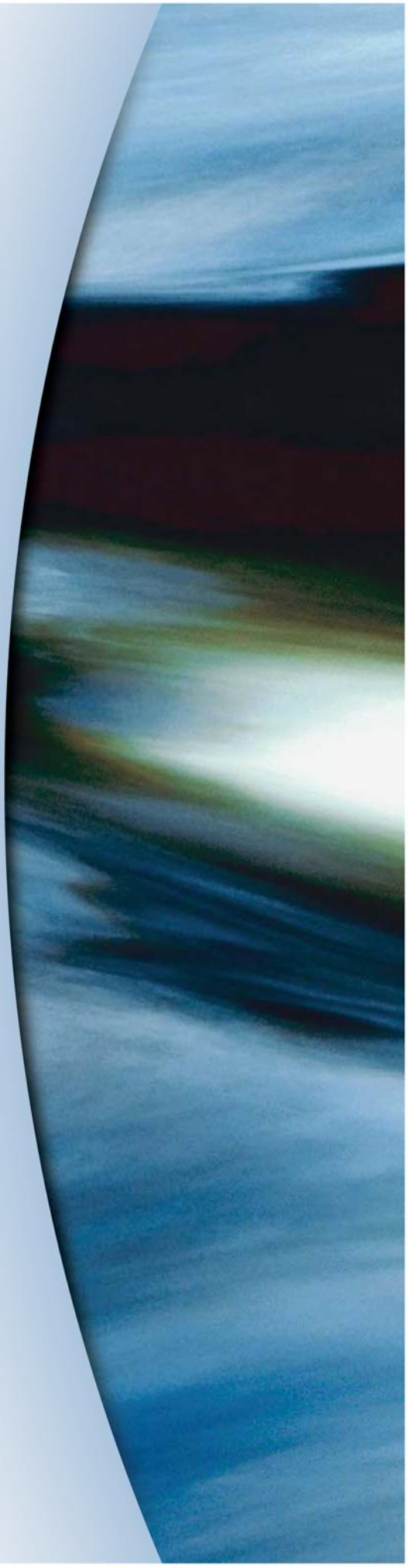

CITY OF FOUNTAIN VALLEY GENERAL PLAN UPDATE

PROPOSED CONDITIONS INFRASTRUCTURE TECHNICAL REPORT FOR HYDROLOGY, SEWER, WATER, & WATER QUALITY

City of Fountain Valley
Orange County, California

Prepared For

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Date Prepared: May 31, 2022

full circle thinking®

CITY OF FOUNTAIN VALLEY
GENERAL PLAN UPDATE

EXISTING CONDITIONS INFRASTRUCTURE REPORT FOR HYDROLOGY, SEWER, WATER, AND WATER QUALITY

CITY OF FOUNTAIN VALLEY
ORANGE COUNTY, CALIFORNIA

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DATE PREPARED: MAY 31, 2022

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1. EXECUTIVE SUMMARY

1.1 BACKGROUND

The City of Fountain Valley ("City") is currently undergoing a General Plan Update (GPU) which is intended to shape development in the City over the next 30-plus years. The entire City encompasses approximately 5,824 acres including the North Island sphere-of-influence (SOI). Existing land uses include approximately 19,395 residential dwelling units (DUs) and 11.9 million square feet (sf) of non-residential sf. An increase of 6,232 dwelling units and an increase in non-residential square footage of 1.3 million square feet is proposed across all of the City and the Opportunity Sites under the proposed GPU.

This report analyzes the capacity of the infrastructure systems that serve the City under the proposed land use conditions as part of this GPU. The analysis includes a review and summary of the conditions of the storm drainage system, water, and wastewater systems, as well as existing water quality regulations and water supply availability. The main findings are summarized below.

1.2 SUMMARY OF INFRASTRUCTURE FINDINGS

As discussed in the sections below, the City of Fountain Valley in conjunction with several other agencies operate and maintain utility systems within the Fountain Valley GPU area. All entities managing the infrastructure in the City have a process in place for correcting deficiencies and addressing any potential capacity issues to ensure a robust infrastructure network. Summaries of each utility system are provided below and throughout this technical report.

1.2.1 Hydrology

Storm drainage throughout the City is conveyed via local catch basins and City storm drain facilities that ultimately connect into OCFCD drainage facilities. The City's storm drain infrastructure is generally in good condition as confirmed by the City's Public Works Department. The City constantly monitors and maintains stormwater pumping stations to ensure they are functioning efficiently to minimize the potential for flooding. The proposed land uses under the GPU are not anticipated to result in a significant impact to this drainage infrastructure.

1.2.2 Sewer & Wastewater

The City maintains responsibility for the local sewer facilities that ultimately tie into OCSD regional trunk sewer systems. Sewer flows within the GPU area have been conservatively estimated to be approximately 1.6 million gallons per day (MGD). Per the City's 2013 Sewer Master Plan, there were several structural and hydraulic deficiencies identified throughout the City. Over the past 10 years, the City has improved many of these deficiencies through their Capital Improvement Program (CIP). There are three structural and three hydraulic deficient areas within or downstream of Opportunity Sites. It is recommended that these deficiencies are re-analyzed as part of the City's 2021/22 update to the Sewer Master Plan as well as be prioritized to be improved as part of the CIP.

1.2.3 Water Infrastructure and Supply

The City maintains the local water infrastructure throughout the GPU area which includes two storage reservoirs and booster pumping stations, six operating groundwater wells, one connection to Metropolitan Water District of Southern California conveyance line, two emergency inter-connections with other cities, and approximately 200 miles of distribution pipelines. OCWD also has existing recycled water infrastructure that serve portions of the City. Under the proposed GPU, there are currently no anticipated water infrastructure deficiencies from a capacity standpoint. Some of the water infrastructure is being constantly improved from a structural standpoint which is considered normal operations and maintenance of the system. In summary, the existing water infrastructure system is functioning effectively to convey the proposed water demand increases associated with the GPU demands. In terms of water supply, the City's Draft 2020 Urban Water Management Plan (UWMP) has concluded adequate supply to support the City into 2045. Therefore, no significant impacts are anticipated associated with water infrastructure or supply under the GPU.

1.2.4 Water Quality

The City resides within the Santa Ana River Watershed and the Anaheim Bay-Huntington Harbour Watershed and falls within the Santa Ana Regional Water Quality Control Board and its respective Basin Plan. The Fountain Valley GPU area discharges into several receiving water bodies which each have various Total Maximum Daily Load specifications and beneficial uses aimed at protecting water quality. The Fountain Valley GPU area also overlies the Orange County Groundwater Basin which also has prescribed beneficial uses and water quality objectives. Future projects that meet certain thresholds within the GPU area must follow development requirements of the North Orange County MS4 Storm Water Permit which include incorporating Low Impact Development Best Management Practices into individual projects to further help protect water quality in receiving waters. Therefore, there will be no significant impacts in terms of pollutants from new developments degrading local or regional water quality.

2. INTRODUCTION

The City of Fountain Valley ("City") is currently undergoing a General Plan Update (GPU) which is intended to shape development in the City over the next 30-plus years. A General Plan is the principal long-range policy and planning document for guiding the physical development, conservation, and enhancement of California cities and counties. As part of the California Environmental Quality Act (CEQA) process associated with General Plan Updates, infrastructure such as drainage, sewer, water systems and water quality that support the existing and proposed land uses will be analyzed at a level consistent with the city-wide program-level planning of an EIR. This report will focus on the existing conditions of these infrastructure systems that serve the City (referred to the Fountain Valley GPU area).

The City is located in the south central part of Orange County and is bounded by the cities of Santa Ana, Garden Grove and Westminster to the north, the cities of Costa Mesa and Santa Ana to the east, the cities of Huntington Beach and Westminster to the west, and Huntington Beach to the south. The City's Sphere of Influence (SOI), commonly referred to as North Island, includes approximately 20 acres including right-of-way (ROW) and 366 dwelling units and is located east of Harbor Blvd and south of W. Edinger Avenue, adjacent to the Santa Ana River.[1] As there are not proposed land use changes within this area, this report will not include details on the North Island SOI.

The GPU includes eleven "Opportunity Sites" throughout the City. Opportunity Sites will feature the majority of land use changes and proposed increases in land use density in addition to Citywide land use changes also proposed outside of the Opportunity Sites. Details of these Opportunity Sites are listed below in Table 1 and shown in Figure 1:

Table 1 City of Fountain Valley GPU Opportunity Sites

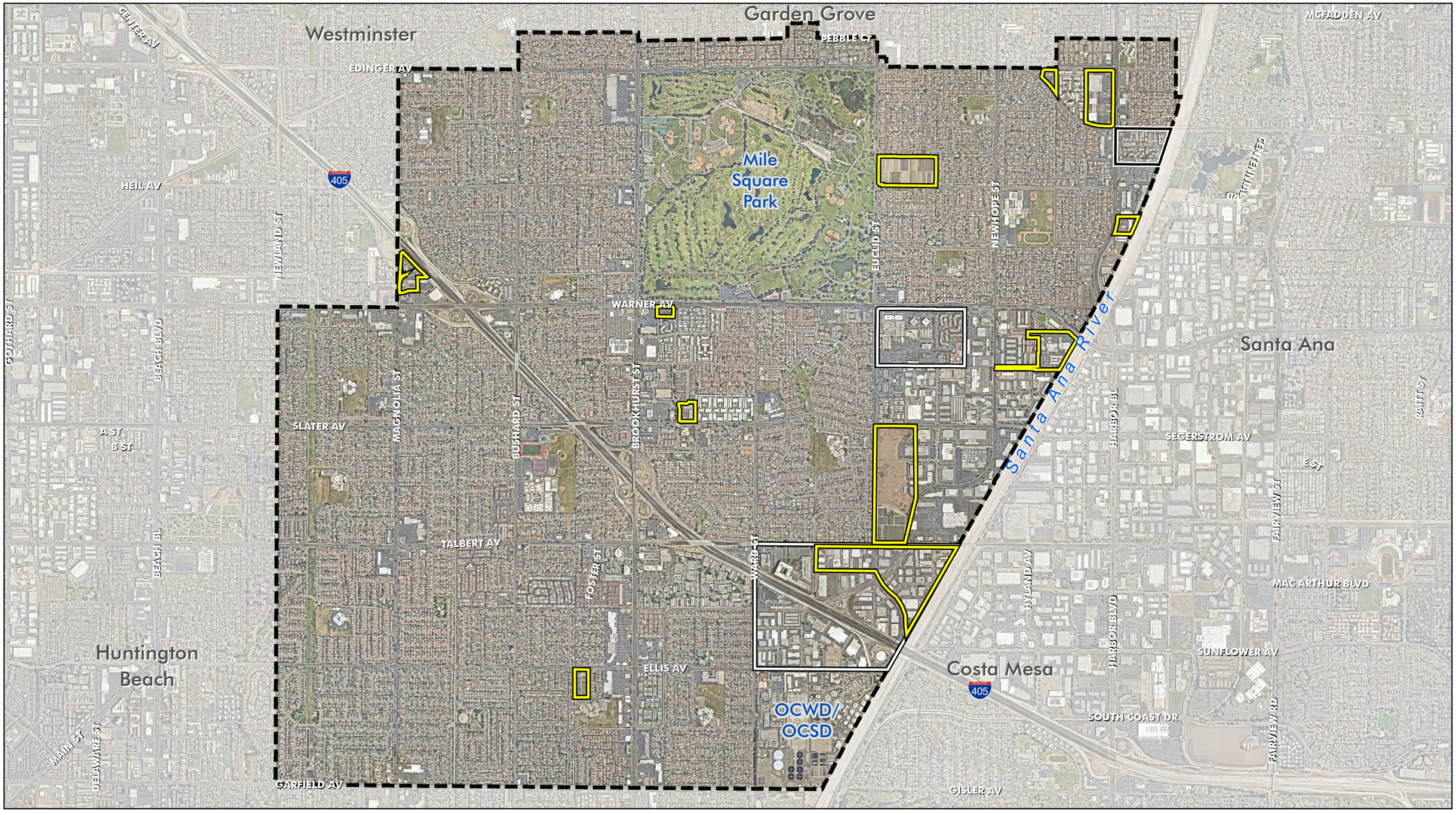
Focus Area	Acreage	Location within the City	Primary Existing Land Uses
16650 S Harbor	3.58 acres	North east portion of City along Harbor Boulevard	• Retail • Service
Boomers	6.88 acres	North west portion of City along Recreation Drive	• Retail • Service
FV Crossings	49.06 acres	South east of City along Talbert Avenue	• Retail • Service Base
Golden Triangle	2.34 acres	North east of City along the Edinger Avenue	• Retail • Service
Harbor Shopping Center	16.69 acres	North east of City along the Harbor Boulevard	• Retail • Service

[1] City of Fountain Valley North Island, LAFCO. Found here: http://oclafco.org/images/stories/PDF/islands/NorthIslandProfile.pdf

Los Cab	15.02 acres	Eastern portion of City along the Santa Ana River	• Retail • Service
Miller (Harvest)	18.64 acres	Central portion of City along Heil Avenue	• Farmland/Agricultural/Open Space
Slater Investments	3.34 acres	Central portion of City along San Mateo Avenue	• Retail • Service
Smith Farm	4.20 acres	Southern portion of City off of Finch Avenue	• Farmland/Agricultural/Open Space
Southpark	35.35 acres	Eastern portion of City along the Euclid Street	• Farmland/Agricultural/Open Space
Warner Square	1.84 acres	Central portion of City along Warner Avenue	• Retail • Service

The proposed land use changes will increase residential land uses and commercial square footage. An estimated growth of 6,232 dwelling units is anticipated across the City as compared to existing land use, concentrated mainly among the eleven Opportunity Sites and additional specific plan and special zoning areas. Approximately 1.3 million feet of additional non-residential land uses are anticipated across the City as compared to existing land use, and a corresponding increase of 3,852 Citywide jobs is anticipated.

This report analyzes the existing infrastructure systems that serve the City and the Opportunity Sites. The analysis includes a review and summary of the baseline conditions of the storm drainage system, water and wastewater systems, and existing water quality regulations currently in place, and provides a comparison to proposed conditions under final buildout conditions of the GPU. Any significant impacts will be identified by analyzing the CEQA thresholds of significance as they relate to storm drain, water, sewer and water quality. The analysis also includes the utilization of GIS tools and data and ongoing communication with City staff.



Aerial Date: 05/12/2021

Fountain Valley GPU Aerial Extent

Figure 1

7/12/2021

City of Fountain Valley General Plan Update

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- North Island SOI
- City of Fountain Valley Boundary
- Opportunity Sites
- Specific Plan

0 2,000 4,000 Feet

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3. ENVIRONMENTAL SETTING

3.1 HYDROLOGY

3.1.1 Watershed Setting and Existing Drainage Facilities

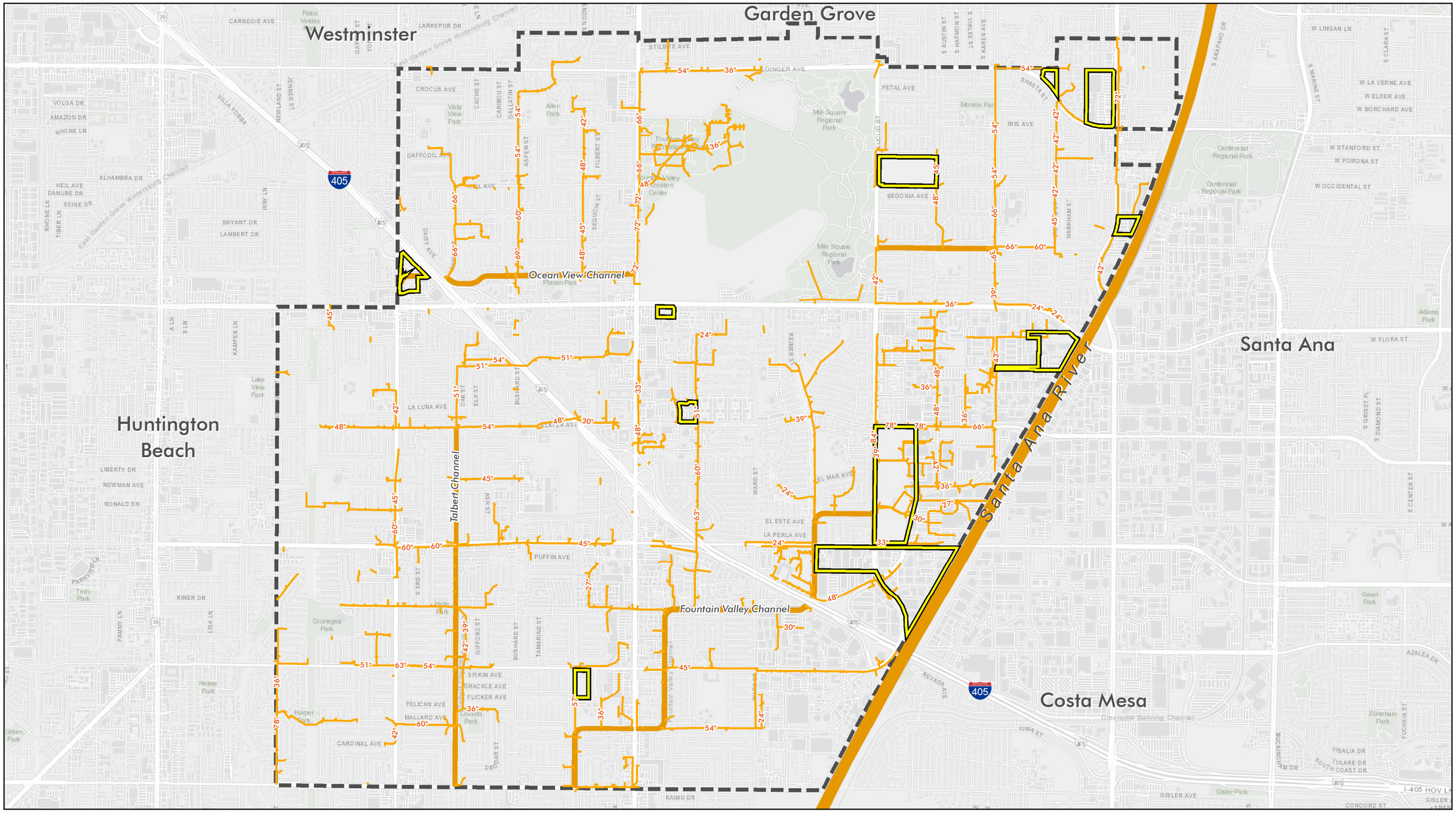
The City resides within the Santa Ana River (SAR) Watershed and the Anaheim Bay-Huntington Harbour Watershed (ABHH Watershed). The SAR Watershed encompasses the eastern portion of the City and the ABHH Watershed encompasses the eastern portion of the City. Each watershed is comprised of a number of channels that ultimately deliver stormwater to the Pacific Ocean. The City drains to the following channels within the SAR and ABHH Watersheds:

- Talbert Channel
- Fountain Valley Channel
- East Garden Grove Wintersburg Channel
- Ocean View Channel

The channels mentioned above are all owned and maintained by the Orange County Flood Control District (OCFCD). The City has storm drain lines that convey stormwater to OCFCD regional conveyance facilities. The City maintains lines that range in diameter from 8"-84". The City has a detailed GIS based inventory of all drainage facilities including storm drainpipes, catch basins, BMPs/filters within catch basins, pump stations, settling basins and outfalls for both public and private properties. See Figure 2 below that shows the existing storm drain system throughout the City and the Opportunity Sites.

Table 2 Existing Drainage Facilities within Opportunity Sites

Opportunity Sites	Acreage	Primary Drainage Facilities
16650 S Harbor	3.58 acres	24"-42" City Storm Drain Lines
Boomers	6.88 acres	12"-24" City Storm Drain Lines OCFCD Drainage Channel (Ocean View Channel)
FV Crossings	49.06 acres	12"-48" City Storm Drain Lines OCFCD Drainage Channel (Fountain Valley Channel)
Golden Triangle	2.34 acres	12"-54" City Storm Drain Lines
Harbor Shopping Center	16.69 acres	12"- 42" City Storm Drain Lines
Los Cab	15.02 acres	12"- 43" City Storm Drain Lines
Miller (Harvest)	18.64 acres	12"- 45" City Storm Drain Lines
Slater Investments	3.34 acres	12"- 51" City Storm Drain Lines
Smith Farm	4.20 acres	12"- 57" City Storm Drain Lines
Southpark	35.35 acres	12"- 84" City Storm Drain Lines OCFCD Drainage Channel (Fountain Valley Channel)
Warner Square	1.84 acres	None



City of Fountain Valley Existing Storm Drain Facilities

Figure 2

City of Fountain Valley General Plan Update

7/12/2021

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full circle thinking

City Boundary
Opportunity Sites
OCFCD Facilities
City Storm Drain Facilities

0 2,000 4,000 Feet

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3.1.2 Storm Drain Capacity

City of Fountain Valley Stormwater Management

The City is flat and largely built out with a storm drain system comprised of catch basins, storm drain lines and pump stations to convey stormwater runoff within the roadways and underground. The City has an ongoing monitoring and maintenance procedure to ensure the system is functioning effectively.

To prevent against significant flooding during storm events, the City monitors and maintains stormwater pumping stations to ensure they are functioning efficiently. As of 2017, the City recently improved the Sandalwood Pump Station which includes replacement of pumps with increased horsepower. Similar improvements have also been completed to the Walnut Pump station as of 2019.[2] See Figure 3 for locations of the pump station improvements.

In addition, the City currently requires individual drainage analyses to occur for redevelopments to ensure conformity with the entire Citywide drainage system.[3] New developments and significant redevelopments must analyze the 10- and 25-year storm events of their project and determine if there are any impacts to the public storm drain system. The City uses a hybrid approach of ensuring storm drain capacity is maintained and promotes the use of existing features (i.e. parks) to serve as detention systems wherever needed and practical.

OCFCD Capital Improvement Plan Projects

OCFCD has a 7-Year CIP in place to plan for future drainage projects. There are several projects that impact drainage facilities within the Fountain Valley GPU area. These are summarized below in Table 3.[4]

Table 3 OCFCD Capital Improvement Projects within Fountain Valley GPU Area

Project Name	Drainage Facility	CIP Year	Project Description
Ocean View Channel Improvements	Ocean View Channel	Completed, 2018-19	Improve capacity by adding two elliptical pipes under Interstate 405 freeway (a cooperative project between OCTA and OCFCD)
Lower Santa Ana River Projects	Santa Ana River	Completed, 2020	Improve 23-mile channel from Prado Dam to the Pacific Ocean[5]

[2] Conference call with City staff on April 20, 2021
[3] City of Fountain Valley Master Plan for Disposal of Storm Waters (September 1961).
[4] OCFCD 7-year Capital Improvement Program 2020-21 to 2026-27. Projects found at the link below: https://ocpw.maps.arcgis.com/apps/Shortlist/index.html?appid=1e3a74d5dcb744fb9bab39f427fb0079
[5] Lower Santa Ana River Infrastructure Project, OCFCD. https://ocip.ocpublicworks.com/service-areas/oc-infrastructure-programs/santa-ana-river-project-home/lower-sar

Project Name	Drainage Facility	CIP Year	Project Description
East Garden Grove - Wintersburg Channel multi-year improvements	East Garden Grove - Wintersburg Channel	2024-25	Reconstruct existing trapezoidal earthen rip rap channel to a concrete rectangular channel, allowing the channel reach to convey a 100-year storm

As shown above, there are four OCFCD CIP projects within the Fountain Valley GPU area over the next six years. These projects will improve the regional drainage infrastructure serving the GPU area. See Figure 3 for locations of the OCFCD improvements.

2024-25 East Garden Grove - Wintersburg Channel Improvements

Sandalwood Pump Station (Completed, 2017)

2018-19 Ocean View Channel Improvements (completed

Walnut Pump Station (Completed, 2019)

Garden Grove

Westminster

Huntington Beach

Santa Ana

Costa Mega

Talbert Channel

Fountain Valley Channel

Santa Ana River

OCFCD 7-Year CIP Projects within Fountain Valley GPU Drainage Area

City of Fountain Valley General Plan Update

Figure 3

7/12/2021

FUSCOE ENGINEERING full circle thinking

City Boundary

Opportunity Sites

OCFCD Facilities

City Storm Drain Facilities

City Drainage Pump Station Improvements

OCFCD 7-year CIP Improvements

0 2,000 4,000 Feet

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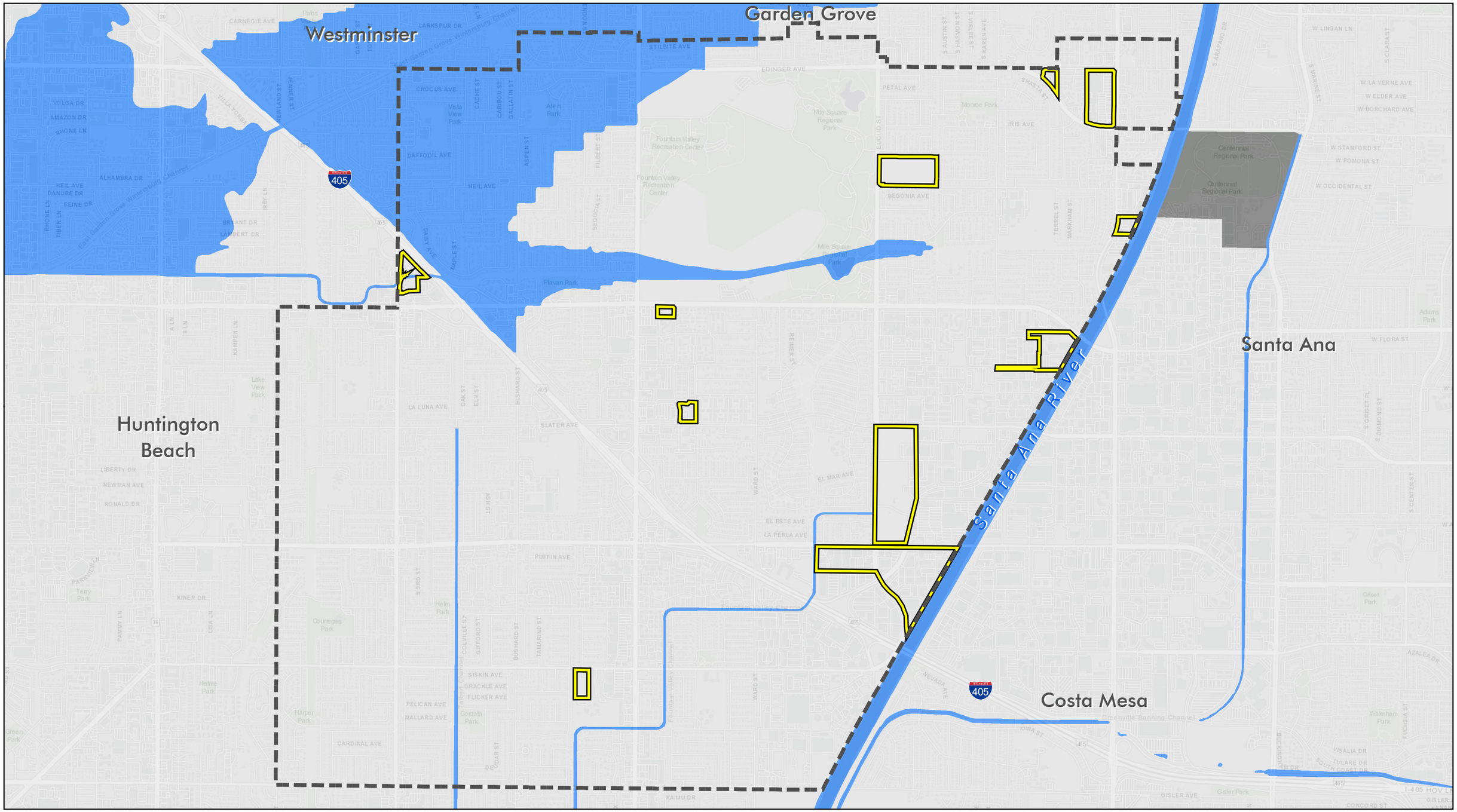
3.1.3 City GPU Area Existing Floodplain Mapping

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

According to the Flood Zone determination, the majority of the City if designated as Zone X. Zone X is defined as the area determined to be outside the 500-year flood, protected by levee from 100-year flood, and with a minimal or 0.2% chance of flooding. The northwestern portion of the City as well as the Boomers Opportunity Site is designated as Zone A, which represents areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. In addition, the Talbert Channel and the Fountain Valley Channel are also designated as Zone A. These channels are both located towards the central portion of the City and flows are routed south towards the Pacific Ocean. See Figure 4 below for a map of the FEMA flood zones within the Fountain Valley GPU.



City of Fountain Valley FEMA Flood Zones

Figure 4

City of Fountain Valley General Plan Update

7/12/2021

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full circle thinking

City Boundary

Opportunity Sites

FEMA Flood Zones

Zone A

Zone D

Zone X

0 2,000 4,000 Feet

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3.2 SEWER & WASTEWATER INFRASTRUCTURE

3.2.1 Existing Sewer System and Facilities

The City owns, operates, and maintains the majority of the sewer collection system within the City boundary. The majority of the sewer system serving the City was built in the 1960's and 1970's and is comprised of approximately 133-miles of vitrified clay pipe ranging from 6"-27" in diameter. The City's Engineering Department works closely with the Maintenance Division to ensure the sewer system is functioning effectively within the City boundary.

Sewer flows from the City ultimately connect into Orange County Sanitation District (OCSD) sewer trunk lines that convey wastewater to OCSD treatment plants (WWTP). OCSD's Reclamation Plant No. 1 in Fountain Valley is the only current source of water for the Groundwater Replenishment System. Treated wastewater from the City and other cities within Orange County is conveyed to Plant No. 1 for treatment and is recharged into the groundwater basin for future water supply. The 24-hour facility is bordered by Ellis Avenue, the Santa Ana River, and the Orange County Water District. See below for summary of sewer facilities within the Opportunity Sites. Figure 5 illustrates existing City and regional sewer infrastructure in the City and Opportunity Sites.

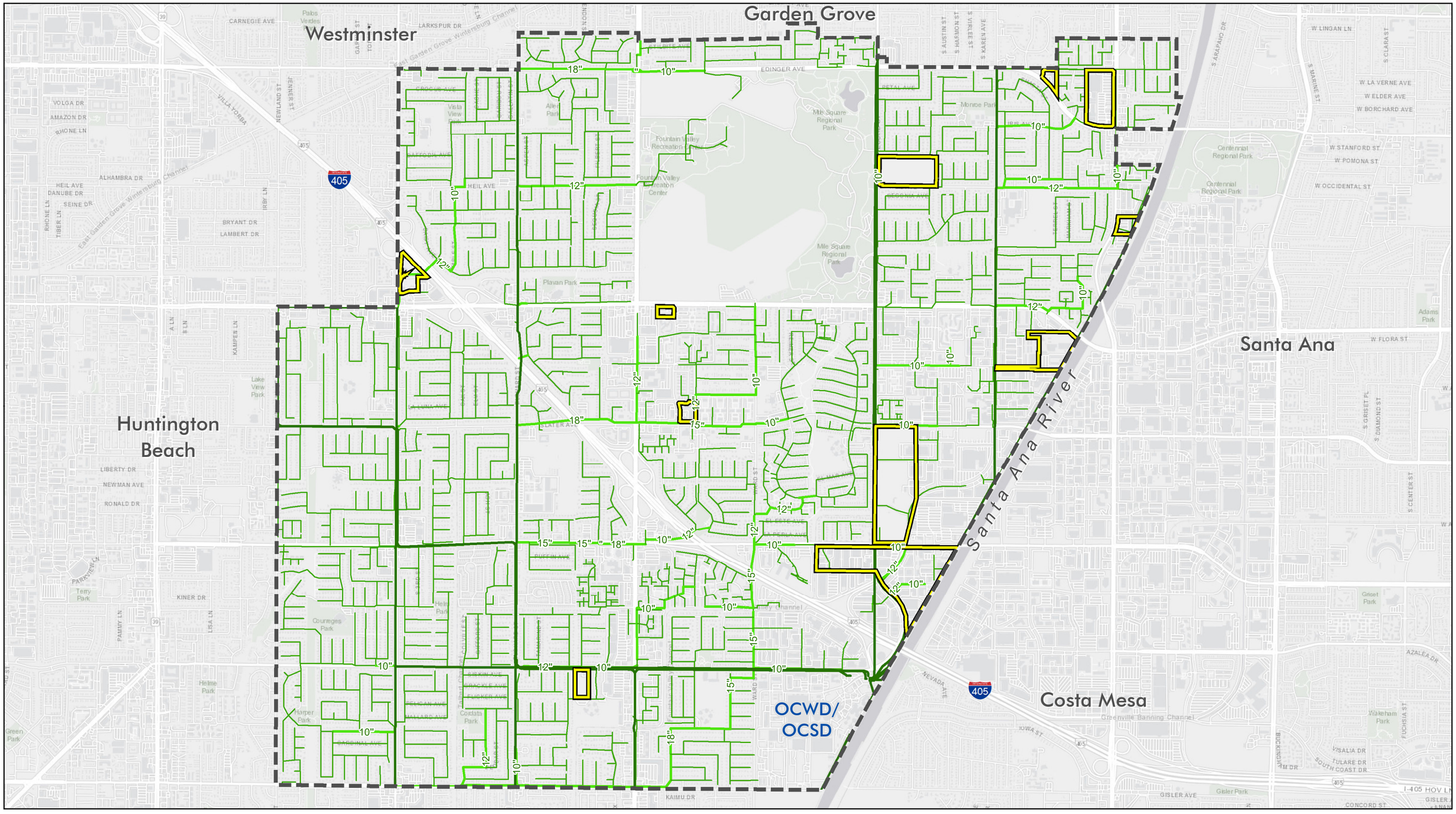
Table 4 Existing Sewer Facilities within the Opportunity Sites

Opportunity Sites	Acreage	Primary Sewer System Facilities
16650 S Harbor	3.58 acres	8" City Lines
Boomers	6.88 acres	8"-12" City Lines
FV Crossings	49.06 acres	8"-12" City Lines OCSD Trunk Lines (Euclid Interceptors A and B and Newhope-Placentia)
Golden Triangle	2.34 acres	8" City Lines
Harbor Shopping Center	16.69 acres	8" City Lines City of Garden Grove Line
Los Cab	15.02 acres	8" Private Lines
Miller (Harvest)	18.64 acres	8" City Lines 8" City Liner Pipes
Slater Investments	3.34 acres	8"-15" City Lines
Smith Farm	4.20 acres	8" City Lines OCSD Trunk Lines (Miller-Holder)
Southpark	35.35 acres	8" City Lines 8" City Liner Pipes OCSD Trunk Lines (Euclid Interceptors A and B)
Warner Square	1.84 acres	8" City Lines

3.2.2 Existing Sewer Flows

For existing land uses within the City and the eleven Opportunity Sites, sewer generation was estimated by employing sewer generation factors from the City's 2013 Sewer Master Plan (2013 SMP). Acreages of the existing non-residential development (i.e. retail, service, and base) and number of residential dwelling units were utilized along with their corresponding flow factors to

develop existing condition flow rates. Existing sewer flow throughout the City is estimated to be approximately 5.2 MGD. See Appendix A for detailed calculations.



City of Fountain Valley Existing Sewer Facilities

Figure 5

7/12/2021

City of Fountain Valley General Plan Update

FUSCOE ENGINEERING
full circle thinking

City Boundary

Opportunity Sites

OCSD Sewer Facilities

OCSD Sewer Lines

City Sewer Facilities

8" and Below in Diameter

9" - 24" in Diameter

0 2,000 4,000 Feet

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3.2.3 Existing Sewer Capacity Assessment

2013 Fountain Valley Sewer Master Plan

The 2013 Sewer Master Plan (2013 SMP) Supplement was developed by AndersonPenna Partners, Inc. ("APP Consultants") and provides an update to the 2007 Sewer Master Plan (2007 SMP), the 2011 Sewer System Management Plan, and the 2010 Evaluation of Year Two Sewer Capital Improvements Program. The 2007 SMP included a sewer capacity analysis, a financial study, closed circuit television (CCT) inspection, a condition assessment, and a 15-year capital improvement plan. In 2009, the City adopted a new capital funding program which resulted in the start of repairing and replacing the most deficient sewer segments identified in the 2007 SMP. In 2010, the City began construction of the first-year improvements and decided a more in-depth analysis of the prioritization of sewer projects was warranted. Therefore, the 2013 SMP updated the City's GIS sewer system data and performed a detailed review of the sewer system to develop a new rehabilitation and replacement program that prioritized structurally defective and operationally deficient sewer over a 15-year planning horizon.

The 2012 CCTV inspection highlighted 83.5 miles of highest risk sewer segments to be analyzed by City staff and prioritized for upgrades. Sewer projects were developed based on deficient segments within the same vicinity and likeliness the sewers would share the same type of rehabilitation design and construction costs.

Table 5 Sewer System Condition Deficiency Criteria

Condition Grading	Condition	Grading Definition
Grade 1	Excellent	No observed defects
Grade 2	Good	Defects that have not begun to deteriorate
Grade 3	Fair	Moderate defects that will continue to deteriorate
Grade 4	Poor	Severe defects that will become Grade 5 defects within the foreseeable future
Grade 5	Very Poor	Defects requiring immediate attention

In addition to the condition assessment, hydraulic analyses of the existing gravity sewer system were conducted and based upon the calculated peak dry weather flows. Existing condition and ultimately condition sewer flow factors were included in the analysis that was based on the existing sewer system and the current land use zoning (no vacancies). Any segment of sewer pipe with a depth to diameter ratio (d/D) of 0.64 or more was considered to be hydraulically deficient.

The condition assessment identified that approximately 52% (355,850 ft) of the sewer system was in good condition, 36% (249,912 ft) was in fair condition, 10% (66,310 ft) was in poor condition and 2% (13,891 ft) was in very poor condition. The hydraulic analysis identified that approximately 2,879 ft and 5,923 ft of sewer lines were identified to be deficient using existing and ultimate flow factors, respectively. Structural Grade 5 deficient areas are illustrated on Figure 6.

The City has programs in place via the CIP to address deficiencies within the City's sewer system. As noted above, the Engineering Department works closely with the Maintenance Division to

ensure the sewer system is functioning effectively. Over the past 10 years, there have been several CIP projects and Maintenance Division improvements that have occurred to fix these deficiencies as shown on Figure 6. Some of these improvement projects align with the Grade 5 deficiencies whereas others have been identified by the Maintenance Division as needing upgrades.

OCSD Capital Improvement Program

The OCSD Capital Improvement Program (CIP) highlights OCSD's continuous effort to keep its facilities operating at optimal levels. The 2019-20 CIP lists several projects within their regional sewer conveyance system.[6] Distribution system projects within the Fountain Valley GPU area include the following listed below:

- Interstate 405 (I-405) Widening Project Impacts on OCSD Sewers

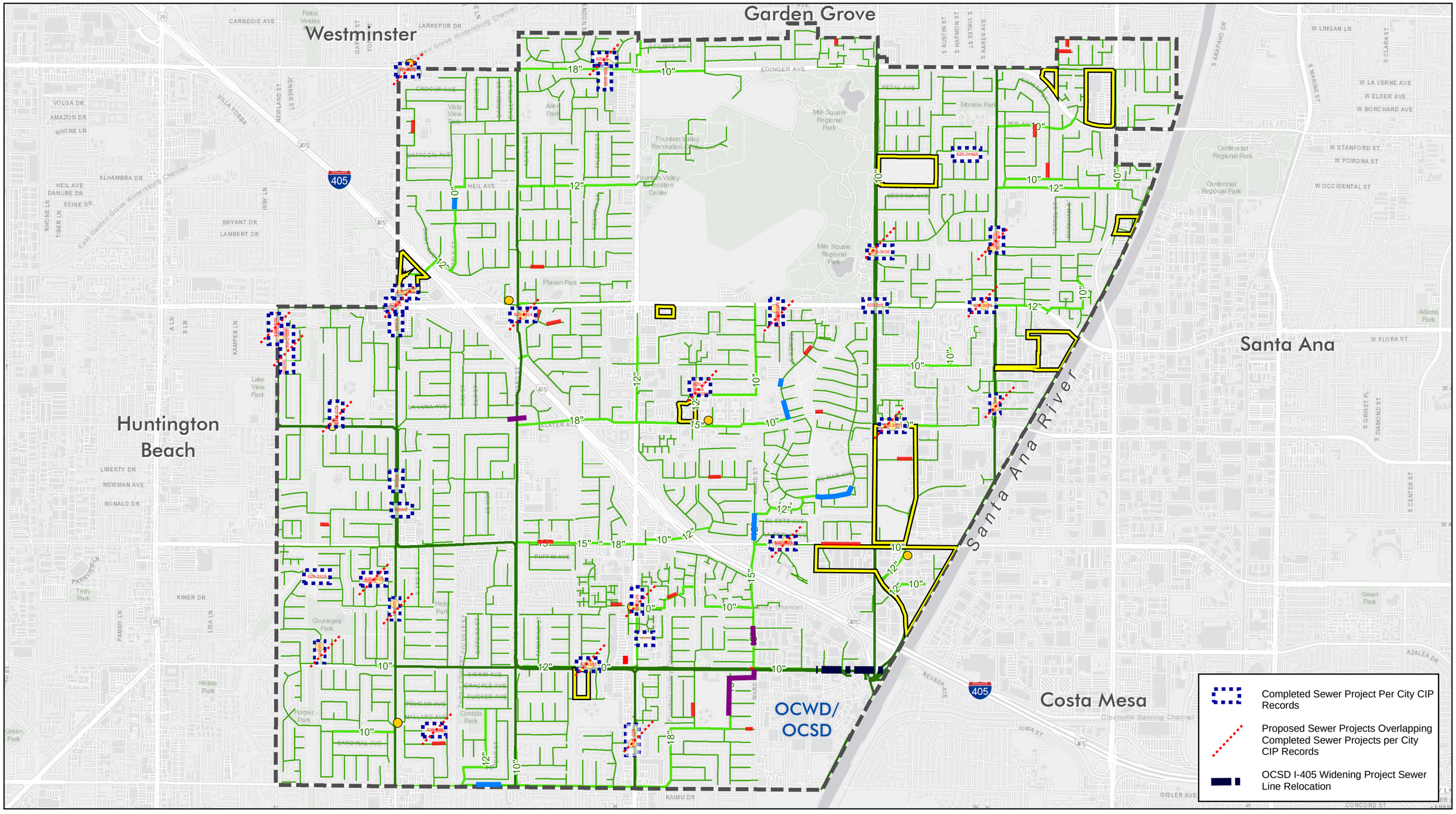
See Figure 6 for I-405 Widening Project mentioned above. This project is a relocation of the current OCSD sewer line at Ellis Ave and Euclid Ave near the site entrance to Reclamation Plant No. 1.

Reclamation Plant No. 1 is also undergoing several new projects, as listed below:

- Digester Rehabilitation
- Sludge Dewatering and Odor Control
- Headworks Rehabilitation
- Rehabilitation of Fleet Services Building, Building 8 and Paving Area
- Headquarters Complex
- Return Activated Sludge Piping Replacement
- Uninterruptable Power Supply Improvements
- Primary Sedimentation Basins No. 6-31 Reliability Improvements
- South Perimeter Security and Utility Improvements
- Digester Ferric Chloride Piping Replacement

OCSD has a 10-Year Net CIP outlay which allocates the available budget to various projects throughout its service area. The majority of the budget (53%) is allocated to the reclamation plants. Approximately 18% is allocated to the existing collections/distribution system.

[6] Orange County Sanitation District Capital Improvement Program Annual Report Fiscal Year 2019/20, retrieved June 1, 2021. https://www.ocsan.gov/Home/ShowDocument?id=29999.



City of Fountain Valley Sewer Deficiencies with CIP Project Overlay

Figure 6

City of Fountain Valley General Plan Update

7/12/2021

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full circle thinking

City Boundary
Opportunity Sites

City Sewer Facilities
8" and Below in Diameter
9" - 24" in Diameter

OCSD Sewer Facilities
OCSD Sewer Lines

Category 5 Structural Deficiency Per 2012 CCTV Analysis
Proposed Sewer Replacement Project Per 2018/19 City CIP

SMP Modeled Existing & Ultimate Deficiency (2003)
SMP Modeled Ultimate Deficiency (2003)

0 2,000 4,000 Feet

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3.3 WATER DISTRIBUTION SYSTEM

3.3.1 Existing Water System

The City's existing potable water system consists of two storage reservoirs and booster pumping stations, six operating groundwater wells, one connection to Metropolitan Water District of Southern California (Metropolitan), two emergency inter-connections with other cities, approximately 200 miles of distribution pipelines, 6,000 valves and over 2,000 fire hydrants. Water supplies are from local groundwater aquifers managed by Orange County Water District (OCWD) that is pumped from City owned wells and imported water from Metropolitan that is provided by the Municipal Water District of Orange County (MWDOC).

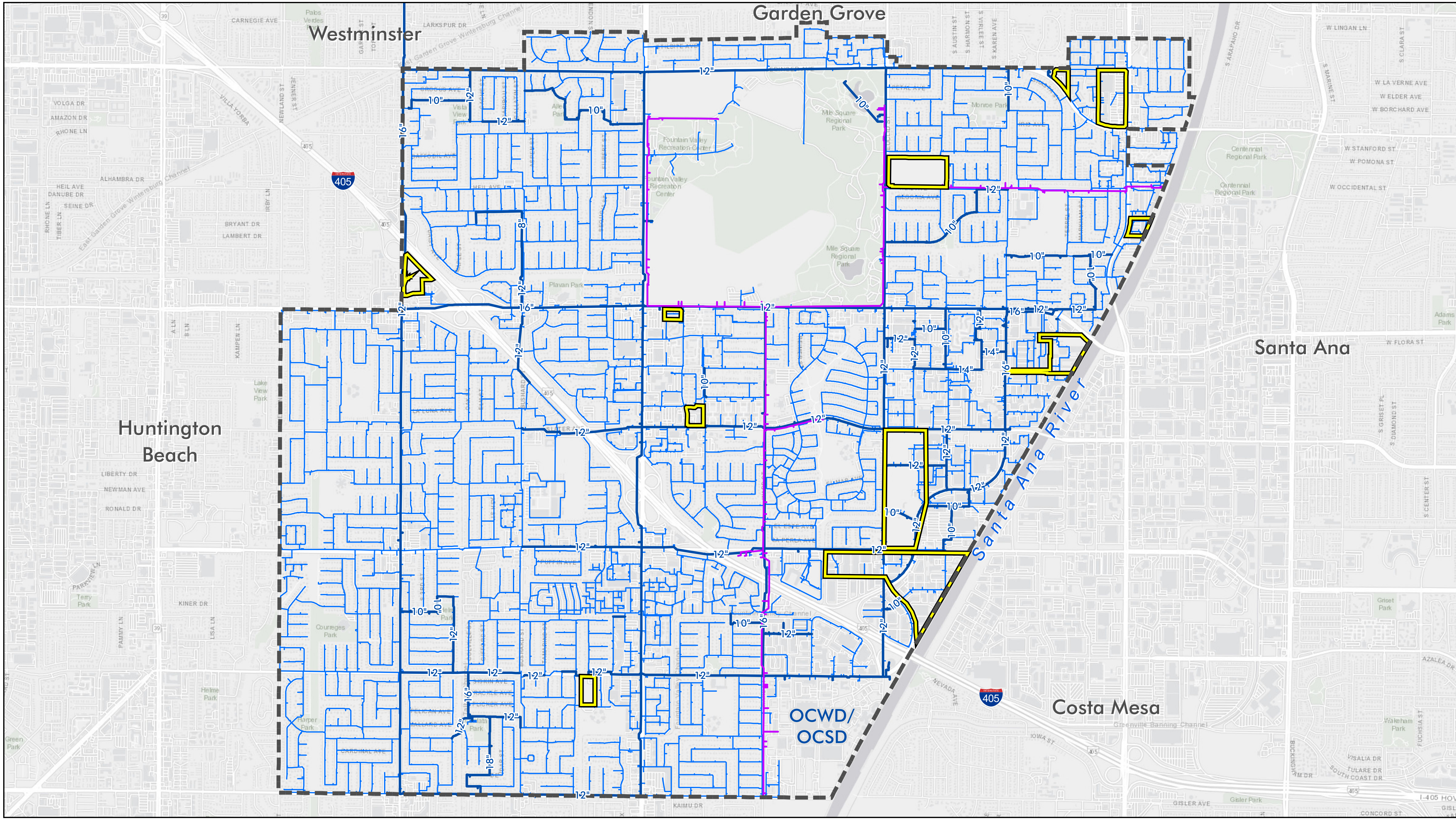
Distribution pipelines within the City range in diameter between 4" and 18" and have a total length of approximately 200 miles. The majority of the water pipes throughout the City are 8" pipes and most of the pipelines were constructed in the 1960's and 1970's. See Figure 7 for the water infrastructure within the Fountain Valley GPU area.

3.3.2 Existing Water Demand

For existing land uses within the City and the eleven Opportunity Sites, water demands were estimated by employing water demand factors from the City's 2013 Water System Master Plan (2013 WSMP). As no landscape water unit demand factors were available, these water demands were estimated based on similar landscape unit demand factors within the region.[7] Acreages of the existing non-residential development (i.e. commercial, industrial, etc.) and number of residential dwelling units were utilized along with their corresponding demand factors to develop existing condition water demand estimates.

The existing land uses within the City GPU area have an estimated combined water demand of approximately 9.0 million gallons per day (MGD). This aligns with the 2020 UWMP total water use of 9,870 AFY in 2020. As described in the section below, the existing water infrastructure system is functioning effectively to deliver these demands and the City is currently studying the condition of the water infrastructure to ensure a robust water infrastructure network. See Appendix B for detailed calculations.

[7] City of Santa Ana Design Guidelines for Water and Sewer Facilities (March 2017)



City of Fountain Valley Existing Water System Facilities

Figure 7

City of Fountain Valley General Plan Update

7/12/2021

City Boundary

Opportunity Sites

OCWD Recycled Water Lines

Recycled Water Pipes

City Water Lines

8" and Below in Diameter

9" - 20" in Diameter

0 2,000 4,000 Feet

FUSCOE ENGINEERING full circle thinking

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3.3.3 Existing Water Capacity Assessment and Water Planning

2013 Fountain Valley Water System Master Plan

The 2013 Water System Master Plan (2013 WSMP) was developed by Black & Veatch consultants to better understand water supplies and demands and to create a hydraulic computer model to assess the capacity of the water infrastructure to ultimately update the City's 20-year CIP.

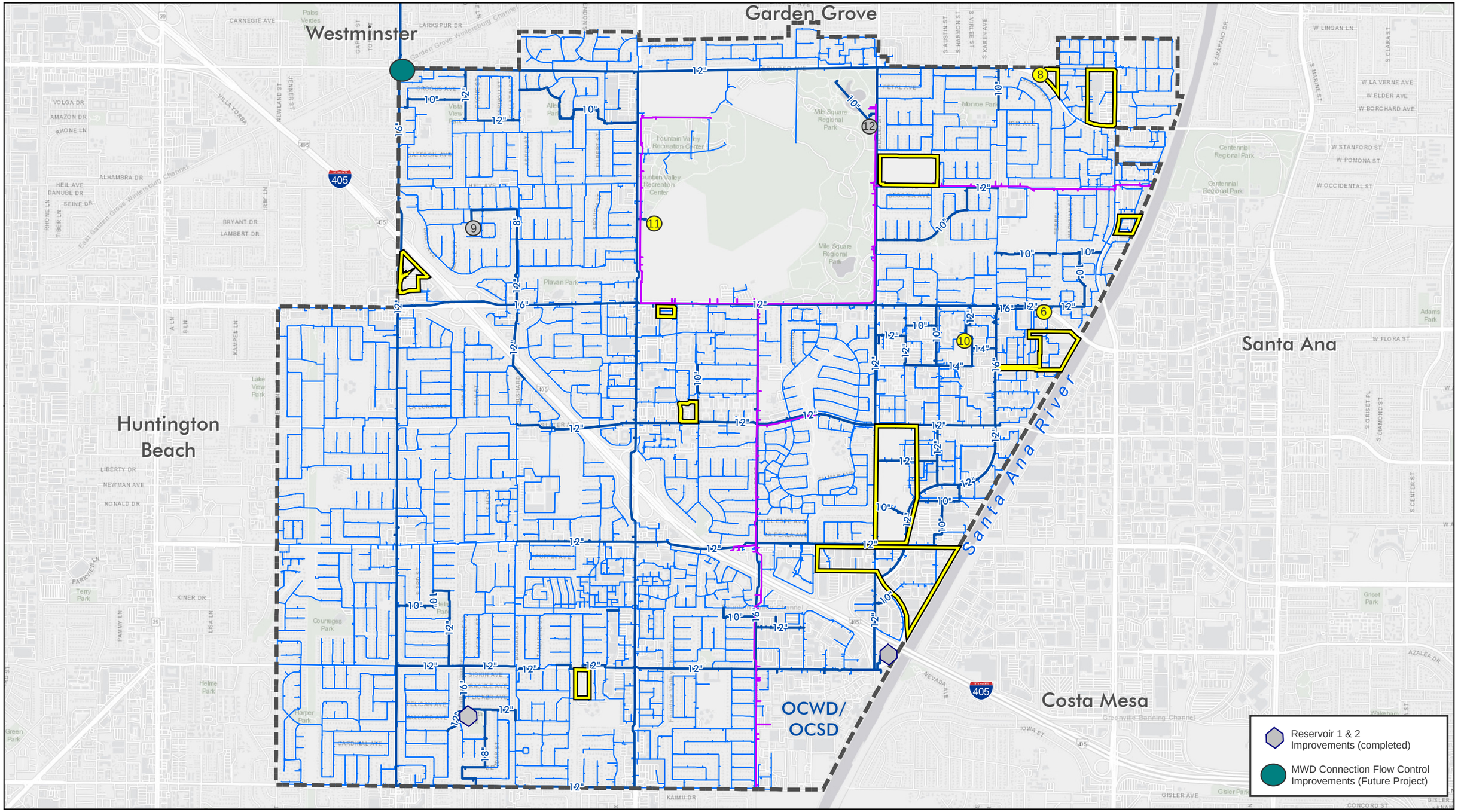
In general, the distribution system was found to have adequate pressures, does not have excessive velocities and provides adequate fire flow for normal and emergency operations. The reservoir storage system was found to also be adequate and there is currently no need for additional storage to meet existing or projected water demands. Currently, the projects identified in the WSMP are also included in the 10-year CIP from 2019-2029 as shown below.

Table 6 Water System Projects

Project Name	CIP Year	Project Summary	Status
Well No. 6	2020/2021	Pump Replacement and Casing Rehabilitation	Future project, not yet started.
Well No. 8	2019-2021	Casing Rehabilitation; Pump Replacement; Emergency Generator Installation; VFD Installation[1]	Future project, not yet started.
Well No. 9	2017/18	Pump Replacement and Casing Rehabilitation	Completed
Well No. 9	2022/23	VFD Replacement	Future project, not yet started.
Well No. 10	2017/18	Pump Replacement and Casing Rehabilitation	Completed
Well No. 10	2023/24	VFD Replacement	Future project, not yet started.
Well No. 11	2019-2022	Casing Rehabilitation; Pump Replacement; Emergency Generator; VFD Replacement	Future project, not yet started.
Well No. 12	2017/18	Casing Rehabilitation, Pump Replacement; VFD Installation[1]	Completed
Reservoir No. 1	2015/16	Replacement of existing booster pump station	Completed

Project Name	CIP Year	Project Summary	Status
Reservoir No. 2	2020/2021	Replacement of existing booster pump station	Completed
Pipeline Condition Assessment	2019-2021	Recommendation to perform a condition assessment and prioritize distribution system projects	In Progress (2021 anticipated completion)
Pipeline Replacement	2019-2029	Distribution system project implementation	In Progress
MWD Connection	2022/23	Rehabilitation of MWD Flow Control Station	Future project, not yet started.
Notes [1]VFD installation refers to the replacement of constant speed motors to increase the wells operational flexibility			

The water system projects are shown in Figure 8 below.



City of Fountain Valley Water System Projects

Figure 8

City of Fountain Valley General Plan Update

7/12/2021

FUSCOE ENGINEERING — full circle thinking

City Boundary

Opportunity Sites

City Water Lines

8" and Below in Diameter

9" - 20" in Diameter

OCWD Recycled Water Lines

Recycled Water Pipes

6 Groundwater Wells with Future Projects

10 Groundwater Wells with Completed Projects

0 2,000 4,000 Feet

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3.4 WATER QUALITY

3.4.1 Existing Surface Water Regulations & Conditions

Basin Plan for the Santa Ana Region

The City is within the SAR and ABHH watersheds and falls under the Santa Ana Regional Water Quality Control Board (RWQCB) and its Basin Plan. See Figure 9 that highlights the watersheds and receiving waters of the Fountain Valley GPU area. The Basin Plan specifically (i) designates beneficial uses for surface waters and ground waters, (ii) sets narrative and numerical objectives that must be met in order to protect the beneficial uses and conform to the state's antidegradation policy, and (iii) describes implementation programs to protect all waters in the Region. The Santa Ana RWQCB Basin Plan provides all relevant information necessary to carry out federal mandates for the antidegradation policy, 303(d) listing of impaired waters, and related Total Maximum Daily Loads (TMDLs), and provides information relative to National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirement (WDR) permit limits. See more details below for specifics on these items.

Total Maximum Daily Loads (TMDLs)

Once a water body has been listed as impaired on the 303(d) list, a TMDL for the constituent of concern (pollutant) must be developed for that water body. A TMDL is an estimate of the daily load of pollutants that a water body may receive from point sources, non-point sources, and natural background conditions (including an appropriate margin of safety), without exceeding its water quality standard. Those facilities and activities that are discharging into the water body, collectively, must not exceed the TMDL. In general terms, Municipal Separate Storm Sewer System (MS4) and other dischargers within each watershed are collectively responsible for meeting the required reductions and other TMDL requirements by the assigned deadline.

The 303(d) list and TMDLs are presented below for the regional channels and water bodies that receive flows from the Fountain Valley GPU area. TMDLs are pending approval for several receiving waters as shown in Table 7.

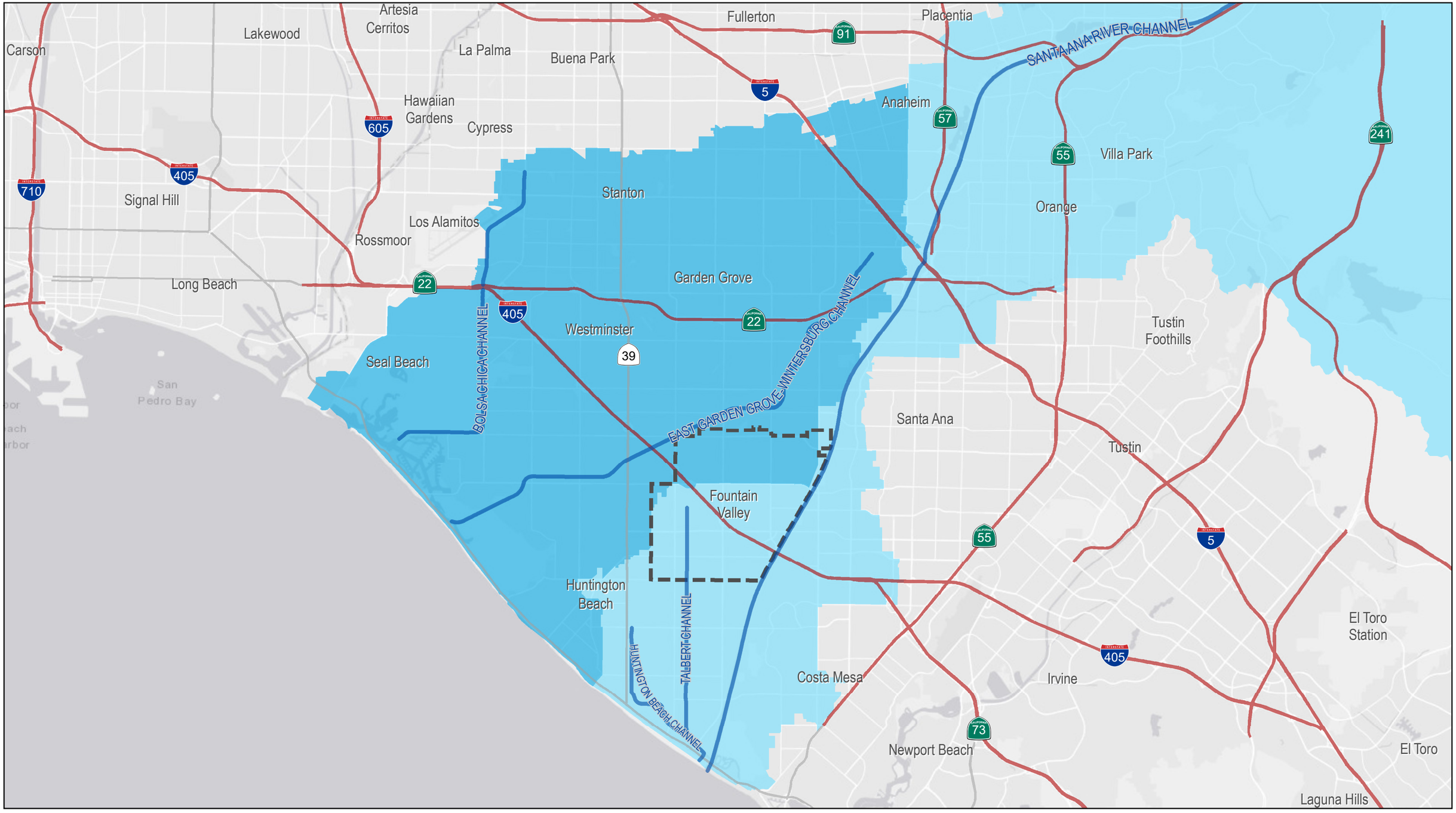
Table 7 List of 303(d) Impairments and TMDLs

Water Body/Channel	List of 303(d) Impairments	TMDL
East Garden Grove Wintersburg Channel	Ammonia (Unionized)	Pending 2021 TMDL Establishment for Ammonia
Bolsa Chica Ecological Reserve/Bolsa Bay Marsh	Toxicity	Pending 2027 TMDL Establishment for Toxicity
Talbert Channel	Toxicity	Pending 2029 TMDL Establishment for Toxicity

Water Body/Channel	List of 303(d) Impairments	TMDL
Newport Slough	Indicator Bacteria	Pending 2021 TMDL Establishment for Indicator Bacteria
Huntington Beach State Park	Polychlorinated Biphenyls (PCBs)	Pending 2019 TMDL Establishment for PCBs
Source: 2014-2016 California 303(d) List of Water Quality Limited Segments. Retrieved September 2018: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml		

In addition, the California State Water Resources Control Board (State Board) has adopted the statewide Trash Provisions[8] that requires implementation of best management practices (BMPs) that mitigate or abate trash within Priority Land Use Areas (PLUs). PLUs are defined as, "high density residential, industrial, commercial, mixed urban, and public transportation stations." The purpose of the Trash Provisions is to establish a statewide water quality objective that ensures the quality of surface waters that enter storm drains and eventually lead out to major water ways are free of trash. The City is currently undergoing the process to comply with these new Trash Provisions over the next 10 years.

[8] State Water Resources Control Board - Statewide Water Quality Control Plans for Trash. Found here: https://www.waterboards.ca.gov/water_issues/programs/trash_control/



City of Fountain Valley Watersheds

Figure 9

7/12/2021

City of Fountain Valley General Plan Update

City Boundary

Anaheim Bay-Huntington Harbour Watershed

Santa Ana River Watershed

FUSCOE ENGINEERING

full circle thinking

0 10,000 20,000 Feet

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County of Orange MS4 Permit, Drainage Area Management Plan (DAMP), & Local Implementation Plans (LIP)

In May 2009, the Santa Ana RWQCB re-issued the North Orange County MS4 Storm Water Permit as WDR Order R8-2009-0030 (NPDES Permit No. CAS618030) to the County of Orange, the incorporated cities of Orange County, and the Orange County Flood Control District within the Santa Ana Region. Pursuant to this "Fourth-Term" MS4 Permit, the Co-permittees were required to update and implement a Drainage Area Management Plan (DAMP) for its jurisdiction, as well as Local Implementation Plans (LIPs), which describe the Co-permittees' urban runoff management programs for their local jurisdictions.

Under the City's LIP, land development policies pertaining to hydromodification and low impact development (LID) are regulated for new developments and significant redevelopment projects. The term "hydromodification" refers to the changes in runoff characteristics from a watershed caused by changes in land use condition. More specifically, hydromodification refers to "the change in the natural watershed hydrologic processes and runoff characteristics (i.e., interception, infiltration, overland flow, interflow and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and sediment transport." The use of LID Best Management Practices (BMPs) in project planning and design is to preserve a site's predevelopment hydrology by minimizing the loss of natural hydrologic processes such as infiltration, evapotranspiration, and runoff detention. LID BMPs try to offset these losses by introducing structural and non-structural design components that restore these water quality functions into the project's land plan. These land development requirements are detailed in the County-wide Model Water Quality Management Plan (WQMP) and Technical Guidance Document (TGD), approved in May 2011, which cities have incorporated into their discretionary approval processes for new development and redevelopment projects.

The LID hierarchy requires new developments and re-developments to implement BMPs under the LID hierarchy as described in the TGD. The LID hierarchy requires new projects to first infiltrate, then harvest and reuse, then biofilter stormwater runoff from their project site depending on site constraints. New projects and redevelopments within the City will follow the set hierarchy of BMP selection, and more runoff throughout the City will be effectively treated as development occurs.

Existing Surface Water Conditions

As described above, the Fountain Valley GPU area is within the SAR and ABBH Watersheds and drains to various different regional drainage conveyance channels. Some of those channels have prescribed beneficial uses and water quality objectives to protect water quality within the receiving waters. Details on the beneficial uses and water quality objectives are presented below for the surface waters that receive runoff from the Fountain Valley GPU area. See Appendix C for a more detailed description of the surface water beneficial uses and water quality objectives.

3.4.2 Existing Groundwater Regulations & Conditions

The GPU area lies within the Orange County Groundwater Basin (OC Basin).[9] The OC Basin is the source of approximately 60 to 70 percent of the water supply for 2.3 million people.

[9] Map of the Orange County Groundwater Basin. Found here: https://www.ocwd.com/media/3656/threelayerbasinmodelextent.pdf

OCWD is responsible for managing the OC Basin. To maintain groundwater quality, OCWD conducts an extensive monitoring program that serves to manage the OC Basin's groundwater production, control groundwater contamination, and comply with all required laws and regulations. A network of nearly 700 wells provides OCWD a source for samples, which are tested for a variety of purposes. OCWD collects 600 to 1,700 samples each month to monitor Basin water quality. These samples are collected and tested according to approved federal and state procedures as well as industry-recognized quality assurance and control protocols.

The OC Basin also has prescribed groundwater beneficial uses and water quality objectives, which are described in greater detail in Appendix C.

Sustainable Groundwater Management Act

The California Sustainable Groundwater Management Act ("SGMA"), a three-bill package signed into law in 2014, creates a framework for the management of groundwater sources throughout the state. Under SGMA, local agencies form Groundwater Sustainability Agencies ("GSAs") and create Groundwater Sustainability Plans (GSPs). If a GSA is not formed, special act districts, such as OCWD, can submit "Alternative Plans" to GSPs. Timelines and requirements are based upon basin priority. Under SGMA, the Orange County Groundwater Basin (Basin 8-1) is considered a medium-priority basin.

In January 2017 OCWD, the city of La Habra, and Irvine Ranch Water District submitted the Basin 8-1 Alternative Plan. The Alternative Plan incorporates the requirements of GSPs and is considered to be "functionally equivalent" to a GSP. The Alternative Plan analyzes existing basin conditions and demonstrates that the Basin has been operated within its sustainable yield for more than 10 years without degrading water quality, reducing storage, or lowering groundwater levels. The Alternative Plan will be updated and resubmitted every 5 years as part of SGMA requirements.

Under the Alternative Plan, four management areas have been created for the Orange County Groundwater Basin. Each of these management areas has slightly different management goals and strategies based on the government bodies that serve them. The management areas are as follows:

- *La Habra-Brea Management Area* – Includes the northern portion of the Basin located outside of the OCWD service area.
- *OCWD Management Area* – Includes OCWD's service area, covering approximately 89% of the Basin.
- *South East Management Area* – Includes the southern and southeastern portions of the Basin that are outside of OCWD's service area.
- *Santa Ana Canyon Management Area* – Includes the eastern portion of the Basin outside of OCWD's service area.

As the OC Basin is a medium priority basin, details regarding sustainable groundwater basin management will be required for future projects within the Fountain Valley GPU area that trigger Senate Bill 610 and the development of a Water Supply Assessment (WSA). Projects that require the development of a WSA include residential developments over 500 dwelling units, shopping centers having 500,000 sf or more of floor space, a hotel with more than 500 rooms, a commercial office building with 250,000 sf of floor space, an industrial type land use over 40

acres of land or 650,000 sf of floor area, or a mixed use project that includes any combination of the limits noted above.

4. THRESHOLDS OF SIGNIFICANCE

California Environmental Quality Act (CEQA) significance criteria are used to evaluate the degree of impact caused by a development project on environmental resources such as hydrology and water quality. According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would impact any of the items listed below.

4.1 HYDROLOGY & WATER QUALITY THRESHOLDS (CEQA CHECKLIST SECTION X)

Would the Project:

A. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?
B. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
C. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

    (i) Result in a substantial erosion or siltation on- or off-site;
    (ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
    (iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
    (iv) Impede or redirect flood flows?

D. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?
E. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Should the answers to these environmental factors prove to be a potentially significant impact, mitigation measures would be required to reduce those impacts to a less-than-significant threshold.

4.2 UTILITIES AND SERVICE SYSTEMS THRESHOLDS (CEQA CHECKLIST SECTION XIX)

Would the Project:

A. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?
B. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

C. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Should the answers to these environmental factors prove to be a potentially significant impact, mitigation measures would be required to reduce those impacts to a less-than-significant threshold.

5. ENVIRONMENTAL IMPACTS

The purpose of the proposed conditions evaluation is to determine potential impacts related to the proposed land use zoning associated with the Fountain Valley GPU and hydrology, sewer and water infrastructure systems.

5.1 PROPOSED LAND USE CHANGES

The proposed land use changes that will largely increase mixed use land uses including multi-family residential, retail, and service of varying density. An increase of 6,232 dwelling units and an increase in non-residential square footage of 1.3 million square feet is proposed across all of the City and the Opportunity Sites in comparison to existing land use. Table 8 provides an overview of proposed land use changes across the City. Figure 10 illustrates the proposed buildout of land uses under full implementation of the GPU.

Table 8 City of Fountain Valley GPU Land Use Changes

Opportunity Site	Acreage	Change in Housing Units	Change in Non-residential Areas
Opportunity Sites			
16650 S Harbor	3.58	+ 179	- 44,126
Boomers	6.88	+ 673	+ 34,340
FV Crossings	49.06	+ 1,100	- 253,759
Golden Triangle	2.34	+ 117	- 8,136
Harbor Shopping Center	16.69	+ 404	- 72,166
Los Cab	15.02	+ 812	- 131,065
Miller (Harvest)	18.64	+ 471	0
Slater Investments	3.34	+ 250	- 25,731
Smith Farm	4.20	+ 25	0
Southpark	35.35	+ 1,100	+ 1,144,485
Warner Square	1.84	+ 211	- 14,658
Opportunity Sites Total	**156.94 acres**	**+ 5,342**	**+ 629,184**
Remainder of City	4,454.59	+ 890	+ 714,856
Citywide Total	**4,612 acres**	**+ 6,232 DUs**	**+ 1,344,040 SF**

Under proposed conditions, an increase of 5,342 DUs and 629,184 square feet of non-residential space will occur throughout the Opportunity Sites, representing approximately 86% of the proposed residential growth as a result of GPU buildout. Based on the proposed land use changes, sewer and water flows are anticipated to increase while runoff within existing built out areas is anticipated to decrease due to minimum landscaping requirements as well as LID features associated with storm water requirements as compared to existing conditions. Runoff increases will occur within areas of new development where previous land uses were vacant. Additional details are provided below for hydrology, sewer and water.

Remainder of City Land Use Changes

+ 890 of Residential DUs

+ 714,856 SF of Non-Residential Space

Citywide Total Land Use Changes

Opportunity Sites + Remainder of City

+ 6,232 of Residential DUs

+ 1,344,040 SF of Non-Residential Space

Golden Triangle
+117 DUs
-8,136 SF

Harbor Shopping Center
+404 DUs
-72,166 SF

Miller Harvest
+471 DUs
0 SF

Warner Square
+211 DUs
-14,658 SF

16650 S Harbor
+179 DUs
-44,126 SF

Boomers
+673 DUs
+34,340 SF

Slater Investments
+250 DUs
-25,731 SF

Los Cab
+812 DUs
-131,065 SF

Southpark
+1,100 DUs
+1,144,485 SF

FV Crossings
+1,100 DUs
-253,759 SF

Smith Farms
+25 DUs
0 SF

Garden Grove
Westminster
Huntington Beach
Santa Ana
Costa Mesa
Ocean View Channel
Talbert Channel
Fountain Valley Channel
Santa Ana River

Fountain Valley GPU Proposed Land Use

Figure 10

City of Fountain Valley General Plan Update

7/12/2021

City Boundary
Opportunity Sites

Proposed General Plan

- Low Density Residential (Up to 5 du/ac)
- Low Medium Density Resid (Up to 10.8 du/ac)
- Medium Density Residential (Up to 15 du/ac)
- High Density Residential (Up to 30 du/ac)
- Mixed Use 1 (Up to 65 du/ac)
- Mixed Use 2 (Up to 40 du/ac)
- Very High Density Residential (Up to 60 du/ac)
- Local Commercial (Up to 0.35 FAR)
- Office Commercial (Up to 0.50 FAR)
- General Commercial (Up to 0.50 FAR)
- Commercial Manufacturing (Up to 0.60 FAR)
- Public Facilities
- Flood Control Channel
- Open Space
- Park
- Specific Plan

0 2,000 4,000 Feet

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full circle thinking

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5.2 HYDROLOGY

The purpose of the proposed conditions evaluation is to evaluate impacts associated with the proposed land use changes at a city-wide program-level EIR. This effort includes characterizing any changes as compared to the existing runoff conditions and identifying where either additional storm drain facilities may be required or where existing facilities need to be improved.

5.2.1 Proposed Hydrology Conditions

As described in Section 3.1.1, under existing conditions, the City is largely built out but there are three (3) Opportunity Sites that have portions of land that currently are undeveloped. For the built-out Opportunity Sites, impacts to hydrology and storm drain systems will be minimal and peak flows will likely be decreased overall due to the implementation of minimum landscaping requirements as well as LID features associated with water quality regulations. These features will either increase pervious areas in already built out portions of the City or allow for less impervious development to occur in undeveloped areas throughout the City. This will decrease stormwater flows from developed areas and mitigate higher runoff intensities from undeveloped areas that undergo development.

As shown in Figure 11, it has been identified that there are three (3) Opportunity Sites that may result in an increase of stormwater runoff peak flow rates due to the potential for vacant lots to be redeveloped into higher intensity uses. These are summarized below:

- Miller (Harvest):
  Description: The Miller (Harvest) Opportunity Site is currently undeveloped agricultural land that will be converted to multifamily residences in the future. This will result in increased imperviousness within these areas and therefore increased stormwater peak runoff.

  Infrastructure may connect to either a 42" City of Fountain Valley line on Euclid Street or a 45" City of Fountain Valley line near Heil Avenue. All flows will discharge to the OCFCD Ocean View Channel and then to ABHH, as under existing conditions. Due to the large diameter and capacity of these downstream facilities, it is unlikely that there will be an impact to this infrastructure.

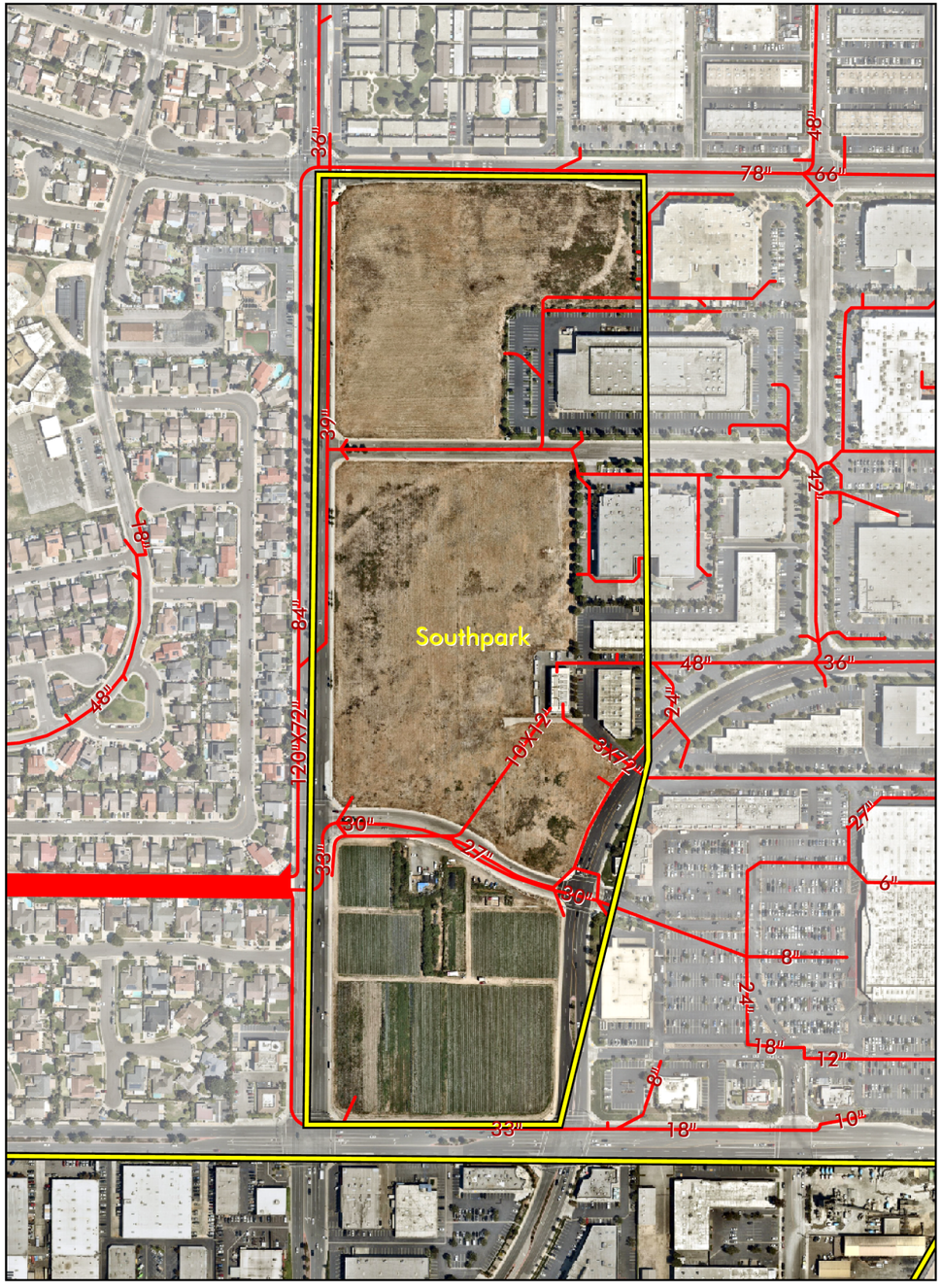
- Southpark:
  Description: The Southpark Opportunity Site is currently undeveloped agricultural land that will be converted to multifamily residences and non-residential properties in the future. This could result in increased imperviousness within these areas and therefore increased stormwater runoff peak flows.

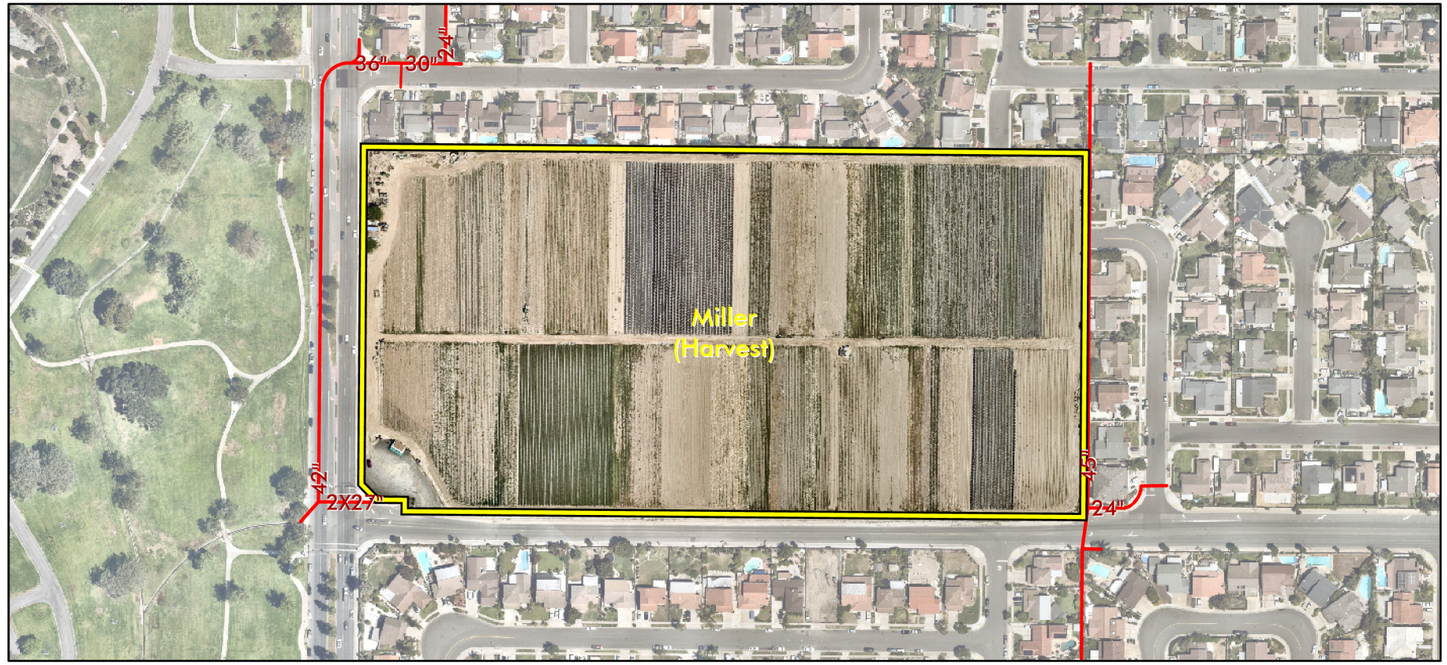
  Infrastructure may connect to either a 39" City of Fountain Valley line on Euclid Street, a 33" City of Fountain Valley line on Euclid Street, or a 33" City of Fountain Valley line on Talbert Avenue. All flows will discharge to the OCFCD Fountain Valley Channel and then to the SAR, as under existing conditions. Due to the large diameter and capacity of these downstream facilities, it is unlikely that there will be an impact to this infrastructure.

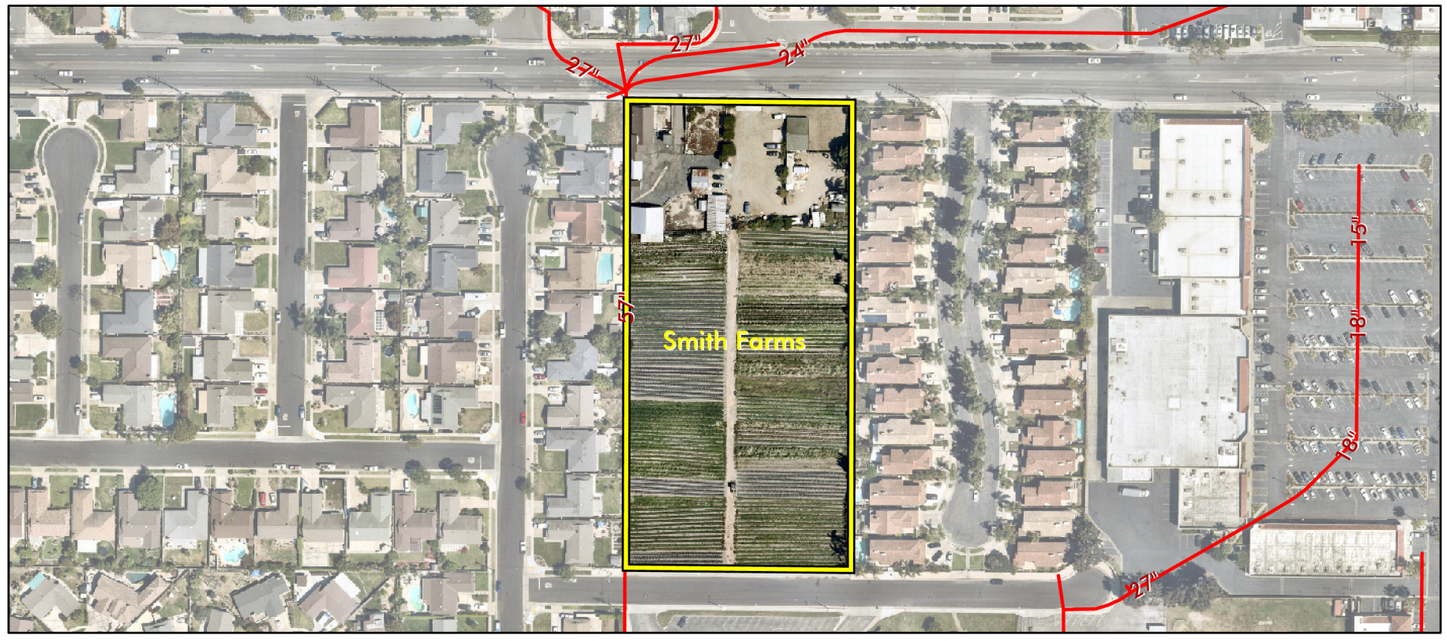
- Smith Farms:
  Description: The Smith Farms Opportunity Site has one (1) existing single-family residence and undeveloped agricultural land that will be converted to all single-family residential land use in the future. This will result in increased imperviousness within these areas and therefore increased stormwater runoff peak flows.

  Infrastructure will connect to a 57" City of Fountain Valley line on Finch Avenue. All flows will discharge to the OCFCD Fountain Valley Channel and then to the SAR, as under existing conditions. Single family residences typically have more pervious/landscaped areas, resulting in the redevelopment of this land use to multi-family or commercial increasing peak flows. Similar to Southpark and Miller Harvest, this Opportunity Site also connects into large storm drain facilities where impacts would likely not be significant.

As noted above for the three Opportunity Sites with vacant land, each of these areas tie into large storm drain pipes with adequate capacities to convey storm events. However, in case there are impacts, the City and County have policies in place to require detention systems for flood control associated with the development of this vacant land. As part of the development process, detailed hydrology studies will be required and if necessary, on-site detention systems within the development can be required to match existing peak flows, thereby eliminating any potential increase in runoff. Therefore, based on these findings, no hydrology impacts will result from the future development proposed under the Fountain Valley GPU.







Aerial Date: 04/28/2021

Fountain Valley GPU Primary Peak Runoff Increase Areas

Figure 11

6/23/2021

Fountain Valley, CA

FUSCOE ENGINEERING full circle thinking

City Storm Drain Facilities | Opportunity Sites

OCFCD Facilities

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5.2.2 Hydrology Impacts

The following impact assessments are based on the significance criteria established in Section 4.1 for hydrology.

Impact B: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

Impact Analysis: The Orange County Water District (OCWD) is the active groundwater agency for the groundwater basin that lies underneath the entire City. OCWD actively participates in reviewing land development projects, which are required to show they will not impact recharge facilities. It is likely that through LID features, infiltration will be feasible and will augment groundwater recharge. Through OCWD's management, land development within the City will not result in interference with groundwater recharge or management of the groundwater basin.

The City of Fountain Valley area relies on local groundwater resources for approximately 90% of its water supply. Therefore, increases in population could generate a higher demand for groundwater resources. However, the City of Fountain Valley updates its UWMP every five years, quantifying existing and projected water supplies and demands to ensure there will not be any water supply shortages or significant groundwater depletion. The 2020 UWMP highlighted sufficient surface and groundwater supplied through 2045 concluding no risk of a net deficit in aquifer volume or lowering of the groundwater table. In addition, the 2018-19 OCWD Engineer's Report also concluded sufficient groundwater supplies into the future to serve its member agencies. OCWD has multiple mechanisms to prevent groundwater overdraft. The basin is covered by Alternative Plan 8-1, and the groundwater management strategies laid out in the Plan have been approved by the State of California Department of Water Resources (DWR). Impacts related to the depletion of groundwater are considered less than significant.

Impact C: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(i) Result in a substantial erosion or siltation on- or off-site;

(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

(iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

(iv) Impede or redirect flood flows?

Impact Analysis: Under the existing conditions and proposed conditions, drainage patterns will largely be maintained and will utilize the existing drainage facilities within the public right of way. Current runoff is captured and conveyed by existing storm drain infrastructure throughout the City before discharging to County drainage channels and to the Pacific Ocean. The City is built out except for three vacant parcels and will likely be developed under buildout conditions.

As noted above, the City and County has policies in place to require detention systems to mitigate peak flows if downstream drainage facilities ever become deficient.

In addition, the majority of streams and channels that collect runoff within the City are concrete lined and not susceptible to scour or erosion. For those areas that are tributary to streams that may be susceptible to scour, hydromodification requirements as part of the regional MS4 permit will ensure that impacts are minimized. There is only one area within the Green Valley neighborhood in the southeast corner of the City that is susceptible to hydromodification requirements. The Green Valley neighborhood drains entirely to the Fountain Valley Channel which is concrete-lined and it does not overlap with any of the Opportunity Sites. Overall impacts to erosion and siltation as a result of GPU buildout are anticipated to be less than significant.

5.3 SEWER & WASTEWATER INFRASTRUCTURE

5.3.1 Proposed Wastewater Flows

Under the proposed land use changes, sewer flows will increase across the City of Fountain Valley. A total increase of 6,232 dwelling units and increase of approximately 1,344,040 sf of non-residential uses are proposed. Increases under proposed conditions implements the same methodology as existing sewer flows, where flow factors for residential land uses are based on sewer generation factors from the City's 2013 Sewer Master Plan (2013 SMP) to reflect buildout conditions. Table 9 provides a summary of the proposed increases in sewer flows under implementation of the General Plan land use changes also shown in Figure 12.

Table 9 Proposed Condition Average Sewer Flows

Area	Dwelling Units Delta	Non-Residential SF Delta[1]	Sewer Flow Delta (gpd)
Opportunity Sites			
16650 S Harbor	+179	-44,126	+42,234
Boomers	+673	+34,340	+166,146
FV Crossings	+1,100	-253,759	+260,179
Golden Triangle	+117	-8,136	+28,366
Harbor Shopping Ctr	+404	-72,166	+96,329
Los Cab	+812	-131,065	+194,126
Miller (Harvest)	+471	0	+115,395
Slater Investments	+250	-25,731	+60,305
Smith Farm	+25	0	+6,125
Southpark	+1,100	+1,144,485	+311,538
Warner Square	+211	-14,658	+51,157
Opportunity Site Total	**+5,406**	**+629,184**	**+1,331,901**
Remainder of City	+890	+714,856	+244,307
City of Fountain Valley Total	**+6,232**	**+1,344,040**	**+1,576,208**

Notes:
GPD – Gallons per day SF – Square Feet
Land use data provided by Placeworks, 2021

Full implementation of the proposed land use changes has the potential to increase sewer flows by 1.58 MGD within the City overall and by 1.33 MGD throughout the Opportunity Sites. This accounts for a percent change of +30% within the City. The Opportunity Sites represent approximately 85% of the proposed increases in sewer flows throughout the GPU area. These flow estimates are for infrastructure planning purposes only and are considered conservative.

Sewer Flow Delta Summary
Opportunity Site Total: 1,331,901 gpd
Remainder of City Total: 244,307 gpd

Combined Total: 1,576,208 gpd (1.6 MGD)

Boomers
+166,146 gpd

Warner Square
+51,157 gpd

Slater Investments
+60,305 gpd

Miller Harvest
+115,395 gpd

Golden Triangle
+28,366 gpd

Harbor Shopping Center
+96,329 gpd

16650 S Harbor
+42,234 gpd

Los Cab
+194,126 gpd

Southpark
+311,538 gpd

FV Crossings
+260,179 gpd

Smith Farms
+6,125 gpd

EUCLID INTERCEPTOR

ELLIS TRUNK

OCWD/
OCSD

Westminster

Garden Grove

Santa Ana

Huntington Beach

Costa Mesa

Santa Ana River

- Portion of Southpark and FV Crossings Sewershed Tributary to Euclid Interceptor to WWTP#1
- Flow Direction from Southpark/FV Crossings to Euclid Interceptor to WWTP#1
- Portion of FV Crossings Sewershed Tributary to Miller - Holder Trunk to WWTP#2
- Flow Direction from FV Crossings to Miller-Holder Trunk to WWTP#2
- Completed Sewer Projects per City CIP/Maintenance Records - Previous Deficiency
- Completed Sewer Projects per City CIP Records - No Deficiency
- OCSD I-405 Widening Project Sewer Line Relocation

Fountain Valley GPU Proposed Sewer Flows

Figure 12

City of Fountain Valley General Plan Update

7/12/2021

FUSCOE ENGINEERING
full circle thinking

City Boundary
Opportunity Sites

OCSD Sewer Facilities
OCSD Sewer Lines

City Sewer Facilities
8" and Below in Diameter
9" - 24" in Diameter

SMP Category 5 Structural Deficiency Per 2012 CCTV Analysis
SMP Modeled Existing & Ultimate Deficiency (2003)
SMP Modeled Ultimate Deficiency (2003)

0 2,000 4,000 Feet

X:\Projects\511\32\MXD\2021\12_ProposedSewerFlow.mxd

5.3.2 Proposed Sewer/Wastewater System

City of Fountain Valley Proposed Sewer System

The City of Fountain Valley's 2013 Sewer Master Plan (SMP) noted a number of deficient segments and improvement projects throughout the City. Of the deficiencies and improvement projects noted throughout the City, one (1) was noted to be within an Opportunity Site and five (5) were noted downstream of another Opportunity Site. As mentioned in Section 3.2.3, there are three sewer segments identified as having capacity issues downstream from one of the Opportunity Sites.

- FV Crossings Opportunity Site:
  Structural Deficiency: There are two recommended structural improvements (2013 SMP) downstream of the FV Crossings Opportunity Site as identified from the City's 2012 CCTV Analysis. One recommended improvement located near the intersection of Ellis Avenue and Ward Street (Pipe ID – PE6122), is to replace the siphon that crosses underneath Ellis Avenue. Another recommended improvement located near the intersection of Talbert Avenue and Euclid Street (Pipe ID – PD5061), is to replace 57' of pipe in order to remove broken pipe and obstructions.

  Hydraulic Deficiency: There are three recommended hydraulic improvements (2003 SMP) downstream of the FV Crossings Opportunity Site as identified from the City's 2003 SMP Modeled Deficiencies. One deficiency along Garfield Avenue (Pipe ID – PC7097) is a SMP Modeled Existing & Ultimate Deficiency. Two others, one along Ward Street north of Talbert Avenue (Pipe ID – PE6120) and the other starting along Ward Street south of Talbert Avenue and continuing along Crane Circle and then San Antonio Street (Pipe IDs – PE7047 through PE7049 and PE7051 through PE7053), are considered Ultimate Deficiencies. The recommended improvement at Pipe ID - PC7097) is to replace 367' of 21" pipe at this segment with 24" diameter pipe. The other recommended improvements along Ward Street, Pipe ID – PE6120 and Pipe IDs – PE7047 through PE7049 and PE7051 through PE7053, are to replace 219' and 1,569' of 15" diameter pipe with 18" pipes, respectively.

  Analysis: An additional 290,243 GPD is anticipated across the Opportunity Site under the proposed GPU compared to existing land use. As a result of the proposed land uses under the GPU, it is recommended that the structural deficiencies are reviewed by the Engineering Division and Maintenance Department and prioritized. For the recommended improvements to the hydraulic deficiencies, re-running models with proposed land uses is needed to properly assess the impact to deficient segments. The City is planning to re-run the hydraulic model and update the SMP in 2021/22 to confirm these deficiencies.

- Southpark Opportunity Site:
  Structural Deficiency: There is one recommended structural improvement (2013 SMP) within the Southpark Opportunity Site as identified from the City's 2012 CCTV Analysis. The recommended improvement at the intersection of Mt Herrmann Street and Grace Avenue segment (Pipe ID - PG4056) is to find the large joint offset (JOL) and replace 6' of piping in this segment.

Analysis: An additional 311,538 GPD is anticipated across the Opportunity Site under the proposed GPU compared to existing land use. As a result of the proposed land uses under the GPU, it is recommended that the structural deficiencies are reviewed by the Engineering Division and Maintenance Department and prioritized. The recommended improvement for finding the JOL and replacing 6' of pipe may require additional flow monitoring and sewer modeling to confirm the JOL is able to handle the confluence of flows from piping along Mt Herrmann Street.

The remaining deficiencies that exist throughout the GPU area are monitored closely by the City's Engineering Division and Maintenance departments. The City has a robust CIP process to improve these areas currently as well as if new developments occur upstream.

OCSD Proposed Sewer System

The OCSD Master Plan Update Report No. 3 (2019) notes a dry weather capacity deficiency through the Euclid Interceptor A which is downstream of the GPU and Miller (Harvest) Opportunity Site. This deficiency is due to the diversion settings at Diversion No. 40 and is considered an operational deficiency and will not be impacted by upstream redeveloped under the GPU. In addition, under normal operating conditions both sluice gates could be open which eliminates this operational deficiency.

From an overall planning perspective, OCSD bases its long-term sewer capacity assessments on Center for Demographic Research (CDR) population estimates in coordination with all cities in their service area and does not generally utilize City-specific General or Specific Plans to plan or conduct capacity analysis. For improvement projects associated with new developments and redevelopments, OCSD manages required upgrades based on detailed population growth models and on a project by project basis. In cases where a trunk line requires upsizing as a result of a specific project and the project is not included in the CIP or any planning documents, OCSD allows the project applicant to conduct the trunk line upsize and follow a reimbursement agreement process. Therefore, OCSD has a functioning and effective process in place to ensure the regional sewer infrastructure will support future developments under the Fountain Valley GPU.

5.3.3 Sewer/Wastewater Impacts

The following impact assessments are based on the significance criteria established in Section 4.2 for wastewater.

Impact A. *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

Impact Analysis: The estimated increase of 1.58 MGD in sewer flows under the GPU is not anticipated to exceed the projected future capacity of the City of Fountain Valley's wastewater infrastructure or OCSD's regional infrastructure. However, potential development patterns within two (2) of the Opportunity Sites are upstream of six (6) deficiencies. The FV Crossings Opportunity Site is upstream of two (2) structural and three (3) hydraulic deficiencies, while the Southpark Opportunity Site is upstream of one (1) structural deficiency. These deficiencies are

recommended to be added to the City's CIP program and/or studied further as part of the SMP in 2021/22.

The City maintains a regularly updated Sewer Master Plan and CIP and has a process in place to assess local sewer impacts on a project-by-project basis. The City is planning to update its SMP in 2021/22 which will continue to serve as a sewer infrastructure planning tool to make informed decisions about when CIP projects are warranted. As noted above, the Engineering Department works closely with the Maintenance Division to ensure the sewer system is functioning effectively and has implemented several projects over the past 10 years since the SMP to improve the sewer system. Therefore, at a citywide scale, the City's Sewer Master Plan and CIP process adequately prioritizes necessary projects as developments under the GPU come online. In addition, OCSD regularly updates long-term planning documents which include provisions for improving regional treatment plant and conveyance infrastructure capacity. OCSD has identified an operational improvement needed to the Euclid Interceptor A and B line within the GPU area. Through planning and management processes currently in place, OCSD is able to ensure the regional sewer infrastructure will support future developments under the Fountain Valley GPU.

Construction impacts associated with private wastewater infrastructure to support development within the Opportunity Sites and throughout the City would primarily be confined to trenching for miscellaneous utility lines and connections to public infrastructure. Installation of wastewater infrastructure will be limited to on-site wastewater distribution and minor off-site work associated with connections to the public main. No upgrades to the public main are anticipated. Any work that may affect services to the existing sewer lines will be coordinated with the City of Fountain Valley. Furthermore, a Construction Management Plan, which would ensure safe pedestrian access as well as emergency vehicle access and safe vehicle travel in general, will be implemented to reduce any temporary pedestrian and traffic impacts occurring as a result of construction activities. Moreover, when considering impacts resulting from the installation of any required wastewater infrastructure, all impacts are of a relatively short-term duration and would cease to occur once the installation is complete. Therefore, Project impacts on wastewater associated with construction activities would be less than significant.

Impact C. *Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

Impact Analysis: OCSD's wastewater treatment plants have a total combined capacity of 390 MGD with the ability to route flows to either of the two WWTPs as needed. 2018-19 flows were estimated to be 185 MGD, indicating adequate capacity (205 MGD)[10] for the proposed increase in flows of 1.58 MGD under the GPU. OCSD utilizes a robust CIP process and relies on internal capacity modeling, population projects and land use projections, independent of General Plan update buildout estimates. As referenced in Section 5.3.2, provided that OCSD retains operational proficiency over Diversion No. 40 and Euclid Interceptor A and B, these lines will be able to handle the increase of 0.01 MGD proposed under the Fountain Valley GPU.

[10] OCSD Website. Found here: https://www.ocsan.gov/services/regional-sewer-service

Through updating appropriate master plans, long-term capital improvement budgets, and plant capacity assessments, it is anticipated OCSD will be able to receive increases in flows consistent with the buildout proposed under implementation of the GPU. No impacts are anticipated to service provider capacities.

5.4 WATER INFRASTRUCTURE & SUPPLY

5.4.1 Proposed Water Flows

Under the proposed land use changes, water flows will increase throughout the City of Fountain Valley and its Opportunity Sites due to increases in dwelling units and other non-residential land uses. A total increase of 6,232 dwelling units and increase of approximately 1,344,040 sf of non-residential uses are proposed. Table 10 shows the proposed water flows associated with each land use change, using the same methodology as for the existing conditions. Increases in water flows under proposed conditions implements the same methodology as existing waterflows, however flow factors for residential land uses are based on 2035 water duty factors from the 2013 WSMP to reflect buildout conditions. Detailed calculations and associated exhibits are included in Appendix B.

Table 10 Proposed Condition Water Flows

Area	Dwelling Units Delta	Non-Residential SF Delta[1]	Water Flow Delta (gpd)
Opportunity Sites			
16650 S Harbor	+ 179	- 44,126	+ 60,118
Boomers	+ 673	+ 34,340	+ 237,521
FV Crossings	+ 1,100	- 253,759	+ 370,436
Golden Triangle	+ 117	- 8,136	+ 40,483
Harbor Shopping Ctr	+ 404	- 72,166	+ 137,258
Los Cab	+ 812	- 131,065	+ 276,678
Miller (Harvest)	+ 471	0	+ 164,850
Slater Investments	+ 250	- 25,731	+ 86,023
Smith Farm	+ 25	0	+ 11,250
Southpark	+ 1,100	+ 1,144,485	+ 450,684
Warner Square	+ 211	- 14,658	+ 73,009
Opportunity Site Total	**+ 5,342**	**+ 629,184**	**+ 1,908,310**
Remainder of City	+ 890	+ 714,856	+ 433,827
City of Fountain Valley Total	**+ 6,232 DUs**	**+ 1,344,040 SF**	**+ 2,342,137**

Notes:
GPD – Gallons per day SF – Square Feet
Land use data supplied by Placeworks, 2021

Full implementation of the proposed increases has the potential to increase water flow by 2.34 MGD within the City. Water flows across all Opportunity Sites are anticipated to increase by 1.91 MGD, representing approximately 81% of the projected Citywide increase in water flows. This accounts for a percent change of +26% within the City overall. Water flows will primarily come from additional dwelling units within the Opportunity Sites. These water flow estimates

are for infrastructure capacity purposes only and are considered conservative. Figure 13 summarizes proposed increases in water flows across the City under buildout conditions.

Water Flow Delta Summary
Opportunity Site Total: 1,908,310 gpd
Remainder of City Total: 433,827 gpd

Combined Total: 2,342,137 gpd (2.3 MGD)

Golden Triangle
+40,483 gpd

Harbor Shopping Center
+137,258 gpd

Miller Harvest
+164,850 gpd

Warner Square
+73,009 gpd

16650 S Harbor
+60,118 gpd

Boomers
+237,521 gpd

Slater Investments
+86,023 gpd

Los Cab
+276,678 gpd

Southpark
+450,684 gpd

FV Crossings
+370,436 gpd

Smith Farms
+11,250 gpd

OCWD/
OCSD

MWD Connection Flow Control Improvements (Future Project)

Garden Grove
Westminster
Huntington Beach
Santa Ana
Costa Mesa
Santa Ana River

Fountain Valley GPU Proposed Water Flows

Figure 13

City of Fountain Valley General Plan Update

7/12/2021

FUSCOE ENGINEERING
full circle thinking

City Boundary
Opportunity Sites

OCWD Recycled Water Lines
Recycled Water Pipes

City Water Lines
8" and Below in Diameter
9" - 20" in Diameter

6 Groundwater Wells with Future Projects

0 2,000 4,000 Feet

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5.4.2 Proposed Water System & Supply

Water Infrastructure

The City currently has one (1) regional pipeline connection project and four (4) groundwater well improvement projects throughout the City as identified in the 2013 WSMP and confirmed by City staff.[11] These existing improvement projects are primarily to optimize operations of the facilities and increase the overall functionality of the system Of these projects, there are three groundwater well improvement project included in the City's 2020/21 CIP. The fourth improvement project of groundwater well #10 is slated for CIP year 2021/22.

Only one of the groundwater well projects falls within an Opportunity Site as summarized below:

- Golden Triangle Opportunity Site Groundwater Well #8 Project: The Golden Triangle Opportunity Site includes the groundwater well #8 improvement project. Per the 2020/21 CIP, groundwater wells require regular maintenance to ensure adequate water flow and continued drinking water safety. This project consists of rehabilitation of the well casing and replacement of the well pump and motor. In addition to the Well pump and motor at well 8, it will include the installation of an emergency backup generator and a Variable Frequency Drive (VFD) for energy efficiency.

The project noted above, and other future projects will be included in subsequent CIP's based on priority. As mentioned, groundwater well projects are primarily operations and maintenance based and do not impact capacity of water supply being provided. Under buildout of the proposed GPU, water flows will increase across all Opportunity Sites, potentially creating deficiencies or necessitating the need for improvement projects not identified in the 2013 WSMP. However, major deficiencies as a result of increased flow are not anticipated, as the 2013 WSMP found that the distribution system was largely hydraulically sound. Improvement projects as a result of deteriorated or aged pipes are anticipated to constitute the majority of future water infrastructure projects. Therefore, the findings of the 2013 WSMP stand and additional impacts as a result of proposed GPU buildout are not anticipated. Additionally, the City is planning to update its WSMP in 2021/22 which will continue to serve as a water infrastructure planning tool to make informed decisions about when CIP projects are warranted.

Through its planning and CIP mechanisms, the City of Fountain Valley will have adequate capacity for the proposed increases in water flows across the City under implementation of the GPU and will be able to serve the additional dwelling units and commercial square footage proposed. This has been confirmed with City staff.[12]

Water Supply

Determining if there are sufficient water supplies available to serve the GPU and reasonably foreseeable future development during normal, dry and multiple dry years requires a review of several water planning documentation and factors. The proposed GPU will increase population by 16,391 people. By 2023, a new state requirement will be imposed on water agencies to achieve 55 gallons per capita per day[13]. Therefore, by applying this rate to the population

[11] Phone call with City Staff. April 20, 2021.
[12] Phone call with City Staff. April 20, 2021.
[13] California Department of Water Resources – Water Use Efficiency (https://water.ca.gov/Programs/Water-Use-And-Efficiency) Senate Bill 606 and Assembly Bill 1668.

growth supposed if RHNA is fully executed, an anticipated increase on 1,010 AFY may occur. When accounting for additional non-residential uses, this would generate an additional water demand of ~86 AFY for a total increase water demand of 1,096 AFY.[14] Landscape water demands will be mostly unchanged and therefore are considered nominal when estimating increases on water demands as part of the GPU.

The City of Fountain Valley updates its Urban Water Management Plan (UWMP) every five years, quantifying existing and projected water supplies and demands to ensure there will not be any water supply shortages. Additionally, as part of the 2020 Draft UWMP, the City has included a 2020 Water Shortage Contingency Plan (2020 WSCP) and augmented the dry-year water reliability assessment. The 2020 UWMP was published prior to the RHNA estimates and associated GPU. Therefore, the 2020 UWMP does not reflect the growth associated with this assessment. This growth associated with the GPU will be accounted for in the 2025 set of UWMPs. However, there are other reports and projects that should be considered when determining if sufficient water supplies will be available to support the growth of RHNA and the GPU:

- GWRS Final Expansion: OCWD provides the majority of water supply to satisfy the City's demands. In 2023, the final expansion to the Groundwater Replenishment System (GWRS) is anticipated to be operational which will increase water supply production into the groundwater basin by 31,000 AFY, significantly boosting the groundwater resources that serve Fountain Valley and far more than the 1,096 AFY of demand anticipated from the GPU, though it is recognized that the increased water resources will also serve other jurisdictions.

- Metropolitan Administrative Code & Water Storage Capacity: Metropolitan has developed significant storage in reservoirs and groundwater banking programs both within and outside of the Southern California region. MET has a total storage capacity of over 5 million AF and maintains a current storage of 3.2 million AF[15]. This regional storage is relevant as a way to augment potential imported water supplies to serve the City of Fountain Valley. Fountain Valley is not alone in its requirement to potentially accommodate a substantial amount of residential growth, with the State assigning the SCAG region a RHNA allocation of 1.34 million housing units. However, unique to the 2021-2029 RHNA cycle, the 1.34 million consists of roughly 505,000 units of projected need based on new growth and roughly 837,000 units of need based on pent-up existing demand.[16] The approximately 837,000 units of pent-up existing need represents households that already exist in the southern California region and currently place demands on water supplies. Accordingly, the amount of new regional growth that would

[14] The 2.3 million gallons per day increase referenced in Section 5.4.1 is based on an assessment utilizing conservative water duty factors for infrastructure assessments only. Therefore, this methodology would not apply to estimating increases in water demands that are impacted by water conservation requirements imposed locally and at the State level.

[15] Southern California prepared for drought with metropolitan investments in storage, conservation, diverse supplies. Business Wire. (2021, March 31). Retrieved October 19, 2021, from https://www.businesswire.com/news/home/20210331005944/en/Southern-California-Prepared-for-Drought-With-Metropolitan-Investments-in-Storage-Conservation-Diverse-Supplies.

[16] Southern California Association of Governments, SCAG 6th Cycle RHNA – Regional Council Approved Final RHNA Allocation Plan, March 4, 2021.

require additional water is not 1.34 million but is more accurately considered to be the 505,000 projected new housing units. This figure is similar to those of past RHNA cycles (412,137 for previous 5th cycle and 699,368 for the 4th cycle), which have not strained local or regional water supplies.

Additionally, MET can pursue additional water transfer and exchange programs with other water agencies to help mitigate supply/demand imbalances and provide additional dry-year supply sources. Metropolitan's administrative code Section § 4202 (Laguna Declaration) states that Metropolitan is prepared, with its existing governmental powers and its present and projected distribution facilities, to provide its service area with adequate supplies of water to meet expanding and increasing needs in the years ahead. When and as additional water resources are required to meet increasing needs for domestic, industrial and municipal water, the District will be prepared to deliver such supplies. This administrative code as well as the storage (and capacity) will ensure that regional water supplies can be bolstered to ensure local water suppliers can satisfy the additional 1,096 AFY from the GPU.

- MWDOC and OCWD Agreements: MWDOC, and in turn its retail agencies, including the City, has access to supply augmentation actions through MET. MET may exercise these actions based on regional need, and may include the use of supplies and storage programs within the Colorado River, SWP, and in-region storage. The City has the ability to augment its supply to reduce the shortage gap by up to 100% by purchasing additional imported water (at higher cost) through MWDOC or pumping additional groundwater in the OC Basin. Based on these agreements, the City has access to additional supplies to support growth as new developments come online.[17] In addition, MWDOC recently published the Orange County Reliability Study that highlights water supply projects to successfully meet increased water demands over time. OCWD also received approval by the State in 2019 on the Groundwater Sustainability Plan Alternative which signifies sustainable groundwater management will be achieved now and into the future.

- State Requirements on Annual Water Demand Projections: The City is required to submit annual water use data to the State for more accurate data on water diversions on a timely basis to evaluate how far water supplies can be expected to stretch. This diversion information together with an understanding of the priority of right to use a limited water supply, will allow for better water use planning decisions for the State as a whole as well as the City.

Based on the information above and input from MWDOC, water demand and supply projections are handled as part of the UWMP plan process and more frequently on an annual basis in reporting to the State. In addition to the regional water supply planning under the UWMPs, cities also must comply with Senate Bill (SB) 610 and SB 221 which are in place to improve the link between information on water supply availability and certain land use decisions made by cities and counties. Specifically, the inclusion of Water Supply Assessments (WSAs) in environmental documentation for certain projects (as defined in Water Code 10912 [a]) subject

[17] City of Fountain Valley 2020 Water Shortage Contingency Plan.

to CEQA may be required. Therefore, cities are able to closely monitor water supplies available as development projects come online under general plan updates.

Due to the extensive water planning efforts occurring throughout Orange County (Metropolitan, MWDOC and OCWD) and the City, as well as the additional capacity of the OCWD GWRS final expansion (31,000 AFY) and Metropolitan (3.2 million AFY of storage), water supplies are anticipated to be available to serve the GPU. However, as the 2020 UWMP only anticipated an increase in water demands between 129 – 238 AFY from 2025-2045, and the GPU may result in an increase of 1,096 AFY, a policy is being recommended as part of the GPU such that the City will only approve new development (of a certain size, below current thresholds required by SB 610/221) if the development project proponents can demonstrate adequate water supplies are available and there will be no substantial impacts to water supplies for existing water users within the City's jurisdiction.

5.4.3 Water System Impacts

The following impact assessments are based on the significance criteria established in Section 4.2 for water systems.

Impact A **Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**

Impact Analysis:
The City of Fountain Valley maintains a regularly updated Water System Master Plan that identifies deficiencies and necessary improvement projects throughout its service area. Improvement projects are regularly incorporated into the City's CIP based on priority. The WSMP did not identify any hydraulic capacity deficiencies within the water system. Improvement projects based on pipe age and condition may be required throughout GPU implementation as suggested in the WSMP, however as these deficiencies are not capacity based, and are considered maintenance projects that can occur over time, the status or prioritization of these projects is not anticipated to be impacted by GPU buildout. Individual projects will be subject to City permits, fees, and applications in order to ensure that they will not place an undue burden on existing infrastructure. In instances where infrastructure is expanded or relocated, construction will follow the Construction General Permit, City, and County specific regulations to minimize environmental impacts. No significant impacts from the construction or expansion of water facilities are anticipated.

Impact B **Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

Impact Analysis:
Metropolitan, MWDOC, OCWD and the City have performed extensive water planning over the past 30+ years by tracking population, City planning documentation, development projects, water supply augmentation projects (e.g. GWRS final expansion), climate, conservation and several other factors utilized in local and regional water resources planning processes. Based on this process, it is anticipated that water supplies will be sufficient to support the GPU over a

25-year horizon. However, when accounting for the RHNA cycle over the next 8 years which requires cities to provide zoning for state mandated housing supply, there may be an impact in this shorter time frame. As such, a policy is being recommended as part of the GPU such that the City will only approve new development (of a certain size, below current thresholds required by SB 610/221) if the development project proponents can demonstrate adequate water supplies are available and there will be no substantial impacts to water supplies for existing water users within the City's jurisdiction. With the adoption of this policy, it can be concluded that there will be water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

5.5 WATER QUALITY

5.5.1 Construction Activities

Clearing, grading, excavation and construction activities associated with the proposed project may impact water quality due to sheet erosion of exposed soils and subsequent deposition of particulates in local drainages. Grading activities, in particular, lead to exposed areas of loose soil, as well as sediment stockpiles, that are susceptible to uncontrolled sheet flow. Although erosion occurs naturally in the environment, primarily from weathering by water and wind action, improperly managed construction activities can lead to substantially accelerated rates of erosion that are considered detrimental to the environment.

Construction General Permit

Prior to the issuance of grading permits, the project applicants shall provide evidence that the development of the projects one acre or greater of soil disturbance shall comply with the most current Construction General Permit (CGP) and associated local National Pollutant Discharge Elimination System (NPDES) regulations to ensure that the potential for soil erosion is minimized on a project-by-project basis. In accordance with the updated CGP (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ), the following Permit Registration Documents are required to be submitted to the SWRCB prior to commencement of construction activities:

- Notice of Intent (NOI)
- Risk Assessment (Standard or Site-Specific)
- Particle Size Analysis (if site-specific risk assessment is performed)
- Site Map
- SWPPP
- Post-Construction Water Balance Calculator (not required – project is covered under the North Orange County MS4 permit Order No. R8-2009-0030)
- Active Treatment System (ATS) Design Documentation (if ATS is determined necessary)
- Annual Fee & Certification

Construction Best Management Practices (BMPs)

In accordance with the existing and updated CGP, a construction SWPPP must be prepared and implemented at all construction projects with 1 acre or greater of soil disturbance, and revised as necessary, as administrative or physical conditions change. The SWPPP must be made available for review upon request, shall describe construction BMPs that address pollutant source reduction, and provide measures/controls necessary to mitigate potential pollutant sources. These include, but are not limited to: erosion controls, sediment controls, tracking controls, non-storm water management, materials & waste management, and good housekeeping practices.[18]

Prior to commencement of construction activities within the GPU area, the project-specific SWPPP(s) will be prepared in accordance with the site specific sediment risk analyses based on the grading plans, with erosion and sediment controls proposed for each phase of construction for the individual project. The phases of construction will define the maximum amount of soil disturbed, the appropriately sized sediment basins and other control measures to accommodate all active soil disturbance areas and the appropriate monitoring and sampling plans.

5.5.2 Post-Construction Activities

With the proposed land use changes, development resulting from the General Plan Update may result in long-term impacts to the quality of storm water and urban runoff, subsequently impacting downstream water quality. Developments can potentially create new sources for runoff contamination through changing land uses. As a consequence, developments within individual Opportunity Sites and the City as a whole may have the potential to increase the post-construction pollutant loadings of certain constituent pollutants associated with the proposed land uses and their associated features, such as landscaping and plaza areas.

To help prevent long-term impacts associated with land use changes and in accordance with the requirements of the City of Fountain Valley LIP and consistency with OC DAMP and Fourth-Term MS4 permit, new development and significant redevelopment projects must incorporate LID/site design and source control BMPs to address post-construction storm water runoff management. In addition, projects that are identified as Priority Projects are required to implement site design/LID and source control BMPs applicable to their specific priority project categories, as well as implement treatment control BMPs where necessary. Selection of LID and additional treatment control BMPs is based on the pollutants of concern for the specific project site and the BMP's ability to effectively treat those pollutants, in consideration of site conditions and constraints. Further, both Priority and Non-Priority projects must develop a project-specific Water Quality Management Plan (WQMP) that describes the menu of BMPs chosen for the project, as well as include operation and maintenance requirements for all structural and any treatment control BMPs.

Since the GPU does not include a specific or detailed development plan, project specific WQMP(s) will not be required at this time. Future project specific WQMPs, preliminary and/or final, will be prepared consistent with the prevailing terms and conditions of the City's LIP, OC DAMP, and Model WQMP at the time of project application. Moreover, LID and water quality treatment solutions prescribed in project specific WQMPs shall be designed to support or

[18] California Stormwater Quality Association. (2003, January). *Stormwater Best Management Practices Handbook for New Development and Redevelopment*. Retrieved March 20, 2020, from http://www.cabmphandbooks.com

enhance the regional BMPs and efforts implemented by the City as part of their City-wide efforts to improve water quality.

LID Design Approach

The overall approach to water quality treatment for the individual projects within the GPU area will include incorporation of site design/LID strategies and source control measures throughout the sites in a systematic manner that maximizes the use of LID features to provide treatment of storm water and reduce runoff. In accordance with the MS4 Permit, the use of LID features will be consistent with the prescribed hierarchy of treatment provided in the Permit: infiltration, evapotranspiration, harvest/reuse and biotreatment. Where applicable, LID features will be analyzed to demonstrate their ability to treat portions of the required design capture volume (DCV) and reduce the size of downstream on-site treatment control BMPs.

Consistent with regulatory requirements and design guidelines for water quality protection, the following principles will be followed for new projects associated with the General Plan and will be supported by construction level documents in the final LID Design Plans prior to grading permit(s) issuance by the City of Fountain Valley:

- LID features will be sized for water quality treatment credit according to local Regional Board sizing criteria as defined in the most recent MS4 Permit for either flow-based or volume-based BMPs.
- LID techniques within the internal development areas (site design objectives), thereby providing treatment of low-flow runoff directly at the source and runoff reduction of small (i.e., more frequent) storm event runoff (first-flush). In most instances, LID features will be sized by volume-based analyses to demonstrate compliance with the required design capture volume for the new projects under the General Plan.
- Detailed field investigations, drainage calculations, grading, and BMP sizing to occur during the detailed design phase and future project specific WQMP documentation.
- Where feasible, LID features will be designed to infiltrate and/or reuse treated runoff on-site in accordance with feasibility criteria as defined in the 2013 Countywide Model WQMP and Technical Guidance Document (TGD).[19] [20]
- For those areas of the City where infiltration is not recommended or acceptable and harvest/reuse landscaping demands are insufficient, biotreatment LID features will be designed to treat runoff and discharge controlled effluent flows to downstream receiving waters.

Unlike flood control measures that are designed to handle peak storm flows, LID BMPs and treatment control BMPs are designed to retain, filter or treat more frequent, low-flow runoff or the "first-flush" runoff from storm events. In accordance with the Fourth-Term MS4 Permit for North Orange County, the LID BMPs shall be sized and designed to ensure on-site retention of the volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the County of Orange's 85th Percentile Precipitation Map.[21] This is termed the "design capture

[19] County of Orange Planning Division. (December 20, 2013). Exhibit 7.III - Model Water Quality Management Plan
(WQMP).
[20] County of Orange Planning Division. (December 20, 2013). Technical Guidance Document (TGD).
[21] Figure XVI-1 in the Technical Guidance Document (County of Orange, December 20, 2013).

volume", or DCV. The City is split between an 85th Percentile storm depth of 0.75 and 0.8 inches. The 2013 Model WQMP and its companion Technical Guidance Document provides design criteria, hydrologic methods and calculations for combining use of infiltration, retention, and biofiltration BMPs to meet the required design capture volume.

Consistency with the State-wide Trash TMDL

As part of the state-wide mandate to reduce trash within receiving waters, the City of Fountain Valley will be required to adhere to the requirements of the amended CA Trash Total Maximum Daily Load (TMDL) from July 2016 onwards. The requirements will include the installation and maintenance of trash screening devices at all public curb inlets, grate inlets and catch basin inlets. The trash screening devices must be approved by the local agency and consistent with the minimum standards of the Trash TMDL.

Sustainable Infrastructure Opportunities

As part of an on-going sustainable effort to improve water conservation, reduce potable water usage, and reduce the environmental "footprint" within the City, there are several emerging trends and technologies that should be considered and incorporated where feasible within the future redevelopment opportunities within the GPU area. These include the following:

- On-Site Gray Water Systems – The use of gray water systems to collect and reuse gray water from various new developments and redevelopments can greatly reduce on-site potable water usage. The process typically includes routing water from showers, sinks and washing machines, treating the water to NSF 350 standards[22] (or equivalent) and reusing the treated gray water within the building for toilet flushing or exterior landscaping. Gray water systems are especially opportune and cost effective within new hotel developments and multi-family residential developments where the constant use of water from showers, sinks and washing machines can be reused for toilet flushing and/or landscape irrigation. Reuse of gray water can help reduce both potable water and sewer generation fees.

- On-Site Stormwater Capture and Reuse Systems – Stormwater capture and reuse systems may be feasible outside of the City's existing "purple pipe" system based on certain project types. Depending on the type of potable demand for landscape irrigation and toilet flushing of a new development of redevelopment, the implementation of a harvested rainwater BMP would provide a multi-benefit solution that could satisfy both water quality regulations and provide for a sustainable water quantity solution that would offset potable water costs. The efficiency and cost-effectiveness for harvest and reuse systems increases when combined with on-site gray water recycling systems.

- OCWD Groundwater Replenishment System (GWRS) - The Groundwater Replenishment System (GWRS), a joint project of OCWD and the Orange County Sanitation District (OCSD), provides a new water supply source for resident of northern Orange County.[23] Ultimate capacity for the GWRS is projected at 130 MGD

[22] NSF/ANSI 350 and 350-1: Onsite Water Reuse Specifications. Found here: http://www.nsf.org/services/by-industry/water-wastewater/onsite-wastewater/onsite-reuse-water-treatment-systems

[23] Orange County Water District: Groundwater Replenishment System Technical Brochure. Found here: https://www.ocwd.com/media/8861/ocwd-technicalbrochure_web-2020.pdf

(146,000 AFY) after infrastructure is built to increase wastewater flows from OCSD to the GWRS. The final expansion is projected to come online in 2023. The City may be able to coordinate with OCWD to promote more direct recharge of stormwater runoff and/or water reuse opportunities.

- OCWD Green Acres Project - OCWD owns and operates the Green Acres Project (GAP), a water recycling system that provides up to 8,400 AFY of recycled water for irrigation and industrial uses. GAP provides an alternate source of water that is mainly delivered to parks, golf courses, greenbelts, cemeteries, and nurseries in the City, including Mile Square Park and Golf Courses. OCWD produces and distributes GAP water for purchase by the City, which sells and distributes the water to recycled water customers. Expanding this program for new projects within the City may prove to be another opportunity to decrease potable water demand. In addition, where the GAP does not reach certain areas of the City, this can be utilized to promote on-site reuse through greywater and stormwater capture technologies.

Each of these opportunities should be evaluated to determine feasibility and appropriateness for the proposed development and redevelopment projects within the GPU area.

5.5.3 Water Quality Impacts

The impact assessments are based on the significance criteria established in Section 4.2 for water quality.

Impact A *Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?*

Impact Analysis: Construction activities within the GPU area would potentially result in soil erosion and temporary adverse impacts to surface water quality from construction materials and wastes if left unregulated or unmitigated.

Both State and Local regulations will effectively mitigate construction storm water runoff impacts from the proposed land use changes under the GPU. Standard erosion control practices shall be implemented for all construction within the City. Additionally, construction sites will be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the Statewide Construction General Permit and subject to the oversight of the Santa Ana Regional Water Quality Control Board. The SWPPP must include BMPs to reduce or eliminate erosion and sedimentation from soil disturbing activities, as well as proper materials and waste management. Implementation of these State and Local requirements would effectively prohibit projects from violating any water quality standards or waste discharge requirements resulting from construction activities.

In terms of post-construction related impacts, the incorporation of site design, LID features and BMPs as required under the North Orange County MS4 Permit, the individual development and redevelopment projects within the GPU will effectively retain or treat the 85th percentile 24-hour storm water runoff for pollutants such as bacteria, metals, nutrients, oil & grease, organics, pesticides, sediment, trash, and oxygen demanding substances prior to discharge off their

property. As properties within the City undergo redevelopment, existing properties that do not have water quality BMPs will be replaced with projects incorporating LID BMPs. Therefore, long-term surface water quality of runoff from the GPU area would be expected to improve over existing conditions as more LID BMPs are implemented. This is considered an overall benefit of the proposed land use changes associated with implementation of the GPU. Impacts to surface water and groundwater quality will be less than significant.

Impact D *In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

Impact Analysis: The City of Fountain Valley has a policy to avoid placing new housing within 100-year flood hazard areas based on FEMA's floodplain maps. All existing housing within Flood Zone A's and AE's require flood insurance. As noted in Impact Analysis C in Section 5.2.2, the City and County regularly maintain and improve storm drain and flood control infrastructure based on priority. New developments will comply with all pertinent flood control regulation. It is not anticipated that pollutants will be mobilized in the event of flooding or inundation.

Impact E *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

Impact Analysis: New development and redevelopment within the City of Fountain Valley will not impact implementation of local or regional water quality control plans or sustainable groundwater management plans. All development within the City will follow the North Orange County MS4 permit. Groundwater levels are managed by OCWD, and development projects will be reviewed for conformance with OCWD's groundwater management goals. The Alternative Plan submitted by OCWD incorporates the requirements of a groundwater sustainability plan and is considered to be functionally equivalent. Impacts to water quality and groundwater management will be less than significant.

6. CONCLUSION

The proposed land use changes under buildout of the Fountain Valley GPU will increase the flow within water and sewer infrastructure over existing conditions while largely maintaining existing runoff conditions. The City of Fountain Valley, OCFCD, and OCSD each have methods in place for prioritizing, funding, and correcting deficient infrastructure. In all cases, specific analyses will be required during final design stages of final development projects to evaluate storm drain, water and sewer infrastructure condition and capacity. Impacts to sewer, water, and storm drain infrastructure are anticipated to be less than significant.

In addition, based on the existing built out condition of the City and the proposed land use changes under the GPU including the implementation of LID features, no substantial additional sources of pollutants or significant Citywide increases in runoff for the 85th percentile storm event are anticipated. Based on the findings of this technical report, the incorporation of site design/LID features, and infiltration/biotreatment BMPs as required under the MS4 Permit and local LID requirements, the individual projects will adequately reduce project related impacts to hydrology and water quality to a level less than significant.

7. TECHNICAL APPENDICES

Appendix A Sewer Flow Calculations

Appendix B Water Demand Calculations

Appendix C Beneficial Uses and Water Quality Objectives

APPENDIX A

SEWER FLOW CALCULATIONS

Delta Sewer Demand Calculation Sheet

Existing Land Use Category	Delta Housing Units	Non-Residential SF	Unit Demand Factor (gpd/unit)	Sewer Demand (gpd)
Remainder of City				
SFR	813		245	199,185
MFR	77		245	18,865
RETAIL		-78997	1,600	-2,902
SERVICES		425680	1,600	15,636
BASE		368173	1,600	13,523
			Total	**244,307**
Opportunity Sites				
16650 Harbor				
SFR	0		245	0
MFR	179		245	43,855
RETAIL		-8825	1,600	-324
SERVICES		-35301	1,600	-1,297
BASE		0	1,600	0
			Total	**42,234**
Boomers				
SFR	0		245	0
MFR	673		245	164,885
RETAIL		22152	1,600	814
SERVICES		12188	1,600	448
BASE		0	1,600	0
			Total	**166,146**
FV Crossings				
SFR	0		245	0
MFR	1100		245	269,500
RETAIL		65496	1,600	2,406
SERVICES		250100	1,600	9,186
BASE		-569355	1,600	-20,913
			Total	**260,179**
Golden Triangle				
SFR	0		245	0
MFR	117		245	28,665
RETAIL		-1627	1,600	-60
SERVICES		-6509	1,600	-239
BASE		0	1,600	0
			Total	**28,366**
Harbor Shopping Ctr				
SFR	0		245	0
MFR	404		245	98,980
RETAIL		22639	1,600	832
SERVICES		-94805	1,600	-3,482
BASE		0	1,600	0
			Total	**96,329**

Los Cab				
SFR	0		245	0
MFR	812		245	198,940
RETAIL		-26213	1,600	-963
SERVICES		-104852	1,600	-3,851
BASE		0	1,600	0
			Total	194,126
Miller (Harvest)				
SFR	0		245	0
MFR	471		245	115,395
RETAIL		0	1,600	0
SERVICES		0	1,600	0
BASE		0	1,600	0
			Total	115,395
Slater Investments				
SFR	0		245	0
MFR	250		245	61,250
RETAIL		-1218	1,600	-45
SERVICES		-24513	1,600	-900
BASE		0	1,600	0
			Total	60,305
Smith Farm				
SFR	25		245	6,125
MFR	0		245	0
RETAIL		0	1,600	0
SERVICES		0	1,600	0
BASE		0	1,600	0
			Total	6,125
Southpark				
SFR	0		245	0
MFR	1100		245	269,500
RETAIL		228897	1,600	8,408
SERVICES		457794	1,600	16,815
BASE		457794	1,600	16,815
			Total	311,538
Warner Square				
SFR	0		245	0
MFR	211		245	51,695
RETAIL		-769	1,600	-28
SERVICES		-13889	1,600	-510
BASE		0	1,600	0
			Total	51,157
Total within City and Opportunity Sites	6,232	1,344,040		1,576,208

APPENDIX B
WATER DEMAND CALCULATIONS

Delta Water Demand Calculation Sheet

Delta Land Use Category	Delta Housing Units	Delta Non-Residential SF	Unit Demand Factor (gpd/unit)	Delta Water Demand (gpd)
Remainder of City				
SFR	813		450	365,850
MFR	77		350	26,950
RETAIL		-78997	2,500	-4,534
SERVICES		425680	2,500	24,431
BASE		368173	2,500	21,130
			Total	433,827
Opportunity Sites				
16650 Harbor				
SFR	0		450	0
MFR	179		350	62,650
RETAIL		-8825	2,500	-506
SERVICES		-35301	2,500	-2,026
BASE		0	2,500	0
Total	179	-44126		
			Total	60,118
Boomers				
SFR	0		450	0
MFR	673		350	235,550
RETAIL		22152	2,500	1,271
SERVICES		12188	2,500	699
BASE		0	2,500	0
Total	673	34340		
			Total	237,521
FV Crossings				
SFR	0		450	0
MFR	1100		350	385,000
RETAIL		65496	2,500	3,759
SERVICES		250100	2,500	14,354
BASE		-569355	2,500	-32,676
Total	1100	-253759		
			Total	370,436
Golden Triangle				
SFR	0		450	0
MFR	117		350	40,950
RETAIL		-1627	2,500	-93
SERVICES		-6509	2,500	-374
BASE		0	2,500	0
Total	117	-8136		
			Total	40,483
Harbor Shopping Ctr				
SFR	0		450	0
MFR	404		350	141,400
RETAIL		22639	2,500	1,299
SERVICES		-94805	2,500	-5,441
BASE		0	2,500	0
Total	404	-72166		
			Total	137,258
Los Cab				

SFR	0		450	0
MFR	812		350	284,200
RETAIL		-26213	2,500	-1,504
SERVICES		-104852	2,500	-6,018
BASE		0	2,500	0
Total	812	-131065		
			Total	276,678
Miller (Harvest)				
SFR	0		450	0
MFR	471		350	164,850
RETAIL		0	2,500	0
SERVICES		0	2,500	0
BASE		0	2,500	0
Total	471	0		
			Total	164,850
Slater Investments				
SFR	0		450	0
MFR	250		350	87,500
RETAIL		-1218	2,500	-70
SERVICES		-24513	2,500	-1,407
BASE		0	2,500	0
Total	250	-25731		
			Total	86,023
Smith Farm				
SFR	25		450	11,250
MFR	0		350	0
RETAIL		0	2,500	0
SERVICES		0	2,500	0
BASE		0	2,500	0
Total	25	0		
			Total	11,250
Southpark				
SFR	0		450	0
MFR	1100		350	385,000
RETAIL		228897	2,500	13,137
SERVICES		457794	2,500	26,274
BASE		457794	2,500	26,274
Total	1100	1144485		
			Total	450,684
Warner Square				
SFR	0		450	0
MFR	211		350	73,850
RETAIL		-769	2,500	-44
SERVICES		-13889	2,500	-797
BASE		0	2,500	0
Total	211	-14658		
			Total	73,009
Total within City and Opportunity Sites	6,232	1,344,040		2,342,137

APPENDIX C

BENEFICIAL USES AND WATER QUALITY OBJECTIVES

Existing Surface Water and Groundwater Conditions

Existing Surface Water Conditions

BENEFICIAL USES

According to the Santa Ana RWQCB Basin Plan, beneficial uses have been established for several of the water bodies that receive runoff from the Fountain Valley GPU area. These are listed below.

Table 1 List of Receiving Waters and Beneficial Uses

Lower Santa Ana River Basin– Santa Ana River Reach 1	
MUN – Municipal and Domestic Supply GWR – Groundwater Recharge REC 1 – Water Contact Recreation REC 2 – Non-Contact Water Recreation	WARM – Warm Freshwater Habitat WILD – Wildlife Habitat RARE – Rare, Threatened, or Endangered Species
Bolsa Chica Ecological Reserve	
REC 1 – Water Contact Recreation REC 2 – Non-Contact Water Recreation BIOL – Biological Habitat of Significance EST – Estuarine Habitat	RARE – Rare, Threatened, or Endangered Species WILD – Wildlife Habitat SPWN – Spawning, Reproduction, and Development MAR – Marine Habitat
Huntington Beach Wetlands	
REC 1 – Water Contact Recreation REC 2 – Non-Contact Water Recreation BIOL – Biological Habitat of Significance	RARE – Rare, Threatened, or Endangered Species WILD – Wildlife Habitat SPWN – Spawning, Reproduction, and Development MAR – Marine Habitat
Santa Ana River Salt Marsh	
REC 1 – Water Contact Recreation REC 2 – Non-Contact Water Recreation BIOL – Biological Habitat of Significance	RARE – Rare, Threatened, or Endangered Species WILD – Wildlife Habitat MAR – Marine Habitat EST – Estuarine Habitat
Tidal Prisms of Flood Control Channels Discharging to Coastal or Bay Waters	
REC 1 – Water Contact Recreation REC 2 – Non-Contact Water Recreation COMM – Commercial or Sport Fishing	WILD – Wildlife Habitat MAR – Marine Habitat
Tidal Prism of Santa Ana River and Newport Slough	
REC 1 – Water Contact Recreation REC 2 – Non-Contact Water Recreation COMM – Commercial or Sport Fishing	WILD – Wildlife Habitat RARE – Rare, Threatened, or Endangered Species MAR – Marine Habitat

Sources:
-California Regional Water Quality Control Board, Santa Ana Region. 1995 Water Quality Control Plan for the Santa Ana River Basin (Updated 2016). Retrieved September 2018 from https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/docs/2016/Chapter_3_Feb_2016.pdf

WATER QUALITY OBJECTIVES

General water quality objectives have been prescribed in the Basin Plan for all surface waters within the Santa Ana River Region. There are currently no numeric water quality objectives for Fountain Valley GPU receiving waters.

EXISTING GROUNDWATER CONDITIONS

BENEFICIAL USES

According to the Santa Ana RWQCB Basin Plan, beneficial uses have been established for the Orange Groundwater Management Zone which underlies the Fountain Valley GPU area. These are listed below.

Table 2 Beneficial Uses of the OC Basin

Lower Santa Ana River Basin– Orange Groundwater Management Zone	
MUN – Municipal and Domestic Supply AGR – Agricultural Supply	IND – Industrial Service Supply PROC – Industrial Process Supply

WATER QUALITY OBJECTIVES

Numeric water quality objectives within the Basin Plan have been established for the OC Basin and are listed below[1]:

Table 3 Numeric Water Quality Objectives

Basin Plan – Orange Groundwater Management Zone	
Water Quality Objective	**Numeric Objective (mg/L)**
Total Dissolved Solids	580
Nitrate as Nitrogen	3.4

Salinity is a significant water quality problem in many parts of southern California, including Orange County. Salinity is a measure of the dissolved minerals in water including both TDS and nitrates. The

[1] Santa Ana RWQCB Basin Plan. Orange Groundwater Management Zone. Found here: https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/docs/2016/Chapter_4_Feb_2016.pdf

portions of the OC Basin with the highest levels are generally located in the Cities of Irvine, Tustin, Yorba Linda, Anaheim, Placentia, and Fullerton. OCWD continually monitors the levels of TDS in wells throughout the OC Basin. The TDS concentration in the OC Basin is expected to decrease over time as the TDS concentration of Groundwater Replenishment System (GWRS) water used to recharge the OC Basin is approximately 50 mg/L.

Nitrates are one of the most common and widespread contaminants in groundwater supplies, originating from fertilizer use, animal feedlots, wastewater disposal systems, and other sources. The MCL for nitrate in drinking water is set at 10 mg/L. OCWD regularly monitors nitrate levels in groundwater and works with producers to treat wells that have exceeded safe levels of nitrate concentrations. OCWD manages the nitrate concentration of water recharged by its facilities to reduce nitrate concentrations in groundwater.

Other contaminants that OCWD monitors within the OC Basin include:

- Methyl Tertiary Butyl Ether (MTBE)
- Volatile Organic Compounds (VOC)
- NDMA
- 1-4-Dioxane
- Perchlorate
- Selenium
- Constituents of Emerging Concern (CEC)