULAR_688949_Block B Green Streets Program	688949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,324,115	$ -	$ 79,447	24	25 Year
ULAR_689349_Block B Green Streets Program	689349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 98,083	$ -	$ 5,885	24	25 Year
ULAR_690249_Block B Green Streets Program	690249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 763,643	$ -	$ 45,819	24	25 Year
ULAR_691149_Block B Green Streets Program	691149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 126,106	$ -	$ 7,566	24	25 Year
ULAR_691249_Block B Green Streets Program	691249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,268,068	$ -	$ 76,084	24	25 Year
ULAR_691349_Block B Green Streets Program	691349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 42,035	$ -	$ 2,522	24	25 Year
ULAR_691549_Block B Green Streets Program	691549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 399,336	$ -	$ 23,960	24	25 Year
ULAR_691649_Block B Green Streets Program	691649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,101,770	$ -	$ 126,106	24	25 Year
ULAR_691849_Block B Green Streets Program	691849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 70,059	$ -	$ 4,204	24	25 Year
ULAR_692149_Block B Green Streets Program	692149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year
ULAR_692249_Block B Green Streets Program	692249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 798,673	$ -	$ 47,920	24	25 Year
ULAR_692449_Block B Green Streets Program	692449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,401,180	$ -	$ 84,071	24	25 Year
ULAR_693449_Block B Green Streets Program	693449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 378,319	$ -	$ 22,699	24	25 Year
ULAR_694149_Block B Green Streets Program	694149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,006	$ -	$ 420	24	25 Year

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ULAR_694249_Block B Green Streets Program	694249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 721,608	$ -	$ 43,296	24	25 Year
ULAR_694349_Block B Green Streets Program	694349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,786,505	$ -	$ 107,190	24	25 Year
ULAR_694449_Block B Green Streets Program	694449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 924,779	$ -	$ 55,487	24	25 Year
ULAR_694549_Block B Green Streets Program	694549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 896,755	$ -	$ 53,805	24	25 Year
ULAR_694649_Block B Green Streets Program	694649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,198,009	$ -	$ 71,881	24	25 Year
ULAR_694849_Block B Green Streets Program	694849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 357,301	$ -	$ 21,438	24	25 Year
ULAR_694949_Block B Green Streets Program	694949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,583,333	$ -	$ 95,000	24	25 Year
ULAR_695049_Block B Green Streets Program	695049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 56,047	$ -	$ 3,363	24	25 Year
ULAR_695149_Block B Green Streets Program	695149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,094,764	$ -	$ 125,686	24	25 Year
ULAR_695249_Block B Green Streets Program	695249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 133,112	$ -	$ 7,987	24	25 Year
ULAR_695349_Block B Green Streets Program	695349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 140,118	$ -	$ 8,407	24	25 Year
ULAR_695449_Block B Green Streets Program	695449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 91,077	$ -	$ 5,465	24	25 Year
ULAR_695549_Block B Green Streets Program	695549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 21,018	$ -	$ 1,261	24	25 Year
ULAR_695849_Block B Green Streets Program	695849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 336,283	$ -	$ 20,177	24	25 Year
ULAR_695949_Block B Green Streets Program	695949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 63,053	$ -	$ 3,783	24	25 Year
ULAR_697449_Block B Green Streets Program	697449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 798,673	$ -	$ 47,920	24	25 Year
ULAR_697549_Block B Green Streets Program	697549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,891,593	$ -	$ 113,496	24	25 Year
ULAR_698049_Block B Green Streets Program	698049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,401,180	$ -	$ 84,071	24	25 Year
ULAR_698149_Block B Green Streets Program	698149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 294,248	$ -	$ 17,655	24	25 Year
ULAR_698249_Block B Green Streets Program	698249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,120,944	$ -	$ 67,257	24	25 Year
ULAR_698349_Block B Green Streets Program	698349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,828,540	$ -	$ 109,712	24	25 Year
ULAR_698549_Block B Green Streets Program	698549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,737,463	$ -	$ 104,248	24	25 Year
ULAR_698649_Block B Green Streets Program	698649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 511,431	$ -	$ 30,686	24	25 Year
ULAR_698749_Block B Green Streets Program	698749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 350,295	$ -	$ 21,018	24	25 Year
ULAR_698849_Block B Green Streets Program	698849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 98,083	$ -	$ 5,885	24	25 Year
ULAR_699149_Block B Green Streets Program	699149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 301,254	$ -	$ 18,075	24	25 Year
ULAR_699649_Block B Green Streets Program	699649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,275,074	$ -	$ 76,504	24	25 Year
ULAR_699749_Block B Green Streets Program	699749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 238,201	$ -	$ 14,292	24	25 Year
ULAR_699849_Block B Green Streets Program	699849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 175,148	$ -	$ 10,509	24	25 Year
ULAR_700049_Block B Green Streets Program	700049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 560,472	$ -	$ 33,628	24	25 Year
ULAR_700249_Block B Green Streets Program	700249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 644,543	$ -	$ 38,673	24	25 Year
ULAR_700349_Block B Green Streets Program	700349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 161,136	$ -	$ 9,668	24	25 Year
ULAR_700449_Block B Green Streets Program	700449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 49,041	$ -	$ 2,942	24	25 Year
ULAR_700649_Block B Green Streets Program	700649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,092,920	$ -	$ 65,575	24	25 Year
ULAR_700849_Block B Green Streets Program	700849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 385,325	$ -	$ 23,119	24	25 Year
ULAR_602449_Block B Green Streets Program	602449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 6,102,139	$ -	$ 366,128	24	25 Year
ULAR_604049_Block B Green Streets Program	604049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,601,033	$ -	$ 216,062	24	25 Year
ULAR_604549_Block B Green Streets Program	604549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,404,867	$ -	$ 204,292	24	25 Year
ULAR_604649_Block B Green Streets Program	604649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,529,130	$ -	$ 151,748	24	25 Year
ULAR_604749_Block B Green Streets Program	604749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,888,275	$ -	$ 233,296	24	25 Year
ULAR_605049_Block B Green Streets Program	605049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 10,165,561	$ -	$ 609,934	24	25 Year
ULAR_605149_Block B Green Streets Program	605149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,115,782	$ -	$ 126,947	24	25 Year
ULAR_605249_Block B Green Streets Program	605249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 6,109,145	$ -	$ 366,549	24	25 Year
ULAR_605349_Block B Green Streets Program	605349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 4,470,433	$ -	$ 268,226	24	25 Year
ULAR_605449_Block B Green Streets Program	605449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 6,823,747	$ -	$ 409,425	24	25 Year
ULAR_605549_Block B Green Streets Program	605549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 10,207,596	$ -	$ 612,456	24	25 Year
ULAR_605649_Block B Green Streets Program	605649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,297,935	$ -	$ 137,876	24	25 Year
ULAR_605749_Block B Green Streets Program	605749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 10,198,237	$ -	$ 611,894	24	25 Year
ULAR_605949_Block B Green Streets Program	605949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,418,879	$ -	$ 205,133	24	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
ULAR_606149_Block B Green Streets Program	606149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,516,962	$ -	$ 211,018	24	25 Year
ULAR_606249_Block B Green Streets Program	606249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,360,988	$ -	$ 141,659	24	25 Year
ULAR_637749_Block B Green Streets Program	637749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,888,643	$ -	$ 473,319	24	25 Year
ULAR_638349_Block B Green Streets Program	638349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 5,023,230	$ -	$ 301,394	24	25 Year
ULAR_638549_Block B Green Streets Program	638549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 7,237,095	$ -	$ 434,226	24	25 Year
ULAR_638849_Block B Green Streets Program	638849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,431,047	$ -	$ 145,863	24	25 Year
ULAR_639249_Block B Green Streets Program	639249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,269,912	$ -	$ 136,195	24	25 Year
ULAR_640249_Block B Green Streets Program	640249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,353,982	$ -	$ 141,239	24	25 Year
ULAR_640649_Block B Green Streets Program	640649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,117,626	$ -	$ 187,058	24	25 Year
ULAR_661949_Block B Green Streets Program	661949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,631,255	$ -	$ 97,875	24	25 Year
ULAR_662049_Block B Green Streets Program	662049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 589,266	$ -	$ 35,356	24	25 Year
ULAR_663949_Block B Green Streets Program	663949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,859,546	$ -	$ 171,573	24	25 Year
ULAR_664049_Block B Green Streets Program	664049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,375,000	$ -	$ 142,500	24	25 Year
ULAR_664149_Block B Green Streets Program	664149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 420,373	$ -	$ 25,222	24	25 Year
ULAR_664549_Block B Green Streets Program	664549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,612,052	$ -	$ 96,723	24	25 Year
ULAR_665049_Block B Green Streets Program	665049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,823,378	$ -	$ 169,403	24	25 Year
ULAR_667649_Block B Green Streets Program	667649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 11,952,065	$ -	$ 717,124	24	25 Year
ULAR_668749_Block B Green Streets Program	668749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 8,211,841	$ -	$ 492,710	24	25 Year
ULAR_683449_Block B Green Streets Program	683449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,662,242	$ -	$ 159,735	24	25 Year
ULAR_685649_Block B Green Streets Program	685649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 5,744,838	$ -	$ 344,690	24	25 Year
ULAR_689149_Block B Green Streets Program	689149	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,494,100	$ -	$ 149,646	24	25 Year
ULAR_689249_Block B Green Streets Program	689249	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,403,024	$ -	$ 144,181	24	25 Year
ULAR_691449_Block B Green Streets Program	691449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 1,577,736	$ -	$ 94,664	24	25 Year
ULAR_691949_Block B Green Streets Program	691949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,811,210	$ -	$ 228,673	24	25 Year
ULAR_692349_Block B Green Streets Program	692349	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 5,212,390	$ -	$ 312,743	24	25 Year
ULAR_692549_Block B Green Streets Program	692549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,749,126	$ -	$ 164,948	24	25 Year
ULAR_692749_Block B Green Streets Program	692749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 4,658,924	$ -	$ 279,535	24	25 Year
ULAR_695649_Block B Green Streets Program	695649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 4,806,047	$ -	$ 288,363	24	25 Year
ULAR_695749_Block B Green Streets Program	695749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 4,890,118	$ -	$ 293,407	24	25 Year
ULAR_696049_Block B Green Streets Program	696049	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,669,248	$ -	$ 160,155	24	25 Year
ULAR_697649_Block B Green Streets Program	697649	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 6,424,410	$ -	$ 385,465	24	25 Year
ULAR_697749_Block B Green Streets Program	697749	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,199,853	$ -	$ 131,991	24	25 Year
ULAR_697849_Block B Green Streets Program	697849	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,543,142	$ -	$ 152,589	24	25 Year
ULAR_697949_Block B Green Streets Program	697949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 4,217,552	$ -	$ 253,053	24	25 Year
ULAR_699449_Block B Green Streets Program	699449	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,396,018	$ -	$ 143,761	24	25 Year
ULAR_699549_Block B Green Streets Program	699549	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 3,348,820	$ -	$ 200,929	24	25 Year
ULAR_699949_Block B Green Streets Program	699949	ULAR	LASAN	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S3**	No	**n/a**		**IWR2**	$ 2,886,431	$ -	$ 173,186	24	25 Year
LA River Sixth Street Bridge Greenway	D3714	ULAR	LABOE	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S4**	No	**n/a**	Community Beautification	**IWR2**	$ 30,000,000	$ -	$ 100,000	25	25 Year
Big Tujunga Reservoir Sediment Removal	DWP13	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	No	**n/a**	Yes	**1S1**	Yes	**F4**	Funding - LADWP	**IWR2**	$ 24,000,000	$ -	$ -	26	25 Year
Haddon Avenue Elementary School	DWP28	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 100,000	$ -	$ 5,000	27	25 Year
Liggett Street Elementary School	DWP27	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 100,000	$ -	$ 5,000	27	25 Year
Noble Avenue Elementary School	DWP25	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 100,000	$ -	$ 5,000	27	25 Year
San Jose Elementary School	DWP26	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 100,000	$ -	$ 5,000	27	25 Year
Silver Lake Reservoir Bypass & Regulator Station	ULAR37	ULAR	LADWP	City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 52,160,000	$ -	$ 500,000	27	25 Year
Telfair Elementary School	DWP29	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 100,000	$ -	$ 5,000	27	25 Year
Victory Boulevard Elementary School	DWP24	ULAR	LAUSD/LADWP	Partner	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 100,000	$ -	$ 5,000	27	25 Year
Coldwater Canyon Ave. Pocket Park & Parkway Infiltration Demonstration	DWP46	ULAR	LA Mayor's Office/LADWP	City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	No	**n/a**		**IWR3**	$ 3,000,000	$ -	$ 180,000	28	25 Year
Bull Creek Water Conservation (Pipeline)	ULAR19	ULAR	LACFCD/LADWP	Partner	Green Infrastructure	Centralized	No	**n/a**	Yes	**1S1**	No	**n/a**		**IWR4**	$ 10,610,000	$ -	$ 50,000	29	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
112th St - Hooper Ave to 114th St SD	SD540	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,085,900	$ 54,295	30	25 Year
12th St & Los Angeles St	SD572	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 67,000	$ 3,350	30	25 Year
12th Street / Santee Street Relief Storm Drain	SD458	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 796,500	$ 39,825	30	25 Year
1477 Montecito Drive Stormdrain	SD507	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 145,900	$ 7,295	30	25 Year
18th Street & Walker Avenue	SD85	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,137,800	$ 106,890	30	25 Year
19th Street, Alma Street and 21st Street Storm Drain	SD489	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,632,700	$ 81,635	30	25 Year
200 foot Esmt N/O Hillrose Btwn Irma & Plainview	SD166	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 137,500	$ 6,875	30	25 Year
364 S Anderson St (X Artemus Street)	SD530	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 24,400	$ 1,220	30	25 Year
486 W Avenue 44	SD529	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 154,700	$ 7,735	30	25 Year
4th Street and Main Street	SD542	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 54,300	$ 2,715	30	25 Year
6245 Roy Street Storm Drain	SD528	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 162,900	$ 8,145	30	25 Year
Agnes Vanowen SD	SD126	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,017,000	$ 150,850	30	25 Year
Amestoy - Prairie To Parthenia	SD202	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,959,900	$ 197,995	30	25 Year
Amigo And Vanowen	SD244	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,484,900	$ 74,245	30	25 Year
Balboa Bl SD Extension To Lassen	SD231	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,752,700	$ 87,635	30	25 Year
Bandini Street - Summerland Ave to Oliver St	SD67	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 414,300	$ 20,715	30	25 Year
Bartee Avenue - Kagel To Osborne	SD114	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 997,000	$ 49,850	30	25 Year
Beck Avenue - Hamlin Street SD	SD361	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,353,400	$ 67,670	30	25 Year
Bellaire Av - Albers To Collins	SD421	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,222,400	$ 61,120	30	25 Year
Benedict Canyon Ln S/O Ventura Bl	SD147	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,405,300	$ 170,265	30	25 Year
Berry Dr and Decente Dr SD	SD488	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 197,500	$ 9,875	30	25 Year
Berry Dr E/O Laurel Cyn Bl	SD121	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,340,800	$ 67,040	30	25 Year
Bessemer Street SD - Alcove Ave to Tujunga Wash Ch	SD381	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 471,500	$ 23,575	30	25 Year
Beverly Glen SD	SD115	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 5,363,300	$ 268,165	30	25 Year
Big Tujunga Wash Levee at Oro Vista Avenue	SD531	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 814,400	$ 40,720	30	25 Year
Blanchard Cyn Ch 900 N/E to Fern Cyn Trl	SD279	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,004,100	$ 50,205	30	25 Year
Bradley Del Sur SD	SD462	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,677,000	$ 183,850	30	25 Year
Branford - Canterbury to Dorrington	SD356	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,178,700	$ 58,935	30	25 Year
Branford - Glenoaks Bl To San Fernando	SD157	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,318,000	$ 165,900	30	25 Year
Branford - Laurel Canyon To Arleta Avenue (aka	SD357	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,619,400	$ 130,970	30	25 Year
Branford Street - Arleta Avenue to the Pacoima Wash	SD522	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 632,800	$ 31,640	30	25 Year
Brookdale Rd and Fryman Rd	SD100	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,135,100	$ 56,755	30	25 Year
Brooktree Low Flow	SD414	SMB	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 609,800	$ 30,490	30	25 Year
Burbank Bl - Hollywood Fwy to Gentry	SD420	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 852,400	$ 42,620	30	25 Year
Burbank Bl & Farralone Av SD	SD319	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,004,100	$ 50,205	30	25 Year
Burbank Boulevard - 1,850 feet W/O Hayvenhurst Ave	SD193	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 374,200	$ 18,710	30	25 Year
Burbank Boulevard SD - Biloxi Ave to Cahuenga Blvd	SD259	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,785,800	$ 139,290	30	25 Year
Camarillo And Vineland SD	SD337	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,205,600	$ 160,280	30	25 Year
Camarillo St - Halbrent to Kester	SD237	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,829,500	$ 91,475	30	25 Year
Camino de la Cumbre SD	SD247	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,622,800	$ 81,140	30	25 Year
Canoga Roscoe SD	SD245	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 5,657,000	$ 282,850	30	25 Year
Canterbury Av & Pierce St	SD224	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,323,400	$ 166,170	30	25 Year
Chandler And Tyrone SD	SD355	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,663,100	$ 83,155	30	25 Year
Chase Mason SD	SD387	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,039,900	$ 101,995	30	25 Year
Chautauqua Blvd Storm Drain	SD510	SMB	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,155,000	$ 107,750	30	25 Year
City Hall Main Street Storm Drain	SD514	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 359,200	$ 17,960	30	25 Year
Clybourn Av - Vanowen To Victory	SD227	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 6,902,000	$ 345,100	30	25 Year
Coldwater Canyon SD- Landale St to LA River	SD310	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,357,100	$ 117,855	30	25 Year
Coldwater Cyn Ave & Goodland Ave S/O Ventura	SD317	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 7,966,900	$ 398,345	30	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Colfax Magnolia SD	SD321	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 309,400	$ 15,470	30	25 Year
Colfax, Riverside to L.A. River	SD473	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 5,751,200	$ 287,560	30	25 Year
Collier Street SD - E/O Quakertown Ave to Winnetka	SD325	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 415,800	$ 20,790	30	25 Year
Commerce Valmont SD	SD502	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,225,700	$ 61,285	30	25 Year
Compton Avenue - 55th Street SD	SD445	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 507,700	$ 25,385	30	25 Year
Corbin Channel - L.A. River To S.P.R.R.	SD407	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,596,500	$ 179,825	30	25 Year
Craig Drive & R/W S/O Hillock Drive SD	SD253	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 327,400	$ 16,370	30	25 Year
Cross Ave - Eldred St Storm Drain Project	SD544	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 620,500	$ 31,025	30	25 Year
D Street & Neptune Avenue	SD53	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,521,900	$ 176,095	30	25 Year
Del Arroyo to La Tuna Cyn Chnl	SD226	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,925,300	$ 96,265	30	25 Year
Devonshire Owensmouth SD	SD524	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 752,500	$ 37,625	30	25 Year
Dixie Cyn Ave S/O Valley Vista	SD400	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 4,157,900	$ 207,895	30	25 Year
Dorris Place SD	SD15	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,402,700	$ 70,135	30	25 Year
Ebey Cyn - W/O Riverwood Rd	SD155	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,177,900	$ 108,895	30	25 Year
Encinitas Avenue - Cobalt St to Bledsoe St	SD392	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,292,700	$ 64,635	30	25 Year
Erwin St - Goodland Av-Victory Bl-Hamlin St	SD242	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 4,949,800	$ 247,490	30	25 Year
Ethel Av - Raymer To Sherman Way	SD139	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,045,200	$ 52,260	30	25 Year
Fair Avenue (Prod.) SD - Alley S/O Hesby St to Morrison	SD408	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 166,300	$ 8,315	30	25 Year
Farralone Av - Gault To Leadwell	SD399	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,732,400	$ 86,620	30	25 Year
Farralone Av - Saticoy to Keswick	SD322	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 693,000	$ 34,650	30	25 Year
Fenwick Sable SD	SD415	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 377,100	$ 18,855	30	25 Year
Filmore St - Foothill To Dronfield	SD330	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,029,400	$ 101,470	30	25 Year
Filmore Street SD - Lev Ave to Pacoima Wash	SD219	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 748,400	$ 37,420	30	25 Year
Foothill (R/W S/O) Whitegate To Leolang	SD269	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 165,900	$ 8,295	30	25 Year
Foothill Bl - Haines Cyn Ch to Haines Cyn Ave	SD352	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,435,400	$ 71,770	30	25 Year
Foothill SD-Pacoima Cyn Chl To Sump S/O Maclay	SD216	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 612,800	$ 30,640	30	25 Year
Foothill Vaughn SD	SD461	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,619,400	$ 130,970	30	25 Year
Foothill -Wheatland To 400 feet E/O	SD374	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 458,400	$ 22,920	30	25 Year
Forman Drain N/O Burbank To Sherman Way (covered	SD198	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 12,822,400	$ 641,120	30	25 Year
Fries Avenue SD - Unit 3	SD80	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,469,200	$ 173,460	30	25 Year
Fulton Av - Sherman Way To Raymer	SD142	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,265,200	$ 63,260	30	25 Year
Fulton Av - Victory To Kittridge	SD275	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,225,700	$ 61,285	30	25 Year
Fulton Av L A River To 150 feet S/O Ventura Bl	SD368	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,188,000	$ 59,400	30	25 Year
Gault Haskell to 700' W/O Haskell	SD505	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 612,800	$ 30,640	30	25 Year
Gladstone Maclay	SD472	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,091,400	$ 54,570	30	25 Year
Glenoaks Bl-Cobalt To Tyler St	SD264	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 5,845,500	$ 292,275	30	25 Year
Glenoaks Filmore SD	SD463	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,833,600	$ 91,680	30	25 Year
Gloria Av - Saticoy To Arminta	SD288	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,375,200	$ 68,760	30	25 Year
Grove St R/W S/O- Scoville To Oro Vista	SD311	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 518,600	$ 25,930	30	25 Year
Gulf Avenue & D Street	SD77	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,469,100	$ 123,455	30	25 Year
Haddon Av - Tuxford To Rialto	SD165	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,168,900	$ 58,445	30	25 Year
Hartland St - Comanche to Oso	SD239	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,231,400	$ 61,570	30	25 Year
Haskell Avenue SD - Los Alimos St to San Jose St	SD171	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,663,100	$ 83,155	30	25 Year
Haskell Parthenia SD	SD525	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,244,800	$ 112,240	30	25 Year
Hatteras St - Whitnall To Cleon	SD365	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,795,900	$ 89,795	30	25 Year
Hawaiian and Opp Storm Drain	SD526	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,433,400	$ 71,670	30	25 Year
Haynes Street SD - Woodlake Ave to Berquest Ave	SD274	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 790,000	$ 39,500	30	25 Year
Hayvenhurst Av and Calneva Dr	SD220	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,639,900	$ 131,995	30	25 Year
Hayvenhurst(Chnl W/O)-S/O Ventura To De Celis	SD409	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 435,500	$ 21,775	30	25 Year

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Hazeltine Av - Cohasset To Sherman Way	SD265	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,457,700	$ 72,885	30	25 Year
Helen Avenue - Art Street SD	SD354	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,131,400	$ 56,570	30	25 Year
Hidden Oak Apperson SD	SD366	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 230,800	$ 11,540	30	25 Year
Hubbard and Dronfield	SD491	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 503,600	$ 25,180	30	25 Year
Kagel Canyon - Remick To Pacoima Wash	SD107	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,615,900	$ 80,795	30	25 Year
Kittridge St - Satsuma To Clybourn	SD186	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 687,600	$ 34,380	30	25 Year
Knobhill - 100 feet To 300 feet E/O Beverly Glen	SD375	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 171,900	$ 8,595	30	25 Year
Knollwood Dr and Clonlee Av SD	SD286	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 249,500	$ 12,475	30	25 Year
La Tuna Cyn Rd Drainage Chan. Reconstruction	SD184	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 401,600	$ 20,080	30	25 Year
Lambie Street SD	SD23	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 578,700	$ 28,935	30	25 Year
Lanark E/O Hazeltine S.D.	SD495	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,781,900	$ 89,095	30	25 Year
Lanark St - Willis To Cedros	SD162	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 385,100	$ 19,255	30	25 Year
Lankershim Boulevard - Bloomfield Street SD	SD340	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,262,800	$ 113,140	30	25 Year
Lankershim Boulevard SD - Sherman Way to Tuxford St	SD200	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 8,674,000	$ 433,700	30	25 Year
Lasaine Avenue (Produced) Oxnard Street to LA River	SD151	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,725,500	$ 86,275	30	25 Year
Lasaine Oxnard SD	SD457	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,027,100	$ 101,355	30	25 Year
Lassen St - Lindley Av To Aliso Creek SD	SD189	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,770,400	$ 88,520	30	25 Year
Lassen St Topanga Cyn Bl To Owensmouth	SD255	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 282,500	$ 14,125	30	25 Year
Laurel Cyn Bl N/O Riverside Dr	SD316	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,200,300	$ 110,015	30	25 Year
Laurelgrove Av - Magnolia To Riverside Dr	SD164	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,072,700	$ 53,635	30	25 Year
Libbit Av & Morrison St	SD225	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,062,800	$ 103,140	30	25 Year
Louise - Nordhoff To SPRR	SD182	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 4,979,900	$ 248,995	30	25 Year
Louise Silverlane (Pvt St S/O 101) To Magnolia	SD378	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,210,200	$ 60,510	30	25 Year
Lowell Av - Santa Carlotta To Cooks Chnl	SD133	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,430,200	$ 71,510	30	25 Year
Lurline Av-Rinaldi To Devonshire	SD320	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,334,900	$ 166,745	30	25 Year
Maclay SD - Bromont to 8th St	SD346	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 835,800	$ 41,790	30	25 Year
Magnolia Boulevard - Densmore Ave to Gaviota Ave	SD229	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 582,200	$ 29,110	30	25 Year
Magnolia Boulevard - Ranchito Ave to Hazeltine Ave SD	SD290	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,164,200	$ 58,210	30	25 Year
Marcus Ln And Estaban St	SD294	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,744,200	$ 87,210	30	25 Year
Mariano St - Manton To Calabasas Creek	SD95	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,375,200	$ 68,760	30	25 Year
Mariano St SD - Sadring to Calabasas Creek	SD384	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 283,800	$ 14,190	30	25 Year
Marnice Av @ Haywood St	SD143	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 68,800	$ 3,440	30	25 Year
Matilija Av - L.A. River-Woodman Av SD	SD389	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 9,626,500	$ 481,325	30	25 Year
Matilija Av And Milbank St SD	SD416	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 659,200	$ 32,960	30	25 Year
McKinley Avenue SD - 103rd St to 108th St	SD17	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,059,900	$ 152,995	30	25 Year
Mcvine Av - Day To Haines Cyn Chnl	SD163	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,583,900	$ 79,195	30	25 Year
Mission Road SD - Lincoln Park Ave to Thomas St	SD5	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 846,500	$ 42,325	30	25 Year
Montague Street SD - Canterbury Ave to Gullo Ave	SD258	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 706,800	$ 35,340	30	25 Year
Montague Street SD - Sharp Ave to Pacoima Wash	SD280	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 611,200	$ 30,560	30	25 Year
Montecito Drive to Latrobe Street Storm Drain	SD537	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 176,400	$ 8,820	30	25 Year
Montgomery Av - Blackhawk To Devonshire	SD281	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 286,500	$ 14,325	30	25 Year
Moorpark St & Sunnyslope Av SD	SD169	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,655,000	$ 82,750	30	25 Year
Moorpark Street & Agnes Avenue SD	SD191	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,907,600	$ 145,380	30	25 Year
Moorpark Tujunga SD	SD287	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,706,900	$ 85,345	30	25 Year
Mulholland Drive - Topanga Cyn Blvd to Canoga Ave	SD402	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,553,100	$ 127,655	30	25 Year
N/O Ellenbogen - 150 feet W/O Parr Av	SD145	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 302,500	$ 15,125	30	25 Year
Neptune Avenue & G Street SD	SD56	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,622,300	$ 181,115	30	25 Year
Nordhoff Street SD - Bahama St to Lurline Ave	SD305	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 914,000	$ 45,700	30	25 Year
Nordhoff Street SD - Sepulveda Blvd to Orion Ave	SD578	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 607,800	$ 30,390	30	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Opp Street SD Replacement	SD54	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 162,500	$ 8,125	30	25 Year
Orion Parthenia SD	SD464	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 7,165,500	$ 358,275	30	25 Year
Orion St - Wyandotte To Stagg	SD334	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,269,100	$ 113,455	30	25 Year
Oro Vista SD - Haines Canyon Channel to Foothill Blvd	SD313	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,061,700	$ 103,085	30	25 Year
Oro Vista Storm Drain- Foothill Blvd to Day Street	SD581	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,273,400	$ 63,670	30	25 Year
Osborne Street - Haddon to Pacoima Ch	SD178	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 4,337,000	$ 216,850	30	25 Year
Oxnard - Tampa to Shirley	SD266	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,146,000	$ 57,300	30	25 Year
Oxnard At Whitnall Hwy	SD363	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,409,600	$ 70,480	30	25 Year
Oxnard St - Greenbush To Allott	SD336	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 412,600	$ 20,630	30	25 Year
Oxnard Street - Fulcher Ave to Elmer Ave SD	SD251	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,138,500	$ 56,925	30	25 Year
Oxnard Street - Tujunga Ave to Lankershim Blvd	SD362	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 797,600	$ 39,880	30	25 Year
Pacific Avenue SD - 26th St to 28th St	SD519	DC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 885,400	$ 44,270	30	25 Year
Paige Street SD	SD500	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 198,000	$ 9,900	30	25 Year
Panorama Channel Reconstruction	SD397	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,573,900	$ 128,695	30	25 Year
Parthenia St- Owensmouth To Topanga Cyn	SD307	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 654,900	$ 32,745	30	25 Year
Parthenia St White Oak Av To Zelzah	SD289	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 603,500	$ 30,175	30	25 Year
Partridge Avenue Storm Drain	SD511	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 208,300	$ 10,415	30	25 Year
Pendleton - Roscoe To Amboy	SD130	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 990,200	$ 49,510	30	25 Year
Peoria St-Dronfield 10 foot Esmt To Glenoaks	SD234	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,925,300	$ 96,265	30	25 Year
Pierce - Sharp To Pacoima Wash	SD125	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,306,500	$ 65,325	30	25 Year
Pinewood Foothill	SD396	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 848,500	$ 42,425	30	25 Year
Plummer Street at Pacoima Wash SD	SD314	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,156,000	$ 57,800	30	25 Year
Prairie St. Winnetka Ave to Oso Ave	SD503	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,386,000	$ 69,300	30	25 Year
Radford Av - Magnolia To Hartsook	SD364	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 275,000	$ 13,750	30	25 Year
Radford Av - Saticoy To Stagg (requires Lankershim	SD123	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,994,100	$ 99,705	30	25 Year
Rancho Encino SD	SD215	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,621,100	$ 131,055	30	25 Year
Riverside Drive - Forman to Ledge	SD323	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,386,000	$ 69,300	30	25 Year
Roscoe - Corbin To Oakdale	SD170	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 725,400	$ 36,270	30	25 Year
Roscoe Boulevard - Mason to Oso	SD302	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,336,500	$ 66,825	30	25 Year
Roscoe By Zelzah To Lindley SD	SD292	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 852,800	$ 42,640	30	25 Year
Roscoe Dora SD	SD487	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 273,400	$ 13,670	30	25 Year
Rossmore Avenue - 3rd Street SD	SD466	BC	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 24,017,500	$ 1,200,875	30	25 Year
Roxford St Herrick Av To Stetson Cyn Ch	SD390	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,508,500	$ 75,425	30	25 Year
Royal Oak Rd W/O Sepulveda	SD101	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,337,900	$ 116,895	30	25 Year
Royal Ridge Rd and Crownridge Pl	SD156	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,622,800	$ 81,140	30	25 Year
Royer - Ostronic to N/O Dolorosa	SD99	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,100,200	$ 55,010	30	25 Year
S.F. Mission And Laurel Cyn. Bl. SD	SD262	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 764,000	$ 38,200	30	25 Year
S/O Skyland - N/O Big Tujunga Cyn	SD150	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 440,100	$ 22,005	30	25 Year
Samoa Hillrose SD	SD486	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 332,600	$ 16,630	30	25 Year
San Pedro Street & 51st Street SD	SD25	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 4,634,400	$ 231,720	30	25 Year
Santa Lucia Dr. - Cardenas Ave to Canoga Dr.	SD536	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,075,100	$ 53,755	30	25 Year
Sarah St - Whitsett to Laurelgrove	SD132	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,045,200	$ 52,260	30	25 Year
Sarah Sunnyslope	SD358	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,100,200	$ 55,010	30	25 Year
Saticoy - Camellia to Lemp	SD152	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 693,000	$ 34,650	30	25 Year
Saticoy - Lankershim To Radford	SD154	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,247,400	$ 62,370	30	25 Year
Saticoy - Tujunga To Vineland	SD341	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,602,800	$ 80,140	30	25 Year
Saticoy St - Louise to Amestoy	SD119	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 928,300	$ 46,415	30	25 Year
Saticoy St Balboa Bl To Bullcreek Channel	SD324	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 756,400	$ 37,820	30	25 Year
Saticoy St SD W/O Woodley Ave.	SD249	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 399,500	$ 19,975	30	25 Year

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Saticoy St White Oak To Encino St	SD326	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 915,200	$ 45,760	30	25 Year
Saticoy St Zelzah To Lindley	SD276	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 692,800	$ 34,640	30	25 Year
Saticoy Tobias To Pacoima Wash	SD190	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 565,700	$ 28,285	30	25 Year
Saticoy Yolanda SD	SD338	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 938,600	$ 46,930	30	25 Year
Satsuma Av - Vanowen To Kittridge	SD213	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 893,900	$ 44,695	30	25 Year
Scandia Way, 3900 Block	SD44	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 436,600	$ 21,830	30	25 Year
SD N/O Sherman Way - Betw Ranchito And Woodman	SD141	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 275,000	$ 13,750	30	25 Year
SD S/O Lankershim and Ventura	SD282	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,885,700	$ 94,285	30	25 Year
SD S/O Vanalden Av and Retarding Basin	SD230	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,709,800	$ 85,490	30	25 Year
Sepulveda Bl - W/O Valley Meadow to Steven Dr	SD112	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 4,058,900	$ 202,945	30	25 Year
Serrania Avenue SD - Ventura Blvd to Dumetz Rd	SD293	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,855,900	$ 92,795	30	25 Year
Sespe Ave - Tustin to Sutton	SD518	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 359,200	$ 17,960	30	25 Year
Sherman Way - Vineland To Fair	SD233	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 962,600	$ 48,130	30	25 Year
Sherman Way & Capps Avenue SD	SD206	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,723,200	$ 186,160	30	25 Year
Sherman Way And Clybourn	SD209	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,650,300	$ 82,515	30	25 Year
Shirley Av SD - LA River To Hartland St	SD344	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,164,200	$ 58,210	30	25 Year
Shoup Av - Kittridge to Vanowen	SD176	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 522,600	$ 26,130	30	25 Year
Speedway Water Quality and Drainage Improvement	SD516	SMB	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 6,788,300	$ 339,415	30	25 Year
SPRR R/W To Vineland And Riverton	SD315	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,200,300	$ 110,015	30	25 Year
Stone Street SD North of Ganahl Street	SD469	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 436,600	$ 21,830	30	25 Year
Strathern St - Corbin to Oakdale	SD350	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 687,600	$ 34,380	30	25 Year
Strathern St - Louise To Amestoy Av S D	SD278	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 755,900	$ 37,795	30	25 Year
Strathern St - Oso to Winnetka	SD235	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 825,100	$ 41,255	30	25 Year
Strathern St - Tampa to Shirley	SD212	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 880,100	$ 44,005	30	25 Year
Strathern St - Yolanda To Wilbur	SD222	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 715,100	$ 35,755	30	25 Year
Strathern St Laurel Cyn Bl To Hwd Fwy	SD183	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,299,900	$ 164,995	30	25 Year
Sunland Boulevard & Glenoaks Boulevard SD	SD304	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,268,200	$ 63,410	30	25 Year
Sutter Av Paxton St To 220 feet N/O Filmore	SD252	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 817,300	$ 40,865	30	25 Year
Sylmar Av - Delano To Kittridge	SD329	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,444,000	$ 72,200	30	25 Year
Telfair Avenue R/W E/O Polk St to Astoria St	SD386	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,633,400	$ 81,670	30	25 Year
Terra Bella St-Eldridge	SD248	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,737,200	$ 86,860	30	25 Year
Thornton Ave SD Outlet Ext	SD442	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,385,300	$ 119,265	30	25 Year
Topanga Cyn Bl - Hart To Sherman Way	SD370	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 962,600	$ 48,130	30	25 Year
Topanga Cyn Bl Valerio St To Bell Creek	SD312	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,639,900	$ 131,995	30	25 Year
Towne Avenue - 81st St to 84th St	SD26	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,555,400	$ 77,770	30	25 Year
Tujunga Canyon Boulevard SD - N/O Valmont St	SD272	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,459,500	$ 72,975	30	25 Year
Tyrone Av - Collins To Califa	SD167	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 935,100	$ 46,755	30	25 Year
Tyrone Av - Magnolia To Chandler	SD159	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 893,900	$ 44,695	30	25 Year
Valerio St - Etiwanda To Canby	SD116	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 481,300	$ 24,065	30	25 Year
Valley Meadow Rd - W/O Valley Meadow to Castlewood	SD105	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,856,500	$ 92,825	30	25 Year
Valley Vista Bl and Madelia Av	SD223	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 962,600	$ 48,130	30	25 Year
Valley Vista Blvd Sunnyslope Ave SD	SD501	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,592,800	$ 129,640	30	25 Year
Van Nuys - Gladstone to Fenton	SD498	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,781,900	$ 89,095	30	25 Year
Van Nuys - Laurel Cyn To Oneida	SD371	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,031,400	$ 51,570	30	25 Year
Van Nuys Blvd - Nordhoff St SD	SD210	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 4,900,300	$ 245,015	30	25 Year
Vanalden Av - Hartland to Sherman Way	SD418	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,168,500	$ 108,425	30	25 Year
Vanalden Avenue - Bessemer Street SD	SD349	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,939,200	$ 96,960	30	25 Year
Vanalden Avenue - Shenango Drive SD	SD168	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,886,000	$ 94,300	30	25 Year
Vanowen - Gloria to Woodley	SD351	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,386,000	$ 69,300	30	25 Year

Project Name	Map ID	OWLA WMA	Lead Agency	Project Nature	Project Category	Project Size	Known Water Quality Benefit?	Water Quality Selection Category	Known Water Supply Benefit ?	Water Supply Selection Category	Known Flood Risk Mitigation Benefit?	Flood Risk Management Selection Category	Other Considerations	Integrated Management Selection Category	Green Infrastructure Capital Cost	Grey Infrastructure Capital Cost	Annual O&M Cost	Selection Order	SIP Phase
Vanowen Bertrand SD	SD140	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,167,900	$ 158,395	30	25 Year
Vanowen Farmdale SD	SD497	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 930,600	$ 46,530	30	25 Year
Vanowen St - 405 Frwy To Orion Av	SD283	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 722,000	$ 36,100	30	25 Year
Vanowen St - Goodland To Bellaire	SD360	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 550,100	$ 27,505	30	25 Year
Vanowen St Corbin Av To Oakdale Av	SD411	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 755,900	$ 37,795	30	25 Year
Vanowen St White Oak To Encino	SD285	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 964,000	$ 48,200	30	25 Year
Vanowen Street - Calhoun to Tyrone	SD385	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 467,600	$ 23,380	30	25 Year
Varna Av - Wyandotte To Sherman Way	SD137	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 357,600	$ 17,880	30	25 Year
Ventura Bl - Vantage to Laurelgrove	SD263	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 660,100	$ 33,005	30	25 Year
Ventura Blvd & Del Moreno Dr SD	SD306	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,509,300	$ 75,465	30	25 Year
Ventura Blvd & Sunnyslope Ave SD	SD196	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,167,900	$ 158,395	30	25 Year
Ventura Boulevard - Corbin Avenue SD	SD173	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,262,800	$ 113,140	30	25 Year
Victory Bl - Fulton To Allott	SD236	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 440,100	$ 22,005	30	25 Year
Victory Blvd - Fair Ave SD	SD343	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,261,700	$ 63,085	30	25 Year
Vinedale - Vinevalley To La Tuna SD	SD221	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 577,600	$ 28,880	30	25 Year
Wall St and 43rd St Storm Drain	SD545	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 591,000	$ 29,550	30	25 Year
Wall Street - 97th St to Century Blvd	SD47	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 654,900	$ 32,745	30	25 Year
Wall Street & 59th Place SD	SD27	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,086,600	$ 54,330	30	25 Year
Warwick Avenue SD - Unit 2	SD3	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,960,700	$ 98,035	30	25 Year
Western Avenue and Paseo Del Mar Drop Structure	SD73	SMB	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 3,118,400	$ 155,920	30	25 Year
Wheatland Avenue E/O Debris Basin N/O Foothill	SD192	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 873,200	$ 43,660	30	25 Year
Whitsett Avenue - Stagg Street SD	SD205	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,870,900	$ 143,545	30	25 Year
Wicks St - Dronfield To Glenoaks Bl	SD240	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 1,925,300	$ 96,265	30	25 Year
Wicks St - Telfair To Sharp Av	SD298	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,750,400	$ 137,520	30	25 Year
Winnetka and Hatteras	SD146	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 891,900	$ 44,595	30	25 Year
Winter Street & Fresno Street Catch Basin	SD562	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 30,100	$ 1,505	30	25 Year
Woodlake Erwin SD	SD267	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,969,900	$ 148,495	30	25 Year
Woodley Av & Morrison St SD	SD401	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,969,900	$ 148,495	30	25 Year
Woodward Av Mcgroarty To Haines Chnl	SD388	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 907,600	$ 45,380	30	25 Year
Wyandotte St - Noble To Kester	SD136	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 907,600	$ 45,380	30	25 Year
Zelzah Avenue - Devonshire to Lassen	SD232	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 2,337,900	$ 116,895	30	25 Year
Zelzah Avenue SD - Victory Blvd to Kittridge St	SD194	ULAR	LABOE	City	Grey Infrastructure	Stormwater Conveyance	No	n/a	No	n/a	Yes	F1		IWR4	$ -	$ 842,800	$ 42,140	30	25 Year
Arleta Greenbelt	ULAR74	ULAR	Others - The River Project	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Community Beautification	IWR1	$ 30,000,000	$ -	$ 1,500,000	31	
Lanark park	ULAR61	ULAR		None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Open Space and Recreation	IWR1	$ 1,000,000	$ -	$ 50,000	31	
Mission Hills Greenbelt	ULAR3717	ULAR	Others - The River Project	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F1	Community Beautification	IWR1	$ 5,000,000	$ -	$ 65,000	31	
Bull Creek Soft Channel Improvement	SCI4	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F2	Recreation Opportunity	IWR1	$ 188,274,878	$ -	$ 3,351,258	31	
Miller Pit Spreading Ground	NSG1	ULAR	LACFCD	None City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F2	Habitat Restoration	IWR1	$ 35,852,400	$ -	$ 133,604	31	
Piggyback Yard	ARBOR0	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F2	Habitat Restoration	IWR1	$ 11,904,650	$ -	$ 43,906	31	
Sepulveda Dam Spreading Grounds	NSG4	ULAR	LACFCD	None City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F2	Habitat Restoration	IWR1	$ 72,971,282	$ -	$ 780,307	31	
Sun Valley Middle School	ULAR132	ULAR	LAUSD	None City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F2	Funding-LADWP	IWR1	$ 100,000	$ -	$ 5,000	31	
Browns Creek Area Spreading Grounds	NSG8	ULAR	LACFCD	None City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Habitat Restoration	IWR1	$ 49,328,504	$ -	$ 572,147	31	
Bull Creek Area Spreading Grounds	NSG7	ULAR	LACFCD	None City	Green - Grey Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Habitat Restoration	IWR1	$ 27,076,366	$ -	$ 572,147	31	
Caballero Creek & Los Angeles River Confluence Park	ULAR55	ULAR	Others - MRCA	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S1	Yes	F4	Open Space and Recreation	IWR1	$ 3,004,475	$ -	$ 18,000	31	
Chester L. Washington Golf Course	LC02	DC	LA County	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F4	Open Space and Recreation	IWR1	$ 59,600,000	$ -	$ 500,000	31	
Ladera Park Field Subsurface Infiltration Regional BMP	LC01	BC	LACDPW/LACDPR	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S2	Yes	F4	Open Space and Recreation	IWR1	$ 9,670,000	$ -	$ 20,000	31	
Marsh Park, Phase II	ULAR42	ULAR	Others - MRCA	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F1	Open Space and Recreation	IWR1	$ 5,830,959	$ -	$ 150,000	31	
San Rafael Creek Restoration	ULAR48	ULAR	Others - Arroyo Seco Foundation	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F1	Habitat Restoration	IWR1	$ 2,000,000	$ -	$ 15,000	31	
Aliso Creek Soft Channel Improvement	SCI5	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	1W1	Yes	1S4	Yes	F2	Habitat Restoration	IWR1	$ 419,406,548	$ -	$ 7,374,609	31	

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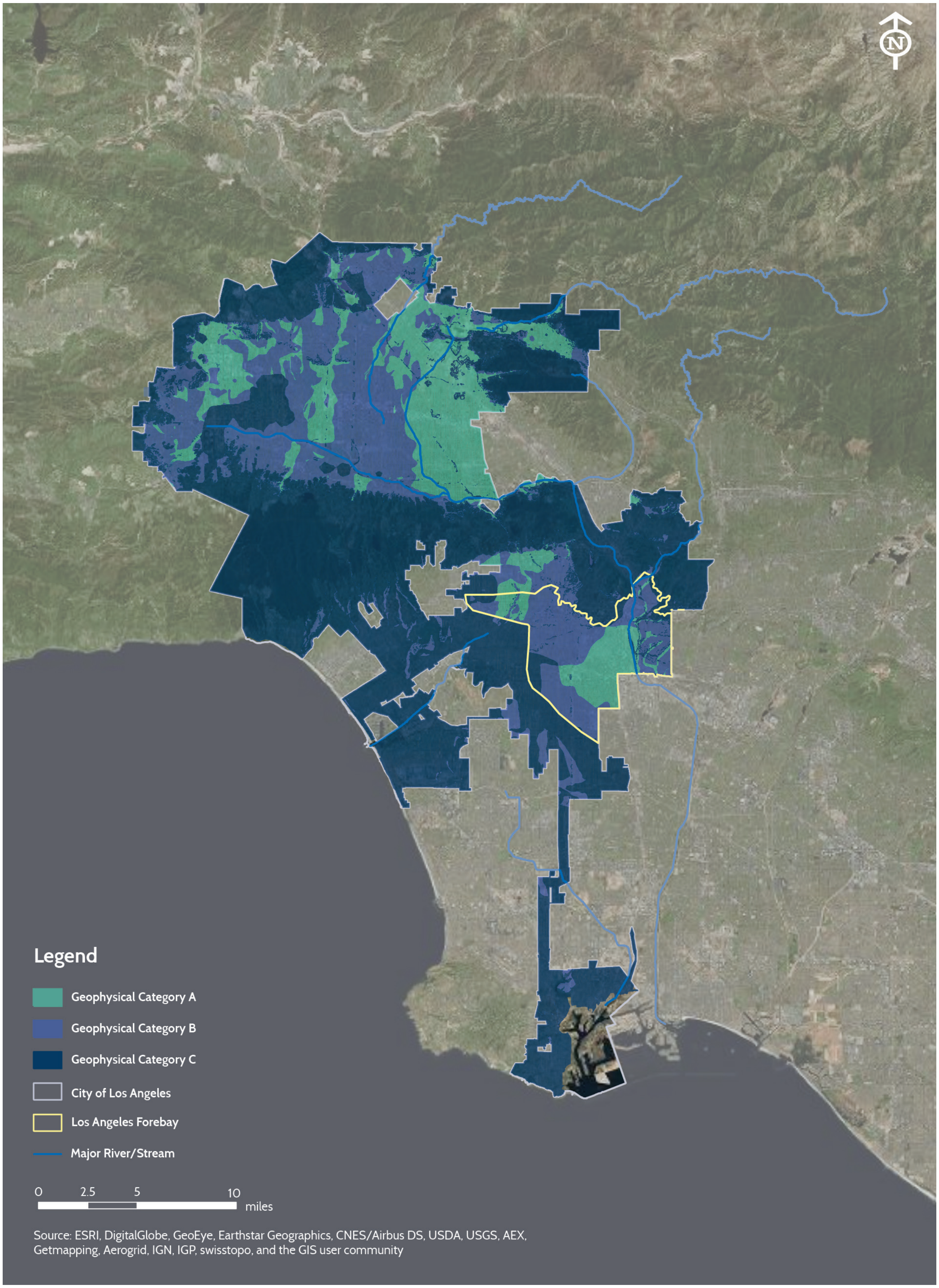
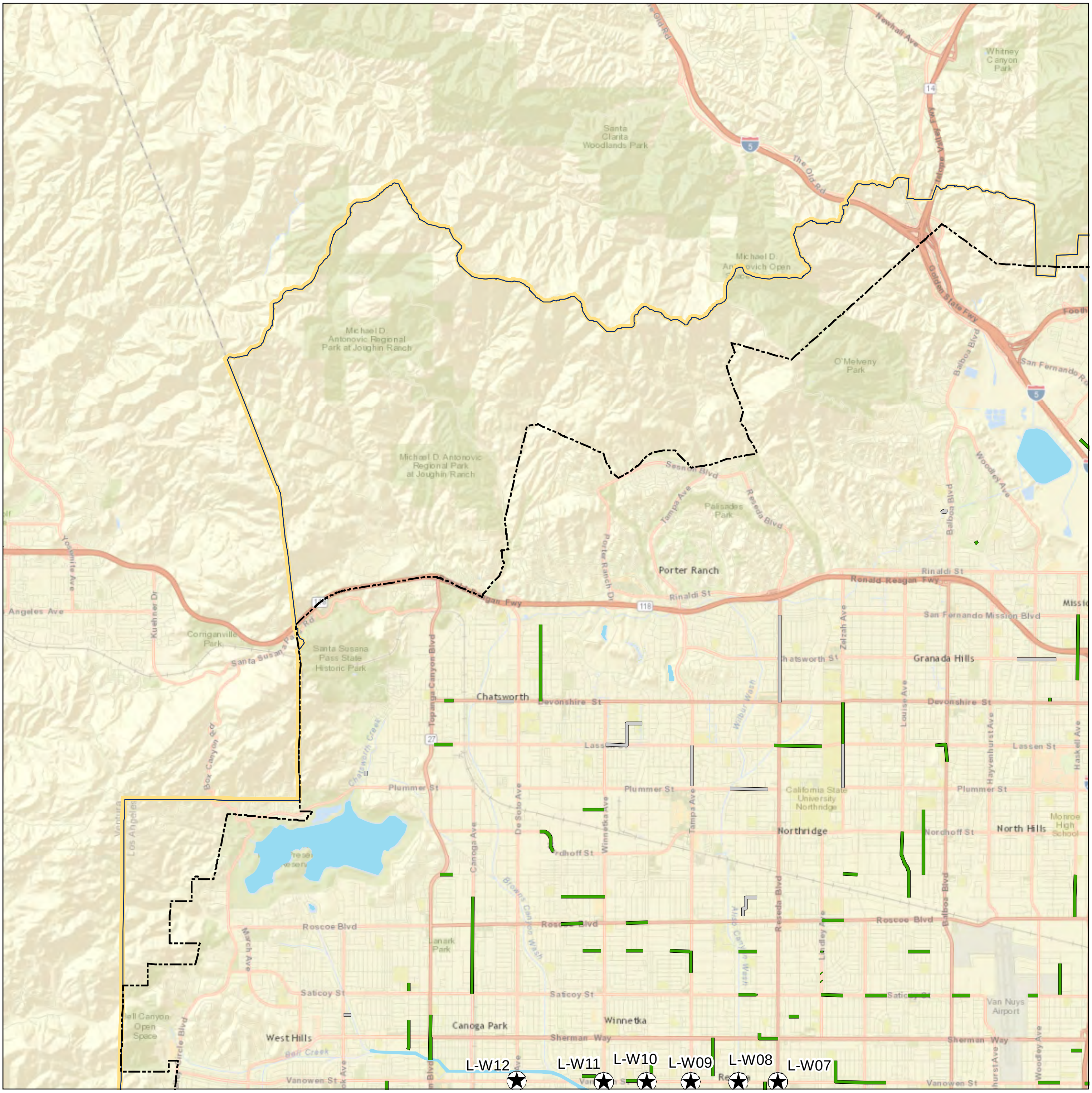
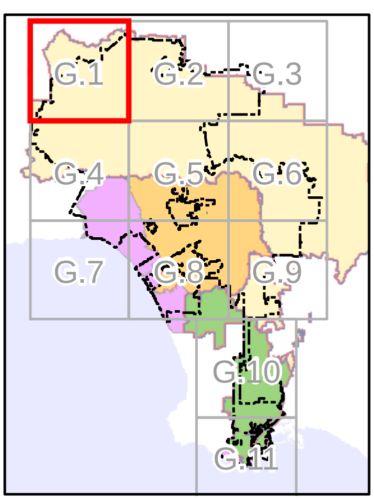
Arroyo Seco Land	ARBOR2	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F2**	Habitat Restoration	**IWR1**	$ 1,000,000	$ -	$ 50,000	31	
Verdugo Wash Land	ARBOR1	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F2**	Habitat Restoration	**IWR1**	$ 1,000,000	$ -	$ 50,000	31	
Arroyo Seco Soft Channel Improvement	SCI1	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F4**	Habitat Restoration	**IWR1**	$ 672,160,822	$ -	$ 11,890,729	31	
Brown Creek Soft Channel Improvement	SCI6	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F4**	Habitat Restoration	**IWR1**	$ 721,196,876	$ -	$ 12,819,113	31	
Santa Susana Creek at Topanga Canyon and Plummer	ULAR67	ULAR	Others - MRCA	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F4**	Habitat Restoration	**IWR1**	$ 500,000	$ -	$ 25,000	31	
Bell Creek Soft Channel Imporevement	SCI7	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F4**		**IWR2**	$ 106,467,914	$ -	$ 1,895,796	31	
Browns Canyon Wash at Plummer and Variel	ULAR68	ULAR	Others - MRCA	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F4**		**IWR2**	$ 15,000,000	$ -	$ 750,000	31	
Stonehurst School	ULAR72	ULAR		None City	Green - Grey Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F4**		**IWR2**	$ 100,000	$ -	$ 5,000	31	
Tujunga and Pacoima Wash Bridge Retrofit and Channel Expansion	ULAR102	ULAR	Others - The River Project	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F4**		**IWR2**	$ 100,000,000	$ -	$ 3,000,000	31	
Tujunga Wash Soft Channel Improvement	SCI3	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F4**		**IWR2**	$ 812,165,273	$ -	$ 14,461,632	31	
Verdugo Hills High School Retrofit	ULAR82	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	Yes	**F4**		**IWR2**	$ 100,000	$ -	$ 5,000	31	
CBS-Viacom Radio Community Park	ULAR137	ULAR	Others - The River Project	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**	Open Space and Recreation	**IWR2**	$ 5,500,000	$ -	$ 100,000	31	
Edward Vincent Junior Park Regional BMP	IG01	BC	Others - Inglewood	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**	Open Space and Recreation	**IWR2**	$ 44,891,000	$ -	$ 1,000,000	31	
Hollenbeck Middle School; Boyle Heights Green Corridor Project	ULAR26	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**	Community Beautification	**IWR2**	$ 1,000,000	$ -	$ 50,000	31	
Pierce College	ULAR56	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**	Community Beautification	**IWR2**	$ 500,000	$ -	$ 25,000	31	
Valley Plaza Park	ULAR58	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**	Community Beautification	**IWR2**	$ 1,000,000	$ -	$ 50,000	31	
Van Nuys Sherman Oaks Park	ULAR51	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**	Open Space and Recreation	**IWR2**	$ 1,000,000	$ -	$ 50,000	31	
Culver Boulevard Median Regional BMP	CC01	BC	Others - Culver City	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	No	**n/a**	Community Beautification	**IWR2**	$ 16,550,000	$ -	$ 827,500	31	
La Cienega Park Regional BMP	BH01	BC	Others - Beverly Hills	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	No	**n/a**	Open Space and Recreation	**IWR2**	$ 32,176,000	$ -	$ 1,608,800	31	
Lower Arroyo Park	SP01	ULAR	Others - South Pasadena	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	No	**n/a**	Open Space and Recreation	**IWR2**	$ 5,132,000	$ -	$ 256,600	31	
Plummer Park Regional BMP	WH01	BC	Others - West Hollywood	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	No	**n/a**	Open Space and Recreation	**IWR2**	$ 12,508,000	$ -	$ 625,400	31	
Welch Site BMP	ULAR46	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F1**		**IWR2**	$ 1,000,000	$ -	$ 50,000	31	
Browns Canyon Wash at Route 118 and Rinaldi	ULAR83	ULAR	Others - MRCA	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F4**		**IWR2**	$ 4,000,000	$ -	$ 200,000	31	
Burbank West Soft Channel Improvement	SCI2	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	Yes	**F4**		**IWR2**	$ 72,655,637	$ -	$ 1,293,726	31	
Sycamore Grove Park	ULAR38	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	No	**n/a**	Open Space and Recreation	**IWR2**	$ 1,000,000	$ -	$ 50,000	31	
Vacant Parcel Adjacent to Compton Creek	ULAR23	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	No	**n/a**	Habitat Restoration	**IWR2**	$ 5,000,000	$ -	$ 250,000	31	
Reach 4- Upstream Glendale Narrows to Los Feliz	ULAR47	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F2**	Habitat Restoration	**IWR2**	$ 14,884,848	$ -	$ 206,588	31	
Reach 5- Los Feliz to Bowtie Parcel	ULAR45	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F2**	Habitat Restoration	**IWR2**	$ 107,500	$ -	$ 83,025	31	
Reach 6- Bowtie Parcel to Downtown Glendale Narrows/Arroyo Seco	ULAR36	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F2**	Habitat Restoration	**IWR2**	$ 19,780,215	$ -	$ 324,327	31	
Reach 7- Downstream Glendale Narrows/Arro yo Seco to Main Street	ULAR33	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F2**	Habitat Restoration	**IWR2**	$ 22,748,788	$ -	$ 109,913	31	
Reach 8-Main Street to First Street	ULAR30	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F2**	Habitat Restoration	**IWR2**	$ 1,287,472	$ -	$ 102,057	31	
Reach 3- Ferrero Fields to Upstream Glendale Narrows	ULAR49	ULAR	USACE	None City	Green Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	Yes	**F4**	Habitat Restoration	**IWR2**	$ 16,131,172	$ -	$ 256,943	31	
Lincoln Heights Freeway Interchange BMP	ULAR35	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 3,000,000	$ -	$ 150,000	31	
Tujunga Tataviam Village Parks	ULAR3722	ULAR	Others - Tataviam	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 5,000,000	$ -	$ 300,000	31	
Tujunga-Sun Valley Tujunga Wash Diversion #1	ULAR104	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 30,000,000	$ -	$ 1,500,000	31	
Tujunga-Sun Valley Tujunga Wash Diversion #2	ULAR105	ULAR	LACFCD	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 30,000,000	$ -	$ 1,500,000	31	
Vulcan Gravel Processing Plant	ULAR135	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 5,000,000	$ -	$ 250,000	31	
Wilson Canyon Wash and Sylmar High School Retrofit	ULAR85	ULAR	Others - The River Project	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S1**	No	**n/a**		**IWR3**	$ 5,500,000	$ -	$ 100,000	31	
Garvanza Elementary school	ULAR44	ULAR		None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S2**	No	**n/a**		**IWR3**	$ 100,000	$ -	$ 5,000	31	
Santa Monica Civic Auditorium and Courthouse	SM01	SMB	Others - Santa Monica	None City	Green Infrastructure	Centralized	Yes	**1W1**	Yes	**1S4**	No	**n/a**		**IWR3**	$ 6,680,311	$ -	$ 334,016	31	
Primary Road Improvement Project	D3725	ULAR	Others - The River Project	None City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	No	**n/a**		**IWR3**	$ 10,000,000	$ -	$ 600,000	31	
Railroad ROW Improvement	D3726	ULAR	Others - The River Project	None City	Green Infrastructure	Distributed	Yes	**1W1**	Yes	**2S1**	No	**n/a**		**IWR3**	$ 50,000,000	$ -	$ 3,000,000	31	
Arroyo Seco North Branch Creek Daylighting	ULAR40	ULAR	Others - The River Project	None City	Green Infrastructure	Centralized	Yes	**1W1**	No	**n/a**	No	**n/a**	Habitat Restoration	**IWR3**	$ 1,060,000	$ -	$ 53,000	31	


N
Legend
Geophysical Category A
Geophysical Category B
Geophysical Category C
City of Los Angeles
Los Angeles Forebay
Major River/Stream
0
2.5
5
10
miles
Source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS user community

APPENDIX G – FIGURES OF PLANNED REGIONAL-CENTRALIZED GREY INFRASTRUCTURE PROJECTS IN CITY OF LOS ANGELES





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

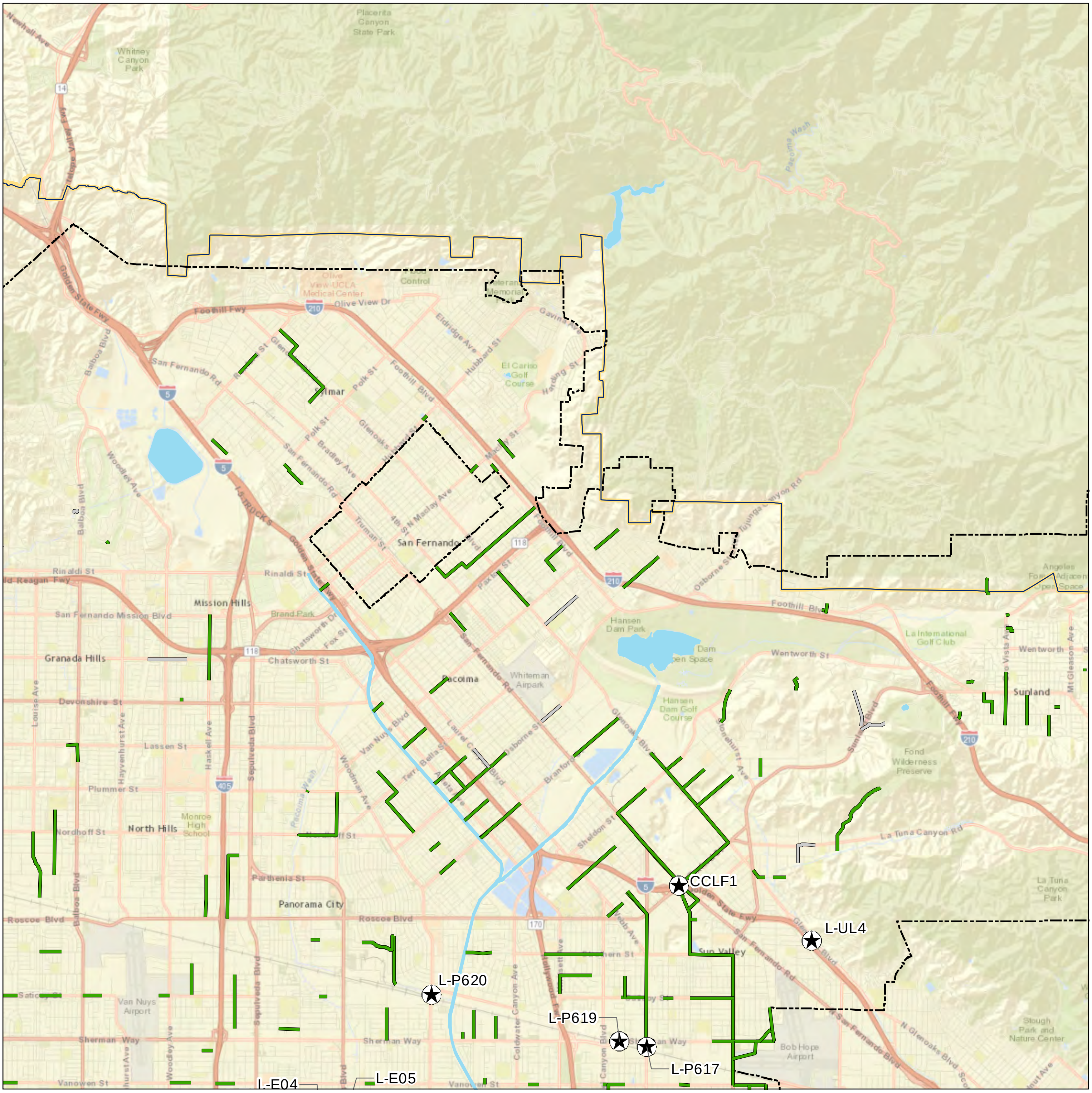
WMA Boundary

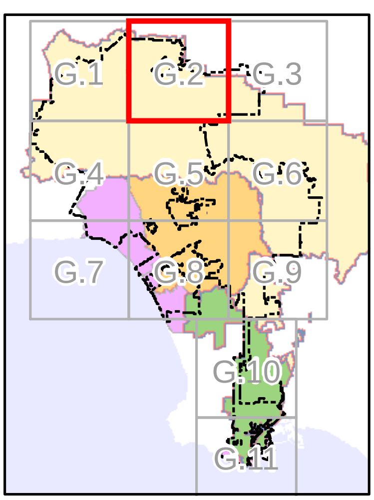
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.1
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

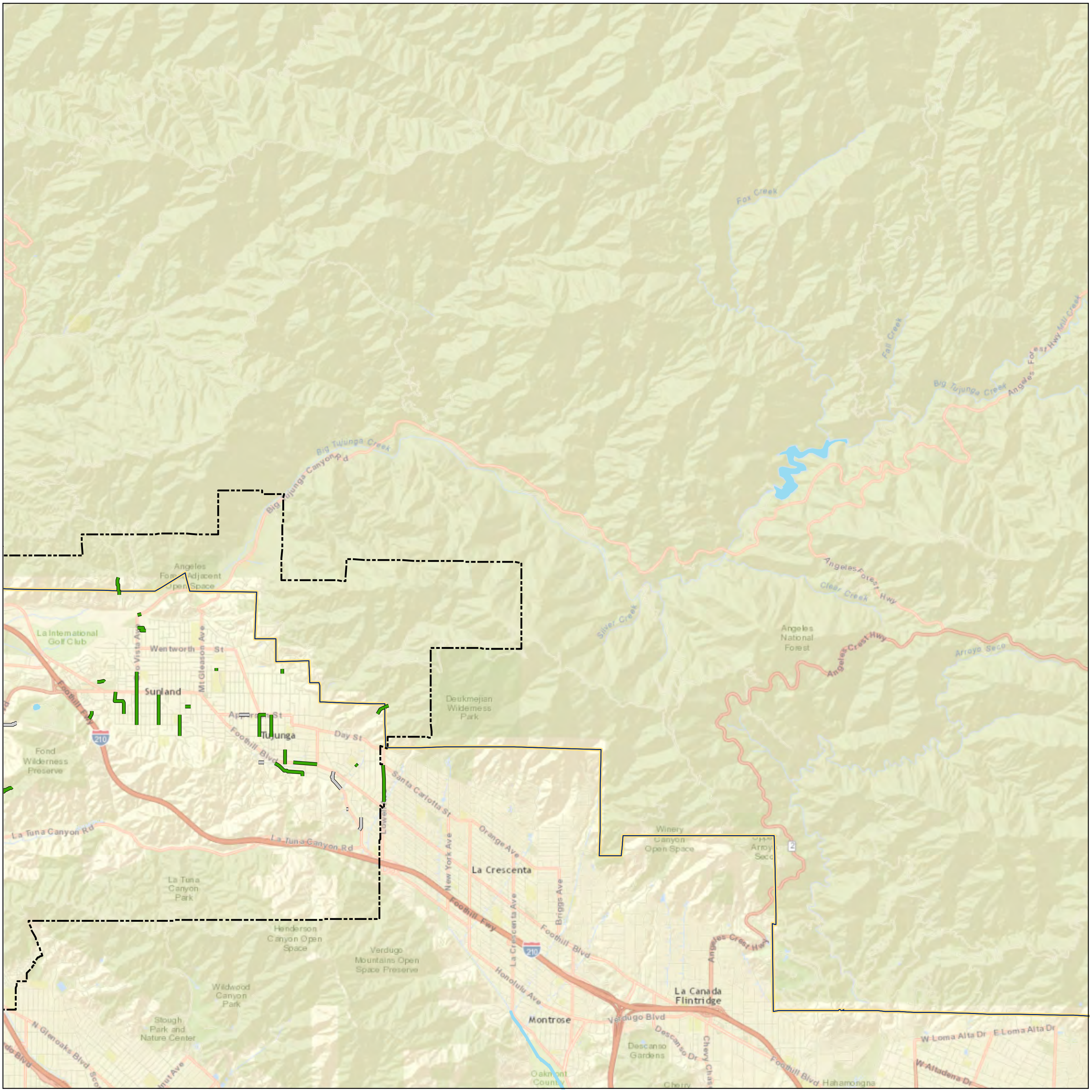
WMA Boundary

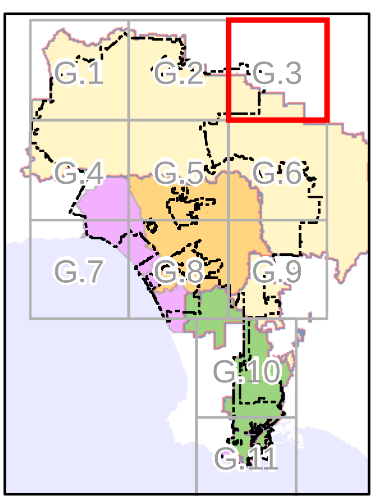
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.2
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

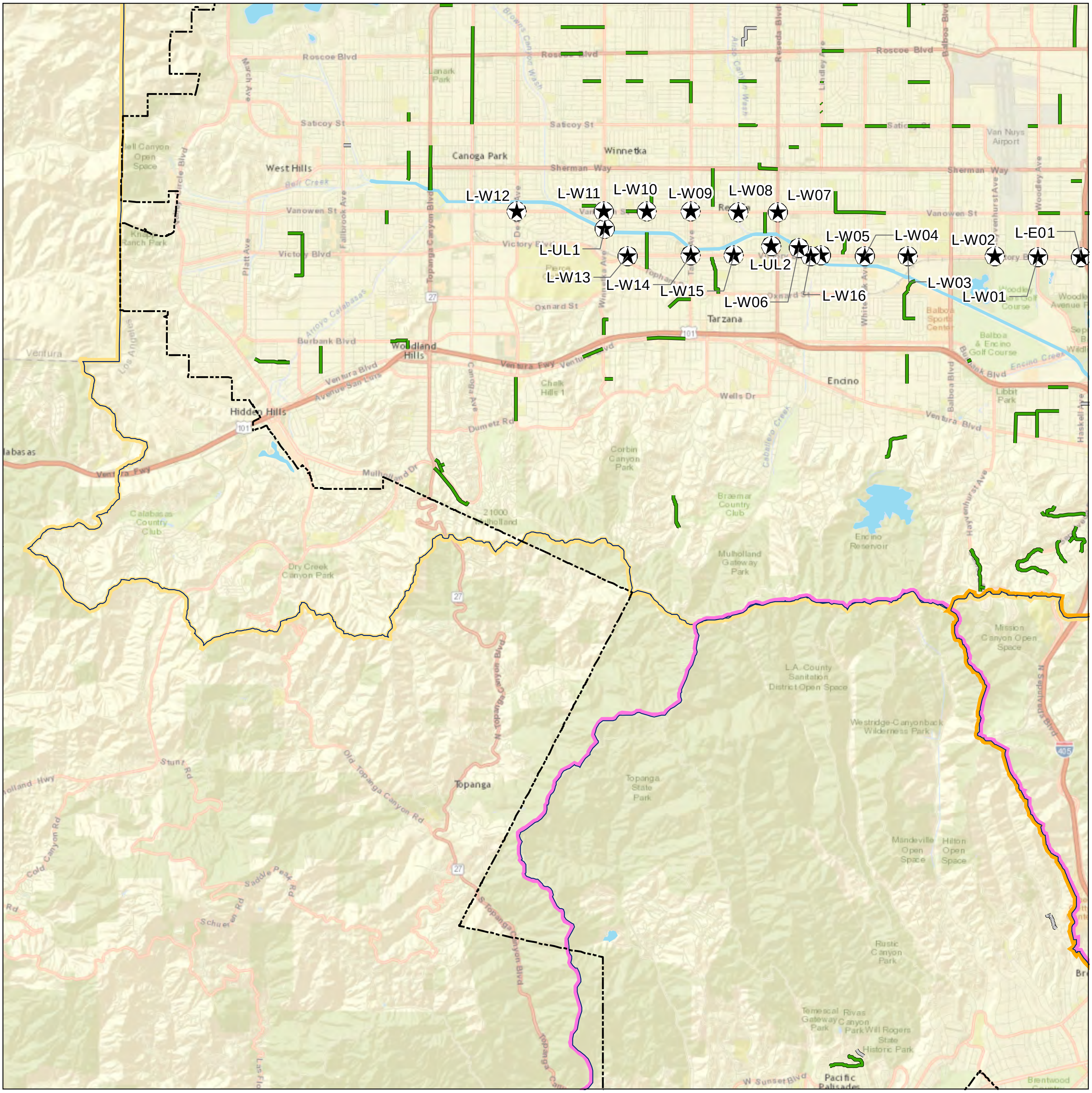
WMA Boundary

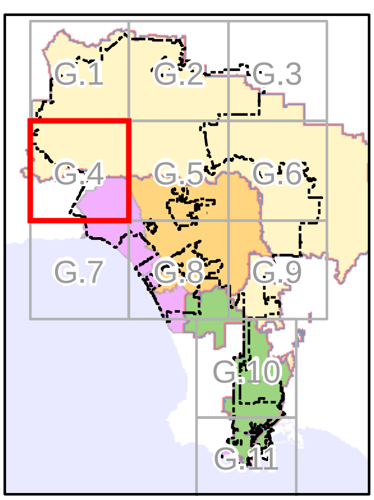
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.3
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

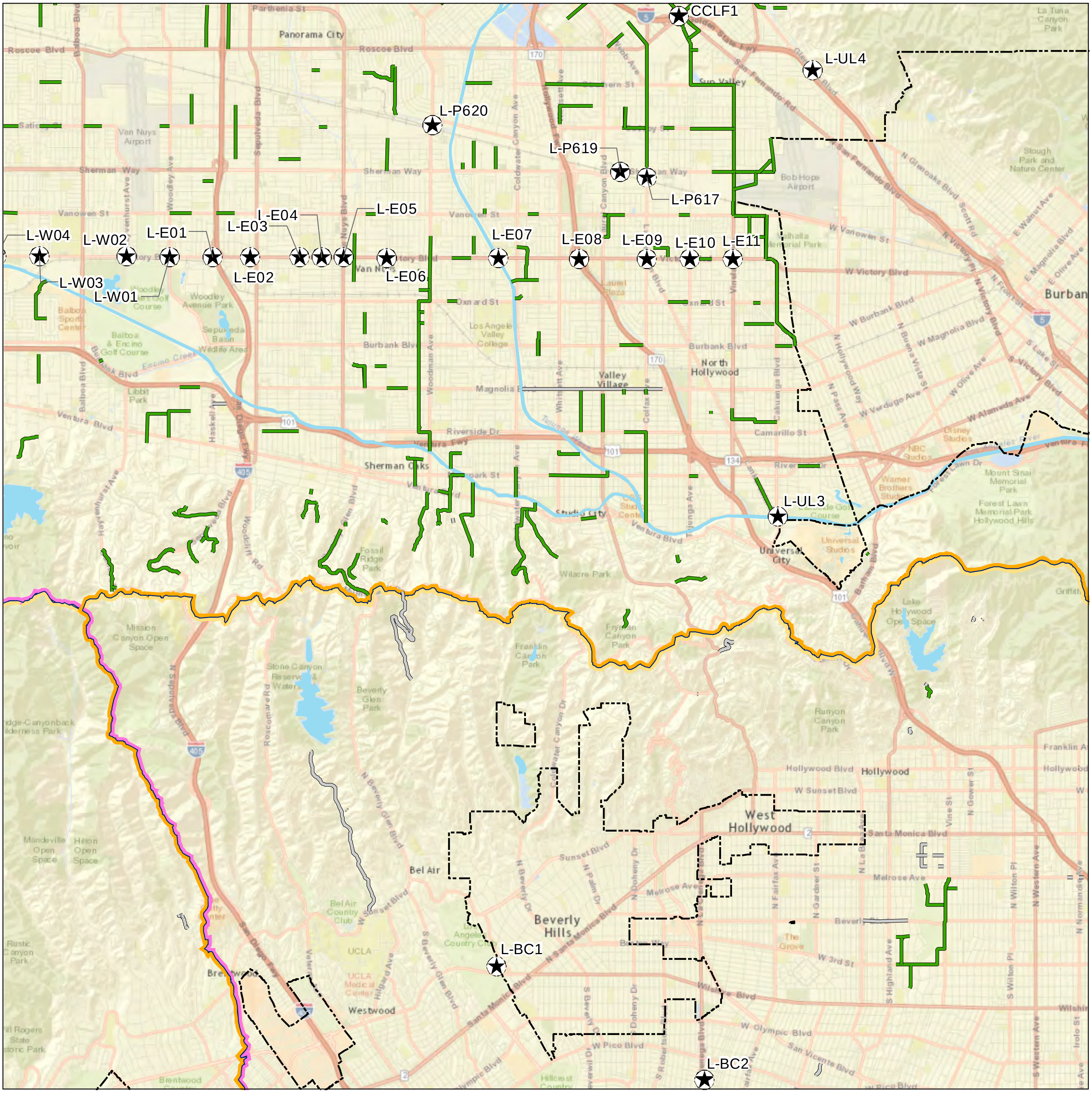
WMA Boundary

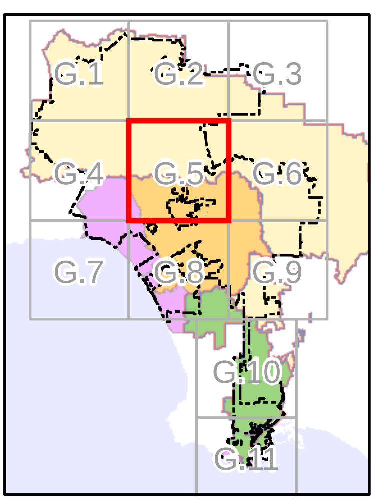
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.4
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

LASAN Stormwaer/LFD Projects

LABOE Stormdrain CIP

LABOE Stormdrain CIP overlay with Green Streets Project

City of LA Boundary

WMA Boundary

Ballona Creek

Dominguez Channel

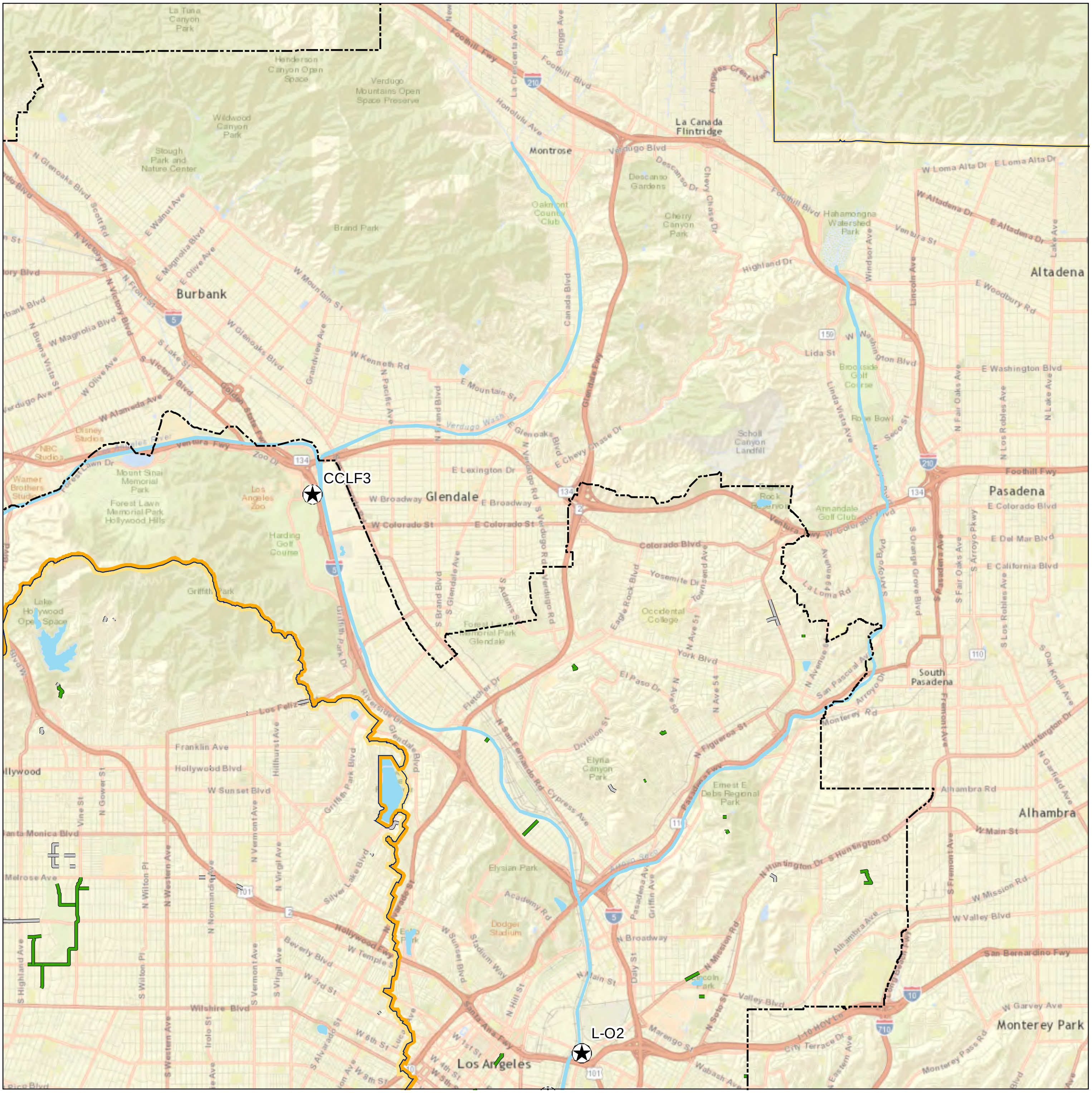
Santa Monica Bay

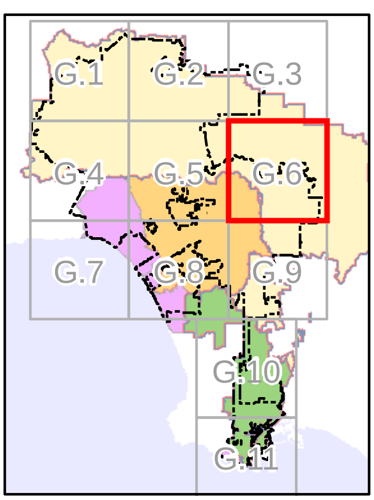
Upper Los Angeles River

Figure G.5
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

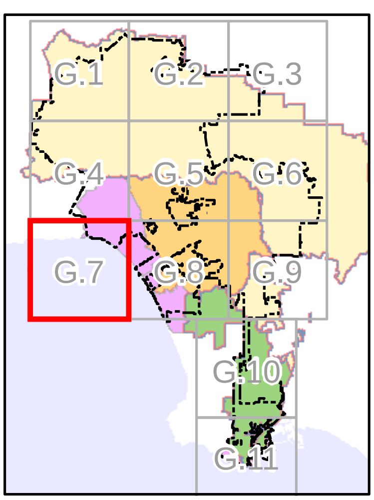
WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.6
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants



Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

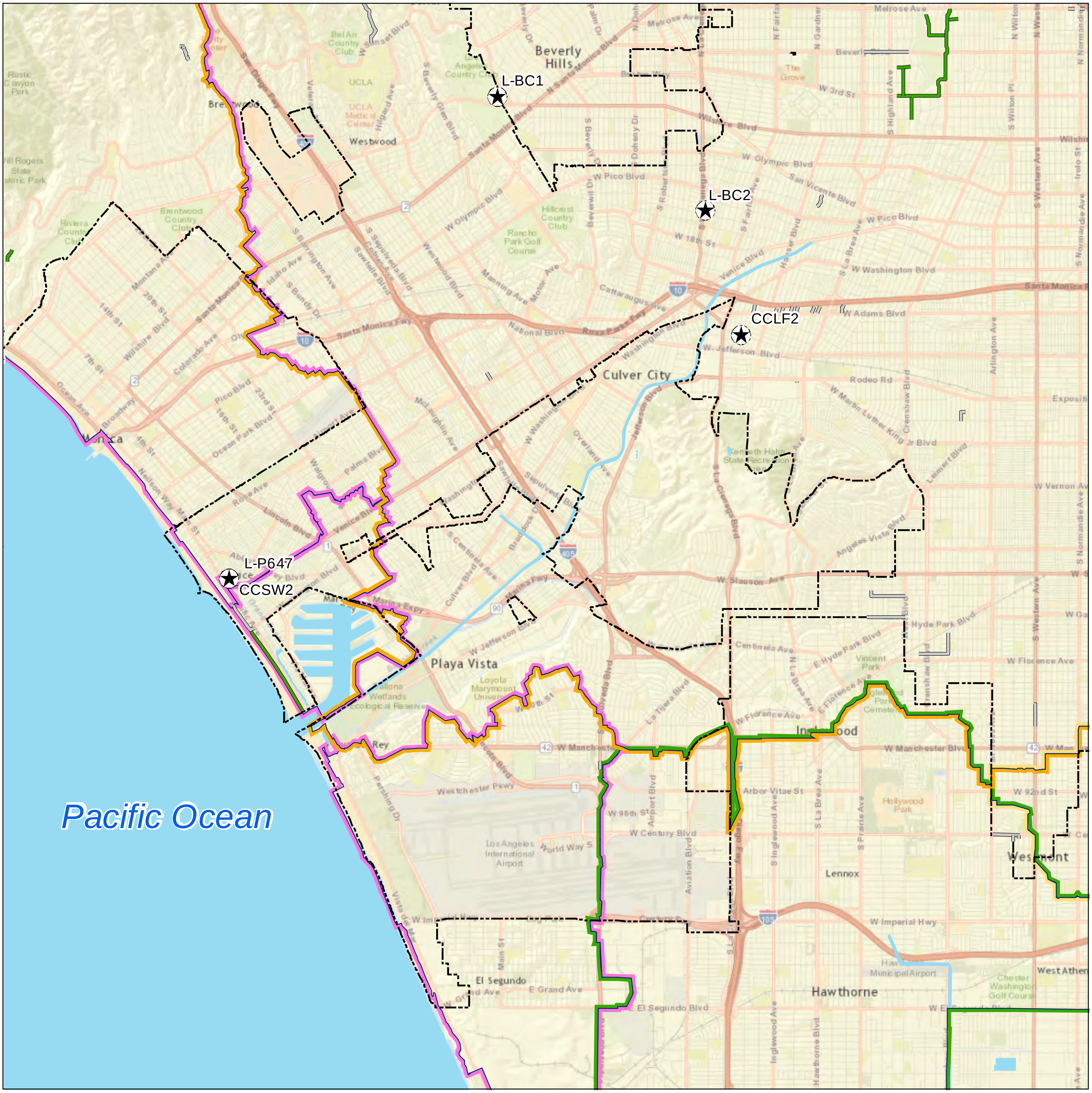
WMA Boundary

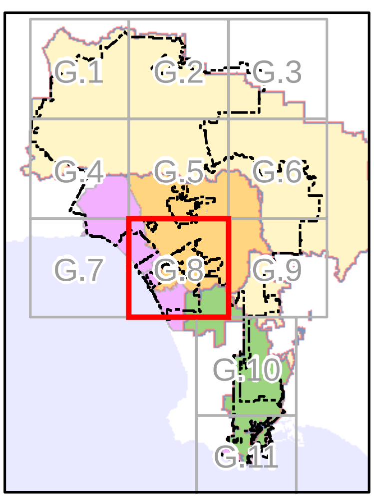
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.7
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

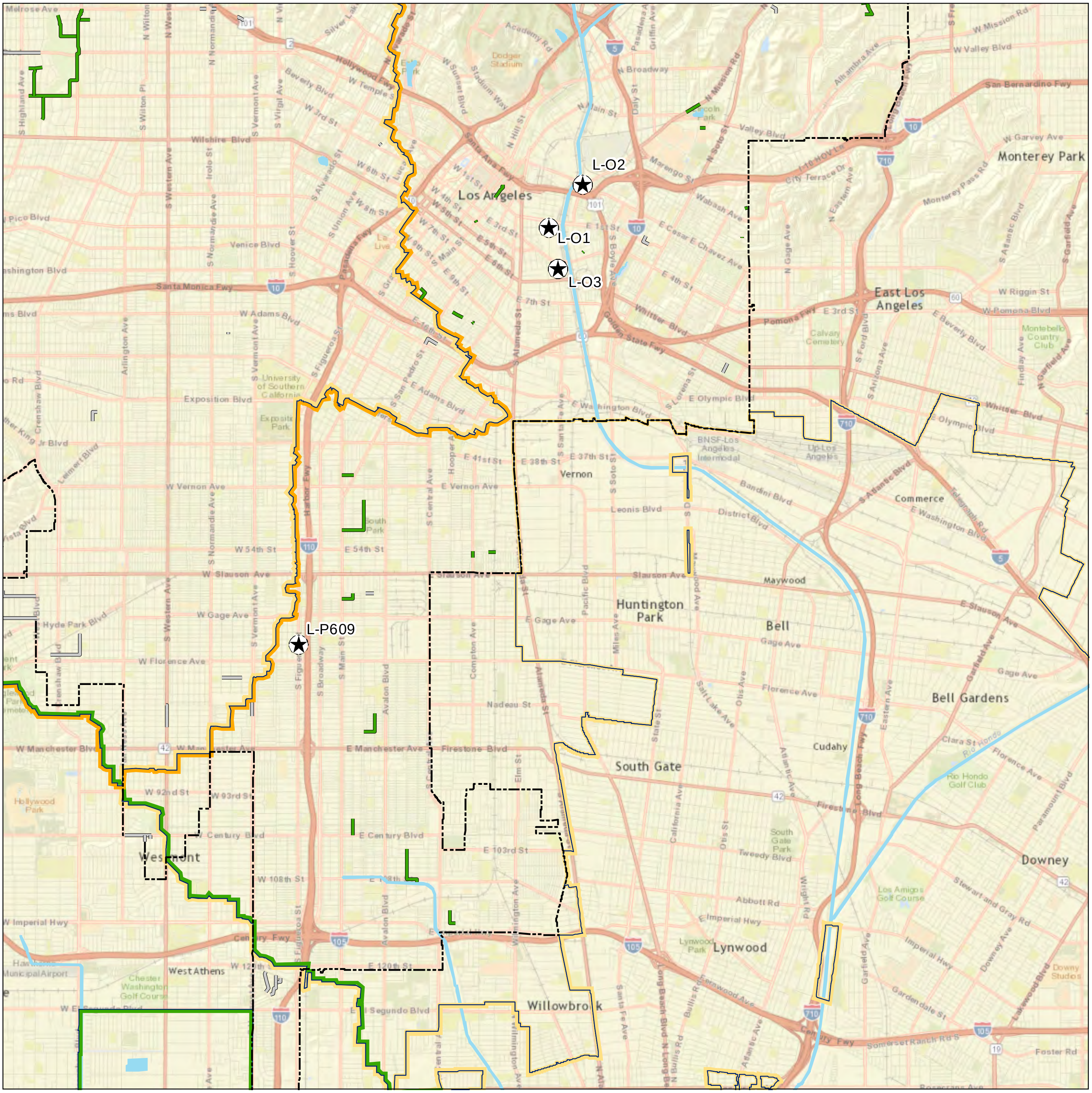
WMA Boundary

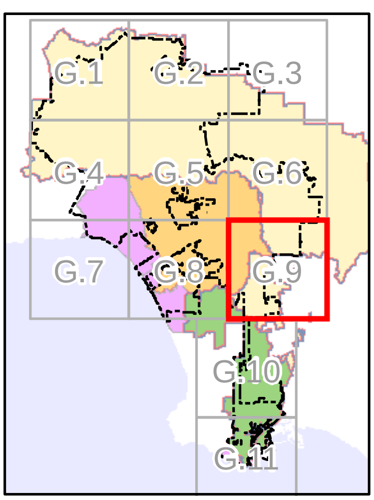
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.8
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

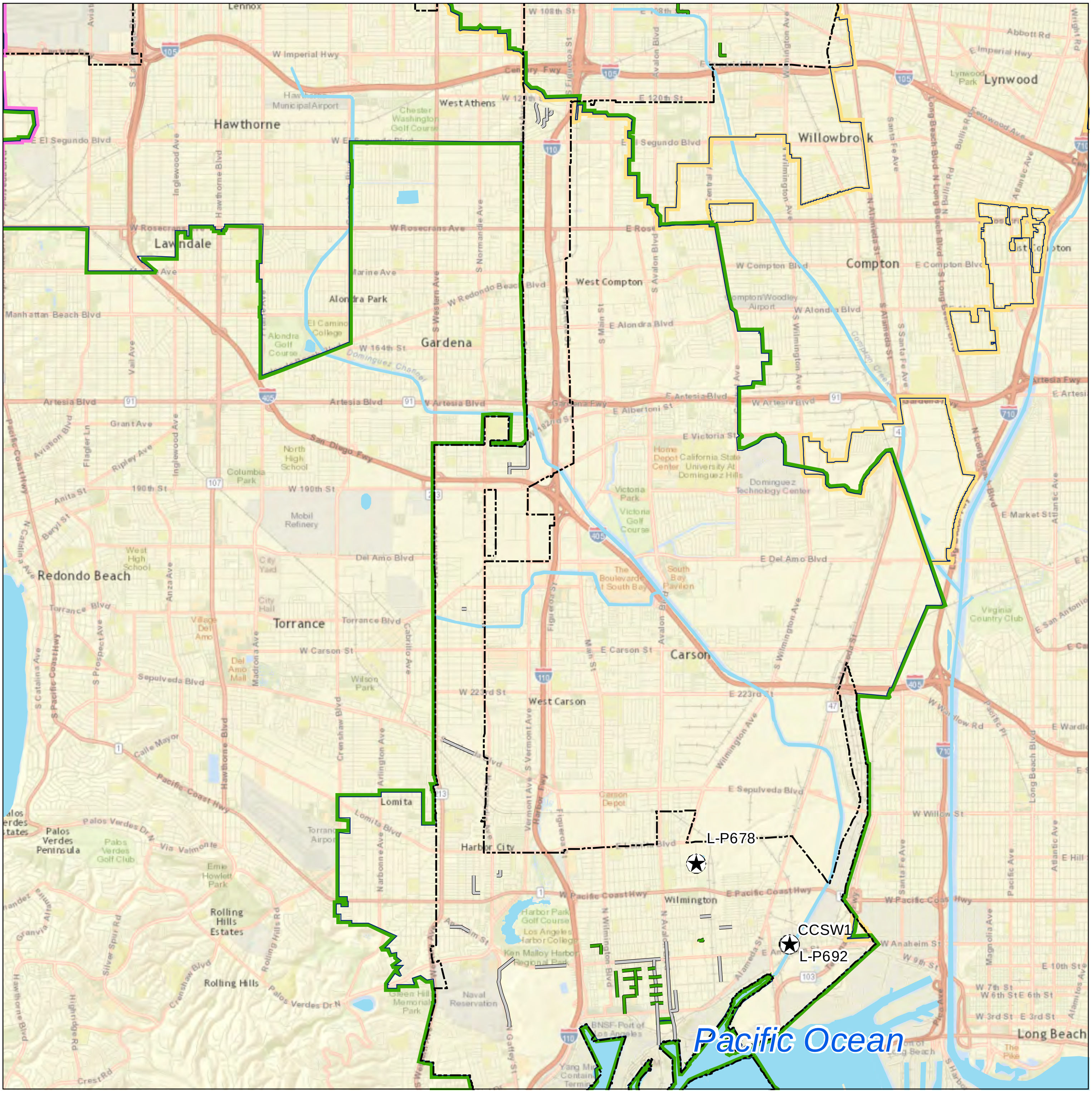
WMA Boundary

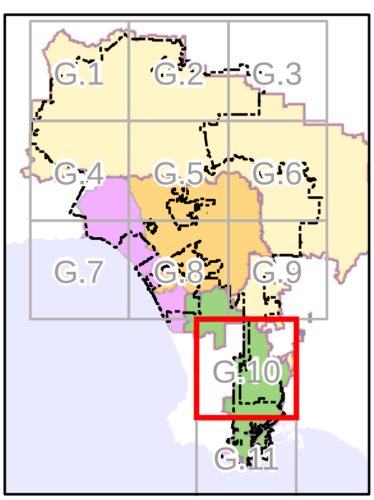
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.9
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

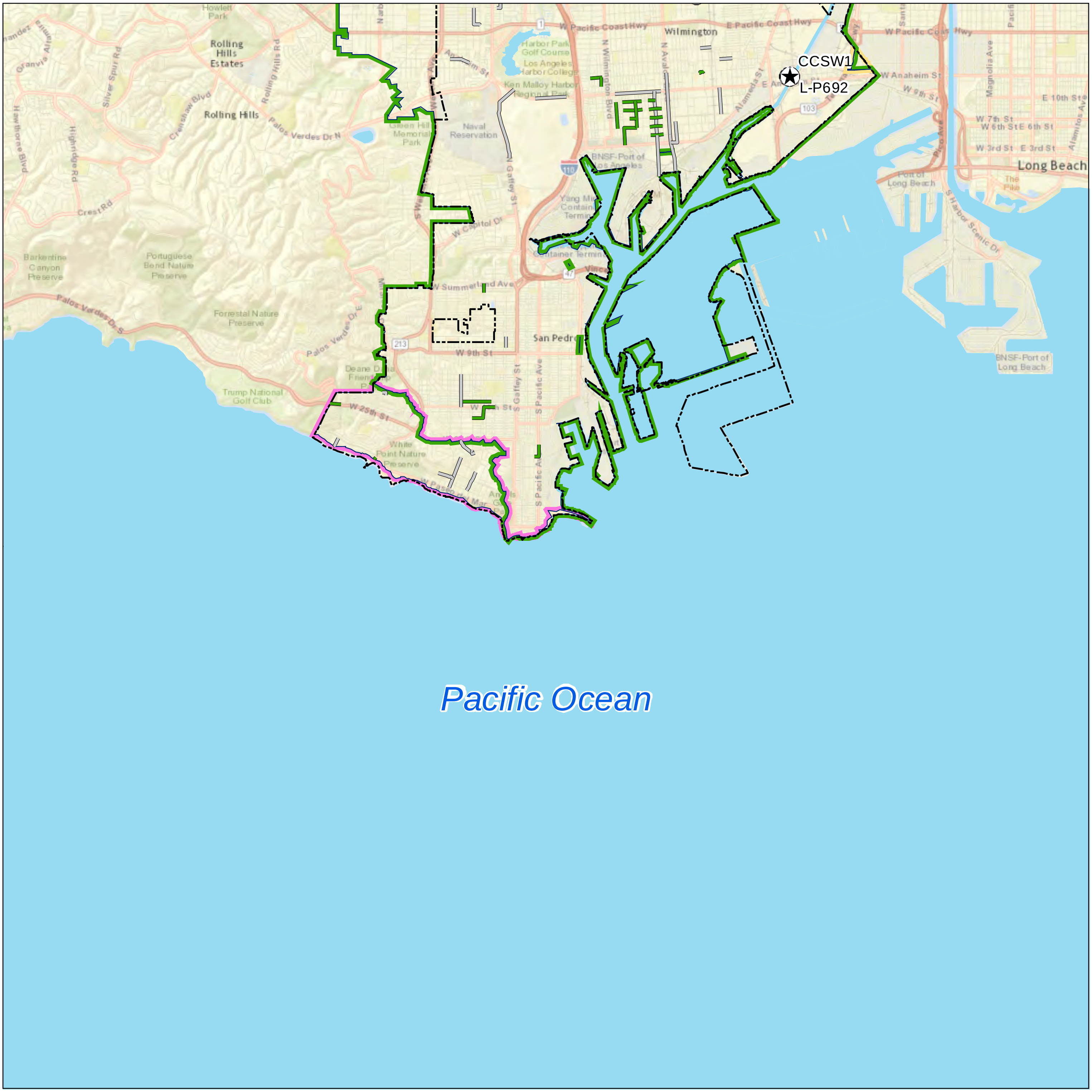
WMA Boundary

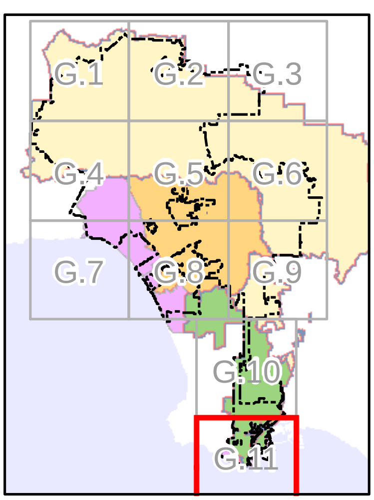
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Figure G.10
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

- LASAN Stormwaer/LFD Projects
- LABOE Stormdrain CIP
- LABOE Stormdrain CIP overlay with Green Streets Project
- City of LA Boundary

WMA Boundary

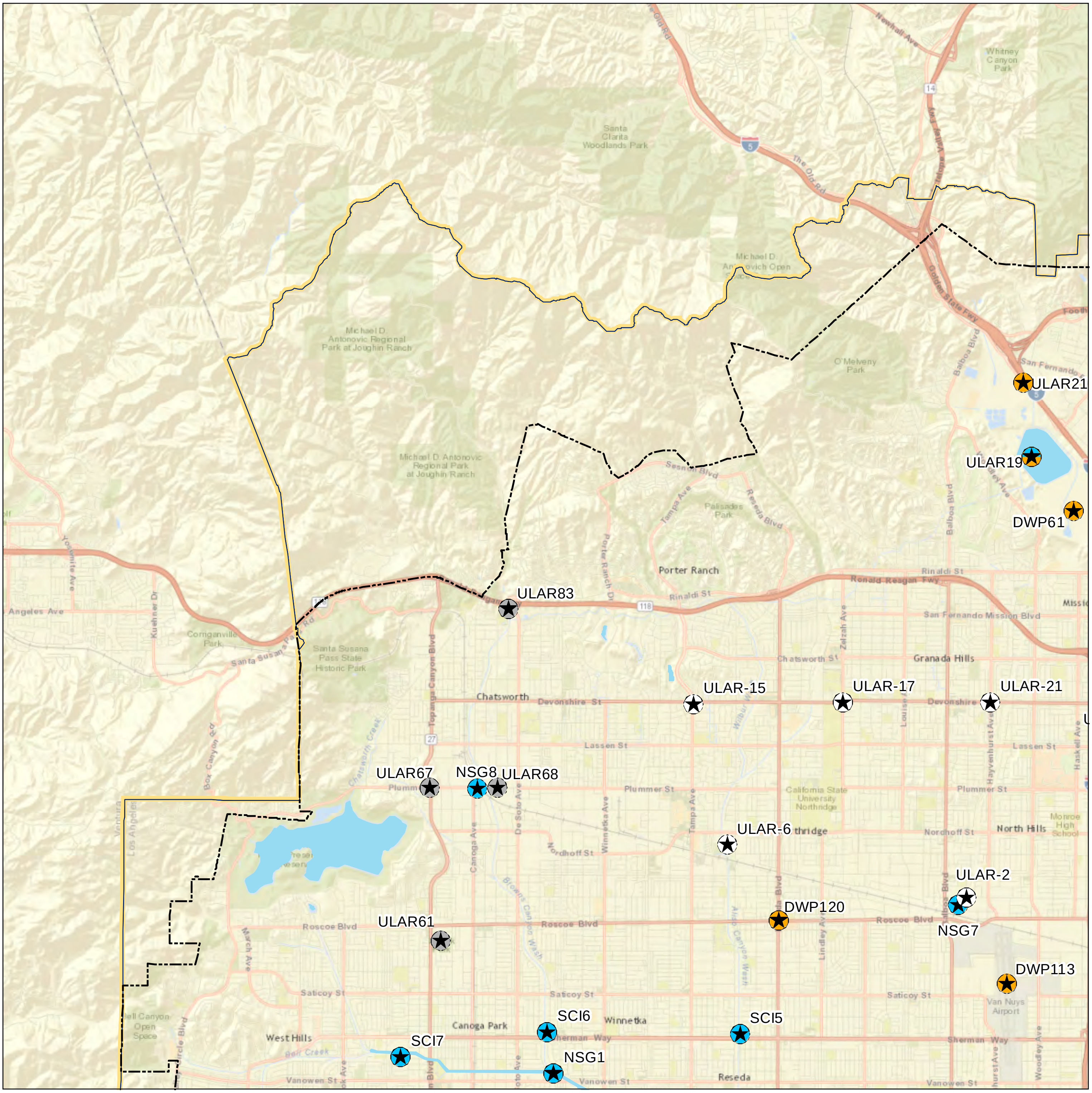
- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

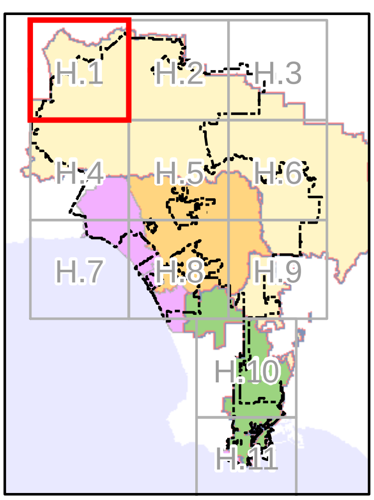
Figure G.11
Planned Centralized-Regional Grey Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants

APPENDIX H – FIGURES OF PLANNED REGIONAL-CENTRALIZED GREEN INFRASTRUCTURE PROJECTS IN CITY OF LOS ANGELES





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Centralized-Regional Project by Agency

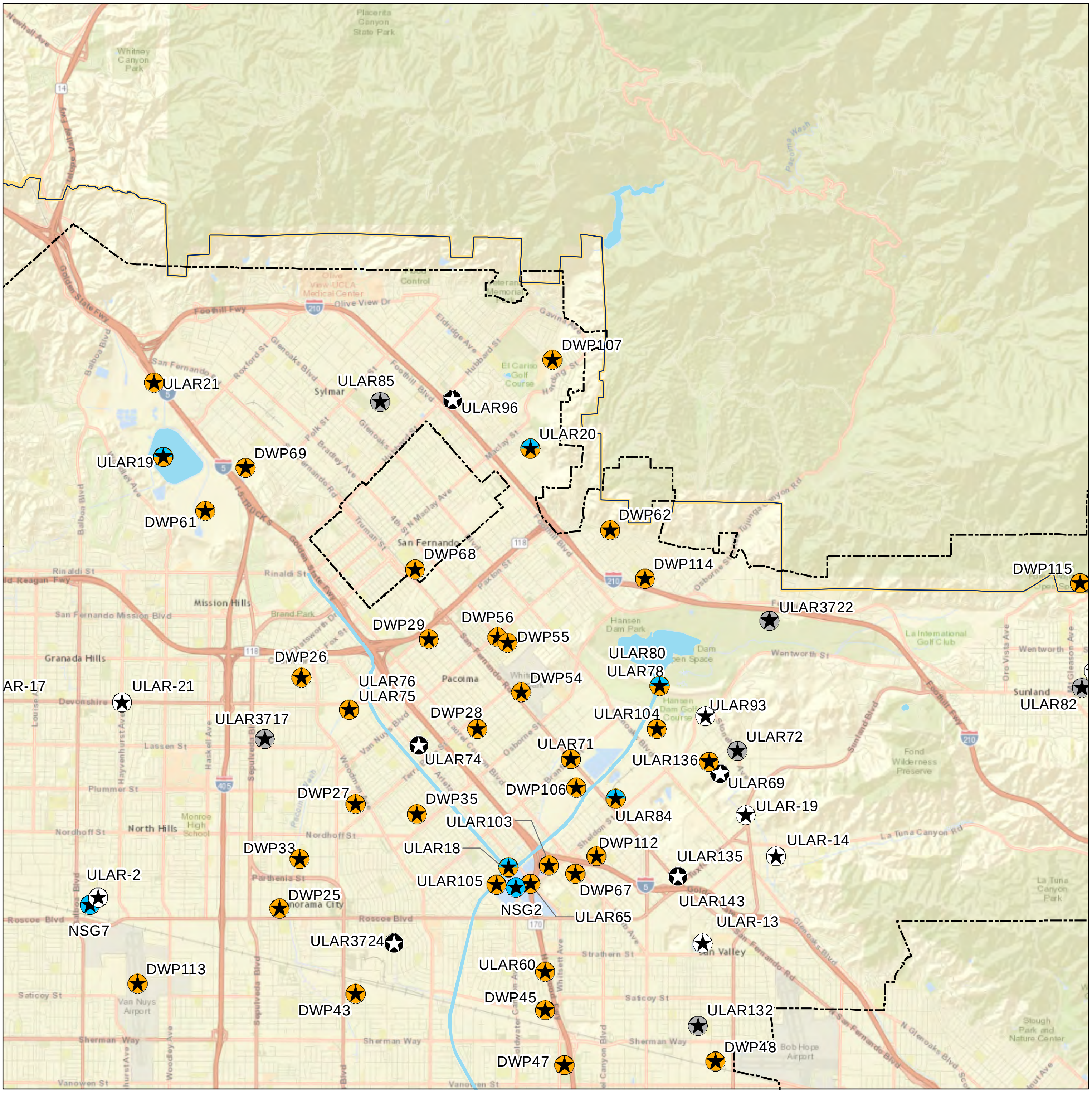
- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

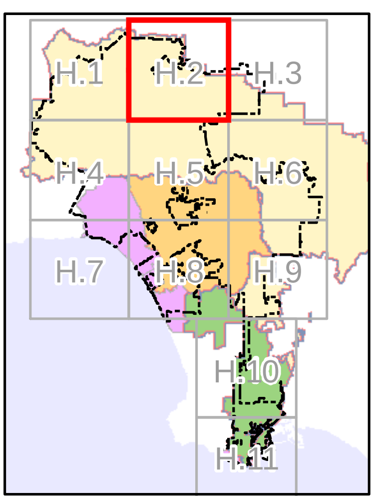
Figure H.1
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

N

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

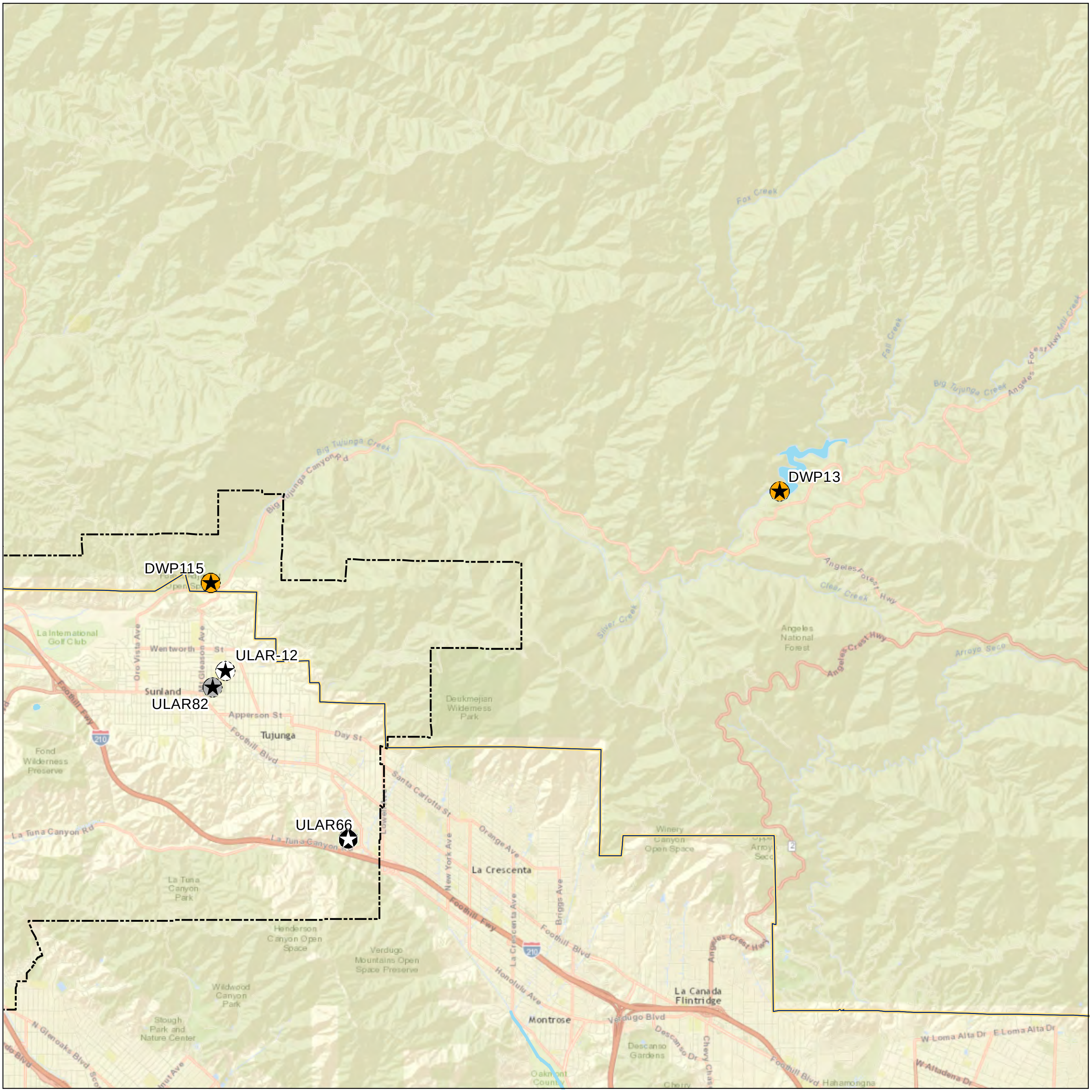
Centralized-Regional Project by Agency

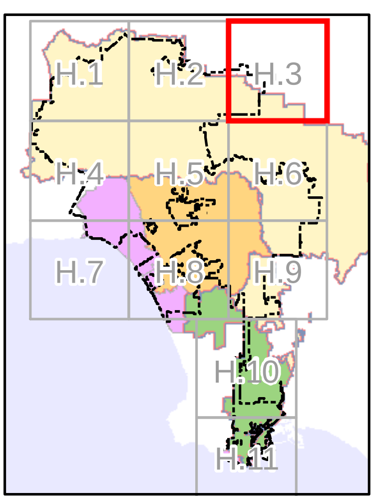
- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

0 1 2 Miles

Figure H.2
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

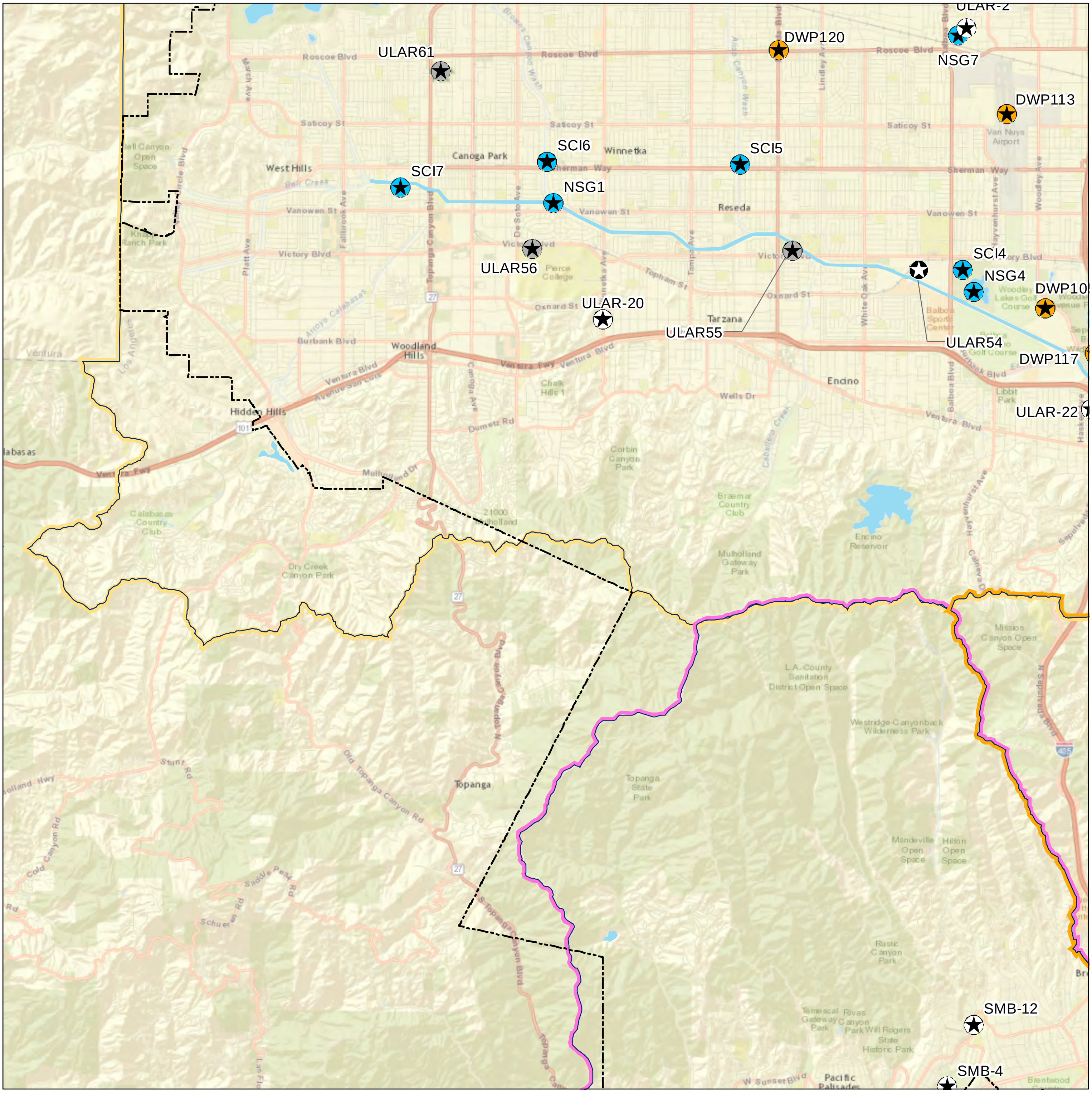
Centralized-Regional Project by Agency

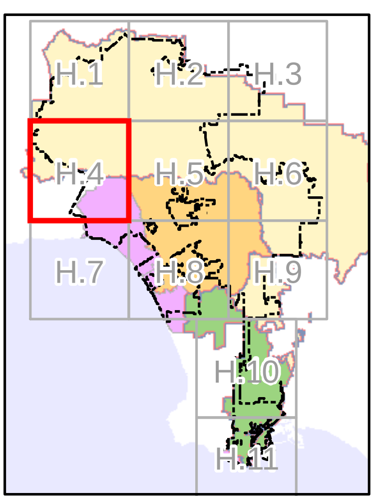
- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

Figure H.3
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

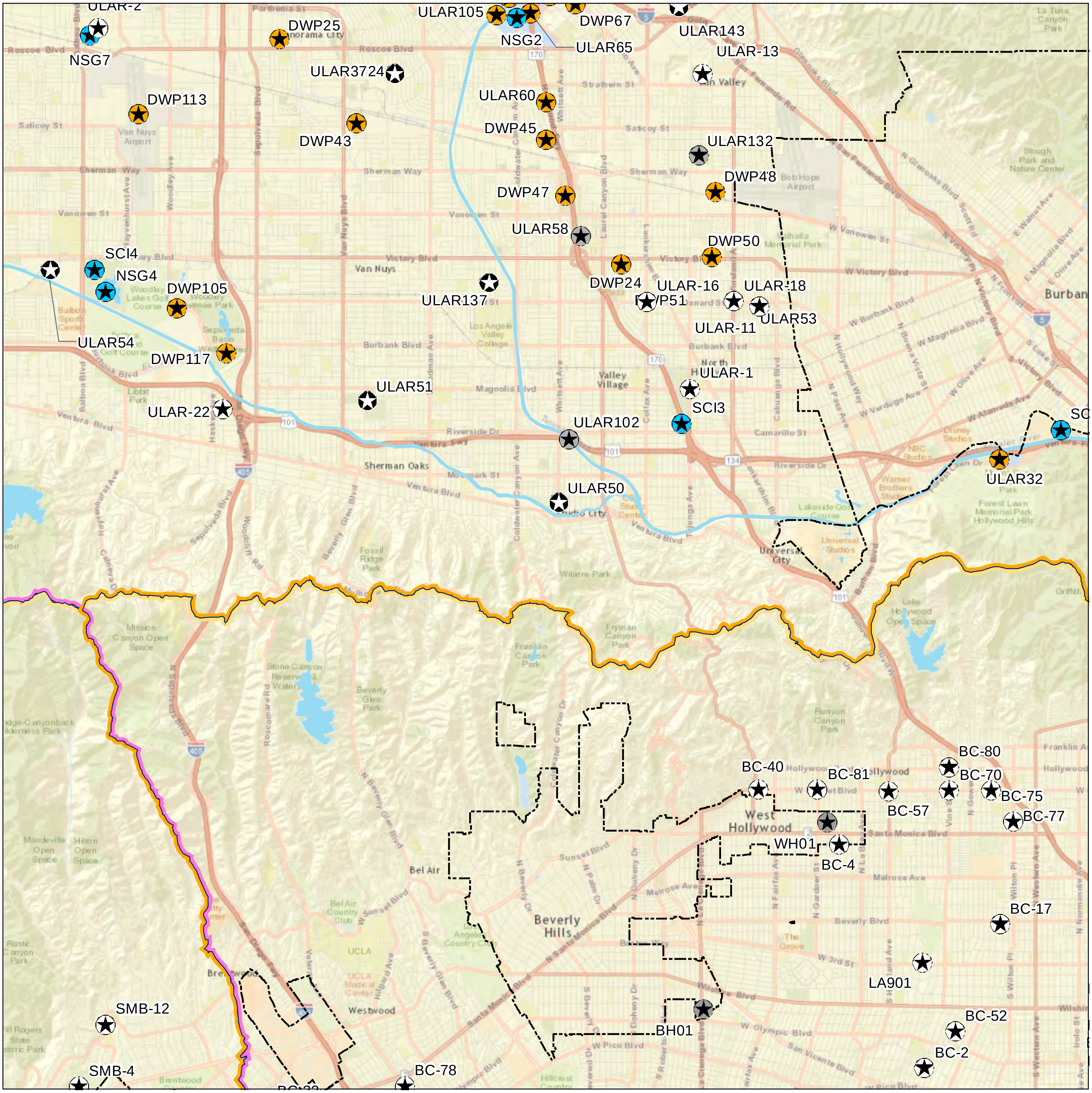
Centralized-Regional Project by Agency

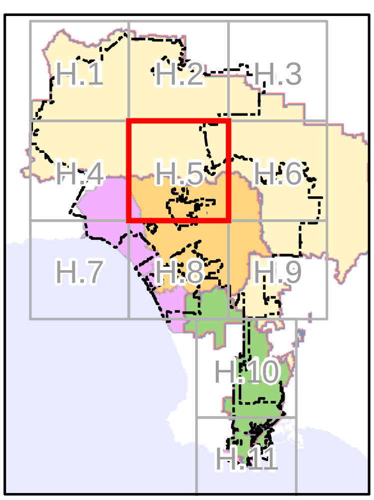
- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

0 1 2 Miles

Figure H.4
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

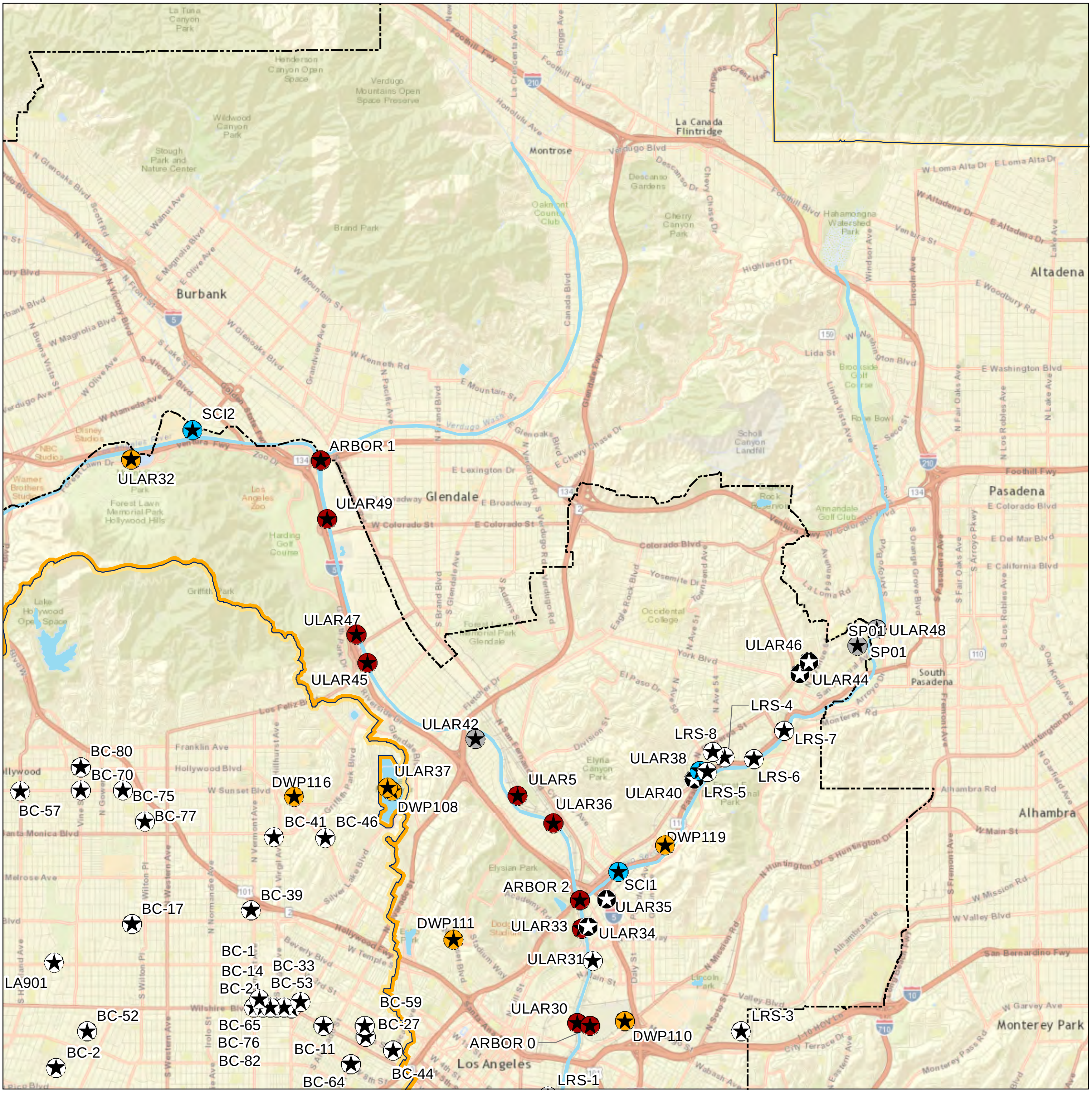
Centralized-Regional Project by Agency

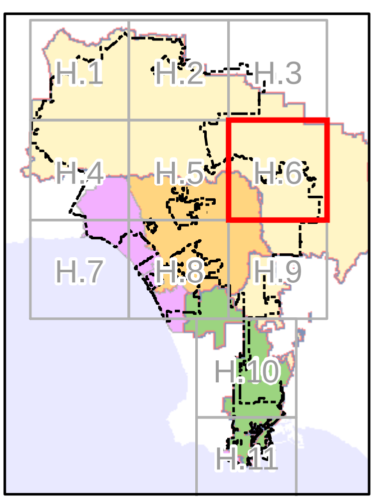
- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

0 1 2 Miles

Figure H.5
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

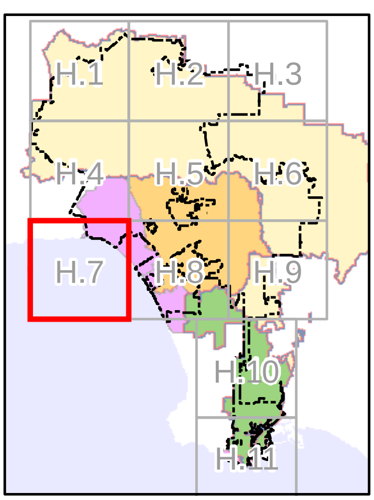
Centralized-Regional Project by Agency

- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

0 1 2 Miles

Figure H.6
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

Geosyntec consultants



Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

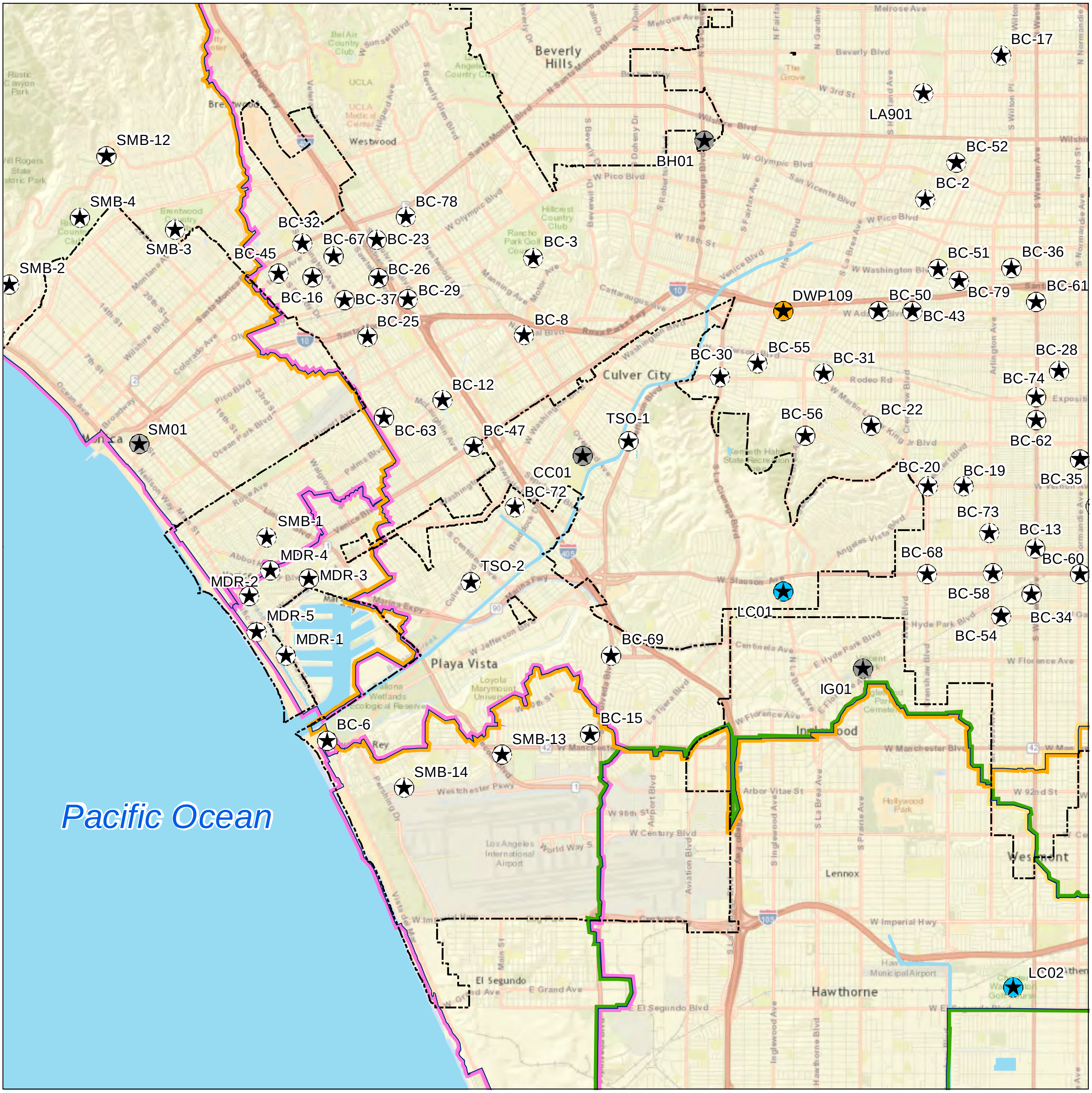
Centralized-Regional Project by Agency

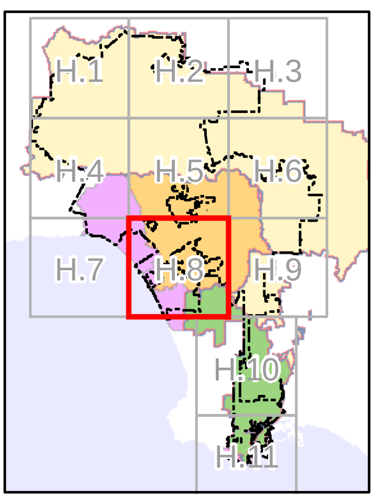
- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

Figure H.7
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

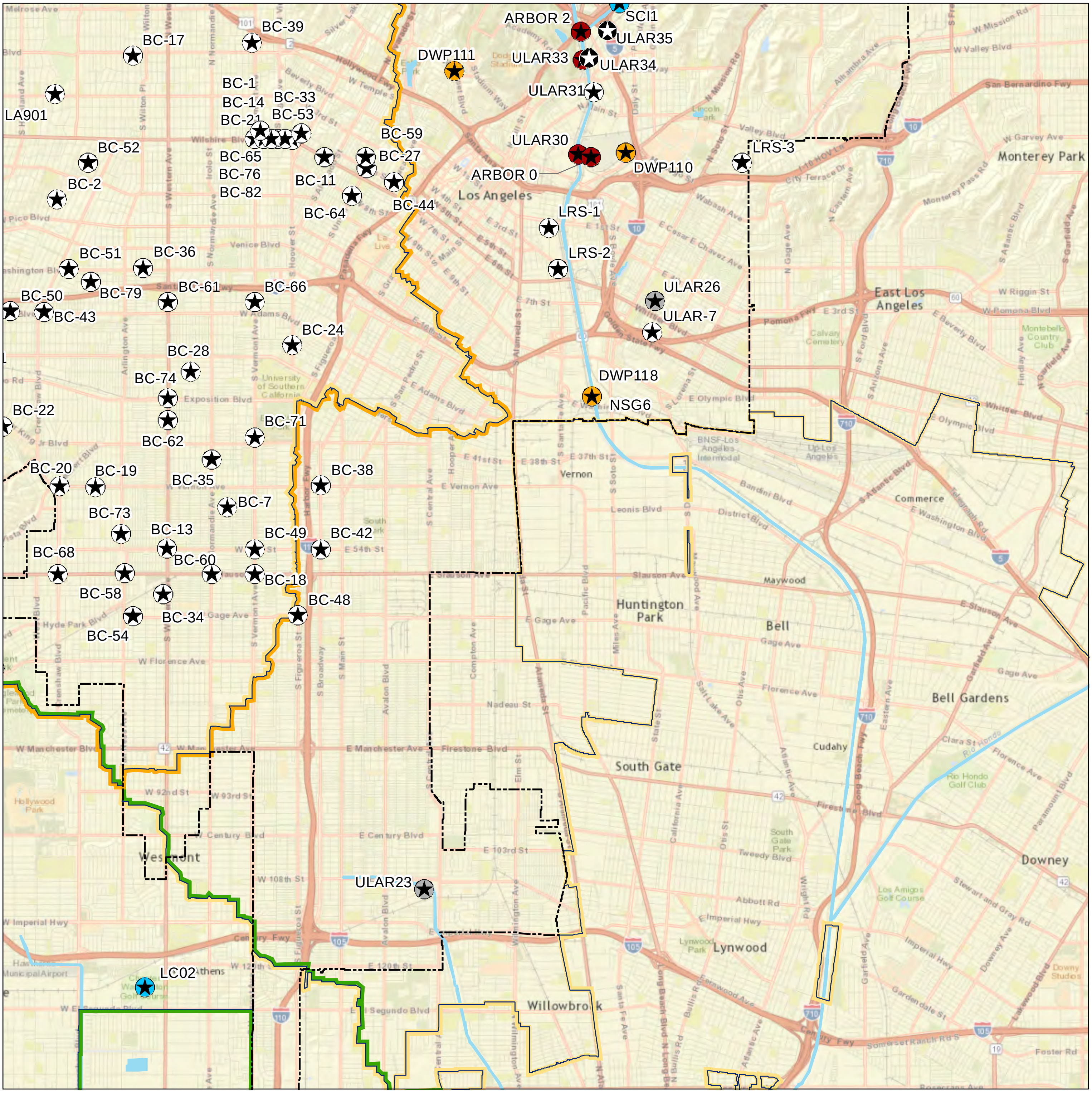
Centralized-Regional Project by Agency

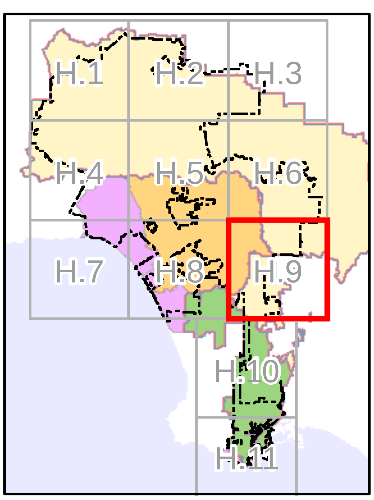
- LASAN
- LADWP
- City of LA Agency other than LASAN and LADWP
- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

Figure H.8
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





Legend

City of LA Boundary

WMA Boundary

- Ballona Creek
- Dominguez Channel
- Santa Monica Bay
- Upper Los Angeles River

Centralized-Regional Project by Agency

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- LADWP
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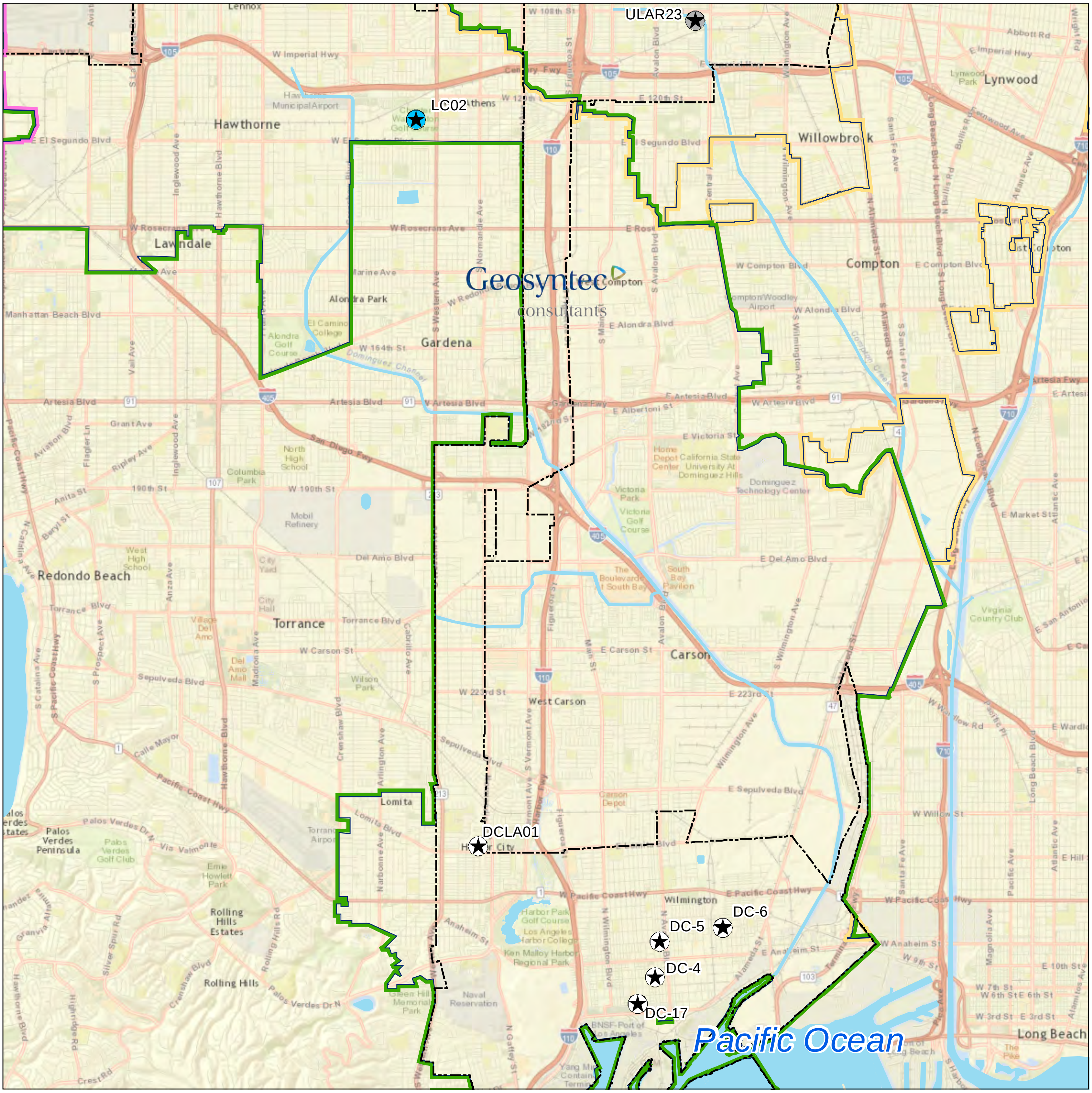
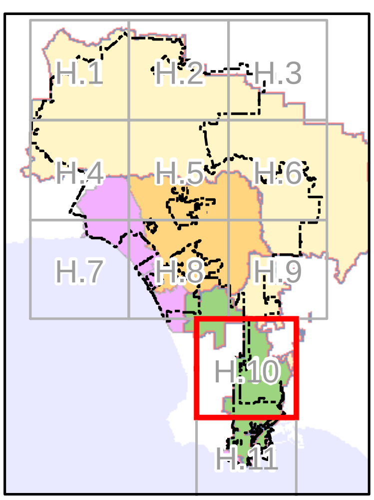
Figure H.9
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

Geosyntec consultants





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City of LA Boundary

WMA Boundary

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- Upper Los Angeles River

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0 1 2 Miles

Figure H.10
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

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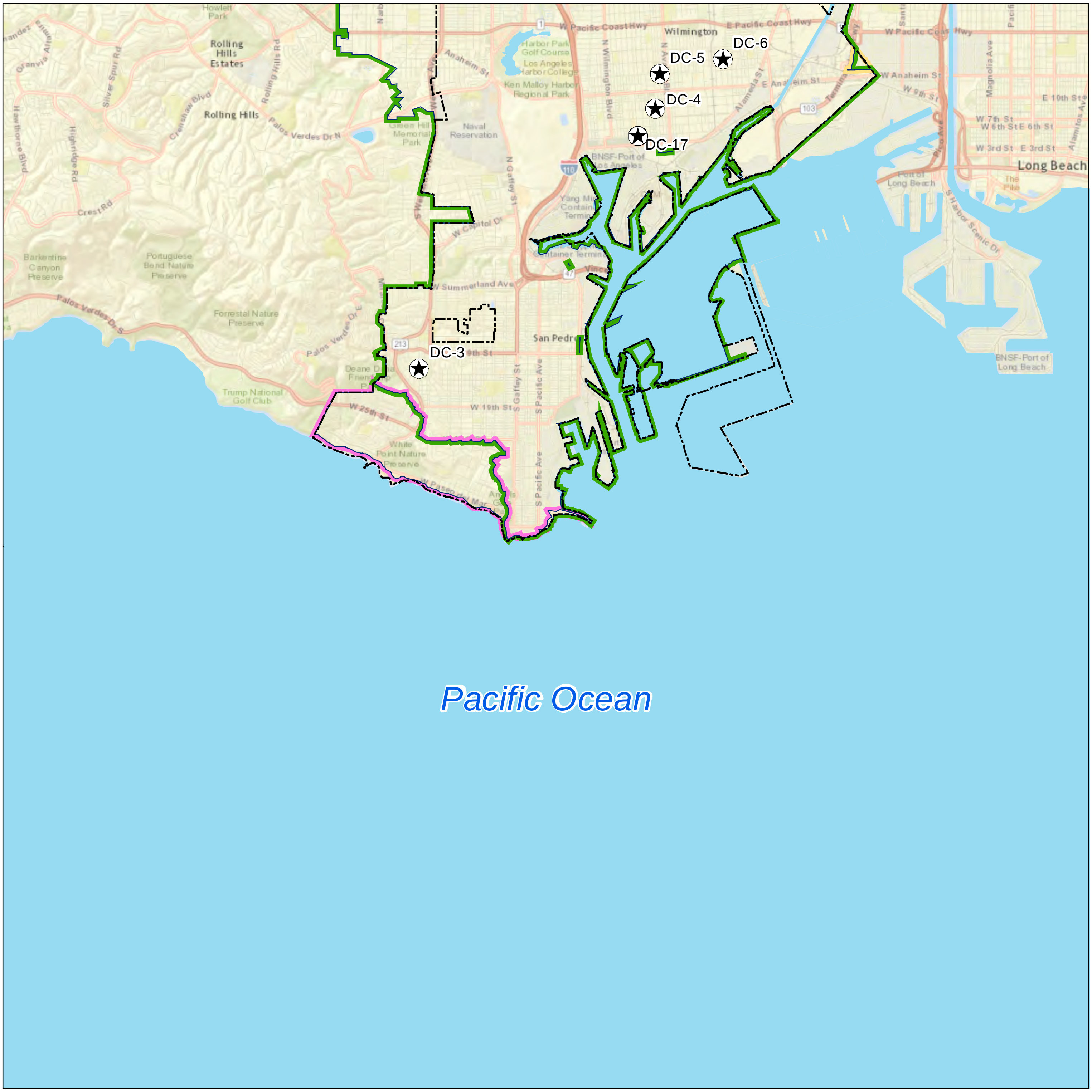

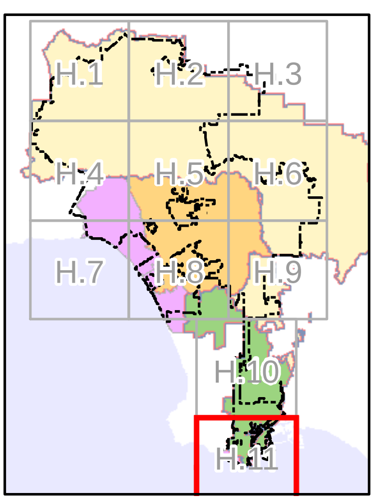

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City of LA Boundary

WMA Boundary

- Ballona Creek
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- Santa Monica Bay
- Upper Los Angeles River

Centralized-Regional Project by Agency

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- LA County (LACDPW and LACFCD)
- LACFCD/LASAN/LADWP
- LACFCD/LADWP
- USACE
- Other Agency (Other City, NGO)

Figure H.11
Planned Centralized-Regional Green Infrastructure Projects in City of Los Angeles

0 1 2 Miles

N

Geosyntec consultants

APPENDIX I – UPDATED WATER BALANCE AND PROJECTIONS OF STORMWATER CAPTURE

First Draft: 1/27/2017

Final: 9/20/2017

Lead Author: Dustin Bambic, PH

CITY OF LOS ANGELES

UPDATED WATER BALANCE AND PROJECTIONS OF STORMWATER CAPTURE

FINAL

September 2017

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CITY OF LOS ANGELES

TECHNICAL MEMORANDUM
UPDATED WATER BALANCE AND PROJECTIONS
OF STORMWATER CAPTURE

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LIST OF ABBREVIATIONS

Abbreviation	Description
ac-ft	acre-feet
AGWO	active groundwater outflow
BMPs	Best Management Practices
CIP	Capital Improvement Plan
EWMP	Enhanced Watershed Management Program
FY	fiscal year
gpcd	gallons per capita per day
IFWO	interflow volume
LACDPW	Los Angeles County Department of Public Works
LADWP	Los Angeles Department of Water and Power
LID	low impact development
LSPC	Load Simulation Program in C+
MS4	Municipal Separate Storm Sewer System
RAA	Reasonable Assurance Analysis
RO	reach outflow
SURO	sum of surface outflow
SUSTAIN	System for Urban Stormwater Treatment and Analysis Integration
ULAR	Upper Los Angeles River
WMMS	Watershed Management Modeling System
WPD	Watershed Protection Division
WRAMPS	Watershed Reporting Adaptive Management and Planning System
WRP	water reclamation plant
WY	water year

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UPDATED WATER BALANCE AND PROJECTIONS OF STORMWATER CAPTURE

I.1 INTRODUCTION

This technical memorandum presents the results of an analysis to provide an updated baseline water budget and projections of stormwater capture for City of Los Angeles. The updated water balance, presented in Section I.2, represents the baseline for the City's existing conditions (Task 1). The stormwater capture projections, presented in Section I.3 below, will support development of the Stormwater and Urban Runoff Facilities Plan through 2040 (Task 8).

I.2 UPDATED WATER BALANCE

I.2.1 Overview of Models Used

To support One Water LA planning, an updated water balance was generated to represent the baseline water resources condition for the City. The updated water balance was generated using a public domain hydrology model called Loading Simulation Program – C++ (LSPC; USEPA link for more information). Each major watershed in the City, as outlined by the Enhanced Watershed Management Programs (EWMP), was simulated with an LSPC model. The LSPC models used for the updated water balance were existing and leveraged from previous efforts. The original LSPC model development effort was led by the Los Angeles County Department of Public Works, through creation of the Watershed Management Modeling System (WMMS; County link for more information). The WMMS is a comprehensive watershed model of the Los Angeles County region that includes the unique hydrology and hydraulics features of the region's watersheds. The WMMS domain encompasses all of Los Angeles County's coastal watersheds for a total of 3,100 square miles (Los Angeles County Department of Public Works [LACDPW] 2010). In 2015, for a subset of watersheds, the LSPC models within WMMS were updated and refined for a component of the City's EWMPs known as Reasonable Assurance Analyses (RAA). The RAAs included numerous LSPC refinements such as improved calibration of hydrology processes, representation of dry-weather runoff from urban water use, refinement of weather data, and representation of additional structures (i.e. spreading grounds) that affect the transport of water through the routing network (Upper Los Angeles River [ULAR] WMG 2016).

For this water balance, the refined LSPC models used for RAAs were applied for ULAR, Ballona Creek, and Dominguez Channel. The LSPC models from the original WMMS model configuration (available for download at dpw.lacounty.gov/ wmd/wmms) were used for Santa Monica Bay and Marina del Rey. The water balance was conducted for each year between 2001 and 2011, as those were the years available from previous models.

I.2.2 Assessment Locations

The water balance was created by analyzing the inputs and losses to watershed "assessment locations", as shown on Figure I.1. The assessment locations were instream points at the downstream boundary of City jurisdiction in the EWMP areas (shown as stars on Figure I.1). For Santa Monica Bay locations and the Port of LA area within Dominguez Channel EWMP area, the Pacific Ocean served as the assessment location (the numerous coastal outlets were aggregated). Upstream of the assessment locations, the inputs from areas outside of the City were separated into non-City bins within the LSPC model and tracked separately.

I.2.3 Water Balance Components

Development of the water balance using the LSPC model required defining several major components of model inputs and losses, as shown in Table I.1. These components were derived from the direct model inputs and outputs or, in some cases, by post-processing the model outputs. The water balance components were categorized as "land processes" which occur prior to discharge to stream or ocean and "instream processes" which occur during downstream transport.

Using the components described in Table I.1, the final water balance from the land is calculated as follow:

Precipitation + Outdoor Water Use

- Evapotranspiration - Infiltration - Recharge

= Runoff + Baseflow

Using the land flow into reaches calculated above and the remaining components described in Table I.1, the final instream water budget is calculated as follows:

Runoff + Baseflow + Point Source Flows

- Spreading Grounds - Instream Losses

= Stream Discharge

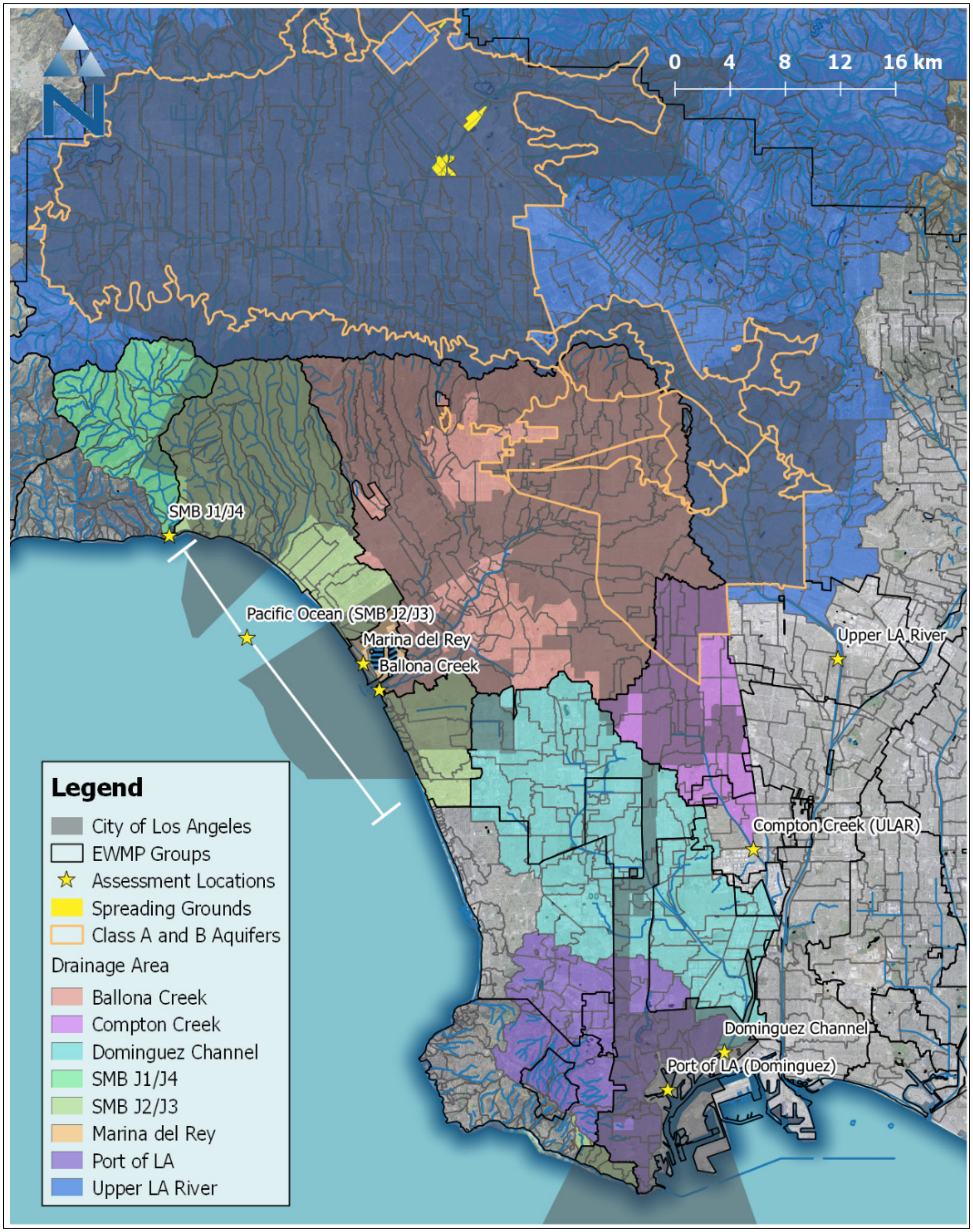

Figure I.1 Major Watersheds in City of Los Angeles Jurisdiction and Assessment Locations used in Developing the Water Balance

Table I.1 Summary of major water balance components

Type of Process	Process	Type	Description
Land	Precipitation	Input	Observed rainfall timeseries used as a direct LSPC input
	Irrigation	Input	Simulated directly in LSPC and summed as irrigated pervious urban areas + dry-weather urban water use
	Evapotranspiration	Loss	Derived as a percentage of total inputs, [Precipitation] + [Irrigation], by land use from long-term daily LSPC timeseries
	Infiltration	Loss	Derived as a percentage of total inputs, [Precipitation] + [Irrigation], by land use from long-term daily LSPC timeseries
	Recharge	Loss	Infiltration that occurs over a Class A or Class B aquifer in the City (see Figure I.1)
	Runoff	Loss	Simulated directly in LSPC as sum of surface outflow (SURO) volume and interflow volume (IFWO)
	Baseflow	Loss	Simulated directly in LSPC as active groundwater outflow (AGWO) volume with reduction applied for concrete lined channels consistent with EWMPs
Instream	Land Inflow	Input	Calculated as the sum of [Runoff] + [Baseflow]
	Point Source Flows	Input	Interpolated discharge timeseries for Donald C. Tillman, Burbank, and Glendale water reclamation plants
	Spreading Grounds	Loss	Calculated using LSPC output as inflow minus outflow for the unique spreading ground structure, where explicitly represented in the model (see Figure I.1)
	Instream Loss	Loss	Calculated using LSPC output as instream inflow minus outflow, representing a net loss from the stream (includes evapotranspiration, seepage and direct precipitation)
	Stream Discharge	Loss	Simulated directly in LSPC as reach outflow (RO)

The Donald C. Tillman, Burbank and Glendale water reclamation plants (WRPs) are important points sources within the Upper LA River EWMP area. Figure I.2 presents a comparison of the three discharges included in the water balance by summarizing a daily average flow by water year.

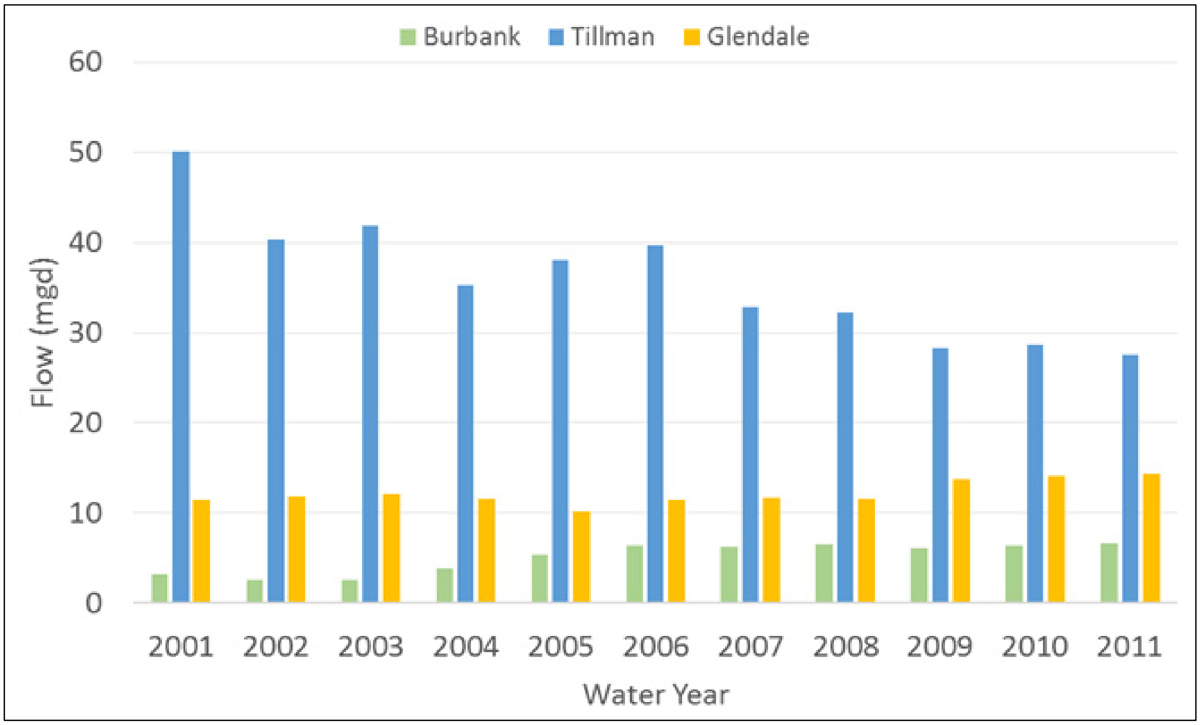

Figure I.2 Summary of Modeled Point Source Inputs from WRP Facilities by Water Year

I.2.4 Results

The primary outcome of the updated water balance is a detailed spreadsheet for each component, organized by EWMP area. See Attachment A for the detailed water balance spreadsheet. A City-wide summary of the water balance for water year 2008 is provided in Table I.2. A summary of inputs and outputs is provided on Figure I.3, with a breakdown for City versus non-City (note: some losses are not broken down into a City of LA-only component because the City and non-City water is comingled downstream). Additional detail on City-only inputs is provided on Figure I.4. Note the summary is based on water year 2008 (water year [WY] 2008; Oct 1 2007 to Sept 30 2007), which has been identified as an average year in the EWMPs (ULAR WMG 2016). Every year between 2001 and 2011 is presented in Attachment A; note that individual years could be selected as most representative of dry and wet years to represent a range of conditions.

Table I.2 Summary of Water Balance Components for all Assessment Locations for an Average Year (WY 2008)

		Volume (ac-ft)		Percent Contribution (%)	
		In City	**Outside City**	**In City**	**Outside City**
Type	**Inputs**				
Land	Precipitation	349,426	466,115	22.9%	30.6%
Land	Outdoor water use	437,853	213,429	28.7%	14.0%
Instream	Point Sources	48,950	7,314	3.2%	0.5%
All	**Total Inputs**	**1,523,087**		**100.0%**	
Type	**Outputs**				
Land	Evapotranspiration	322,943	337,702	21.2%	22.2%
Land	Infiltration	73,361	178,482	4.8%	11.7%
Land	Recharge	214,595		14.1%	0.0%
Instream	Spreading Grounds	21,297		1.4%	
Instream	Instream loss	9,041		0.6%	
Instream	Stream Discharge	365,666		24.0%	
All	**Total Outputs**	**1,523,087**		**100.0%**	

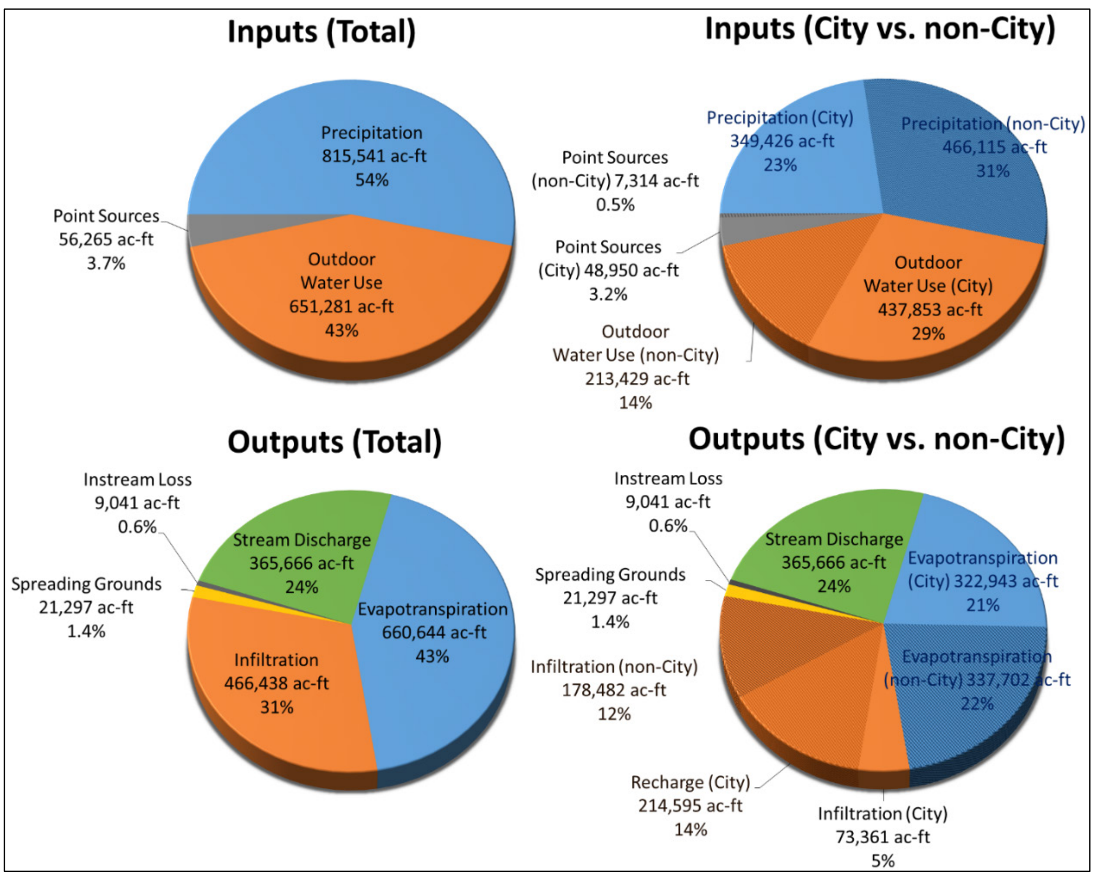

Figure I.3 Summary of Water Balance Inputs and Outputs at Assessment Locations for an Average Year (WY 2008)

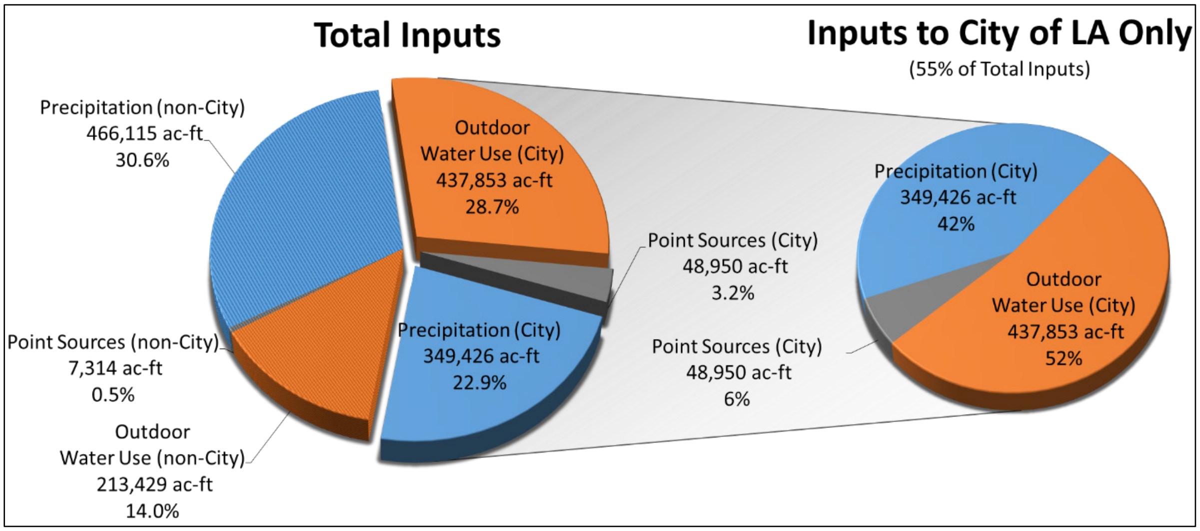

Figure I.4 Detail of Inputs for Water Balance for City of LA Areas Only for an Average Year (WY 2008)

Outdoor water use is a major input to the water balance and deserves discussion – the LSPC output estimates the City's watersheds receive more water annually from outdoor water use than precipitation. It should be noted, however, that LSPC represents outdoor water use within an irrigation module (model subroutine) that irrigates "urban grass" areas at a rate that mimics demand based on the daily evapotranspiration rate. In other words, actual water use rates – for example based on water meter readings – are not explicitly represented in the LSPC models of the City's watersheds. For comparison, the LSPC-simulated outdoor water use for the average year was 437,853 acre-feet (ac-ft), which roughly translates to a daily per capita outdoor water use of approximately 100 gallons assuming a population of 3.88 million people. The outdoor water use value of 100 gallons per capita per day (gpcd) derived from the LSPC output is likely higher than actual usage in the City. According to the 2010 Urban Water Management Plan (Los Angeles Department of Water and Power [LADWP], 2010), LADWP's baseline per capita water use was 152 gpcd using a ten-year average ending between December 31, 2004 and December 31, 2009. Outdoor water use was estimated to be 52 percent of the total water use for single family residential (79 gpcd), 32 percent for multi-family residential (48 gpcd) and 39 percent across the service area (59 gpcd). Water use, both indoor and outdoor, has decreased even further in recent years due to the City's nationally-recognized water conservation efforts. The rates of outdoor water use could be adjusted in the LSPC models to match actual usage estimates by LADWP, but that was outside of the scope of this memo.

The evaluation of outdoor water use, as discussed above, is an illustration of how the LSPC model outputs can be compared to other data sources and estimates. As the water balance results are carried forward for the OneWater LA planning effort, additional components such as recharge should be evaluated by comparing other data sources to the water balance results presented in Table I.2, Figure I.3, Figure I.4 and Attachment A.

I.3 STORMWATER CAPTURE PROJECTIONS

I.3.1 Overview

To support development of a Stormwater and Urban Runoff Facilities Plan, a projection of stormwater project capacity and water capture was generated. The projection was based on the capacities of Best Management Practices (BMPs) in the City of Los Angeles 5-year Capital Improvement Plan (CIP) and EWMPs. These projects are subcategorized as low impact development (LID), green streets or regional projects by the EWMPs and CIP. To support planning across the City which requires aggregating multiple EWMPs that have varying schedules and milestones, the schedule through 2037 was separated into four "Schedule Blocks", as follows:

- Schedule Block A: now thru 2021
- Schedule Block B: 2022 through 2024
- Schedule Block C: 2025 thru 2028
- Schedule Block D: 2029 through 2040

The stormwater capture projections do not include LADWP projects – capture by spreading grounds and other facilities would be in addition to the estimates reported in this section.

I.3.2 Methodology for Stormwater Capture Estimates

To estimate annual stormwater capture volume, a relationship was developed between BMP capacity and annual stormwater runoff retained. The relationship, shown on Figure I.5, was represented using a set of 1,920 unique projects from the City that was provided for the fiscal year (FY) 15-16 stormwater annual reporting effort. These projects, which were used represent the City's "existing BMPs", were implemented between 2012 and 2016 and include all of the LID projects implemented by land developers over that period along with green streets and regional projects. The City's EWMPs used 2011 as the baseline year, and thus projects built before 2011 were implicitly included, whereas projects built after 2011 explicitly contribute to EWMP progress. Note that many Prop O projects were built before 2011 and are not explicitly included in the existing BMP category (instead they were implicitly included in the EWMP baseline). To generate stormwater capture estimates, the set of existing BMPs was modeled to estimate the annual stormwater capture per unit BMP capacity/storage. Modeling relied on the process-based BMP model System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN), which is a component of the WMMS System. For the simulation, existing BMPs were modeled consistent with design information provided by the City for annual reporting (dimensions and drainage area) or, in some cases where design geometry was not defined, consistent with EWMP modeling assumptions.

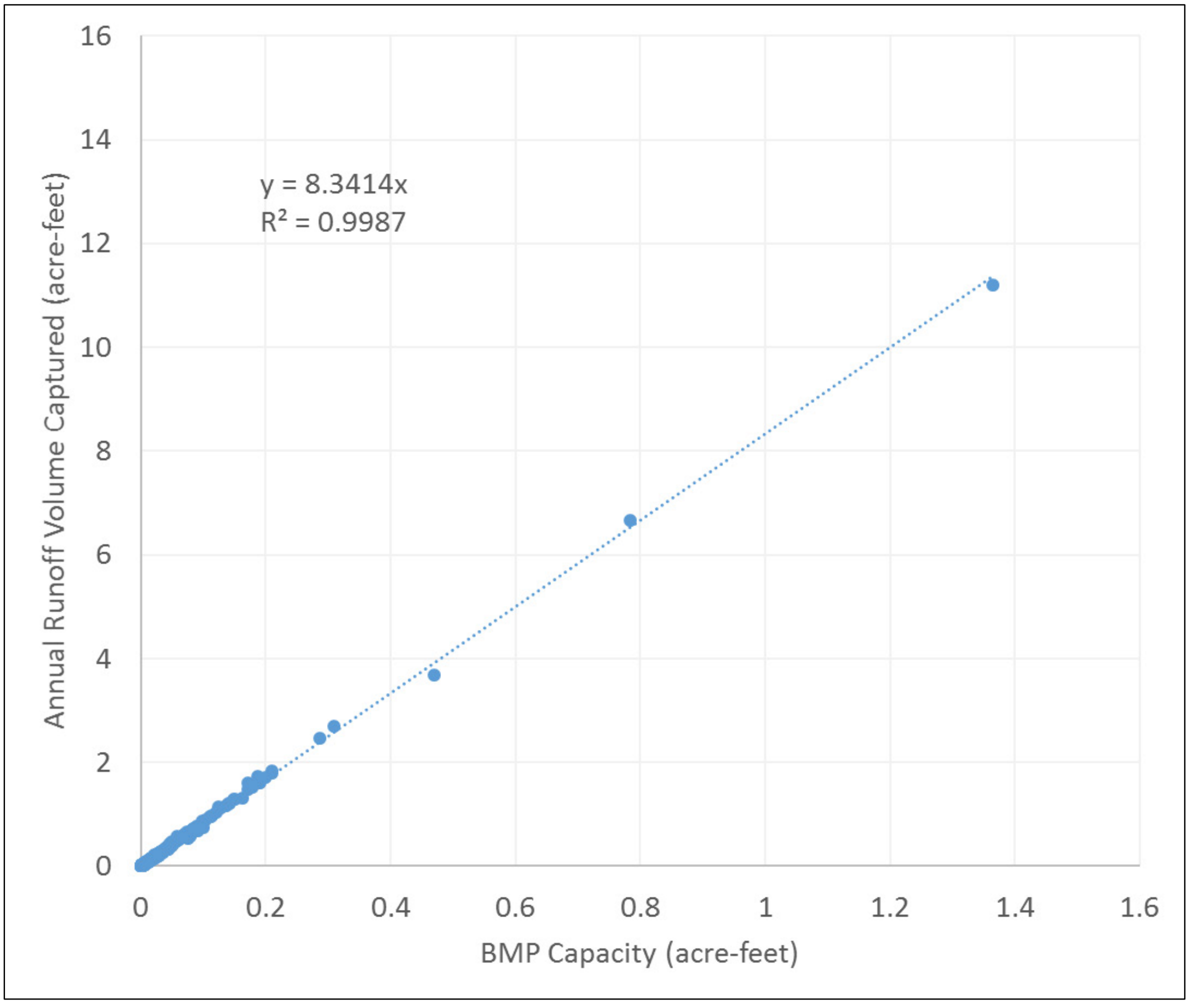

Figure I.5 Regression Relationship between BMP Capacity (acre-feet) and Annual Runoff Capture Volume (acre-feet) for LID, Green Streets and Regional EWMP Projects an Average Year (WY 2008).

Simulations in SUSTAIN were conducted for WY 2008, which has been identified as an average rainfall year using the precipitation gage at Downtown Los Angeles Downtown (gage D482). The runoff volume captured, calculated as the baseline runoff minus the BMP bypass, was plotted against BMP capacity to develop a relationship between BMP size and annual runoff captured for the City's existing projects, as shown on Figure I.5. The regression on Figure I.5 was applied to the BMP capacity targets across time as specified by the schedules in both the 5-year CIP and EWMPs to estimate the stormwater volume that will be captured. For green streets, it was assumed that 1 mile of green street is 0.913 ac-ft of capacity, based on assumptions used in the 5-year CIP.

The regression approach based on Figure I.5 is a simplified methodology – first, note that it is based on a single rain gage and thus does not capture the orographic rainfall effects across the City (i.e., more rainfall in the hills than the coastal areas). Second, LID projects and regional projects likely have varying capture per unit BMP capacity but the regression is dominated by LID BMPs. Finally, the regression is for a single year and would vary across years (e.g., more water would be captured in wet years [slope of the line would be higher] and less in dry years [lower slope]). While simplified, however, the regression approach is consistent with recent annual reports submitted for the Municipal Separate Storm Sewer System (MS4) Permit. The Watershed Protection Division (WPD) is collaborating with the Los Angeles County Flood Control District on a web-based system called the Watershed Reporting Adaptive Management and Planning System (WRAMPS) that will estimate stormwater capture for all areas of the City, for account orographic effects, include an array of BMP types, and handle multiple storm types (average year, wet year, 85th percentile storm, etc.). WRAMPS will be launched in late summer 2017 and will include a dynamic "dashboard" to visualize the stormwater capture benefits of the City's stormwater projects.

I.3.3 Results

The primary outcome of stormwater capture projection is a timeline of BMP capacity and stormwater capture through 2040. The timeline is consistent with the EWMP implementation schedules and incorporates both the 5-year CIP and EWMP implementation progress as documented by the City's FY 15-16 annual reporting. The detailed spreadsheet, provided in Attachment B, separates capacity identified in the EWMP and CIP and also includes placeholders for LADWP projects (to be filled in separately). The spreadsheet also breaks down BMP capacity and capture by stormwater BMP type – low impact development, green streets and regional BMPs. A summary of the stormwater capture projections in provided in Table I.3 (BMP capacity) and Table I.4 (captured stormwater volume during an average year). The same data are presented graphically in bar charts on Figure I.6 (BMP capacity) and Figure I.7 (captured stormwater volume during an average year). Note that capacities and capture volumes are cumulative over time. Some values for Dominguez Channel were derived by interpolating between EWMP milestones to align with scheduling block dates for presentation purposes.

Table I.3 Cumulative BMP Capacity (ac-ft) by Watershed at Schedule Blocks Ends

Watershed	Existing BMPs (2011- 2016)	Block A (2017-2021)	Block B (2022-2024)	Block C (2025-2028)	Block D (2029-2040)
ULAR	9	238	746	2,261	3,065
Ballona Creek	4.5	2,075	2,075	2,075	2,075
Santa Monica Bay	5.1	261	261	261	261
Dominguez Channel	2.0	2.3	2.3	126	370
Marina del Rey	0.04	53	53	53	53
City Total	**20.6**	**2,629**	**3,137**	**4,776**	**5,824**

Table I.4 Cumulative Average Annual Stormwater Volume Captured (ac-ft) at Schedule Blocks Ends

Watershed	Existing BMPs (2011- 2016)	Block A (2017-2021)	Block B (2022-2024)	Block C (2025-2028)	Block D (2029-2040)
ULAR	75	1,985	6,225	18,864	25,570
Ballona Creek	38	17,310	17,310	17,310	17,310
Santa Monica Bay	42	2,176	2,176	2,176	2,176
Dominguez Channel	17	19	19	1,048	3,088
Marina del Rey	0.3	441	441	441	441
City Total	**172**	**21,931**	**26,171**	**39,839**	**48,585**

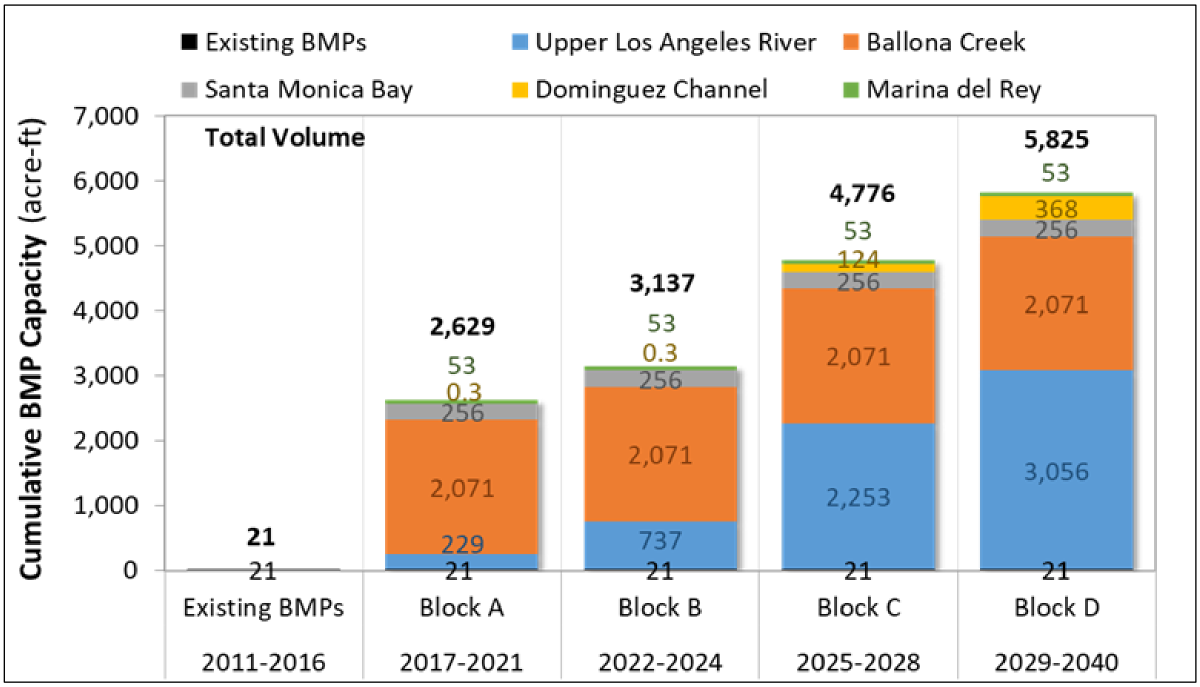

Figure I.6 Projection of Cumulative Stormwater BMP Capacity to be Implemented under EWMPs and 5-year CIP through 2040

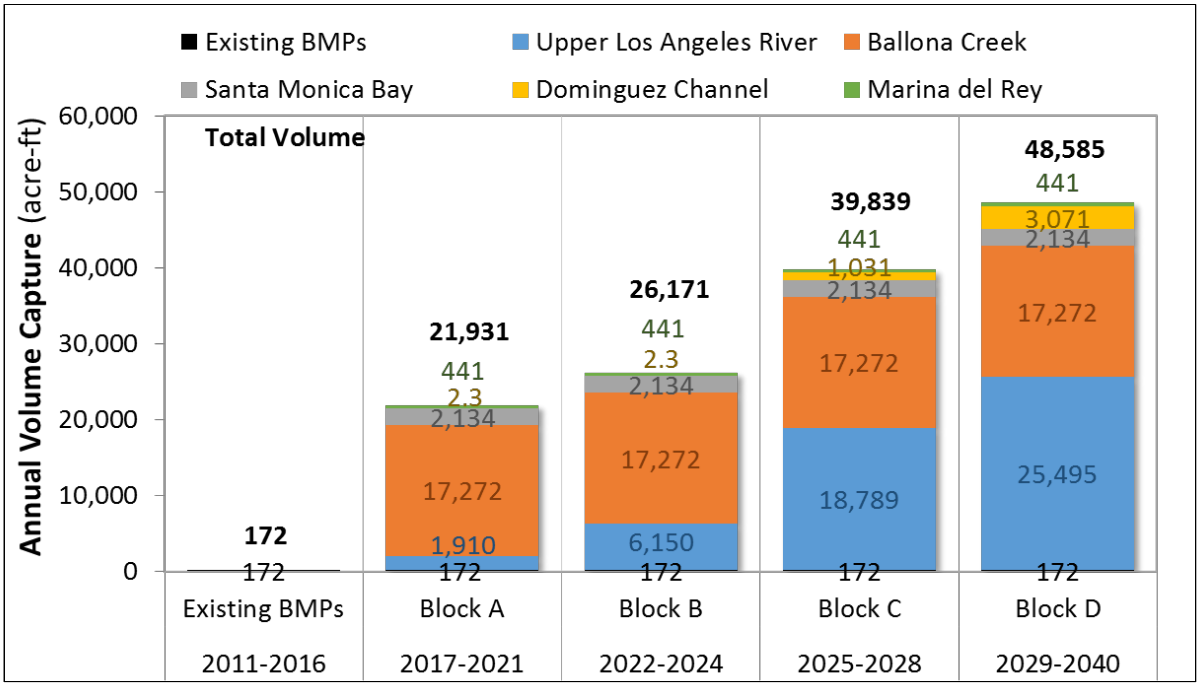

Figure I.7 Projection of Cumulative Stormwater Capture during an Average Year to be Achieved by EWMPs and 5-year CIP through 2040

I.4 CONCLUSIONS

The updated baseline water balance and stormwater capture projections will serve as important building blocks for the integrated water planning effort under One Water LA. The water balance and stormwater projections leveraged the City's previous stormwater planning and reporting efforts, which represented years of effort and engagement of an array of stakeholders. The water balance and stormwater projections are based on continuous simulation models, regarded as the best-available tool for watershed and stormwater modeling. These models could potentially support other components of One Water LA, as additional information requests and scenarios are developed. The following considerations are highlighted as the planning effort moves forward:

- The LSPC models used for the water balance were developed for stormwater quality planning and were not customized for the One Water LA effort which places more emphasis on potable water supply and discharges from the City's water reclamation plants. It is recommended that as the results presented in this memo are carried forward they should be compared / cross-checked to other data sources, such as other estimates of groundwater recharge by the City's spreading grounds. An example of a simple cross-check is illustrated in Section I.2.4 using outdoor water use.

- The stormwater capture projections were developed in a manner consistent with the City's EWMPs, 5-year Stormwater CIP and stormwater annual reports submitted in December 2016. Attachment B includes placeholders for LADWP projects which should be filled-in to support development of the Stormwater and Urban Runoff Facilities Plan. The regression approach used to estimate stormwater volume captured is simplified, based on a single rain gage, but leverages continuous simulation with SUSTAIN and is consistent with submitted annual reports. The web-based WRAMPS being developed by WPD in coordination with Los Angeles County Flood Control District (to be released late summer 2017) will provide more robust estimates of stormwater capture for a variety of locations, storm types and BMP types.

I.5 REFERENCES

LACDPW (Los Angeles County Department of Public Works). 2010. Los Angeles County Watershed Model Configuration and Calibration—Part I: Hydrology. Prepared for County of Los Angeles Department of Public Works, Watershed Management Division, Los Angeles County, CA

LADPW (Los Angeles Department of Water and Power). 2010. Urban Water Management Plan. Accessed through the following LINK.

ULAR WMG (Upper Los Angeles River Watershed Management Group). 2016. Enhanced Watershed Management Program (EWMP) for the Upper Los Angeles River. Prepared for the ULAR WMG, Los Angeles, CA.

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ATTACHMENT A – WATER BALANCE

The detailed spreadsheet that servers as the output for the updated water balance can be downloaded from this link:

https://paradigmh2o.box.com/s/1oqi3hv7k4co6pdxc2t5myjoo90vd7nb

Table 1. Yearly water balance by assessment location (acre-ft)

Water Year	EWMP	Assessment Area	City	Area (ac)	LAND PROCESSES: Precipitation + Irrigation - Evapotranspiration - Infiltration = Runoff + Baseflow = Land Flow into Reaches							IN-STREAM PROCESSES: Land Flow into Reaches + Point Source Flow into Reaches - Spreading Grounds - InStream Loss = Outflow				
					Precipitation	Irrigation	Evapo-transpiration	Infiltration	Infiltration (Recharge)	Runoff	Baseflow	Land Flow into Reaches	Point Sources Flow into Reaches	Spreading Grounds	In-Stream Loss	Outflow
2001	Upper LA River	Upper LA River	COLA	174,600	278,762	238,791	205,739	12,488	171,985	120,148	7,193	209,805	72,589	18,181	6,460	257,753
			Other	209,880	342,165	75,064	238,519	96,246	0	48,076	34,388					
		Compton Creek	COLA	10,602	11,313	11,918	9,422	4,951	4,324	4,521	13	7,951	0	0	33	7,918
			Other	6,527	6,368	8,503	5,677	5,776	0	3,399	19					
	Ballona Creek	Ballona Creek	COLA	67,470	103,175	85,055	71,879	24,531	31,927	58,106	1,786	72,063	0	0	475	71,588
			Other	14,222	19,992	22,106	15,834	14,094	0	12,105	66					
	Dominguez Channel	Dominguez Channel	COLA	6,117	6,659	5,331	3,845	3,505	0	4,612	28	32,273	0	0	217	32,056
			Other	39,889	43,662	41,284	29,398	27,915	0	27,411	222					
		Port of LA	COLA	8,891	13,547	9,917	7,305	6,706	0	8,241	1,212	25,115	0	0	75	25,040
			Other	15,371	24,834	21,472	15,748	14,895	0	12,475	3,188					
	J1J4	J1J4	COLA	1,951	4,434	91	2,190	386	0	732	1,216	17,525	0	0	92	17,433
			Other	10,633	26,299	4,044	11,047	3,720	0	5,358	10,219					
	J2J3	J2J3	COLA	27,152	48,931	20,967	31,951	17,671	0	14,428	5,848	27,726	0	0	82	27,644
			Other	7,711	11,228	9,747	7,352	6,172	0	7,054	396					
	Marina del Rey	Marina del Rey	COLA	998	1,229	1,318	925	794	0	827	1	1,285	0	0	3	1,282
			Other	855	974	350	610	258	0	424	31					
	TOTAL		**COLA**	**297,782**	**468,050**	**373,388**	**333,257**	**71,032**	**208,236**	**211,614**	**17,298**	**393,743**	**72,589**	**18,181**	**7,439**	**440,713**
			Other	**305,089**	**475,522**	**182,570**	**324,184**	**169,077**	**0**	**116,302**	**48,529**					
2002	Upper LA River	Upper LA River	COLA	174,600	80,138	250,263	144,502	10,192	140,357	31,413	3,938	55,732	61,470	2,256	4,022	110,924
			Other	209,880	133,605	77,487	122,577	68,134	0	10,398	9,984					
		Compton Creek	COLA	10,602	3,428	12,213	7,109	4,086	3,569	867	10	1,821	0	0	32	1,789
			Other	6,527	1,930	8,685	4,622	5,048	0	930	14					
	Ballona Creek	Ballona Creek	COLA	67,470	32,404	87,520	53,048	20,416	26,571	19,201	688	24,166	0	0	443	23,724
			Other	14,222	6,643	22,671	12,875	12,161	0	4,255	22					
	Dominguez Channel	Dominguez Channel	COLA	6,117	1,745	5,390	2,956	3,065	0	1,096	18	8,188	0	0	204	7,984
			Other	39,889	11,605	41,886	22,555	23,862	0	6,924	150					
		Port of LA	COLA	8,891	2,703	9,962	4,968	5,330	0	1,557	811	7,097	0	0	71	7,026
			Other	15,371	5,553	21,766	10,886	11,704	0	2,645	2,084					
	J1J4	J1J4	COLA	1,951	1,138	96	910	204	0	6	114	3,488	0	0	88	3,400
			Other	10,633	6,473	4,287	4,718	2,675	0	328	3,040					
	J2J3	J2J3	COLA	27,152	15,595	21,643	18,214	13,273	0	3,426	2,325	7,729	0	0	71	7,658
			Other	7,711	2,544	9,987	5,492	5,061	0	1,772	207					
	Marina del Rey	Marina del Rey	COLA	998	334	1,350	738	667	0	279	0	411	0	0	3	409
			Other	855	311	358	340	198	0	123	9					
	TOTAL		**COLA**	**297,782**	**137,486**	**388,437**	**232,444**	**57,233**	**170,497**	**57,845**	**7,903**	**108,632**	**61,470**	**2,256**	**4,933**	**162,914**
			Other	**305,089**	**168,664**	**187,128**	**184,065**	**128,842**	**0**	**27,375**	**15,509**					
2003	Upper LA River	Upper LA River	COLA	174,600	274,047	247,618	207,783	12,683	174,671	120,328	6,200	216,600	63,203	25,523	6,836	247,444
			Other	209,880	395,302	75,491	276,072	104,648	0	53,468	36,604					
		Compton Creek	COLA	10,602	13,025	12,216	10,107	5,254	4,589	5,276	14	9,526	0	0	34	9,492
			Other	6,527	7,796	8,681	6,115	6,127	0	4,215	21					
	Ballona Creek	Ballona Creek	COLA	67,470	101,019	87,356	72,094	24,919	32,433	57,599	1,329	70,278	0	0	476	69,802
			Other	14,222	19,187	22,903	16,229	14,510	0	11,302	48					
	Dominguez Channel	Dominguez Channel	COLA	6,117	6,291	5,399	3,861	3,573	0	4,229	27	31,061	0	0	215	30,847
			Other	39,889	42,911	42,263	29,886	28,482	0	26,583	223					
		Port of LA	COLA	8,891	11,292	9,923	7,091	6,669	0	6,433	1,022	19,974	0	0	75	19,900
			Other	15,371	20,823	21,993	15,405	14,890	0	9,840	2,680					
	J1J4	J1J4	COLA	1,951	4,188	95	2,551	454	0	483	795	12,156	0	0	97	12,059
			Other	10,633	23,629	4,218	12,544	4,426	0	3,266	7,611					
	J2J3	J2J3	COLA	27,152	44,020	21,700	32,023	18,031	0	11,032	4,634	21,510	0	0	87	21,423
			Other	7,711	8,790	10,224	7,085	6,084	0	5,508	336					
	Marina del Rey	Marina del Rey	COLA	998	1,143	1,386	920	794	0	813	1	1,284	0	0	3	1,282
			Other	855	995	368	627	266	0	448	23					
	TOTAL		**COLA**	**297,782**	**455,025**	**385,692**	**336,430**	**72,379**	**211,693**	**206,194**	**14,021**	**382,390**	**63,203**	**25,523**	**7,822**	**412,248**
			Other	**305,089**	**519,433**	**186,140**	**363,963**	**179,434**	**0**	**114,630**	**47,546**					
2004	Upper LA River	Upper LA River	COLA	174,600	136,585	262,659	168,414	11,331	156,051	58,540	4,907	112,690	56,751	9,189	4,881	155,371
			Other	209,880	224,518	81,294	174,244	82,325	0	28,325	20,917					
		Compton Creek	COLA	10,602	8,593	12,524	8,800	4,772	4,168	3,366	12	6,329	0	0	37	6,292
			Other	6,527	5,244	9,047	5,566	5,774	0	2,934	18					
	Ballona Creek	Ballona Creek	COLA	67,470	61,630	90,488	61,855	22,629	29,452	37,152	1,029	45,973	0	0	514	45,459
			Other	14,222	11,991	23,702	14,521	13,380	0	7,756	36					
	Dominguez Channel	Dominguez Channel	COLA	6,117	4,249	5,924	3,630	3,541	0	2,979	24	20,368	0	0	252	20,116
			Other	39,889	26,718	45,652	27,417	27,588	0	17,162	203					
		Port of LA	COLA	8,891	6,211	11,216	6,384	6,496	0	3,524	1,022	11,916	0	0	84	11,832
			Other	15,371	10,020	23,866	12,976	13,541	0	4,838	2,532					
	J1J4	J1J4	COLA	1,951	2,180	100	1,489	292	0	168	332	6,404	0	0	98	6,305
			Other	10,633	12,063	4,469	7,308	3,320	0	1,262	4,642					
	J2J3	J2J3	COLA	27,152	25,894	22,958	22,793	15,206	0	7,430	3,422	14,741	0	0	84	14,657
			Other	7,711	5,289	10,638	6,352	5,685	0	3,620	269					
	Marina del Rey	Marina del Rey	COLA	998	672	1,436	842	746	0	519	0	796	0	0	3	793
			Other	855	590	381	463	231	0	263	13					
	TOTAL		**COLA**	**297,782**	**246,014**	**407,305**	**274,208**	**65,013**	**189,671**	**113,678**	**10,748**	**219,216**	**56,751**	**9,189**	**5,953**	**260,825**
			Other	**305,089**	**296,433**	**199,047**	**248,847**	**151,844**	**0**	**66,159**	**28,630**					

Table 1. Yearly water balance by assessment location (acre-ft)

Water Year	EWMP	Assessment Area	City	Area (ac)	LAND PROCESSES: Precipitation + Irrigation - Evapotranspiration - Infiltration = Runoff + Baseflow = Land Flow into Reaches							IN-STREAM PROCESSES: Land Flow into Reaches + Point Source Flow into Reaches - Spreading Grounds - InStream Loss = Outflow				
					Precipitation	Irrigation	Evapo-transpiration	Infiltration	Infiltration (Recharge)	Runoff	Baseflow	Land Flow into Reaches	Point Sources Flow into Reaches	Spreading Grounds	In-Stream Loss	Outflow
2005	Upper LA River	Upper LA River	COLA	174,600	602,721	243,297	295,127	15,727	216,590	305,565	13,010	673,453	59,962	45,719	17,110	670,586
			Other	209,880	963,056	72,398	521,510	159,066	0	244,045	110,833					
		Compton Creek	COLA	10,602	28,982	12,245	14,836	7,038	6,147	13,185	21	22,745	0	0	40	22,705
			Other	6,527	16,789	8,852	8,334	7,768	0	9,504	34					
	Ballona Creek	Ballona Creek	COLA	67,470	245,181	86,865	100,090	30,986	40,329	157,072	3,568	188,872	0	0	537	188,336
			Other	14,222	42,603	22,599	20,071	16,898	0	28,100	132					
	Dominguez Channel	Dominguez Channel	COLA	6,117	14,322	5,771	5,501	4,586	0	9,958	48	70,244	0	0	271	69,973
			Other	39,889	92,528	43,979	40,739	35,529	0	59,824	414					
		Port of LA	COLA	8,891	21,106	11,009	9,655	8,466	0	12,433	1,561	38,516	0	0	87	38,429
			Other	15,371	38,325	22,941	19,236	17,508	0	20,821	3,700					
	J1J4	J1J4	COLA	1,951	9,552	92	2,981	499	0	3,499	2,664	43,946	0	0	100	43,846
			Other	10,633	52,857	4,102	14,881	4,295	0	18,822	18,960					
	J2J3	J2J3	COLA	27,152	93,963	21,282	46,063	22,363	0	37,696	9,122	61,277	0	0	99	61,178
			Other	7,711	20,247	9,978	8,761	7,006	0	13,930	529					
	Marina del Rey	Marina del Rey	COLA	998	2,370	1,346	1,094	903	0	1,716	2	2,731	0	0	3	2,728
			Other	855	1,913	357	929	328	0	964	49					
	TOTAL		**COLA**	**297,782**	**1,018,198**	**381,906**	**475,348**	**90,569**	**263,066**	**541,126**	**29,996**	**1,101,785**	**59,962**	**45,719**	**18,248**	**1,097,781**
			Other	**305,089**	**1,228,316**	**185,205**	**634,459**	**248,398**	**0**	**396,011**	**134,652**					
2006	Upper LA River	Upper LA River	COLA	174,600	228,400	256,865	202,315	12,711	175,050	88,961	6,229	180,506	64,403	14,332	7,971	222,606
			Other	209,880	357,856	75,058	249,910	97,688	0	44,449	40,866					
		Compton Creek	COLA	10,602	10,423	12,722	9,720	5,184	4,528	3,700	13	6,664	0	0	39	6,625
			Other	6,527	5,967	9,188	6,016	6,188	0	2,931	20					
	Ballona Creek	Ballona Creek	COLA	67,470	85,381	91,138	71,137	25,213	32,815	46,081	1,273	56,397	0	0	506	55,891
			Other	14,222	15,861	24,139	16,227	14,728	0	8,999	45					
	Dominguez Channel	Dominguez Channel	COLA	6,117	5,081	6,028	4,009	3,844	0	3,230	27	22,086	0	0	259	21,827
			Other	39,889	31,920	46,618	29,977	29,731	0	18,605	225					
		Port of LA	COLA	8,891	7,189	11,383	6,800	6,827	0	3,877	1,069	13,382	0	0	84	13,298
			Other	15,371	13,109	24,390	14,357	14,706	0	5,794	2,642					
	J1J4	J1J4	COLA	1,951	3,594	97	2,167	393	0	282	849	10,818	0	0	100	10,718
			Other	10,633	19,892	4,343	10,566	3,982	0	2,008	7,679					
	J2J3	J2J3	COLA	27,152	34,797	22,995	28,201	17,537	0	8,182	3,873	16,959	0	0	91	16,869
			Other	7,711	7,446	10,930	7,174	6,297	0	4,631	275					
	Marina del Rey	Marina del Rey	COLA	998	898	1,480	934	819	0	624	1	954	0	0	3	951
			Other	855	735	392	542	257	0	310	20					
	TOTAL		**COLA**	**297,782**	**375,763**	**402,708**	**325,281**	**72,528**	**212,393**	**154,936**	**13,333**	**307,766**	**64,403**	**14,332**	**9,053**	**348,785**
			Other	**305,089**	**452,786**	**195,059**	**334,769**	**173,578**	**0**	**87,726**	**51,771**					
2007	Upper LA River	Upper LA River	COLA	174,600	70,618	279,220	152,753	10,961	150,945	30,855	4,325	52,583	56,930	6,555	4,233	98,725
			Other	209,880	123,136	81,959	118,819	68,873	0	8,994	8,409					
		Compton Creek	COLA	10,602	2,498	13,330	7,210	4,214	3,680	714	11	1,671	0	0	40	1,631
			Other	6,527	1,437	9,715	4,846	5,359	0	931	15					
	Ballona Creek	Ballona Creek	COLA	67,470	25,489	96,503	54,092	21,337	27,770	18,052	741	22,808	0	0	541	22,267
			Other	14,222	4,913	25,525	13,504	12,918	0	3,991	24					
	Dominguez Channel	Dominguez Channel	COLA	6,117	1,461	6,556	3,363	3,558	0	1,075	22	8,084	0	0	290	7,795
			Other	39,889	9,321	50,385	25,388	27,330	0	6,794	193					
		Port of LA	COLA	8,891	2,911	12,548	6,032	6,529	0	1,857	1,041	8,256	0	0	94	8,162
			Other	15,371	4,489	26,435	12,182	13,384	0	2,766	2,592					
	J1J4	J1J4	COLA	1,951	478	108	387	123	0	6	70	3,447	0	0	101	3,347
			Other	10,633	3,649	4,806	2,947	2,136	0	304	3,068					
	J2J3	J2J3	COLA	27,152	11,319	24,858	16,701	13,625	0	3,562	2,289	7,956	0	0	88	7,868
			Other	7,711	2,121	11,643	6,022	5,638	0	1,897	208					
	Marina del Rey	Marina del Rey	COLA	998	276	1,572	823	750	0	274	0	391	0	0	3	388
			Other	855	241	417	330	212	0	109	7					
	TOTAL		**COLA**	**297,782**	**115,051**	**434,693**	**241,361**	**61,096**	**182,395**	**56,395**	**8,498**	**105,196**	**56,930**	**6,555**	**5,389**	**150,182**
			Other	**305,089**	**149,306**	**210,885**	**184,038**	**135,850**	**0**	**25,786**	**14,517**					
2008	Upper LA River	Upper LA River	COLA	174,600	210,361	282,734	202,226	12,912	177,821	93,013	7,124	196,856	56,265	21,297	7,812	224,011
			Other	209,880	361,951	82,439	249,148	98,524	0	57,600	39,119					
		Compton Creek	COLA	10,602	8,639	13,090	9,084	4,941	4,315	3,376	13	6,439	0	0	40	6,399
			Other	6,527	5,388	9,559	5,833	6,063	0	3,031	19					
	Ballona Creek	Ballona Creek	COLA	67,470	78,358	95,769	69,985	24,940	32,459	45,161	1,582	56,351	0	0	565	55,786
			Other	14,222	15,467	25,882	16,600	15,141	0	9,554	54					
	Dominguez Channel	Dominguez Channel	COLA	6,117	5,459	6,559	4,174	4,010	0	3,805	29	29,290	0	0	305	28,986
			Other	39,889	38,669	51,119	32,456	31,876	0	25,196	260					
		Port of LA	COLA	8,891	9,872	12,472	7,728	7,589	0	5,756	1,271	17,976	0	0	99	17,878
			Other	15,371	15,999	26,928	15,875	16,103	0	7,784	3,165					
	J1J4	J1J4	COLA	1,951	4,518	110	2,118	379	0	1,229	902	14,363	0	0	113	14,251
			Other	10,633	20,860	4,894	9,721	3,800	0	4,483	7,750					
	J2J3	J2J3	COLA	27,152	31,352	25,471	26,634	17,714	0	8,770	3,705	17,482	0	0	104	17,378
			Other	7,711	7,016	12,170	7,486	6,694	0	4,739	267					
	Marina del Rey	Marina del Rey	COLA	998	867	1,648	994	877	0	643	1	982	0	0	4	979
			Other	855	765	437	583	281	0	314	24					
	TOTAL		**COLA**	**297,782**	**349,426**	**437,853**	**322,943**	**73,361**	**214,595**	**161,753**	**14,626**	**339,740**	**56,265**	**21,297**	**9,041**	**365,666**
			Other	**305,089**	**466,115**	**213,429**	**337,702**	**178,482**	**0**	**112,702**	**50,658**					

Table 1. Yearly water balance by assessment location (acre-ft)

Water Year	EWMP	Assessment Area	City	Area (ac)	LAND PROCESSES: Precipitation + Irrigation - Evapotranspiration - Infiltration = Runoff + Baseflow = Land Flow into Reaches							IN-STREAM PROCESSES: Land Flow into Reaches + Point Source Flow into Reaches - Spreading Grounds - InStream Loss = Outflow				
					Precipitation	Irrigation	Evapo-transpiration	Infiltration	Infiltration (Recharge)	Runoff	Baseflow	Land Flow into Reaches	Point Sources Flow into Reaches	Spreading Grounds	In-Stream Loss	Outflow
2009	Upper LA River	Upper LA River	COLA	174,600	166,173	276,576	187,783	12,386	170,580	66,180	5,820	121,679	53,921	14,931	5,529	155,140
			Other	209,880	251,971	77,868	194,521	85,640	0	25,070	24,609					
		Compton Creek	COLA	10,602	6,742	13,547	8,763	4,872	4,255	2,387	12	4,804	0	0	41	4,762
			Other	6,527	4,334	9,814	5,711	6,032	0	2,386	18					
	Ballona Creek	Ballona Creek	COLA	67,470	56,320	98,381	65,652	24,344	31,685	31,903	1,117	39,872	0	0	587	39,285
			Other	14,222	11,085	26,456	15,904	14,785	0	6,814	38					
	Dominguez Channel	Dominguez Channel	COLA	6,117	4,384	6,560	3,992	3,919	0	3,007	26	21,318	0	0	309	21,008
			Other	39,889	28,447	51,281	30,577	30,866	0	18,053	232					
		Port of LA	COLA	8,891	5,782	12,349	6,754	6,966	0	3,275	1,136	12,903	0	0	98	12,805
			Other	15,371	11,277	26,936	14,537	15,184	0	5,659	2,834					
	J1J4	J1J4	COLA	1,951	2,823	107	1,739	330	0	328	533	7,869	0	0	109	7,759
			Other	10,633	13,734	4,792	7,957	3,562	0	1,553	5,455					
	J2J3	J2J3	COLA	27,152	24,333	25,810	24,066	16,774	0	6,236	3,066	12,884	0	0	103	12,781
			Other	7,711	4,822	12,294	7,084	6,450	0	3,344	238					
	Marina del Rey	Marina del Rey	COLA	998	627	1,668	960	858	0	476	1	714	0	0	4	710
			Other	855	560	442	501	265	0	220	17					
	TOTAL		**COLA**	**297,782**	**267,184**	**434,998**	**299,709**	**70,450**	**206,520**	**113,791**	**11,711**	**222,041**	**53,921**	**14,931**	**6,780**	**254,252**
			Other	**305,089**	**326,230**	**209,884**	**276,791**	**162,784**	**0**	**63,099**	**33,441**					
2010	Upper LA River	Upper LA River	COLA	174,600	261,683	260,533	216,203	13,244	182,386	103,011	7,372	207,751	55,008	9,745	8,232	244,782
			Other	209,880	413,643	75,278	284,982	106,570	0	54,436	42,933					
		Compton Creek	COLA	10,602	10,807	12,798	9,838	5,233	4,570	3,950	13	7,417	0	0	40	7,377
			Other	6,527	6,583	9,292	6,143	6,277	0	3,434	20					
	Ballona Creek	Ballona Creek	COLA	67,470	101,034	92,986	77,140	26,724	34,782	53,606	1,769	66,378	0	0	589	65,789
			Other	14,222	20,105	25,434	18,205	16,332	0	10,939	65					
	Dominguez Channel	Dominguez Channel	COLA	6,117	6,902	6,293	4,425	4,116	0	4,624	30	32,645	0	0	307	32,338
			Other	39,889	44,880	49,551	33,833	32,606	0	27,734	257					
		Port of LA	COLA	8,891	13,257	11,819	8,135	7,661	0	7,950	1,331	24,192	0	0	99	24,093
			Other	15,371	22,493	26,096	17,039	16,640	0	11,629	3,283					
	J1J4	J1J4	COLA	1,951	4,448	100	2,453	436	0	626	1,032	12,852	0	0	105	12,747
			Other	10,633	22,331	4,473	11,399	4,211	0	2,923	8,270					
	J2J3	J2J3	COLA	27,152	39,744	24,711	30,524	18,761	0	10,750	4,420	20,261	0	0	106	20,155
			Other	7,711	7,801	12,041	7,849	6,901	0	4,790	302					
	Marina del Rey	Marina del Rey	COLA	998	1,092	1,638	1,062	927	0	740	1	1,165	0	0	4	1,161
			Other	855	1,025	434	719	317	0	393	31					
	TOTAL		**COLA**	**297,782**	**438,967**	**410,878**	**349,781**	**77,102**	**221,738**	**185,257**	**15,967**	**372,662**	**55,008**	**9,745**	**9,481**	**408,444**
			Other	**305,089**	**538,861**	**202,600**	**380,169**	**189,854**	**0**	**116,277**	**55,161**					
2011	Upper LA River	Upper LA River	COLA	174,600	343,646	256,037	238,317	14,039	193,335	145,312	8,680	293,120	54,530	0	9,708	337,942
			Other	209,880	505,434	67,424	321,715	112,014	0	84,115	55,014					
		Compton Creek	COLA	10,602	15,103	12,211	10,988	5,625	4,913	5,773	15	10,956	0	0	39	10,917
			Other	6,527	9,509	8,948	6,689	6,601	0	5,145	23					
	Ballona Creek	Ballona Creek	COLA	67,470	125,679	89,557	81,832	27,608	35,933	67,609	2,254	84,468	0	0	551	83,917
			Other	14,222	25,690	24,979	19,166	16,897	0	14,517	88					
	Dominguez Channel	Dominguez Channel	COLA	6,117	9,236	6,281	4,873	4,358	0	6,251	35	43,775	0	0	306	43,469
			Other	39,889	60,331	49,689	37,524	35,008	0	37,180	309					
		Port of LA	COLA	8,891	14,579	11,873	8,730	8,122	0	8,161	1,438	24,254	0	0	97	24,157
			Other	15,371	24,342	26,300	18,284	17,703	0	11,019	3,636					
	J1J4	J1J4	COLA	1,951	5,631	100	2,561	446	0	1,386	1,339	18,465	0	0	105	18,360
			Other	10,633	27,919	4,472	12,373	4,279	0	5,662	10,077					
	J2J3	J2J3	COLA	27,152	50,358	24,550	35,033	20,512	0	13,826	5,537	26,800	0	0	108	26,692
			Other	7,711	11,562	12,169	8,766	7,528	0	7,078	359					
	Marina del Rey	Marina del Rey	COLA	998	1,495	1,656	1,159	996	0	996	1	1,573	0	0	4	1,569
			Other	855	1,313	439	833	343	0	534	41					
	TOTAL		**COLA**	**297,782**	**565,728**	**402,265**	**383,494**	**81,706**	**234,181**	**249,313**	**19,300**	**503,411**	**54,530**	**0**	**10,917**	**547,024**
			Other	**305,089**	**666,101**	**194,421**	**425,351**	**200,372**	**0**	**165,250**	**69,548**					

Table 2. Yearly water balance by assessment location (inches)

Water Year	EWMP	Assessment Area	City	Area (ac)	LAND PROCESSES: Precipitation + Irrigation - Evapotranspiration - Infiltration = Runoff + Baseflow = Land Flow into Reaches							IN-STREAM PROCESSES: Land Flow into Reaches + Point Source Flow into Reaches - Spreading Grounds - InStream Loss = Outflow				
					Precipitation	Irrigation	Evapo-transpiration	Infiltration (Not Recharge)	Infiltration (Recharge)	Runoff	Baseflow	Land Flow into Reaches	Point Sources Flow into Reaches	Spreading Grounds	In-Stream Loss	Outflow
2001	Upper LA River	Upper LA River	COLA	174,600	19.16	16.41	14.14	0.86	11.82	8.26	0.49	6.55	2.27	0.57	0.20	8.04
			Other	209,880	19.56	4.29	13.64	5.50	0.00	2.75	1.97					
		Compton Creek	COLA	10,602	12.81	13.49	10.66	5.60	4.89	5.12	0.01	5.57	0.00	0.00	0.02	5.55
			Other	6,527	11.71	15.63	10.44	10.62	0.00	6.25	0.03					
	Ballona Creek	Ballona Creek	COLA	67,470	18.35	15.13	12.78	4.36	5.68	10.33	0.32	10.59	0.00	0.00	0.07	10.52
			Other	14,222	16.87	18.65	13.36	11.89	0.00	10.21	0.06					
	Dominguez Channel	Dominguez Channel	COLA	6,117	13.06	10.46	7.54	6.88	0.00	9.05	0.06	8.42	0.00	0.00	0.06	8.36
			Other	39,889	13.14	12.42	8.84	8.40	0.00	8.25	0.07					
		Port of LA	COLA	8,891	18.28	13.38	9.86	9.05	0.00	11.12	1.64	12.42	0.00	0.00	0.04	12.38
			Other	15,371	19.39	16.76	12.29	11.63	0.00	9.74	2.49					
	J1J4	J1J4	COLA	1,951	27.27	0.56	13.47	2.37	0.00	4.50	7.48	16.71	0.00	0.00	0.09	16.62
			Other	10,633	29.68	4.56	12.47	4.20	0.00	6.05	11.53					
	J2J3	J2J3	COLA	27,152	21.63	9.27	14.12	7.81	0.00	6.38	2.58	9.54	0.00	0.00	0.03	9.52
			Other	7,711	17.47	15.17	11.44	9.61	0.00	10.98	0.62					
	Marina del Rey	Marina del Rey	COLA	998	14.78	15.85	11.12	9.54	0.00	9.95	0.02	8.32	0.00	0.00	0.02	8.30
			Other	855	13.68	4.91	8.57	3.62	0.00	5.96	0.44					
	TOTAL		**COLA**	**297,782**	**18.86**	**15.05**	**13.43**	**2.86**	**8.39**	**8.53**	**0.70**	**7.84**	**1.44**	**0.36**	**0.15**	**8.77**
			Other	**305,089**	**18.70**	**7.18**	**12.75**	**6.65**	**0.00**	**4.57**	**1.91**					
2002	Upper LA River	Upper LA River	COLA	174,600	5.51	17.20	9.93	0.70	9.65	2.16	0.27	1.74	1.92	0.07	0.13	3.46
			Other	209,880	7.64	4.43	7.01	3.90	0.00	0.59	0.57					
		Compton Creek	COLA	10,602	3.88	13.82	8.05	4.63	4.04	0.98	0.01	1.28	0.00	0.00	0.02	1.25
			Other	6,527	3.55	15.97	8.50	9.28	0.00	1.71	0.03					
	Ballona Creek	Ballona Creek	COLA	67,470	5.76	15.57	9.43	3.63	4.73	3.42	0.12	3.55	0.00	0.00	0.07	3.48
			Other	14,222	5.60	19.13	10.86	10.26	0.00	3.59	0.02					
	Dominguez Channel	Dominguez Channel	COLA	6,117	3.42	10.57	5.80	6.01	0.00	2.15	0.03	2.14	0.00	0.00	0.05	2.08
			Other	39,889	3.49	12.60	6.79	7.18	0.00	2.08	0.05					
		Port of LA	COLA	8,891	3.65	13.44	6.70	7.19	0.00	2.10	1.09	3.51	0.00	0.00	0.03	3.48
			Other	15,371	4.34	16.99	8.50	9.14	0.00	2.07	1.63					
	J1J4	J1J4	COLA	1,951	7.00	0.59	5.59	1.26	0.00	0.04	0.70	3.33	0.00	0.00	0.08	3.24
			Other	10,633	7.30	4.84	5.32	3.02	0.00	0.37	3.43					
	J2J3	J2J3	COLA	27,152	6.89	9.57	8.05	5.87	0.00	1.51	1.03	2.66	0.00	0.00	0.02	2.64
			Other	7,711	3.96	15.54	8.55	7.88	0.00	2.76	0.32					
	Marina del Rey	Marina del Rey	COLA	998	4.02	16.23	8.87	8.02	0.00	3.35	0.00	2.66	0.00	0.00	0.02	2.65
			Other	855	4.37	5.03	4.77	2.78	0.00	1.73	0.12					
	TOTAL		**COLA**	**297,782**	**5.54**	**15.65**	**9.37**	**2.31**	**6.87**	**2.33**	**0.32**	**2.16**	**1.22**	**0.04**	**0.10**	**3.24**
			Other	**305,089**	**6.63**	**7.36**	**7.24**	**5.07**	**0.00**	**1.08**	**0.61**					
2003	Upper LA River	Upper LA River	COLA	174,600	18.83	17.02	14.28	0.87	12.00	8.27	0.43	6.76	1.97	0.80	0.21	7.72
			Other	209,880	22.60	4.32	15.78	5.98	0.00	3.06	2.09					
		Compton Creek	COLA	10,602	14.74	13.83	11.44	5.95	5.19	5.97	0.02	6.67	0.00	0.00	0.02	6.65
			Other	6,527	14.33	15.96	11.24	11.26	0.00	7.75	0.04					
	Ballona Creek	Ballona Creek	COLA	67,470	17.97	15.54	12.82	4.43	5.77	10.24	0.24	10.32	0.00	0.00	0.07	10.25
			Other	14,222	16.19	19.32	13.69	12.24	0.00	9.54	0.04					
	Dominguez Channel	Dominguez Channel	COLA	6,117	12.34	10.59	7.57	7.01	0.00	8.30	0.05	8.10	0.00	0.00	0.06	8.05
			Other	39,889	12.91	12.71	8.99	8.57	0.00	8.00	0.07					
		Port of LA	COLA	8,891	15.24	13.39	9.57	9.00	0.00	8.68	1.38	9.88	0.00	0.00	0.04	9.84
			Other	15,371	16.26	17.17	12.03	11.63	0.00	7.68	2.09					
	J1J4	J1J4	COLA	1,951	25.76	0.58	15.69	2.79	0.00	2.97	4.89	11.59	0.00	0.00	0.09	11.50
			Other	10,633	26.67	4.76	14.16	4.99	0.00	3.69	8.59					
	J2J3	J2J3	COLA	27,152	19.46	9.59	14.15	7.97	0.00	4.88	2.05	7.40	0.00	0.00	0.03	7.37
			Other	7,711	13.68	15.91	11.03	9.47	0.00	8.57	0.52					
	Marina del Rey	Marina del Rey	COLA	998	13.74	16.66	11.06	9.55	0.00	9.78	0.01	8.32	0.00	0.00	0.02	8.30
			Other	855	13.98	5.16	8.80	3.73	0.00	6.29	0.32					
	TOTAL		**COLA**	**297,782**	**18.34**	**15.54**	**13.56**	**2.92**	**8.53**	**8.31**	**0.57**	**7.61**	**1.26**	**0.51**	**0.16**	**8.21**
			Other	**305,089**	**20.43**	**7.32**	**14.32**	**7.06**	**0.00**	**4.51**	**1.87**					
2004	Upper LA River	Upper LA River	COLA	174,600	9.39	18.05	11.57	0.78	10.73	4.02	0.34	3.52	1.77	0.29	0.15	4.85
			Other	209,880	12.84	4.65	9.96	4.71	0.00	1.62	1.20					
		Compton Creek	COLA	10,602	9.73	14.18	9.96	5.40	4.72	3.81	0.01	4.43	0.00	0.00	0.03	4.41
			Other	6,527	9.64	16.63	10.23	10.61	0.00	5.39	0.03					
	Ballona Creek	Ballona Creek	COLA	67,470	10.96	16.09	11.00	4.02	5.24	6.61	0.18	6.75	0.00	0.00	0.08	6.68
			Other	14,222	10.12	20.00	12.25	11.29	0.00	6.54	0.03					
	Dominguez Channel	Dominguez Channel	COLA	6,117	8.34	11.62	7.12	6.95	0.00	5.84	0.05	5.31	0.00	0.00	0.07	5.25
			Other	39,889	8.04	13.73	8.25	8.30	0.00	5.16	0.06					
		Port of LA	COLA	8,891	8.38	15.14	8.62	8.77	0.00	4.76	1.38	5.89	0.00	0.00	0.04	5.85
			Other	15,371	7.82	18.63	10.13	10.57	0.00	3.78	1.98					
	J1J4	J1J4	COLA	1,951	13.41	0.62	9.15	1.80	0.00	1.03	2.04	6.11	0.00	0.00	0.09	6.01
			Other	10,633	13.61	5.04	8.25	3.75	0.00	1.42	5.24					
	J2J3	J2J3	COLA	27,152	11.44	10.15	10.07	6.72	0.00	3.28	1.51	5.07	0.00	0.00	0.03	5.04
			Other	7,711	8.23	16.55	9.89	8.85	0.00	5.63	0.42					
	Marina del Rey	Marina del Rey	COLA	998	8.07	17.26	10.12	8.97	0.00	6.23	0.01	5.15	0.00	0.00	0.02	5.14
			Other	855	8.28	5.35	6.50	3.25	0.00	3.70	0.19					
	TOTAL		**COLA**	**297,782**	**9.91**	**16.41**	**11.05**	**2.62**	**7.64**	**4.58**	**0.43**	**4.36**	**1.13**	**0.18**	**0.12**	**5.19**
			Other	**305,089**	**11.66**	**7.83**	**9.79**	**5.97**	**0.00**	**2.60**	**1.13**					

Table 2. Yearly water balance by assessment location (inches)

Water Year	EWMP	Assessment Area	City	Area (ac)	LAND PROCESSES: Precipitation + Irrigation - Evapotranspiration - Infiltration = Runoff + Baseflow = Land Flow into Reaches							IN-STREAM PROCESSES: Land Flow into Reaches + Point Source Flow into Reaches - Spreading Grounds - InStream Loss = Outflow				
					Precipitation	Irrigation	Evapo-transpiration	Infiltration (Not Recharge)	Infiltration (Recharge)	Runoff	Baseflow	Land Flow into Reaches	Point Sources Flow into Reaches	Spreading Grounds	In-Stream Loss	Outflow
2005	Upper LA River	Upper LA River	COLA	174,600	41.42	16.72	20.28	1.08	14.89	21.00	0.89	21.02	1.87	1.43	0.53	20.93
			Other	209,880	55.06	4.14	29.82	9.09	0.00	13.95	6.34					
		Compton Creek	COLA	10,602	32.80	13.86	16.79	7.97	6.96	14.92	0.02	15.93	0.00	0.00	0.03	15.91
			Other	6,527	30.86	16.27	15.32	14.28	0.00	17.47	0.06					
	Ballona Creek	Ballona Creek	COLA	67,470	43.61	15.45	17.80	5.51	7.17	27.94	0.63	27.74	0.00	0.00	0.08	27.67
			Other	14,222	35.95	19.07	16.93	14.26	0.00	23.71	0.11					
	Dominguez Channel	Dominguez Channel	COLA	6,117	28.09	11.32	10.79	9.00	0.00	19.53	0.09	18.32	0.00	0.00	0.07	18.25
			Other	39,889	27.84	13.23	12.26	10.69	0.00	18.00	0.12					
		Port of LA	COLA	8,891	28.49	14.86	13.03	11.43	0.00	16.78	2.11	19.05	0.00	0.00	0.04	19.01
			Other	15,371	29.92	17.91	15.02	13.67	0.00	16.26	2.89					
	J1J4	J1J4	COLA	1,951	58.74	0.57	18.33	3.07	0.00	21.52	16.38	41.90	0.00	0.00	0.09	41.81
			Other	10,633	59.65	4.63	16.79	4.85	0.00	21.24	21.40					
	J2J3	J2J3	COLA	27,152	41.53	9.41	20.36	9.88	0.00	16.66	4.03	21.09	0.00	0.00	0.03	21.06
			Other	7,711	31.51	15.53	13.63	10.90	0.00	21.68	0.82					
	Marina del Rey	Marina del Rey	COLA	998	28.49	16.18	13.16	10.86	0.00	20.63	0.02	17.69	0.00	0.00	0.02	17.67
			Other	855	26.86	5.01	13.04	4.61	0.00	13.54	0.69					
	TOTAL		**COLA**	**297,782**	**41.03**	**15.39**	**19.16**	**3.65**	**10.60**	**21.81**	**1.21**	**21.93**	**1.19**	**0.91**	**0.36**	**21.85**
			Other	**305,089**	**48.31**	**7.28**	**24.96**	**9.77**	**0.00**	**15.58**	**5.30**					
2006	Upper LA River	Upper LA River	COLA	174,600	15.70	17.65	13.90	0.87	12.03	6.11	0.43	5.63	2.01	0.45	0.25	6.95
			Other	209,880	20.46	4.29	14.29	5.59	0.00	2.54	2.34					
		Compton Creek	COLA	10,602	11.80	14.40	11.00	5.87	5.12	4.19	0.02	4.67	0.00	0.00	0.03	4.64
			Other	6,527	10.97	16.89	11.06	11.38	0.00	5.39	0.04					
	Ballona Creek	Ballona Creek	COLA	67,470	15.19	16.21	12.65	4.48	5.84	8.20	0.23	8.28	0.00	0.00	0.07	8.21
			Other	14,222	13.38	20.37	13.69	12.43	0.00	7.59	0.04					
	Dominguez Channel	Dominguez Channel	COLA	6,117	9.97	11.82	7.86	7.54	0.00	6.34	0.05	5.76	0.00	0.00	0.07	5.69
			Other	39,889	9.60	14.02	9.02	8.94	0.00	5.60	0.07					
		Port of LA	COLA	8,891	9.70	15.36	9.18	9.21	0.00	5.23	1.44	6.62	0.00	0.00	0.04	6.58
			Other	15,371	10.23	19.04	11.21	11.48	0.00	4.52	2.06					
	J1J4	J1J4	COLA	1,951	22.10	0.60	13.33	2.42	0.00	1.74	5.22	10.32	0.00	0.00	0.10	10.22
			Other	10,633	22.45	4.90	11.92	4.49	0.00	2.27	8.67					
	J2J3	J2J3	COLA	27,152	15.38	10.16	12.46	7.75	0.00	3.62	1.71	5.84	0.00	0.00	0.03	5.81
			Other	7,711	11.59	17.01	11.16	9.80	0.00	7.21	0.43					
	Marina del Rey	Marina del Rey	COLA	998	10.80	17.79	11.23	9.84	0.00	7.50	0.01	6.18	0.00	0.00	0.02	6.16
			Other	855	10.33	5.51	7.61	3.61	0.00	4.35	0.27					
	TOTAL		**COLA**	**297,782**	**15.14**	**16.23**	**13.11**	**2.92**	**8.56**	**6.24**	**0.54**	**6.13**	**1.28**	**0.29**	**0.18**	**6.94**
			Other	**305,089**	**17.81**	**7.67**	**13.17**	**6.83**	**0.00**	**3.45**	**2.04**					
2007	Upper LA River	Upper LA River	COLA	174,600	4.85	19.19	10.50	0.75	10.37	2.12	0.30	1.64	1.78	0.20	0.13	3.08
			Other	209,880	7.04	4.69	6.79	3.94	0.00	0.51	0.48					
		Compton Creek	COLA	10,602	2.83	15.09	8.16	4.77	4.17	0.81	0.01	1.17	0.00	0.00	0.03	1.14
			Other	6,527	2.64	17.86	8.91	9.85	0.00	1.71	0.03					
	Ballona Creek	Ballona Creek	COLA	67,470	4.53	17.16	9.62	3.79	4.94	3.21	0.13	3.35	0.00	0.00	0.08	3.27
			Other	14,222	4.14	21.54	11.39	10.90	0.00	3.37	0.02					
	Dominguez Channel	Dominguez Channel	COLA	6,117	2.87	12.86	6.60	6.98	0.00	2.11	0.04	2.11	0.00	0.00	0.08	2.03
			Other	39,889	2.80	15.16	7.64	8.22	0.00	2.04	0.06					
		Port of LA	COLA	8,891	3.93	16.93	8.14	8.81	0.00	2.51	1.40	4.08	0.00	0.00	0.05	4.04
			Other	15,371	3.50	20.64	9.51	10.45	0.00	2.16	2.02					
	J1J4	J1J4	COLA	1,951	2.94	0.66	2.38	0.76	0.00	0.04	0.43	3.29	0.00	0.00	0.10	3.19
			Other	10,633	4.12	5.42	3.33	2.41	0.00	0.34	3.46					
	J2J3	J2J3	COLA	27,152	5.00	10.99	7.38	6.02	0.00	1.57	1.01	2.74	0.00	0.00	0.03	2.71
			Other	7,711	3.30	18.12	9.37	8.77	0.00	2.95	0.32					
	Marina del Rey	Marina del Rey	COLA	998	3.32	18.89	9.89	9.02	0.00	3.30	0.00	2.53	0.00	0.00	0.02	2.51
			Other	855	3.38	5.85	4.63	2.97	0.00	1.53	0.10					
	TOTAL		**COLA**	**297,782**	**4.64**	**17.52**	**9.73**	**2.46**	**7.35**	**2.27**	**0.34**	**2.09**	**1.13**	**0.13**	**0.11**	**2.99**
			Other	**305,089**	**5.87**	**8.29**	**7.24**	**5.34**	**0.00**	**1.01**	**0.57**					
2008	Upper LA River	Upper LA River	COLA	174,600	14.46	19.43	13.90	0.89	12.22	6.39	0.49	6.14	1.76	0.66	0.24	6.99
			Other	209,880	20.69	4.71	14.25	5.63	0.00	3.29	2.24					
		Compton Creek	COLA	10,602	9.78	14.82	10.28	5.59	4.88	3.82	0.01	4.51	0.00	0.00	0.03	4.48
			Other	6,527	9.91	17.57	10.72	11.15	0.00	5.57	0.04					
	Ballona Creek	Ballona Creek	COLA	67,470	13.94	17.03	12.45	4.44	5.77	8.03	0.28	8.28	0.00	0.00	0.08	8.19
			Other	14,222	13.05	21.84	14.01	12.77	0.00	8.06	0.05					
	Dominguez Channel	Dominguez Channel	COLA	6,117	10.71	12.87	8.19	7.87	0.00	7.46	0.06	7.64	0.00	0.00	0.08	7.56
			Other	39,889	11.63	15.38	9.76	9.59	0.00	7.58	0.08					
		Port of LA	COLA	8,891	13.32	16.83	10.43	10.24	0.00	7.77	1.72	8.89	0.00	0.00	0.05	8.84
			Other	15,371	12.49	21.02	12.39	12.57	0.00	6.08	2.47					
	J1J4	J1J4	COLA	1,951	27.78	0.67	13.03	2.33	0.00	7.56	5.55	13.70	0.00	0.00	0.11	13.59
			Other	10,633	23.54	5.52	10.97	4.29	0.00	5.06	8.75					
	J2J3	J2J3	COLA	27,152	13.86	11.26	11.77	7.83	0.00	3.88	1.64	6.02	0.00	0.00	0.04	5.98
			Other	7,711	10.92	18.94	11.65	10.42	0.00	7.37	0.42					
	Marina del Rey	Marina del Rey	COLA	998	10.42	19.81	11.95	10.54	0.00	7.74	0.01	6.36	0.00	0.00	0.02	6.34
			Other	855	10.74	6.14	8.18	3.95	0.00	4.41	0.34					
	TOTAL		**COLA**	**297,782**	**14.08**	**17.64**	**13.01**	**2.96**	**8.65**	**6.52**	**0.59**	**6.76**	**1.12**	**0.42**	**0.18**	**7.28**
			Other	**305,089**	**18.33**	**8.39**	**13.28**	**7.02**	**0.00**	**4.43**	**1.99**					

Table 2. Yearly water balance by assessment location (inches)

Water Year	EWMP	Assessment Area	City	Area (ac)	LAND PROCESSES: Precipitation + Irrigation - Evapotranspiration - Infiltration = Runoff + Baseflow = Land Flow into Reaches							IN-STREAM PROCESSES: Land Flow into Reaches + Point Source Flow into Reaches - Spreading Grounds - InStream Loss = Outflow				
					Precipitation	Irrigation	Evapo-transpiration	Infiltration (Not Recharge)	Infiltration (Recharge)	Runoff	Baseflow	Land Flow into Reaches	Point Sources Flow into Reaches	Spreading Grounds	In-Stream Loss	Outflow
2009	Upper LA River	Upper LA River	COLA	174,600	11.42	19.01	12.91	0.85	11.72	4.55	0.40	3.80	1.68	0.47	0.17	4.84
			Other	209,880	14.41	4.45	11.12	4.90	0.00	1.43	1.41					
		Compton Creek	COLA	10,602	7.63	15.33	9.92	5.51	4.82	2.70	0.01	3.37	0.00	0.00	0.03	3.34
			Other	6,527	7.97	18.04	10.50	11.09	0.00	4.39	0.03					
	Ballona Creek	Ballona Creek	COLA	67,470	10.02	17.50	11.68	4.33	5.64	5.67	0.20	5.86	0.00	0.00	0.09	5.77
			Other	14,222	9.35	22.32	13.42	12.47	0.00	5.75	0.03					
	Dominguez Channel	Dominguez Channel	COLA	6,117	8.60	12.87	7.83	7.69	0.00	5.90	0.05	5.56	0.00	0.00	0.08	5.48
			Other	39,889	8.56	15.43	9.20	9.29	0.00	5.43	0.07					
		Port of LA	COLA	8,891	7.80	16.67	9.12	9.40	0.00	4.42	1.53	6.38	0.00	0.00	0.05	6.33
			Other	15,371	8.80	21.03	11.35	11.85	0.00	4.42	2.21					
	J1J4	J1J4	COLA	1,951	17.36	0.66	10.70	2.03	0.00	2.01	3.28	7.50	0.00	0.00	0.10	7.40
			Other	10,633	15.50	5.41	8.98	4.02	0.00	1.75	6.16					
	J2J3	J2J3	COLA	27,152	10.75	11.41	10.64	7.41	0.00	2.76	1.36	4.43	0.00	0.00	0.04	4.40
			Other	7,711	7.50	19.13	11.02	10.04	0.00	5.20	0.37					
	Marina del Rey	Marina del Rey	COLA	998	7.54	20.05	11.54	10.31	0.00	5.72	0.01	4.62	0.00	0.00	0.02	4.60
			Other	855	7.87	6.21	7.03	3.72	0.00	3.09	0.24					
	TOTAL		**COLA**	**297,782**	**10.77**	**17.53**	**12.08**	**2.84**	**8.32**	**4.59**	**0.47**	**4.42**	**1.07**	**0.30**	**0.13**	**5.06**
			Other	**305,089**	**12.83**	**8.26**	**10.89**	**6.40**	**0.00**	**2.48**	**1.32**					
2010	Upper LA River	Upper LA River	COLA	174,600	17.99	17.91	14.86	0.91	12.54	7.08	0.51	6.48	1.72	0.30	0.26	7.64
			Other	209,880	23.65	4.30	16.29	6.09	0.00	3.11	2.45					
		Compton Creek	COLA	10,602	12.23	14.49	11.14	5.92	5.17	4.47	0.01	5.20	0.00	0.00	0.03	5.17
			Other	6,527	12.10	17.08	11.29	11.54	0.00	6.31	0.04					
	Ballona Creek	Ballona Creek	COLA	67,470	17.97	16.54	13.72	4.75	6.19	9.53	0.31	9.75	0.00	0.00	0.09	9.66
			Other	14,222	16.96	21.46	15.36	13.78	0.00	9.23	0.05					
	Dominguez Channel	Dominguez Channel	COLA	6,117	13.54	12.34	8.68	8.08	0.00	9.07	0.06	8.51	0.00	0.00	0.08	8.43
			Other	39,889	13.50	14.91	10.18	9.81	0.00	8.34	0.08					
		Port of LA	COLA	8,891	17.89	15.95	10.98	10.34	0.00	10.73	1.80	11.97	0.00	0.00	0.05	11.92
			Other	15,371	17.56	20.37	13.30	12.99	0.00	9.08	2.56					
	J1J4	J1J4	COLA	1,951	27.35	0.62	15.09	2.68	0.00	3.85	6.35	12.25	0.00	0.00	0.10	12.16
			Other	10,633	25.20	5.05	12.86	4.75	0.00	3.30	9.33					
	J2J3	J2J3	COLA	27,152	17.57	10.92	13.49	8.29	0.00	4.75	1.95	6.97	0.00	0.00	0.04	6.94
			Other	7,711	12.14	18.74	12.21	10.74	0.00	7.45	0.47					
	Marina del Rey	Marina del Rey	COLA	998	13.13	19.69	12.77	11.14	0.00	8.90	0.01	7.55	0.00	0.00	0.03	7.52
			Other	855	14.39	6.10	10.09	4.45	0.00	5.52	0.43					
	TOTAL		**COLA**	**297,782**	**17.69**	**16.56**	**14.10**	**3.11**	**8.94**	**7.47**	**0.64**	**7.42**	**1.09**	**0.19**	**0.19**	**8.13**
			Other	**305,089**	**21.19**	**7.97**	**14.95**	**7.47**	**0.00**	**4.57**	**2.17**					
2011	Upper LA River	Upper LA River	COLA	174,600	23.62	17.60	16.38	0.96	13.29	9.99	0.60	9.15	1.70	0.00	0.30	10.55
			Other	209,880	28.90	3.86	18.39	6.40	0.00	4.81	3.15					
		Compton Creek	COLA	10,602	17.10	13.82	12.44	6.37	5.56	6.53	0.02	7.68	0.00	0.00	0.03	7.65
			Other	6,527	17.48	16.45	12.30	12.13	0.00	9.46	0.04					
	Ballona Creek	Ballona Creek	COLA	67,470	22.35	15.93	14.55	4.91	6.39	12.02	0.40	12.41	0.00	0.00	0.08	12.33
			Other	14,222	21.68	21.08	16.17	14.26	0.00	12.25	0.07					
	Dominguez Channel	Dominguez Channel	COLA	6,117	18.12	12.32	9.56	8.55	0.00	12.26	0.07	11.42	0.00	0.00	0.08	11.34
			Other	39,889	18.15	14.95	11.29	10.53	0.00	11.18	0.09					
		Port of LA	COLA	8,891	19.68	16.02	11.78	10.96	0.00	11.01	1.94	12.00	0.00	0.00	0.05	11.95
			Other	15,371	19.00	20.53	14.27	13.82	0.00	8.60	2.84					
	J1J4	J1J4	COLA	1,951	34.63	0.62	15.75	2.74	0.00	8.52	8.23	17.61	0.00	0.00	0.10	17.51
			Other	10,633	31.51	5.05	13.96	4.83	0.00	6.39	11.37					
	J2J3	J2J3	COLA	27,152	22.26	10.85	15.48	9.07	0.00	6.11	2.45	9.22	0.00	0.00	0.04	9.19
			Other	7,711	17.99	18.94	13.64	11.71	0.00	11.01	0.56					
	Marina del Rey	Marina del Rey	COLA	998	17.97	19.91	13.93	11.97	0.00	11.97	0.02	10.19	0.00	0.00	0.02	10.16
			Other	855	18.44	6.17	11.70	4.82	0.00	7.50	0.58					
	TOTAL		**COLA**	**297,782**	**22.80**	**16.21**	**15.45**	**3.29**	**9.44**	**10.05**	**0.78**	**10.02**	**1.09**	**0.00**	**0.22**	**10.89**
			Other	**305,089**	**26.20**	**7.65**	**16.73**	**7.88**	**0.00**	**6.50**	**2.74**					

ATTACHMENT B – STORMWATER CAPTURE PROJECTIONS

The detailed spreadsheet that serves as the output for stormwater capture projections can be downloaded from this link:

https://paradigmh2o.box.com/s/kt9apm83ocdqdk6iqdj1bzl5lt17hvhz

Assessment Area	Implementation Date	BMP Type	STORMWATER PROJECTS TO BE IMPLEMENTED			
			Total Number of Projects	Linear Ft of Green Streets [1]	Total Capacity of Projects (ac-ft)	Estimated Volume of Stormwater Managed during Average Year (ac-ft) [7]
Ballona Creek	Thru 2021 (Block A)	Existing Projects	302	0	5	38
		Low Impact Development	302	--	5	38
		Green Streets	0	0	0	0
		Regional Projects	0	--	0	0
		In Process - LASAN 5-yr CIP [2]	69	642,966	396	3,306
		Low Impact Development	0	0	0	0
		Green Streets	5	642,966	111	927
		Regional Projects	64	--	285	2,379
		In Process - DWP SCMP CIP	TBD	TBD	TBD	TBD
		In Process - LASAN DWP Funded Projects	TBD	TBD	TBD	TBD
		EWMP Projects (beyond Existing & 5-yr CIP)	n/a	n/a	1,309	10,915
		Low Impact Development	n/a	--	210	1,749
		Green Streets	n/a	963,425	167	1,390
		Regional Projects	n/a	--	932	7,776
		TOTAL	**371**	**642,966**	**1,709**	**14,258**
Santa Monica Bay [3]	Thru 2021 (Block A)	Existing Projects	266	867	17	138
		Low Impact Development	264	--	1	9
		Green Streets	1	867	0.2	1
		Regional Projects	1	--	15	128
		In Process - LASAN 5-yr CIP [2]	23	67,787	138	1,151
		Low Impact Development	0	--	0	0
		Green Streets	7	67,787	11.7	98
		Regional Projects	16	--	126.2	1,053
		In Process - DWP SCMP CIP	TBD	TBD	TBD	TBD
		In Process - LASAN DWP Funded Projects	TBD	TBD	TBD	TBD
		EWMP Projects (beyond Existing & 5-yr CIP)	n/a	n/a	106	888
		TOTAL	**289**	**67,787**	**261**	**2,177**
MdR [4,5]	Thru 2021 (Block A)	Existing Projects	29	0	0.04	0.3
		Low Impact Development	29	--	0.04	0.3
		Green Streets	0	0	0	0
		Regional Projects	0	--	0	0
		In Process - LASAN 5-yr CIP [2]	12	253,301	44	365
		Low Impact Development	0	--	0	0
		Green Streets	12	253,301	44	365
		Regional Projects	0	--	0	0
		In Process - DWP SCMP CIP	TBD	TBD	TBD	TBD
		In Process - LASAN DWP Funded Projects	TBD	TBD	TBD	TBD
		EWMP Projects (beyond Existing & 5-yr CIP)	0	0	0	0
		TOTAL	**41**	**253,301**	**44**	**366**
Upper LA River [6]	Thru 2021 (Block A)	Existing Projects	834	44,414	31	260
		Low Impact Development	820	--	9	75
		Green Streets	11	44,414	8	64
		Regional Projects	3	--	15	121
		In Process - LASAN 5-yr CIP [2]	36	8,201	170	1,421
		Low Impact Development	--	--	--	--
		Green Streets	27	8,201	1	12
		Regional Projects	9	--	169	1,410
		In Process - DWP SCMP CIP	TBD	TBD	TBD	TBD
		In Process - LASAN DWP Funded Projects	TBD	TBD	TBD	TBD
		EWMP Projects (beyond Existing & 5-yr CIP)	n/a	n/a	36	303
		TOTAL	**870**	**52,616**	**238**	**1,985**
	2021-2024 (Block B)	EWMP Projects	n/a	1,179,846	746	6,225
		Low Impact Development	n/a	--	117	976
		Green Streets	n/a	1,179,846	204	1,702
		Regional Projects	n/a	--	425	3,547
		Other Projects	0	0	0	0
		TOTAL	**0**	**1,179,846**	**746**	**6,225**
	2025-2028 (Block C)	EWMP Projects	n/a	3,510,041	2,261	18,864
		Low Impact Development	n/a	--	344	2,867
		Green Streets	n/a	3,510,041	607	5,063
		Regional Projects	n/a	--	1,311	10,934
		Other Projects	0	0	0	0
		TOTAL	**0**	**3,510,041**	**2,261**	**18,864**
	2028-2037 (Block D)	EWMP Projects	n/a	3,510,041	3,065	25,570
		Low Impact Development	n/a	--	344	2,867
		Green Streets	n/a	3,510,041	607	5,063
		Regional Projects	n/a	--	2,115	17,640
		Other Projects	0	0	0	0
		TOTAL	**0**	**3,510,041**	**3,065**	**25,570**

Assessment Area	Implementation Date	BMP Type	STORMWATER PROJECTS TO BE IMPLEMENTED			
			Total Number of Projects	Linear Ft of Green Streets [1]	Total Capacity of Projects (ac-ft)	Estimated Volume of Stormwater Managed during Average Year (ac-ft) [7]
Dominguez Channel	Thru 2021 (Block A)	Existing Projects	49	--	2	17
		Low Impact Development	49	--	2	17
		Green Streets	0	0	0	0
		Regional Projects	0	--	0	0
		In Process - LASAN 5-yr CIP [2]	9	1,600	0.3	2
		Low Impact Development	--	--	--	--
		Green Streets	9	1,600	0.3	2
		Regional Projects	--	--	--	--
		In Process - DWP SCMP CIP	TBD	TBD	TBD	TBD
		In Process - LASAN DWP Funded Projects	TBD	TBD	TBD	TBD
		TOTAL	**58**	**1,600**	**2**	**19**
	2021-2026	EWMP Projects	n/a	183,904	85	711
		Low Impact Development	n/a	--	18	148
		Green Streets	n/a	183,904	32	265
		Regional Projects	n/a	--	36	297
		Other Projects	0	0	0	0
		TOTAL	**0**	**183,904**	**85**	**711**
	2026-2029	EWMP Projects	n/a	497,349	146	1,218
		Low Impact Development	n/a	--	25	209
		Green Streets	n/a	497,349	86	717
		Regional Projects	n/a	--	35	292
		Other Projects	0	0	0	0
		TOTAL	**0**	**497,349**	**146**	**1,218**
	2029-2032	EWMP Projects	n/a	555,181	334	2,786
		Low Impact Development	n/a	--	47	392
		Green Streets	n/a	555,181	96	801
		Regional Projects	n/a	--	191	1,593
		Other Projects	0	0	0	0
		TOTAL	**0**	**555,181**	**334**	**2,786**
	2032-2040	EWMP Projects	n/a	555,181	370	3,083
		Low Impact Development	n/a	--	51	422
		Green Streets	n/a	555,181	96	801
		Regional Projects	n/a	--	223	1,860
		Other Projects	0	0	0	0
		TOTAL	**0**	**555,181**	**370**	**3,083**

BLOCKS FOR SCHEDULING:

BLOCK A = 2017 to 2021
BLOCK B = 2022 to 2024
BLOCK C = 2025 to 2028
BLOCK D = 2029 to 2037

NOTES:

1 Green Street length was calculated based on capacity using a conversion of 0.913 acre-feet per mile, consistent with developmetn of the LASAN 5-yr CIP.
2 LASAN 5-yr CIP values reflect projects with construction scheduled for completion through FY 20/21.
3 BMP capacities for LID were not readily available from the Santa Monica Bay J2/J3 EWMP; Therefore, EWMP projects beyond existing and CIP are presented only as a total capacity.
4 Marina del Rey portion of the LASAN 5-yr CIP assumed completion of all EWMP projects.
5 BMP Capacity for City of Los Angeles poriton of Marina del Rey EWMP was not explicitly available. BMP capacity was approximated using the annual volume milestones derived from the EWMP and the WY2008 BMP capacity to volume regression presented in the acccompanying memo.
6 EWMP Projects (beyond Existing & 5-yr CIP) presented only as total capacity because the regional project capacity in the 5-yr CIP exceeds the regional capacity specified for the Block A EWMP milestone.
7 Annual average stormwwater capture is based on a regression of SUSTAIN simulations as presented in the memo.
n/a Information not available. For EWMPs, the number of projects is not separately reported - instead the plan specifies BMP capacities.
-- Not applicable for this BMP type or plan.

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