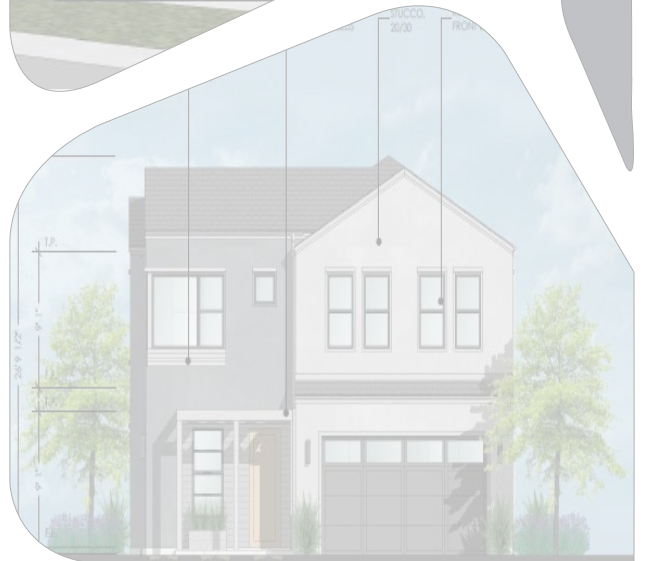


Water and Sewer Assessment



TECHNICAL MEMORANDUM

TO: Derek Wieske (City of Fullerton)
PREPARED BY: Dylan Merlo (Woodard & Curran)
Chris van Lienden (Woodard & Curran)
REVIEWED BY: Gisa Ju (Woodard & Curran)
DATE: May 11, 2021
RE: Sewer capacity assessment for the proposed The Pines Development Project

1. INTRODUCTION

The City of Fullerton (City) requires a sewer capacity analysis to evaluate the hydraulic effects of the sewer mains downstream of the proposed development of The Pines at Sunrise Village at the corner of Euclid Avenue and Rosecrans Avenue (The Pines). The Pines is a proposed residential development which includes 49 single-family residential units and 115 townhome units. The Pines would be replacing an existing mixed retail and commercial center. Appendix A shows the information provided for the development.

This brief Technical Memorandum (TM) describes the modeling work requested by the City of Fullerton to assess the hydraulic capacity of the City's sewer mains downstream of the proposed development. The InfoSWMM model used for this evaluation was originally developed for the City's 2009 Sewer Master Plan (2009 Master Plan) and has been updated on an on-going basis to reflect new development projects and changes to the sewer network. The 2009 Master Plan estimated average dry weather wastewater flows of approximately 13,800 gallons per day (gpd) for the proposed development location, based on 2007/2008 water consumption data. Future loads in the 2009 Master Plan for this area were based on population and employment projections prepared by the Center for Demographic Research, which distributed projected growth across the city in Traffic Analysis Zones (TAZ). TAZ projections were added on top of the existing loads to estimate future loads in the 2009 Master Plan. The 2009 Master Plan did not identify any specific developments at The Pines location. For modeling purposes, it has been assumed that flows from the proposed development would replace the existing consumption-based flow and would be in addition to any projected growth in the TAZ.

Sewer flows from the 49 single-family residential units would connect to the existing 10-inch sewer main running along Euclid Avenue, and flows from the 115 townhome units would connect to the existing 8-inch sewer main running along Rosecrans Avenue. Figure 1 shows the location of the development and the model sewer network, and the assumed discharge locations.

The 2009 Sewer Master Plan identified capacity deficiencies in the stretch of pipe in Euclid Avenue from Rosecrans Avenue to W. Bastanchury Rd. from manhole 28-69 to 71-69 under existing and future wet weather flow conditions. The 2009 Master Plan recommended upsizing the existing 8-inch sewer to a 10-inch sewer. A portion of the sewer has been upsized (from manhole 28-69 to manhole 56-69) however, the segment of sewer from manhole 56-69 to 71-69 (which is under a railroad) has not yet been upsized.

2. MODEL RESULTS AND CONCLUSIONS

Wastewater flow projections for the residential units were estimated based on an Average Dry Weather Flow (ADWF) unit flow factor of 75 gallons per capita per day, and an assumed average of 2.93 persons per dwelling unit based on the city-wide average occupancy rate. The equivalent unit flow factor of 220 gallons per day per dwelling unit was used in a review of the Fullerton Transportation Center sewer flows, attached to the 2009 Master Plan. Note that these flow factors may be somewhat different than the flow factors used for the developer’s sewer study. Projected average dry weather flows are summarized in **Table 1**; peaking factors were applied in the model by using the diurnal curves for residential and commercial land uses as developed in the 2009 Master Plan. Wet weather flows were also developed as part of model calibration for the 2009 Master Plan and assigned to each modeled node; the calibrated wet weather flows have not been changed.

Table 1: Modeled Sewer Loads from The Pines

	Units	Unit Flow Factor	Average Dry Weather Flow (gpd)
Single-Family Residential	49 DU	220 gpd/DU	10,780
Townhome	115 DU	220 gpd/DU	25,300
Total			36,080
Existing Development ¹			13,800
Total Increase			22,280

1. As part of the 2009 Master Plan, sewer loads for the existing development at the location were estimated to be 13,800 gpd based on 2007/2008 water consumption data.

The 2009 Master Plan previously identified capacity deficiencies under existing conditions in the sewers downstream from the proposed development (see Appendix B, which indicates the location of the proposed development relative to the capacity projects identified in the 2009 Master Plan). The three projects identified are “Project 1B” which proposes upsizing sewers between manholes 71-69 and 12-41 from 15-inch to 18-inch, “Project 1C” which proposes upsizing sewers between manholes 10-42 and 28-42 from 15-inch to 18-inch, and “Project 2” which proposes upsizing sewers between manholes 28-69 and 71-69 from 8-inch to 10-inch. A portion of the “Project 2” improvements have been implemented (from manhole 28-69 to manhole 56-69) however, “Project 1B” and “Project 1C” and the section of “Project 2” from manhole 56-69 to 71-69 have not been implemented. The model was updated to reflect the implementation of the upgraded portion of “Project 2”.

The model has been run under both existing and 2035 land use conditions, with the addition of The Pines projected flows, under dry weather and wet-weather design storm scenarios to determine whether the proposed development would cause any new capacity deficiencies, and to confirm that the previously identified capacity improvement projects would alleviate the deficiencies. The “trigger” criterion for capacity deficiencies, which identifies when an existing sewer has insufficient capacity and requires capacity relief, was defined in the 2009 Master Plan to occur when pipe surcharge exceeds two feet over the pipe crown or if the hydraulic grade line reaches within five feet of ground surface.

As described in the 2009 Master Plan, the model predicts significant surcharging under existing conditions under the design storm scenario downstream of the development, even without the proposed development. Model runs indicate that the improvement projects proposed in the 2009 Master Plan would alleviate the surcharging even with the

proposed development, as shown in Figure 2. The proposed development is not predicted to require any changes to the proposed improvements.

Because there are existing deficiencies in sewers that the proposed development would contribute to, The Pines development would be responsible for contributing a fair-share cost to implement the improvements. Fair-share costs are shown as a percentage of the cost of the total project and are based on the percent increase of flow under dry weather flow conditions that the development would add to the sewer system. As shown in Table 1, the total increase in flows to the sewer system is 22,280 gpd. Table 2 summarizes the projected buildout ADWF for each improvement project and the fair share percentage for the proposed development based on the percentage of additional flow. Project costs were escalated based on the Engineering News Record (ENR) Construction Cost Index (CCI) for April 2021 Los Angeles versus the average 2008 CCI for Los Angeles used in the 2009 Plan. The total fair-share costs are summarized in Table 3.

Table 2: Fair-Share Percentage

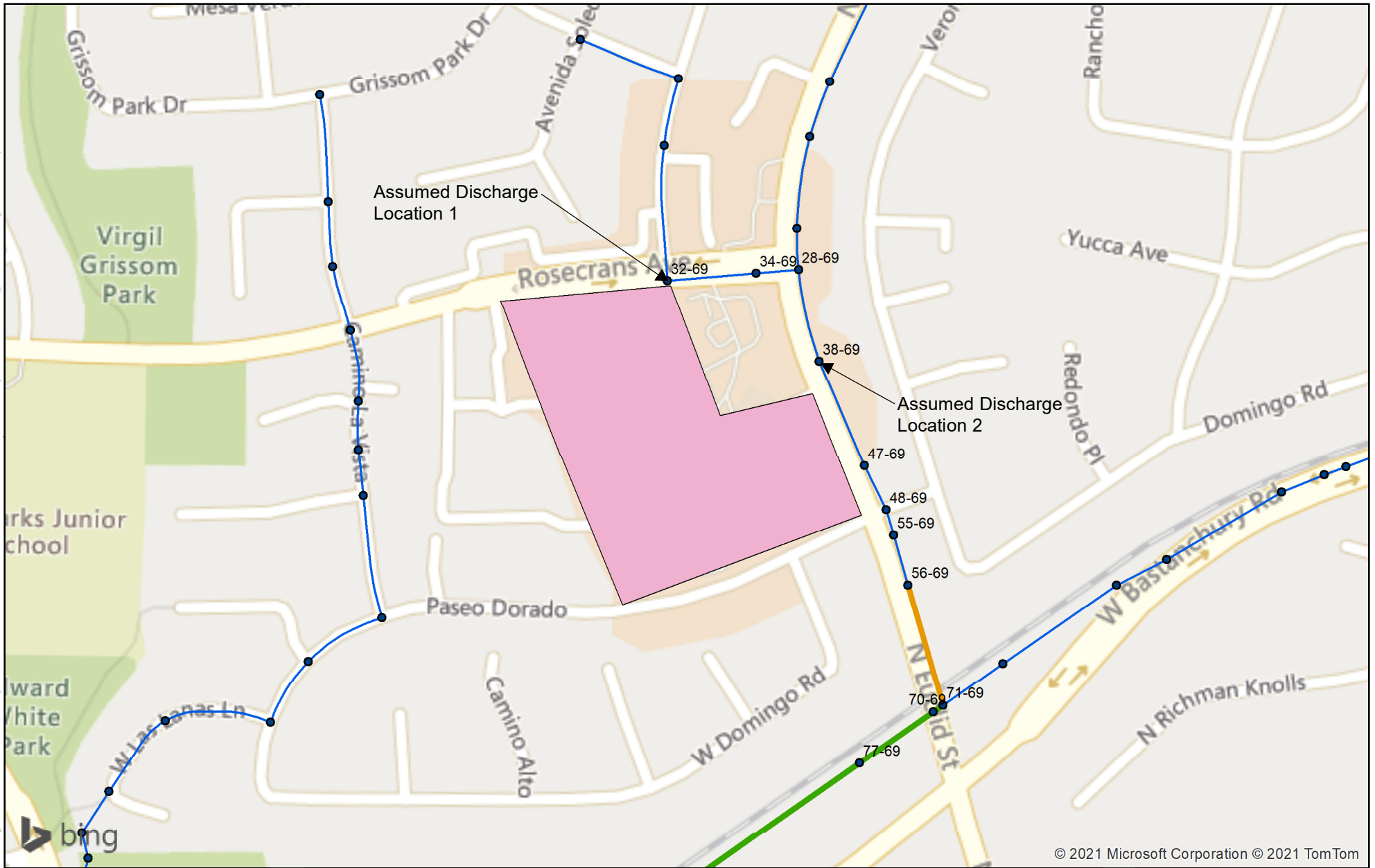
Project	Future ADWF (gpd)	Net Increase in ADWF from The Pines (gpd)	Fair-Share Cost Percentage
Project 1B	1,090,000	22,280	2.1%
Project 1C	1,507,000	22,280	1.5%
Project 2	236,300	22,280	9.4%

Table 3: Fair-Share Project Cost

Project	Cost from 2009 Master Plan ¹	April 2021 Cost ²	Fair-Share Cost Percentage	Fair-Share Cost
Project 1B	\$1,807,000	\$2,330,000	2.1%	\$48,000
Project 1C	\$724,000	\$935,000	1.5%	\$14,000
Project 2³	\$805,000	\$1,040,000	9.4%	\$98,000
Total				\$160,000






1. Cost Basis for the 2009 Master Plan is the 2008 Average CCI for Los Angeles (9410.7)
2. Based on the April 2021 CCI for Los Angeles (12139.6)
3. Project 2 cost shown only includes the pipe segment from manhole 56-69 to 71-69, which was estimated to be approximately 60% of the overall estimated cost of the project.


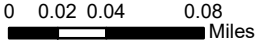
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Figure 1
Proposed Development Location
 The Pines Sewer Capacity Assessment

Legend	 Modeled manhole	 Proposed development location
	 Project 1B	
	 Project 2 not yet implemented	
	 Modeled City sewer	

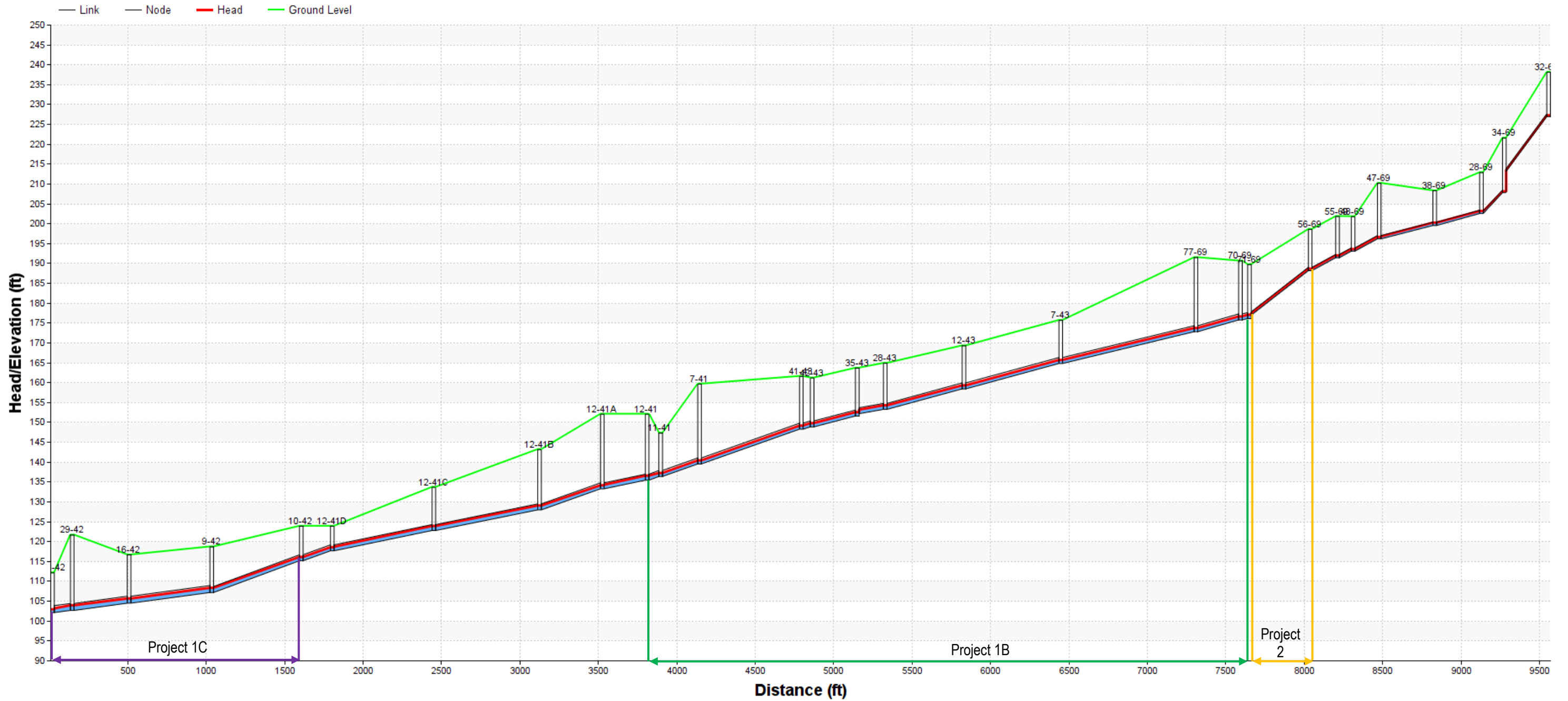



Project #: 0011744.01
Map Created: April 2021

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk.



Figure 2: Hydraulic Profile under 2035 Peak Design Storm Conditions with The Pines and with Capacity Improvements



APPENDIX A – DEVELOPMENT INFORMATION

SEWER GENERATION AND WATER DEMAND STUDY

For

The Pines at Sunrise Village

PROJECT LOCATION

Property bordered by Rosecrans, Euclid, and Paseo Dorado.
Fullerton, CA

PREPARED FOR:

Shopoff Realty Investments, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614


PREPARED BY:

HUITT-ZOLLARS

2603 Main Street, Suite 400
Irvine, CA 92614

Contact:

Craig Johnson, P.E., RCE 45838
phone: (949) 988-5815
email: craigj@huitt-zollars.com



Craig Johnson, P.E.

03/12/2021

Date

PREPARED: March 12, 2021

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Introduction..... 3

Purpose & Criteria 4

Sewer Analysis..... 5

Water Analysis..... 6

List of Technical Appendices

- Existing Sewer Index Map
- Existing Water Index Map
- Preliminary Utility Plan

Introduction

This report has been prepared for a proposed development along Euclid Avenue bordered by Rosecrans Avenue to the north and Paseo Dorado to the south (APNs 287-241-01, 287-241-04, and 287-241-06), in the City of Fullerton, in the County of Orange, California (Figure 1). The proposed development will replace an existing retail/commercial center with a residential development consisting of 49 single family homes and 115 townhome units.

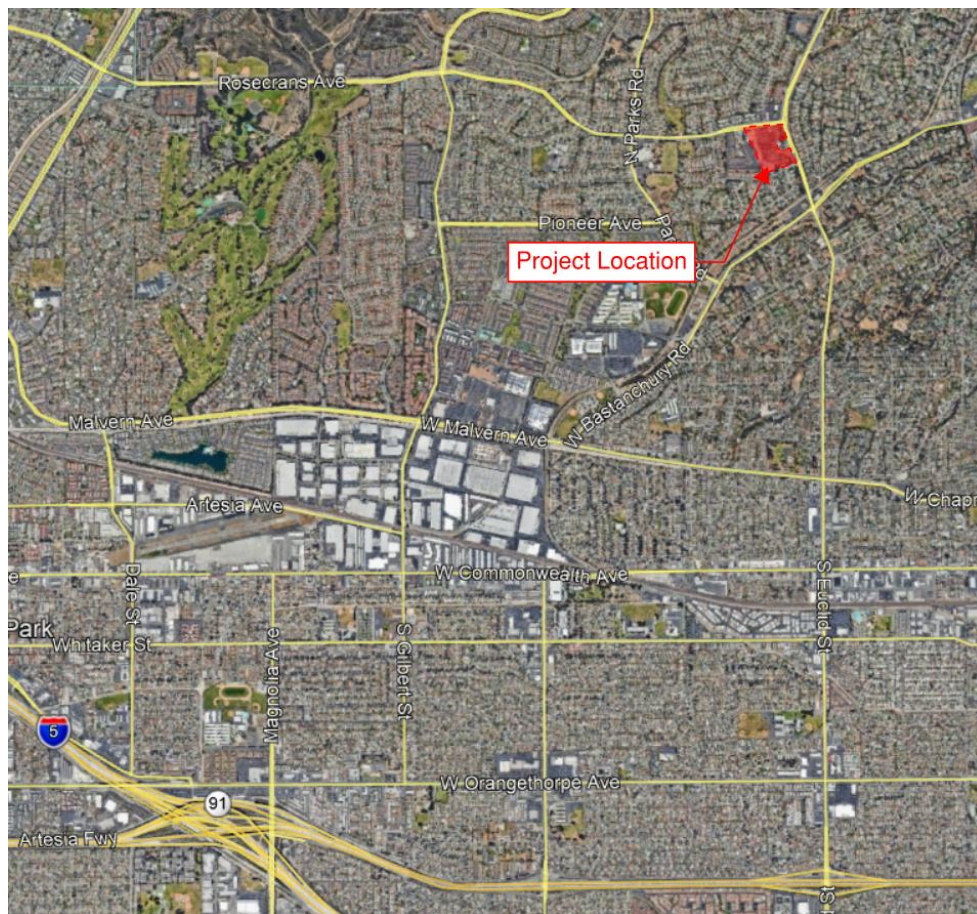


Figure 1: Location Map

Purpose & Criteria

The purpose of this report is to determine the existing and the proposed sewer flowrates and water demand from the Project site to the existing sewer and water systems in Euclid Street and Rosecrans Avenue. A comparison between the existing and proposed will be made to allow the City of Fullerton to determine if the existing public systems have the capacity to serve the new development.

The City of Fullerton does not have published sewer and water design standards therefore, assumptions of sewer rates and water demands were made based on applicable standards for similar developments within Orange County.

Sewer Generation Assumptions

Design flows used in this analysis are as follows:

Existing Condition (Retail/Commercial): 2,262 gallons per day per acre. A factor of 1.7 was used to estimate peak flows.

Proposed Condition (Residential): 105 gallons per capita per day (gpcd) with an assumed 3.3 people per household. A factor of 3.25 was used to estimate peak flows.

Water Demand Assumptions

Design flows used in this analysis are as follows:

Existing Condition (Retail/Commercial): 4,000 gallons per day per acre for Average Day Demand (ADD).

Proposed Condition (Residential): Average Daily Demand of 600 gallons per day (gpd) per unit (gpd/unit) for single family dwellings; and 450 gpd/unit for low-medium density residential dwellings.

The Maximum Day Demand (MDD) is two times (2x) the ADD and the Peak Hour Demand (PHD) is four times (4x) the ADD.



Figure 2: Project Boundary

Sewer Analysis

An existing 8” VCP sewer main is located along the Project frontage within the south half of Rosecrans Avenue. An existing 10” VCP sewer main is located along the Project frontage within the east half of Euclid Avenue. A copy of the Sewer System Index is included in the Appendix.

Existing Condition

The existing commercial site sewer discharges to the existing 8” main in Rosecrans through an 8” lateral. Based on the design criteria cited above and an area of 12.52 acres, the existing average sewer discharge from the site is 28,320 gpd with a peak discharge of 48,144 gpd.

Proposed Condition

In the proposed condition the single family development (Lot 1, 49 Units) will discharge to the existing 10” sewer main in Euclid via a new lateral. The average sewer discharge to this new lateral from the site is estimated to be 16,979 gpd with a peak discharge of 55,180 gpd. The multifamily development (Lot 2, 115 Units) will discharge to the existing 8” sewer main in Rosecrans. The average sewer discharge is

estimated to be 39,848 gpd with a peak discharge of 129,504 gpd. A depiction of the proposed sewer system to serve the development is shown on the Preliminary Utility Plan in the Appendix.

Summary

Based on the assumptions and calculations, the existing and proposed sewer flows are summarized in Table 1 below.

Table 1: Sewer Generation Rates.

Condition	Existing		Proposed	
	Average (gpd)	Peak (gpd)	Average (gpd)	Peak (gpd)
Existing Commercial	28,320	48,114		
Proposed - Lot 1			16,979	55,180
Proposed - Lot 2			39,848	129,504
TOTAL	28,320	48,114	56,827	184,684

The new residential development will increase the volume of sewer flows over the existing commercial condition. The impact to the existing City sewer system will need to be evaluated to determine if improvements are required to adequately serve the new development. To do so, the existing and other proposed developments tributary to the sewer in Rosecrans and Euclid will need to be studied utilizing a system wide sewer model.

Water Analysis

The proposed Pines at Sunrise Village development resides within the City of Fullerton Zone 2 water system. There is an existing 24” line in Rosecrans, a 12” line in Euclid, and an 8” line in Paseo Dorado. A copy of the Water System Index is included in the Appendix.

Existing Condition

The existing commercial site takes service from an onsite public water line that connects the 24” line in Rosecrans to the 8” line in Paseo Dorado. Based on the design criteria cited above, the existing average daily demand (ADD) from the site is 50,080 gpd with a maximum daily demand of 100,160 gpd and a peak hourly demand of 139.11 gpm.

Proposed Condition

In the proposed condition the single family development will be served by combination of a public and private water system. A new onsite public loop in the private streets connecting the 24” water line in Rosecrans to the 12” water line in Euclid will be constructed. From this line two master meters will be installed to feed the single family development and a the multifamily development. There will also be a separate private fire line for fire hydrants and building sprinkler systems. The proposed average daily demand (ADD) from the site is 81,150 gpd with a maximum daily demand of 162,300 gpd and a peak

hourly demand of 225.42 gpm. A depiction of the proposed public and private system to serve the development is shown on the Preliminary Utility Plan in the Appendix.

Summary

Based on the assumptions and calculations, the existing and proposed water demands are summarized in Table 2 below.

Table 2: Existing and proposed water demand, maximum day demand, peak hour demand, and the increase between the existing and the proposed site conditions.

Condition	Water Demand (gpd)	MDD (gpd)	PHD (gpm)
Existing	50,080	100,160	139.11
Proposed	81,150	162,300	225.42
Increase	31,070	62,140	86.31

The new residential development will increase the water demand over the existing commercial condition. The new onsite water system will be designed to supply the required water demand. The impact to the existing offsite City water system will need to be evaluated to determine if improvements are required to adequately serve the new development. To do so, the existing and other proposed developments within the Zone 2 water system will need to be studied utilizing a system wide water model.

Appendix

Existing Sewer Index Map

Existing Water Index Map

Preliminary Utility Plan

CITY OF FULLERTON SEWER SYSTEM



LEGEND

- SEWER MAINS
- COUNTY, OTHER CITY OR PRIVATE LINES
- FLOW DIRECTION
- MANHOLE
- LAMPHOLE
- DROPHOLE
- SPLIT FLOW MANHOLE
- DUMMY MANHOLE (NO ACCESS POINT)
- FLOWLINE DEPTH FROM TOP OF MANHOLE
- MANHOLE NUMBER

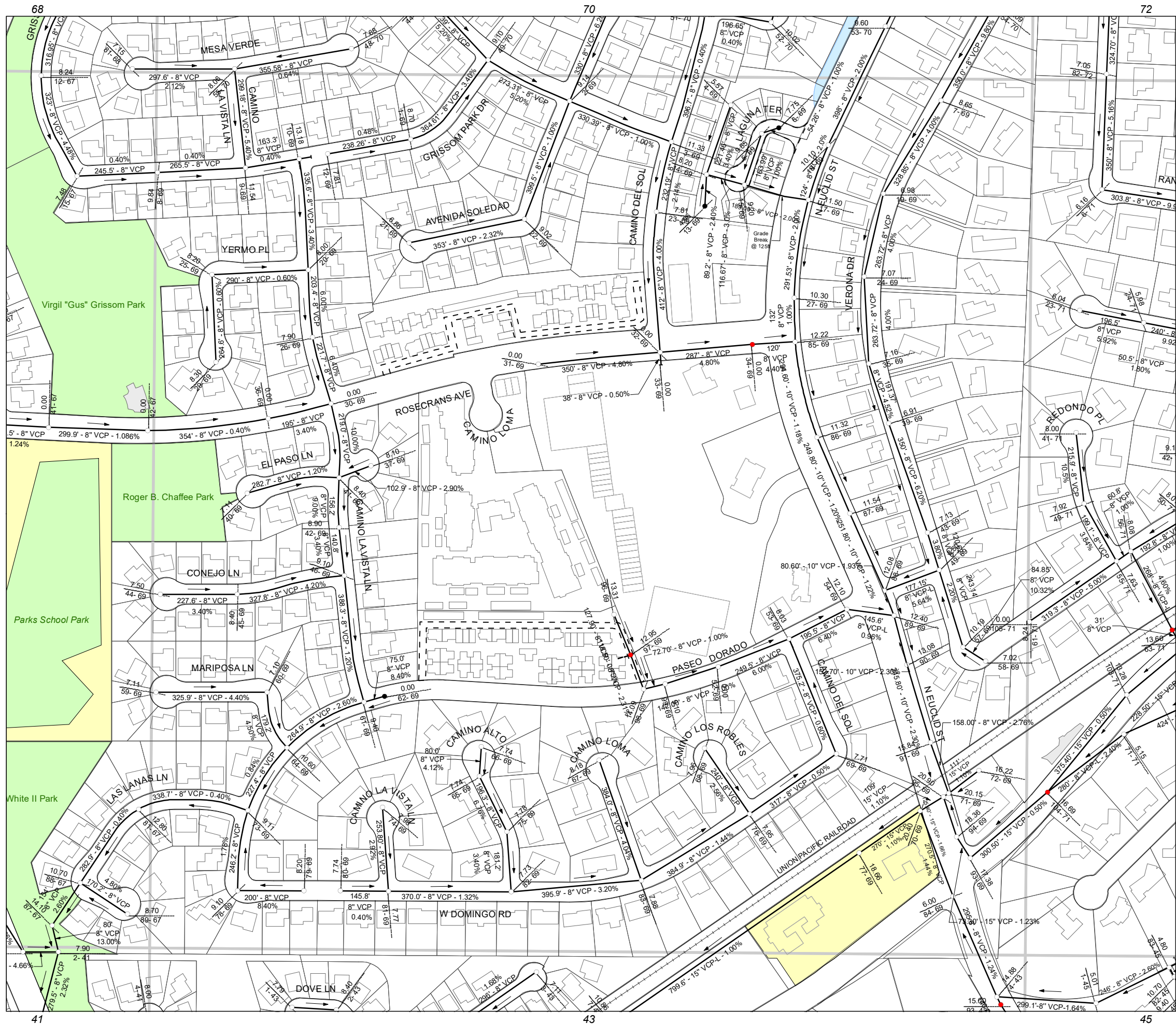
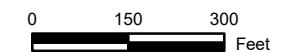
- SCHOOL
- PARK
- ATLAS GRID
- PARKING LOT
- PRIVATE STREET
- CITY BOUNDARY
- RAILROAD
- POINT OF INTEREST

PIPE MATERIAL ABBREVIATIONS

- VCP VITRIFIED CLAY
- VCP-L VITRIFIED CLAY PIPE - LINED
- HDPE HIGH DENSITY POLYETHYLENE
- PVC POLYVINYL CHLORIDE
- DIP DUCTILE IRON
- RCP REINFORCED CONCRETE
- CP CONCRETE (NON-REINFORCED)
- CIP CAST IRON
- ABS ACRYLONITRILE BUTADIENE STYRENE

THIS MAP IS NOT AN OFFICIAL RECORD OF THE CITY BUT IS COMPILED FROM DATA FURNISHED BY PRIVATE CONTRACTORS AND OTHER SOURCES. LOCATIONS AND SIZE OF WATER MAIN, LATERALS, VALVES, AND OTHER RELATED FACILITIES ARE SHOWN BASED ON THESE SOURCES. THIS INFORMATION IS FURNISHED TO ANY PERSON STRICTLY AS A CONVENIENCE AND THE CITY DOES NOT ASSUME ANY RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS.

BASE UPDATES
COUNTY - 2019 ADDRESS - 2020
OVERLAY REVISED
MAR 2020
GRID 6 - G



CITY OF FULLERTON WATER SYSTEM



LEGEND

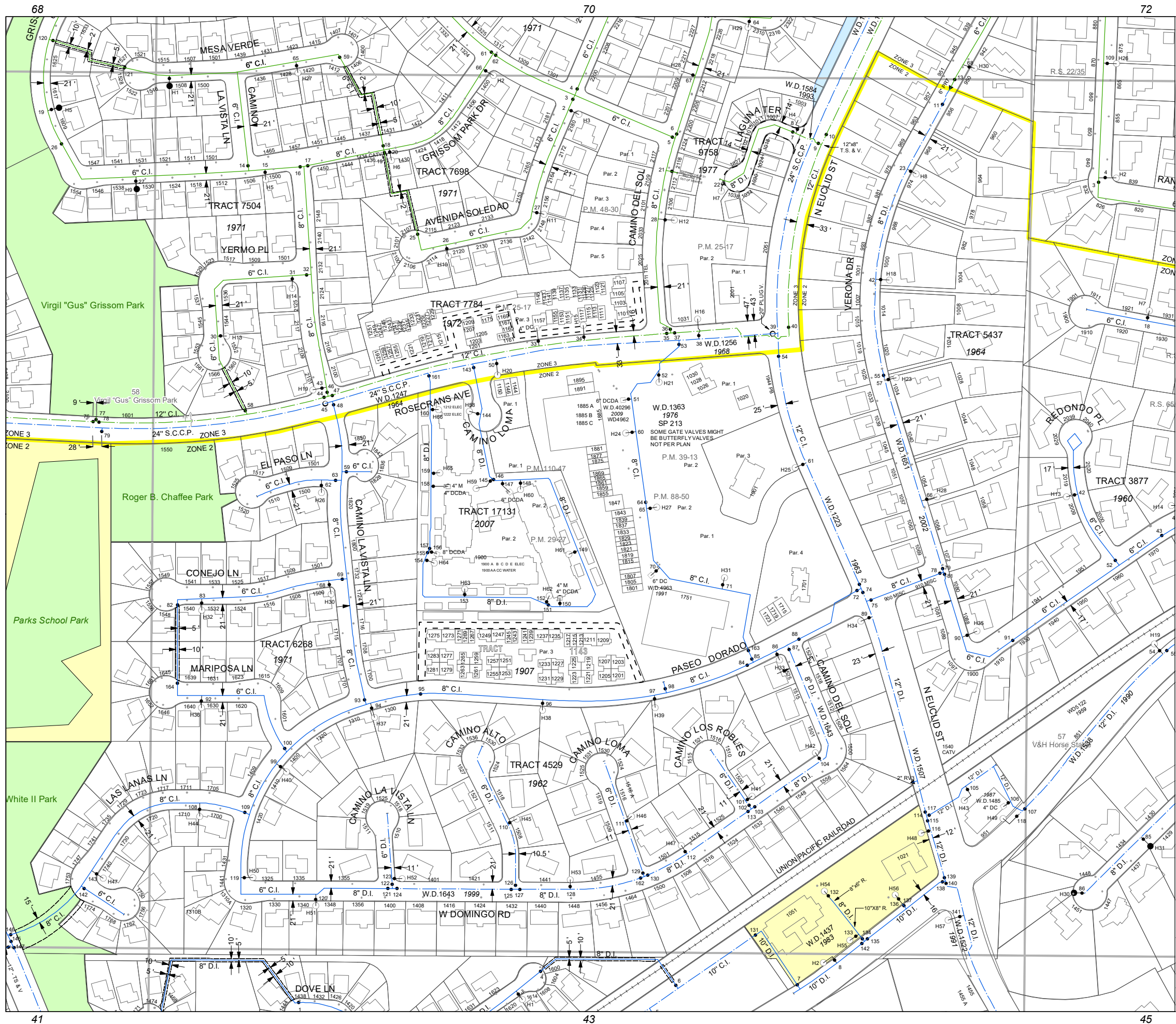
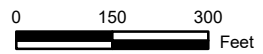
WATER MAIN ZONES	WATER MAIN TYPES
— ZONE 1	- - - CITY INSTALLED FRONTAGE FEE
— ZONE 1A	- - - PRIVATE OR OWNED BY OTHER CITIES
— ZONE 1B	- - - MWD
— ZONE 1C	- - - LATERAL LINE 2" & SMALLER
— ZONE 2	- - - LATERAL LINE 3" & LARGER
— ZONE 2A	□ SURROUNDED BY BOX INDICATES CLOSED VALVE
— ZONE 3	● GATE
— ZONE 3A	△ AIR RELEASE
— ZONE 4	○ ALTITUDE
— ZONE 4A	⊗ BUTTERFLY
— ZONE 4B	⊙ CHECK
— ZONE 4C	○ PLUG
	▲ REGULATING

Ⓡ RESERVOIR	Ⓜ DEAD-END
Ⓦ WELL	Ⓜ EXTRACTION
Ⓜ PUMP	Ⓜ INJECTION
Ⓜ FIRE HYDRANT	□ METER 2" & SMALLER
Ⓜ FIRE HYDRANT CHECK VALVE	□ METER 3" & LARGER
Ⓜ MWD TURNOUT	□ INTERCONNECT
Ⓜ SCHOOL	Ⓜ SAMPLE STATION
Ⓜ PARK	Ⓜ PRESSURE ZONE
Ⓜ ATLAS GRID	Ⓜ PRIVATE STREET
Ⓜ EASEMENT	Ⓜ CITY BOUNDARY
Ⓜ POINT OF INTEREST	Ⓜ RAILROAD
	★ CRITICAL CARE FACILITY

ABBREVIATIONS	
PIPE MATERIAL	FITTING
CI CAST IRON	BD BEND
DI DUCTILE IRON	C CROSS
GI GALVANIZED IRON	R REDUCER
PVC POLYVINYL CHLORIDE	TS TAPPING SLEEVE
SCCP STEEL CYLINDER CONCRETE PIPE	T TEE
STL STEEL	MSC
METER TYPE	FLG FLANGE
DOM DOMESTIC	HP HIGH PRESSURE
FL FIRE LINE	LP LOW PRESSURE
DC DOUBLE CHECK	MJ MECHANICAL JOINT
DCDA DOUBLE CHECK DETECTOR ASSEMBLY	PE PLAIN END
RPPDA REDUCE PRESSURE PRINCIPLE ASSEMBLY	RP REDUCED PRESSURE VALVE
IRR IRRIGATION	V VALVE
WATER AGENCY	SURVEY
AUW ANAHEIM UNION WATER	CL CENTERLINE
OCFCD ORANGE COUNTY FLOOD CONTROL DISTRICT	PL PROPERTY LINE
MWD METROPOLITAN WATER DISTRICT	TR TRACT
	WD WATER DRAWING

THIS MAP IS NOT AN OFFICIAL RECORD OF THE CITY BUT IS COMPILED FROM DATA FURNISHED BY PRIVATE CONTRACTORS AND OTHER SOURCES. LOCATIONS AND SIZE OF WATER MAIN, LATERALS, VALVES, AND OTHER RELATED FACILITIES ARE SHOWN BASED ON THESE SOURCES. THIS INFORMATION IS FURNISHED TO ANY PERSON STRICTLY AS A CONVENIENCE AND THE CITY DOES NOT ASSUME ANY RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS.

OVERLAY REVISED
MAR 2020
BASE UPDATES
COUNTY - 2019 ADDRESS - 2020
GRID 6 - G

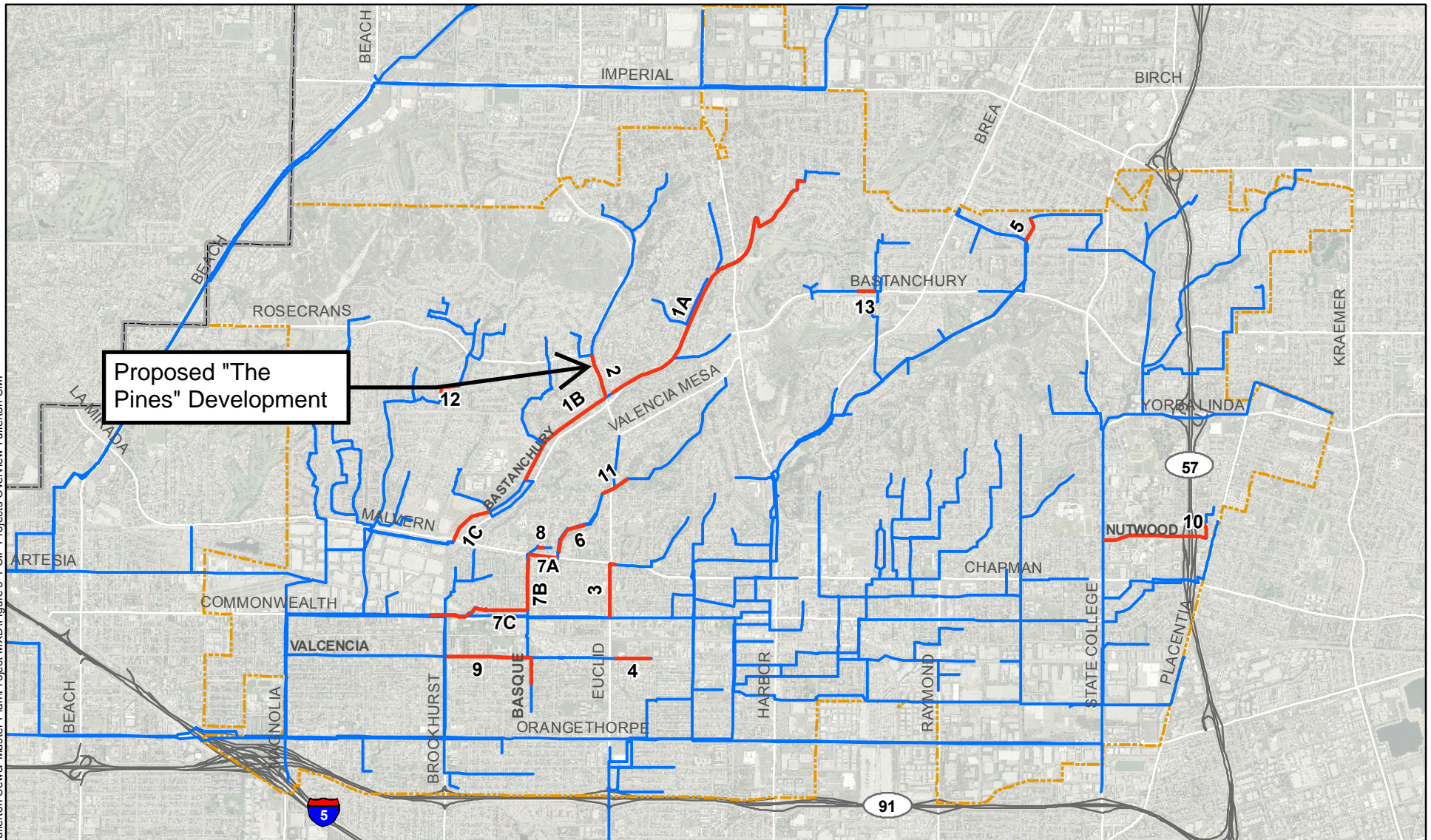




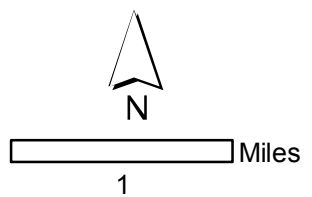
LEGEND

	RIGHT OF WAY
	PROPERTY LINE
	PROPOSED PRIVATE STORM DRAIN
	PROPOSED PRIVATE SANITARY SEWER
	PROPOSED PUBLIC DOMESTIC WATER
	PROPOSED PRIVATE DOMESTIC WATER
	PROPOSED PRIVATE FIRE
	PROPOSED PRIVATE FIRE HYDRANT
	PROPOSED WATER QUALITY DEVICE

APPENDIX B – 2009 MASTER PLAN IMPROVEMENT PROJECTS



Proposed "The Pines" Development



- 1 CIP Project
- Modeled Sewer
- County Boundary
- City Boundary
- Freeway
- Street



**City of Fullerton
Sewer Master Plan**
**Figure 5-1
CIP Projects Overview**

Table 5-3: List of Ranked Capacity-Related Capital Improvement Projects

Project ID	Location	US MH	DS MH	Length	Existing Diameter	Trigger Scenario	Existing Worst Condition	2015 Worst Condition	2035 Worst Condition	Freeboard at Trigger Scenario	Solution	Estimated Cost
1A	W Bastanchury Road, Morellia Pl, from N Euclid St to Arbolado Dr	15-97	72-69	10,440'	8", 10"	Ex. WWF	Multiple Overflows	Multiple Overflows (WWF)	Multiple Overflows (WWF)	0	Replace 15-97 to 61-95 (8") with 12" (L=2303'); Replace 61-95 to 72-69 (10") with 15" (L= 8136')	\$4,525,000
2	N Euclid St from Rosecrans Ave to Bastanchury Rd	28-69	71-69	1,440'	8"	Ex. WWF	Multiple Overflows	Multiple Overflows (WWF)	Multiple Overflows (WWF)	0	Replace 28-69 to 71-69 (8") with 10" (L=1443')	\$1,305,000
3	N Euclid St from W Malvern Ave to W Commonwealth Ave	102-46	57-19	2,030'	8", 10"	Ex. WWF	Overflow	Overflow (WWF)	Overflow (WWF)	0	Replace 90-44 to 57-19 (10") with 12" (L=1665'); Replace 102-46 to 91-44 (8") with 12" (L=232'), add another 8" siphon (L=103')	\$787,000
4	W Valencia Dr from S Euclid St to S Woods Ave	8-22	1-22	1,190'	8"	Ex. WWF	Overflow	Overflow (WWF)	Overflow (WWF)	0	Replace 8-22 to 1-22 (8") with 10" (L=1193')	\$435,000
5	Evergreen Ave and Laurel Ave from Maple Ave to Lark Ellen Dr	26-100	EUB0880-0005	820'	8"	Ex. WWF	Overflow	Overflow (WWF)	Overflow (WWF)	0	Replace 3-100 to 36-100 (8") with 12" (L =560'); Reconnect 36-100 to EUB0920-0000 (12" diversion; L=260');	\$391,000
6	Arroyo Drive from Ramona Dr to W Malvern Ave	45-44	73-44	1,420'	6"	Ex. WWF	Overflow	Overflow (WWF)	Overflow (WWF)	0	Place 1' weir at 26-44 to divert flow from 6" (west pipe) to the 10" (south pipe)	\$104,000
7B	N Basque Ave from W Malvern Ave to Gregory Ave	82-42	58-17	1,710'	10", 12"	Ex. WWF	Overflow	Overflow (WWF)	Overflow (WWF)	0	Replace existing 12" pipe with 18"; Retain existing 10" pipe and lateral connections (L=1721')	\$646,000
7A	W Malvern from Arroyo Drive to N Basque Ave	78-44	66-42	970'	8", 10"	Ex. WWF	3.8' of surcharge	3.9' of surcharge (WWF)	3.9' of surcharge (WWF)	0.5'	Replace north 8" with a 15" (L=951'); Retain south existing 8"; Replace 68-42 to 66-42 (10") with 15" (L=22')	\$399,000
8	Johnson Pl from Carhart Ave to N Stephens Ave	66-44	64-44	250'	6"	Ex. WWF	3.0' of surcharge	3.0' of surcharge (WWF)	3.0' of surcharge (WWF)	2.5'	Replace 66-44 to 64-44 (6") with 8" (L=250')	\$114,000
1C	W Bastanchury Rd and Hughes Dr	10-42	28-42	1,610'	15", 18"	Ex. WWF	4.8' of surcharge	5.6' of surcharge (WWF)	5.9' of surcharge (WWF)	2.7'	Replace 10-42 to 9-42 (15") with 18" (L=590'); Replace 9-42 to 28-42 (18") with 21" (L=1018')	\$724,000
9	W Valencia Dr & S Basque Ave from S Brookhurst Rd to W Elm Ave	29-20	91-17A	3,680'	8", 12"	Ex. WWF	4.2' of surcharge	4.9' of surcharge (WWF)	5.1' of surcharge (WWF)	2.9'	Replace 1-20 to 91-17A (12") with 15" (L=2791'); Replace 1-20 to 29-20 (8") with 10" (L=890')	\$1,495,000
7C	Gregory Ave from N Wanda Dr to N Basque Ave	58-17	22-15	3,840'	15", 18"	Ex. WWF	1.2' of surcharge	1.4' of surcharge (WWF)	1.5' of surcharge (WWF)	4.5'	Replace 58-17 to 29-15A (15") with 18" (L=2906'); Replace 29-15A to 22-15 (18") with 21" (L=932')	\$2,684,000
1B	W Bastanchury Road, from N Euclid St to Warburton Way	71-69	12-41	3,860'	15"	Ex. WWF	11.0' of surcharge	12.4' of surcharge (WWF)	13.3' of surcharge (WWF)	6.4'	Replace 71-69 to 12-41 (15") with 18" (L=3860')	\$1,807,000
13	E Bastanchury Rd from Amberleaf St to Puente St	46-76	36-78	580'	8"	Ex. WWF	2.3' of surcharge	2.5' of surcharge (WWF)	2.5' of surcharge (WWF)	23.4'	Replace 46-76 to 36-78 (8") with 10" (L=574')	\$363,000
10	Nutwood Ave from State College Blvd to Ruby Dr	12-60	NHP0545-0000	3,880'	10"	2015 WWF		1.4' of surcharge (DWF) 1.6' of surcharge (WWF)	1.6' of surcharge (DWF) 2.3' of surcharge (WWF)	3.9'	Replace from 12-60 to OCSD trunk (10") with 12" (L=3880')	\$3,167,000
11	By W Valley View Dr and N Euclid St	50-45	8-44	970'	10"	2035 WWF			1.9' of surcharge (WWF)	3.0'	Replace from 50-45 to 8-44 (10") with 12" (L=970'); 12" segment will be between 10" pipes.	\$331,000
12	Conejo Lane from Sunrise Lane to Camino Centroloma	62-67	123-65	880'	10"	2035 WWF			0.8' of surcharge (WWF)	4.8'	Replace 62-67 to 123-65 (10") with 12" (L=878'); 12" segment will be between 10" pipes.	\$463,000

SEWER GENERATION AND WATER DEMAND STUDY

For

The Pines at Sunrise Village

PROJECT LOCATION

Property bordered by Rosecrans, Euclid, and Paseo Dorado.
Fullerton, CA

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03/12/2021

Date

PREPARED: March 12, 2021 (Updated July 9, 2021 for CEQA)

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Introduction

This report has been prepared for a proposed development along Euclid Avenue bordered by Rosecrans Avenue to the north and Paseo Dorado to the south (APNs 287-241-01, 287-241-04, and 287-241-06), in the City of Fullerton, in the County of Orange, California (Figure 1). The proposed development will redevelop a 12.52-acre commercial retail property into a 164-DU residential community, including one lot with 49 detached single-family residential DUs and one lot with 115 multi-family townhome DUs. will replace an existing retail/commercial center with a residential development consisting of 49 single family homes and 115 townhome units.



Figure 1: Location Map

Purpose & Criteria

The purpose of this report is to determine the existing and the proposed sewer flowrates and water demand from the Project site to the existing sewer and water systems in Euclid Street and Rosecrans Avenue. A comparison between the existing and proposed will be made to allow the City of Fullerton to determine if the existing public systems have the capacity to serve the new development.

The City of Fullerton does not have published sewer and water design standards therefore, assumptions of sewer rates and water demands were made based on applicable standards for similar developments within Orange County. Specifically, design standards for the City of Anaheim were used. These design standards are summarized below.

Sewer Generation Assumptions

Design flows used in this analysis are as follows:

Existing Condition (Retail/Commercial): 2,262 gallons per day per acre. A factor of 1.7 was used to estimate peak flows.

Proposed Condition (Residential): 105 gallons per capita per day (gpcd) with an assumed 3.3 people per household. A factor of 3.25 was used to estimate peak flows.

Water Demand Assumptions

Design flows used in this analysis are as follows:

Existing Condition (Retail/Commercial): 4,000 gallons per day per acre for Average Day Demand (ADD).

Proposed Condition (Residential): Average Daily Demand of 600 gallons per day (gpd) per unit (gpd/unit) for single family dwellings; and 450 gpd/unit for low-medium density residential dwellings.

The Maximum Day Demand (MDD) is two times (2x) the ADD and the Peak Hour Demand (PHD) is four times (4x) the ADD.



Figure 2: Project Boundary

Sewer Analysis

An existing [City of Fullerton public](#) 8" VCP sewer main is located along the Project frontage within the south half of Rosecrans Avenue. An existing 10" VCP sewer main is located along the Project frontage within the east half of Euclid Avenue. A copy of the Sewer System Index is included in the Appendix.

Existing Condition

The existing commercial site sewer discharges to the existing 8" main in Rosecrans through an 8" lateral. Based on the design criteria cited above and an area of 12.52 acres, the existing average sewer discharge from the site is 28,320 gpd with a peak discharge of 48,144 gpd.

Proposed Condition

In the proposed condition the single family development (Lot 1, 49 Units) will discharge to the existing 10" sewer main in Euclid via a new lateral. The average sewer discharge to this new lateral from the site is estimated to be 16,979 gpd with a peak discharge of 55,180 gpd. The multifamily development (Lot 2, 115 Units) will discharge to the existing 8" sewer main in Rosecrans. The average sewer discharge is

estimated to be 39,848 gpd with a peak discharge of 129,504 gpd. A depiction of the proposed sewer system to serve the development is shown on the Preliminary Utility Plan in the Appendix.

Summary

Based on the assumptions and calculations, the existing and proposed sewer flows are summarized in Table 1 below.

Table 1: Sewer Generation Rates.

Condition	Existing		Proposed	
	Average (gpd)	Peak (gpd)	Average (gpd)	Peak (gpd)
Existing Commercial (to Rosecrans)	28,320	48,114		
Proposed SFR - Lot 1 (to Euclid)			16,979	55,180
Proposed MFR - Lot 2 (to Rosecrans)			39,848	129,504
TOTAL	28,320	48,114	56,827	184,684

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The new residential development will increase the volume of sewer flows over the existing commercial condition. ~~Subsequent to the publication of this study, the City’s Consultant Woodard & Curran prepared a Technical Memo, dated May 11, 2021, based on the City’s sewer model and the 2009 Sewer Master Plan. The Technical Memo concluded an increase of 22,280 gpd would be expected from the proposed development. A fair share contribution of \$160,000 was recommended for improvements to the offsite sewer downstream of the development. The impact to the existing City sewer system will need to be evaluated to determine if improvements are required to adequately serve the new development. To do so, the existing and other proposed developments tributary to the sewer in Rosecrans and Euclid will need to be studied utilizing a system wide sewer model.~~

Water Analysis

The proposed Pines at Sunrise Village development resides within the City of Fullerton Zone 2 water system. There is an existing 24” line in Rosecrans, a 12” line in Euclid, and an 8” line in Paseo Dorado. A copy of the Water System Index is included in the Appendix.

Existing Condition

The existing commercial site takes service from an onsite public water line that connects the 24” line in Rosecrans to the 8” line in Paseo Dorado. Based on the design criteria cited above, the existing average daily demand (ADD) from the site is 50,080 gpd with a maximum daily demand of 100,160 gpd and a peak hourly demand of 139.11 gpm.

Proposed Condition

In the proposed condition the ~~single family~~ development will be served by a combination of a public and private water system. A new onsite public loop in the private streets A, B, and G connecting the 24” water line in Rosecrans to the 12” water line in Euclid will be constructed. From this line two master meters will be installed to feed the single family development and the multifamily development. There will also be a separate private fire line for fire hydrants and building sprinkler systems. The proposed average daily demand (ADD) from the site is 81,150 gpd with a maximum daily demand of 162,300 gpd and a peak

hourly demand of 225.42 gpm. A depiction of the proposed public and private system to serve the development is shown on the Preliminary Utility Plan in the Appendix.

Summary

Based on the assumptions and calculations, the existing and proposed water demands are summarized in Table 2 below.

Table 2: Existing and proposed water demand, maximum day demand, peak hour demand, and the increase between the existing and the proposed site conditions.

Condition	Water Demand (gpd)	MDD (gpd)	PHD (gpm)
Existing	50,080	100,160	139.11
Proposed	81,150	162,300	225.42
Increase	31,070	62,140	86.31

The new residential development will increase the water demand over the existing commercial condition. The new onsite water system will be designed to supply the required water demand. A Will Serve Letter, dated March 18, 2021, to confirm water service to the development was provided by the City of Fullerton Public Works Department. ~~The impact to the existing offsite City water system will need to be evaluated to determine if improvements are required to adequately serve the new development. To do so, the existing and other proposed developments within the Zone 2 water system will need to be studied utilizing a system wide water model.~~

Appendix

Existing Sewer Index Map

Existing Water Index Map

Preliminary Utility Plan