VALLECITOS WATER DISTRICT

VILLA SERENA, SAN MARCOS WATER AND SEWER STUDY

WORK ORDER # 235663

DRAFT TECHNICAL MEMORANDUM

October 21, 2020

Prepared By: Robert Scholl, P.E. and Lisa Whitesell

INTRODUCTION

The proposed Villa Serena, San Marcos (Project) is a 148-unit multi-family residential development on 4.16-acres, north of Richmar Avenue between Liberty Drive and Fitzpatrick Road within the City of San Marcos (APNs 220-112-09, 10 & 220-100-69). The project will be constructed in two phases. Phase 1 will consist of 85 multi-family residential dwelling units on APN 220-112-09. Phase 2 will consist of 63 multi-family residential dwelling units on APNs 220-100-69 & 220-112-10.

The Project property is located within VWD's boundaries for water and wastewater service. The property does not need to annex, both water and wastewater services can be provided by the Vallecitos Water District (VWD).

All new projects undergo evaluation by VWD to determine if the current water and sewer infrastructure is sufficient to accommodate the proposed water demands and sewage generation.

This study projects water demand and sewage generation increases due to the Project densification. It analyzes the following aspects of VWD's infrastructure and makes recommendations for capital improvements for impacts that are created due to the land use change:

- Water distribution system, including the need to upsize pipelines, install new pipelines, or install flow control facilities
- Water storage, including the need for additional storage and the adequacy of existing storage tanks and reservoirs to serve the proposed development
- Water pump stations, including the need to install new pump stations or upsize existing pump stations to serve the proposed development
- Wastewater collection system, including the need to upsize pipelines and manholes, or the need to install new pipelines and manholes
- Wastewater lift stations, including the need to install new lift stations or upsize existing lift stations to serve the proposed development
- Wastewater land outfall, including the need to construct a parallel land outfall to serve this and other proposed developments

- Wastewater treatment facilities, including the need for obtaining additional capacity at the Encina Water Pollution Control Facility (EWPCF) or for expanding the Meadowlark Water Reclamation Facility (MRF)

WATER SYSTEM ANALYSIS

The proposed 4.16-acre Project lies completely within VWD's 920 Pressure Zone. Figures 1 and 2 show the development's location in relation to pressure zone boundaries, identify pipelines within the vicinity of the development, and identify storage reservoirs that supply the development area.

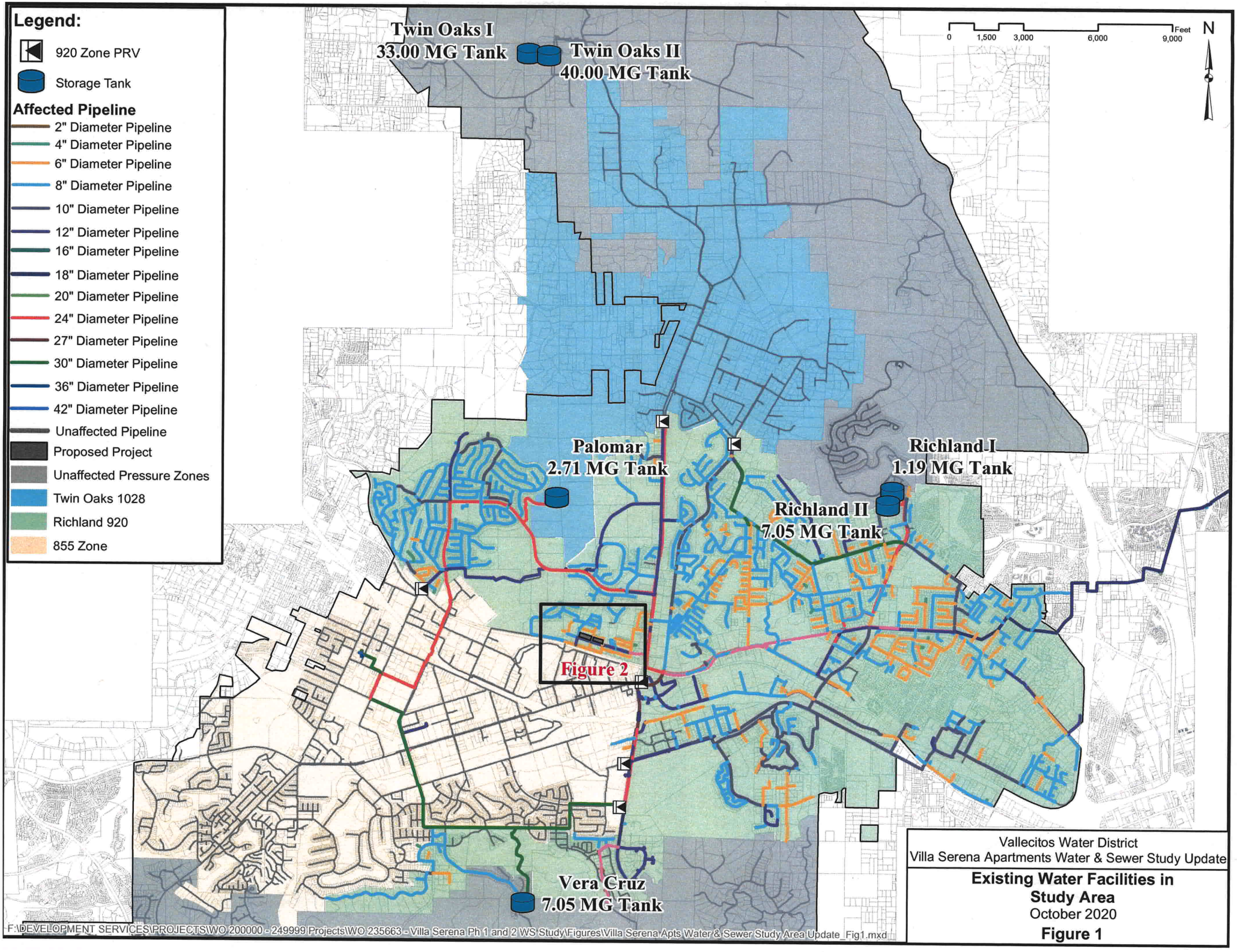
Water Demand Projections

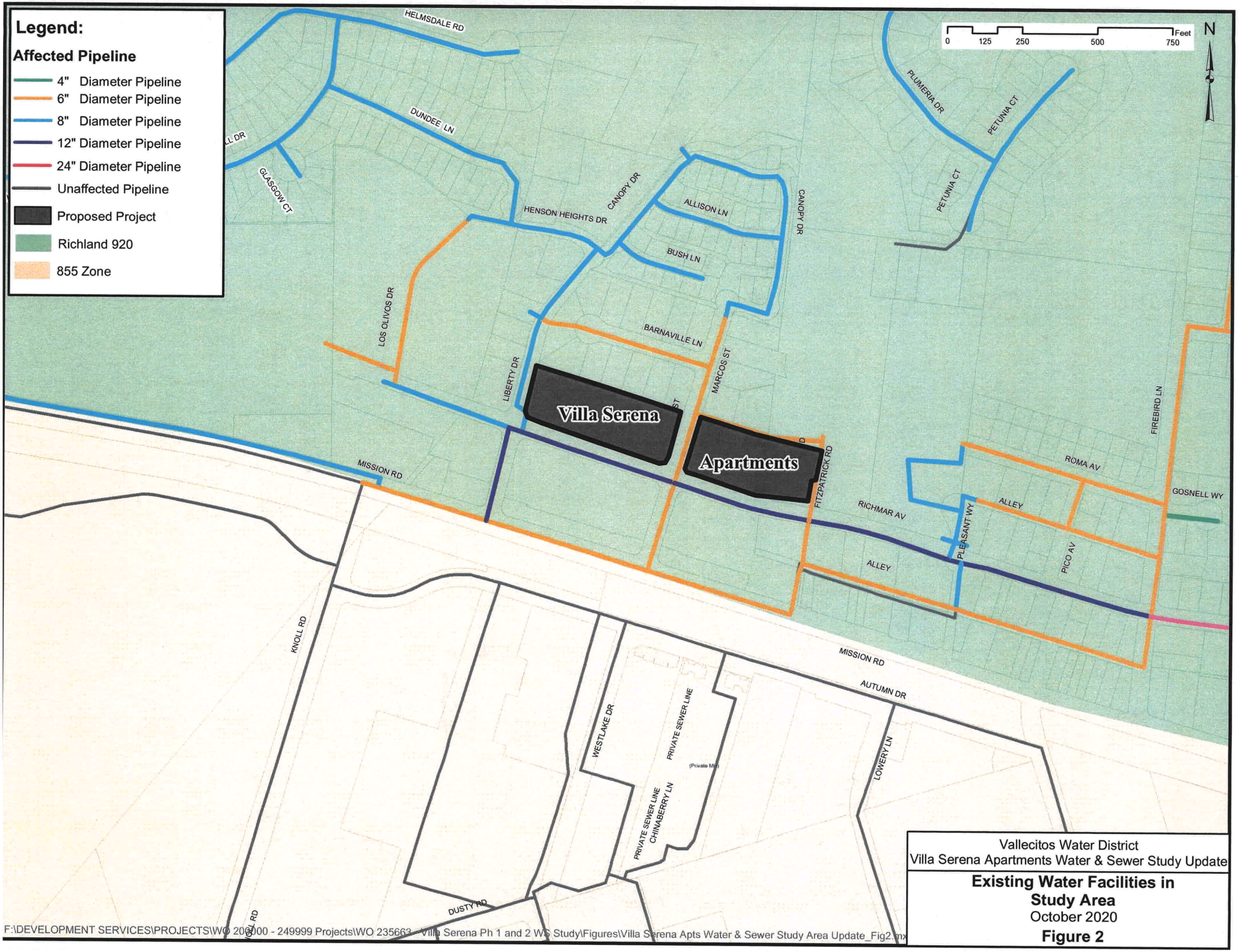
The Project property's City of San Marcos approved land use designation for the proposed Project is Residential 15-20 du/ac. The 2018 Master Plan based its ultimate water demand planning on this land use. The Project is proposing a density increase with the proposed 148 multi-family residential dwelling units (Residential use of 30-40 du/ac).

Table 1 provides the average water demand generated both under the density planned for the 2018 Master Plan and with the proposed Project. The table shows that the Villa Serena Project will increase the projected average water demand from the 2018 Master Plan land use by 8,320 gallons per day.

Table 1 – Project Estimated Water Demands

Land Use Type	Area (acres)	Residential Units	Duty Factor (gpd/ac)	Water Demand (gpd)
2018 Master Plan Land Use Demand				
Residential 15-20 du/ac	4.16		5,000	20,800
Total	**4.16**			**20,800**
Proposed Project Demand				
Residential 30-40 du/ac	4.16	148	7,000	29,120
Total	**4.16**			**29,120**
Water Demand Increase				**8,320**


Legend:
920 Zone PRV
Storage Tank
Affected Pipeline
2" Diameter Pipeline
4" Diameter Pipeline
6" Diameter Pipeline
8" Diameter Pipeline
10" Diameter Pipeline
12" Diameter Pipeline
16" Diameter Pipeline
18" Diameter Pipeline
20" Diameter Pipeline
24" Diameter Pipeline
27" Diameter Pipeline
30" Diameter Pipeline
36" Diameter Pipeline
42" Diameter Pipeline
Unaffected Pipeline
Proposed Project
Unaffected Pressure Zones
Twin Oaks 1028
Richland 920
855 Zone
Twin Oaks I
33.00 MG Tank
Twin Oaks II
40.00 MG Tank
Palomar
2.71 MG Tank
Richland I
1.19 MG Tank
Richland II
7.05 MG Tank
Figure 2
Vera Cruz
7.05 MG Tank
0
1,500
3,000
6,000
9,000
Feet
N
F:\DEVELOPMENT SERVICES\PROJECTS\WO 200000 - 249999 Projects\WO 235663 - Villa Serena Ph 1 and 2 WS Study\Figures\Villa Serena Apts Water & Sewer Study Area Update_Fig1.mxd
Vallecitos Water District
Villa Serena Apartments Water & Sewer Study Update
Existing Water Facilities in Study Area
October 2020
Figure 1


Legend:
Affected Pipeline
4" Diameter Pipeline
6" Diameter Pipeline
8" Diameter Pipeline
12" Diameter Pipeline
24" Diameter Pipeline
Unaffected Pipeline
Proposed Project
Richland 920
855 Zone
0 125 250 500 750 Feet
N
Villa Serena
Apartments
HELMSDALE RD
DUNDEE LN
GLASGOW CT
HENSON HEIGHTS DR
CANOPY DR
ALLISON LN
BUSH LN
LOS OLIVOS DR
BARNAVILLE LN
LIBERTY DR
MARCOS ST
PLUMERIA DR
PETUNIA CT
MISSION RD
FITZPATRICK RD
RICHMAR AV
ALLEY
ROMA AV
GOSNELL WY
FIREBIRD LN
PLEASANT WY
PICO AV
KNOLL RD
AUTUMN DR
WESTLAKE DR
PRIVATE SEWER LINE
(Private Mh)
CHINABERRY LN
LOWERY LN
DUSTY RD
Vallecitos Water District
Villa Serena Apartments Water & Sewer Study Update
Existing Water Facilities in Study Area
October 2020
Figure 2
F:\DEVELOPMENT SERVICES\PROJECTS\WO 200000 - 249999 Projects\WO 235663 - Villa Serena Ph 1 and 2 WS Study\Figures\Villa Serena Apts Water & Sewer Study Area Update_Fig2.mxd

Water Distribution System Analysis

The 2018 Master Plan water system distribution and pressure criteria are as follows:

Water Distribution Infrastructure Criteria

The water service pressure criteria to be met by this development are as follows:

- Minimum allowable pressure at peak hour demand: 40 psi
- Minimum allowable pressure at max day plus fire demand: 20 psi
- Maximum allowable pressure: 150 psi

The City of San Marcos Fire Marshall has set the required fire demand at 1,500 gpm for the Project.

To avoid excessive velocity and headloss within the distribution system, the following pipeline design criteria was also utilized:

- Maximum allowable velocity: 7 feet per second
- Maximum allowable headloss gradient: 15 feet per 1,000 feet
- Hazen-Williams C-factor: 130

Water Model Scenarios

The following scenarios were modeled to identify system impacts that may be created by the proposed water demands, and to recommend any improvements required to provide service to the Project:

- Average Day Demand with existing demands at the Project site
- Average Day Demand with the proposed Project
- Maximum Day Demand with existing demands at the Project site
- Maximum Day Demand with the proposed Project
- Peak Hour Demand with existing demands at the Project site
- Peak Hour Demand with the proposed Project
- Maximum Day Demand plus Fire Flow with existing demands at the Project site
- Maximum Day Demand plus Fire Flow with the proposed Project

Per the 2018 Master Plan, maximum day demands for this project are 300% those of average day demands, and peak hour demands are 620% those of average day demands.

Water Model Results

Modeling focused on the infrastructure in the direct vicinity of the Project. The model found that the Project did not create any distribution system deficiencies along Richmar Avenue under average day demand or maximum day plus fire flow demand conditions.

Water Storage Analysis

The 2018 Master Plan outlines VWD's potable water storage reservoirs for each pressure zone as follows:

> 1.5 times ADD (operational storage) + 3.0 times ADD (emergency storage) + fire flow demand = 4.5 times ADD + fire flow demand
>
> OR
>
> 5.0 times ADD, whichever is greater.

The Project is located entirely within the VWD 920 pressure zone. Water storage for this zone is located within the 920 Richland and 1028 Twin Oaks pressure zones, as shown in Figure 1. Table 2 shows the required storage in the 855, 920 Richland, and 1028 Twin Oaks pressure zones for existing and ultimate build-out (Master Plan) conditions relative to the existing storage provided within each zone.

Table 2 – Existing Reservoir Storage Capacity and Requirements

Pressure Zone	Existing ADD (MGD)	Existing Storage Requirement (MG)	Ultimate ADD (MGD)	Ultimate Storage Requirement (MG)	Existing Storage Available (MG)
855	3.74	50.05	6.79	101.25	0
920 Richland	5.61		10.40		18
1028 Twin Oaks	0.66		3.06		73
Totals	10.01	**50.05**	20.25	**101.25**	**91**

The Project will increase the projected average water demand by approximately 8,320 gallons per day as shown in Table 1.

The amount of additional reservoir storage required is 500% of the development's average day demand or:

8,320 gallons * 500% = 41,600 gallons

The analysis finds that water storage capacity is currently available to serve the Project's increased storage requirements. Master Plan projects address and accommodate the ultimate build-out storage deficiency and Water Capital Facility Fees paid by this project will be used for the increase in storage necessitated by the Project's demand calculated above.

Water Pump Station Analysis

Since the proposed Project is located in a pressure zone that is not served by pumping, there are no impacts to existing or proposed pump stations by this Project.

WASTEWATER SYSTEM ANALYSIS

The proposed 4.16-acre Project lies completely within VWD sewer shed 16C. Figures 3 through 6 show the development's location in relation to sewer shed boundaries, identify wastewater infrastructure within the vicinity of the development, and identify the downstream collection infrastructure that will be impacted by the development.

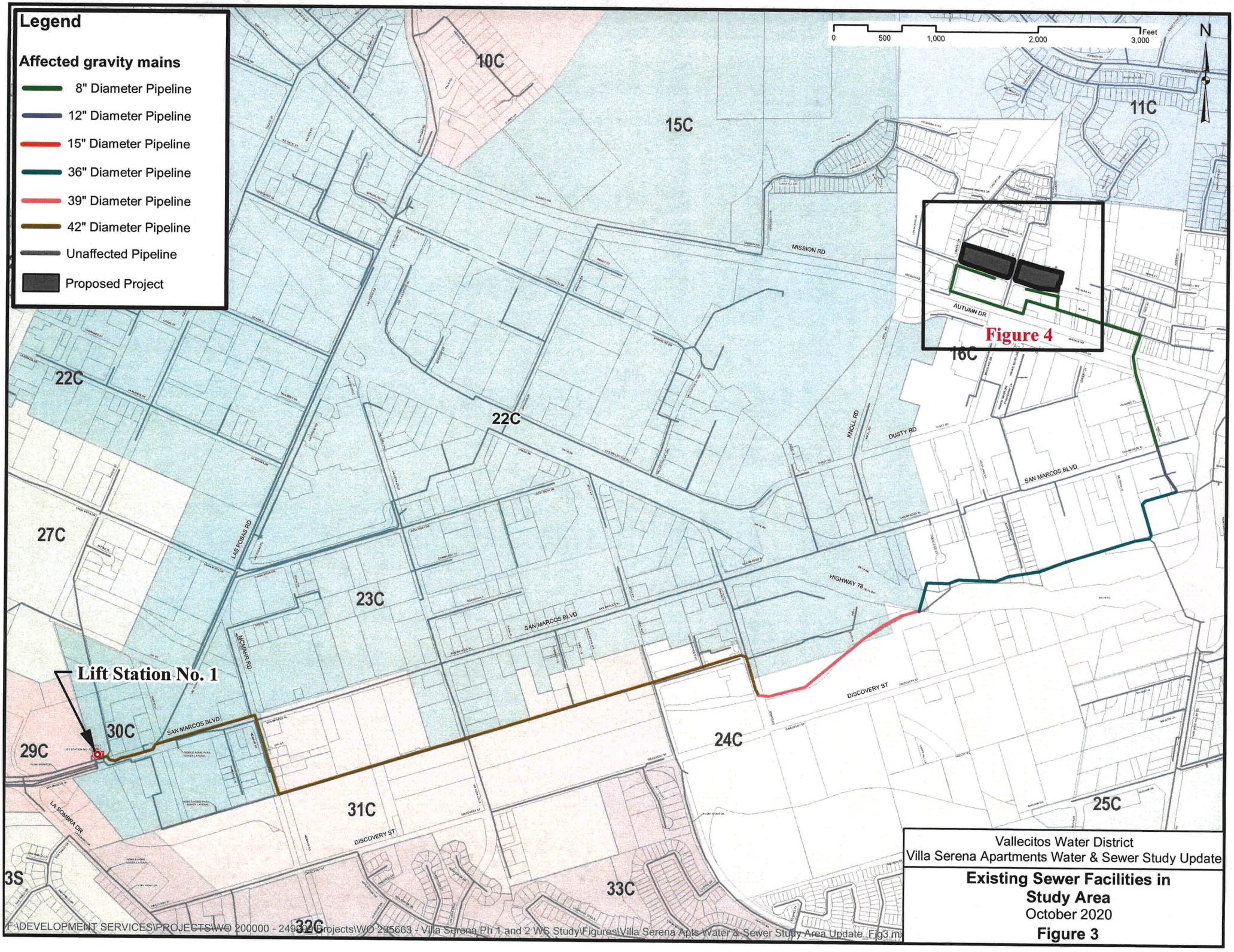
Wastewater Flow Projections

The Project property's City of San Marcos approved land use designation for the proposed Project is Residential 15-20 du/ac. The 2018 Master Plan based its ultimate wastewater generation planning on this land use. The Project is proposing a density increase with the proposed 148 multi-family residential dwelling units (Residential use of 30-40 du/ac).

Table 3 provides the average wastewater flow generated both under the density planned for the 2018 Master Plan and with the proposed Project. The table shows that the Villa Serena Project will increase the projected average wastewater generation from the 2018 Master Plan by 12,480 gallons per day.

Table 3 – Project Estimated Wastewater Flows

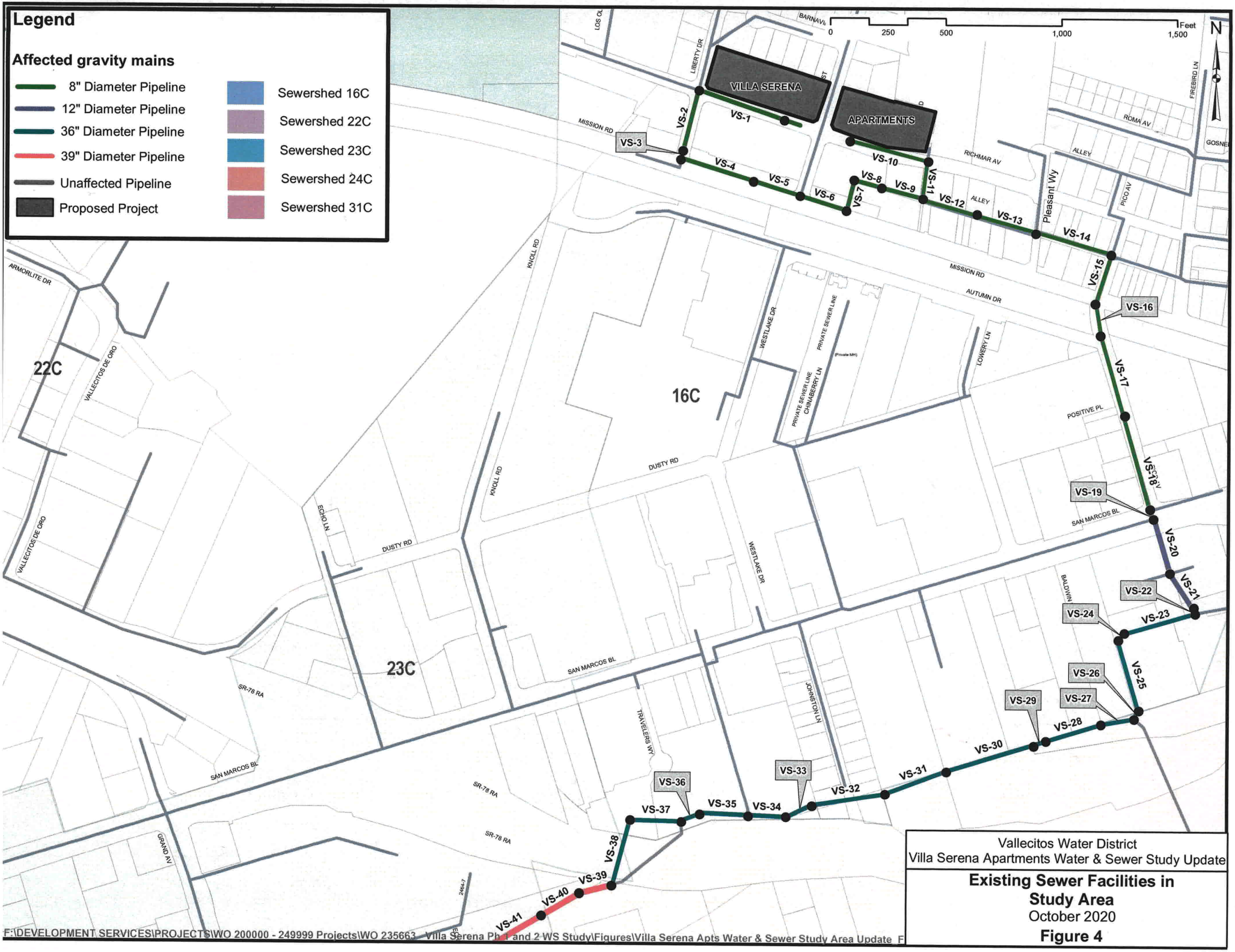
Land Use Type	Area (acres)	Residential Units	Duty Factor (gpd/ac)	Wastewater Flow (gpd)
2018 Master Plan Land Use Flows				
Residential 15-20 du/ac	4.16		3,300	13,728
Total				**13,728**
Proposed Project Demand				
Residential (30-40du/ac)	4.16	148	6,300	26,208
Total	**4.16**			**26,208**
Sewer Generation Increase				**12,480**



Vallecitos Water District
Villa Serena Apartments Water & Sewer Study Update

Existing Sewer Facilities in Study Area
October 2020
Figure 3

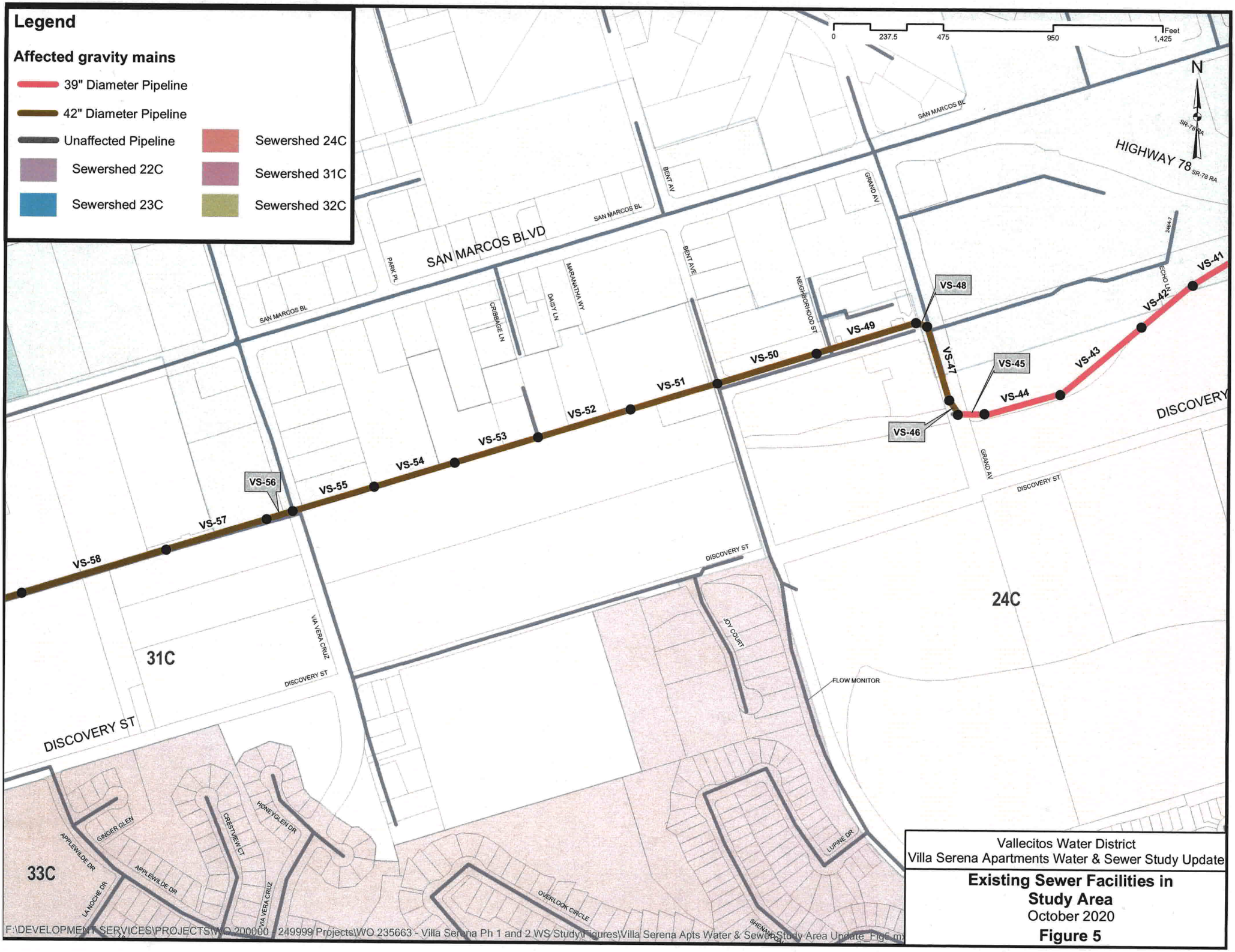
F:\DEVELOPMENT SERVICES\PROJECTS\WO 200000 - 249999 Projects\WO 235663 - Villa Serena Ph 1 and 2 WS Study\Figures\Villa Serena Apts Water & Sewer Study Area Update_Fig3.mxd



Vallecitos Water District
Villa Serena Apartments Water & Sewer Study Update

Existing Sewer Facilities in Study Area
October 2020
Figure 4

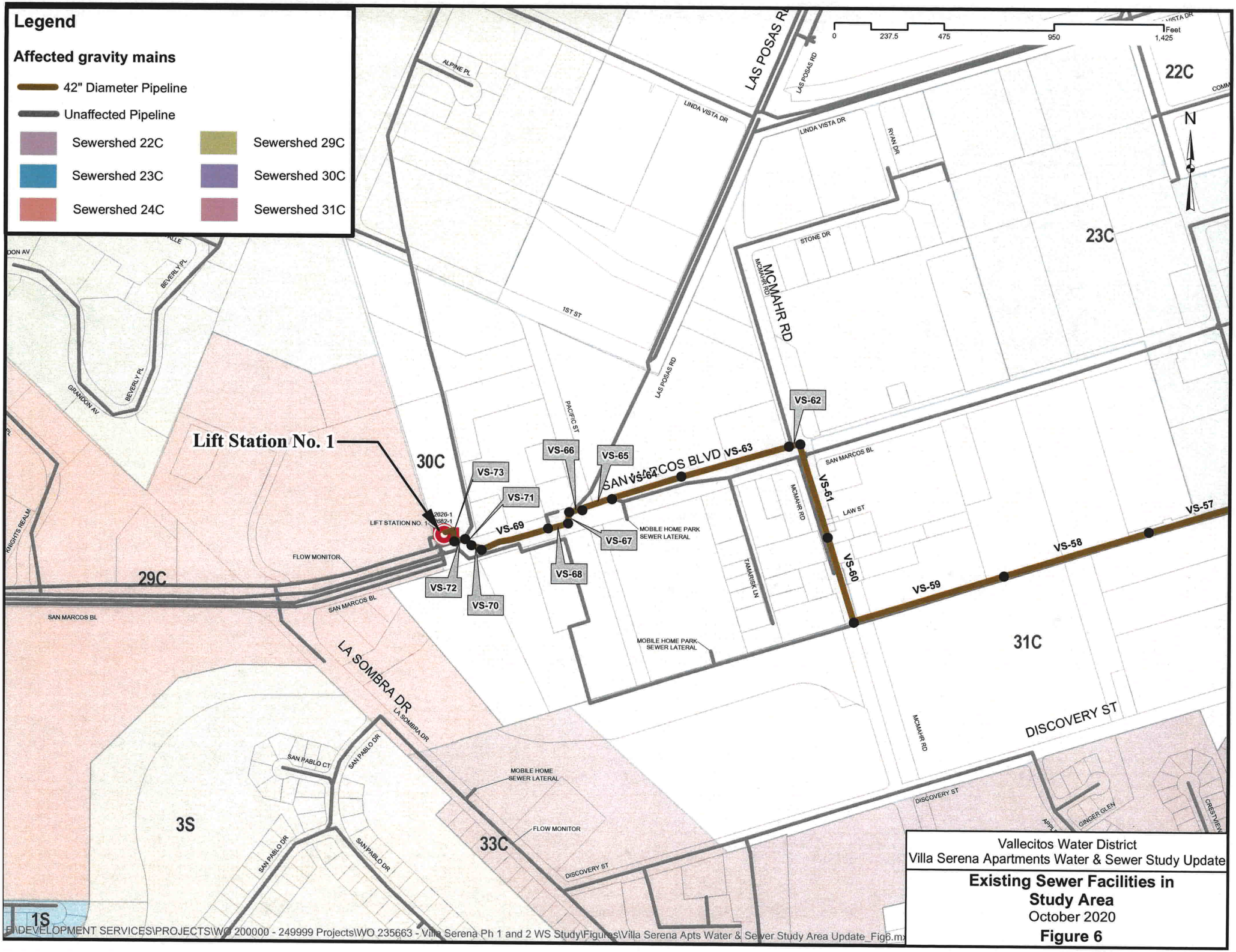
F:\DEVELOPMENT SERVICES\PROJECTS\WO 200000 - 249999 Projects\WO 235663 - Villa Serena Ph 1 and 2 WS Study\Figures\Villa Serena Apts Water & Sewer Study Area Update F



Vallecitos Water District
Villa Serena Apartments Water & Sewer Study Update

Existing Sewer Facilities in Study Area
October 2020
Figure 5

F:\DEVELOPMENT SERVICES\PROJECTS\WO 200000 - 249999 Projects\WO 235663 - Villa Serena Ph 1 and 2 WS Study\Figures\Villa Serena Apts Water & Sewer Study Area Update_Fig5.mxd



Vallecitos Water District
Villa Serena Apartments Water & Sewer Study Update

Existing Sewer Facilities in Study Area
October 2020
Figure 6

R:\DEVELOPMENT SERVICES\PROJECTS\WO 200000 - 249999 Projects\WO 235663 - Villa Serena Ph 1 and 2 WS Study\Figures\Villa Serena Apts Water & Sewer Study Area Update_Fig6.mxd

Wastewater Collection System Analysis

The 2018 Master Plan outlines VWD's wastewater system design criteria which are as follows:

Wastewater Collection Infrastructure Criteria

The wastewater pipeline criteria to be met both within and downstream of the development are as follows:

- Pipes 12 inches in diameter and smaller: ½ full maximum at peak flow
- Pipes over 12 inches in diameter: ¾ full maximum at peak flow
- Minimum velocity: 2 feet per second
- Maximum velocity: 10 feet per second
- Manning's n for gravity pipes: .013
- Hazen-Williams C-factor for force mains/siphons: 120
- Slope for pipes 8 inches in diameter and smaller: 0.4% minimum
- Slope for pipes over 8 inches in diameter: to be determined by VWD

When flow depth in gravity pipes exceeds maximum levels as stated above, a pipe upsize will be specified.

Wastewater Model Scenarios

The following scenarios were modeled to identify system impacts that may be created by the proposed sewer generation, and to recommend any improvements required to provide service to the Project:

- Average Dry Weather Flow with existing flows at the Project site
- Average Dry Weather Flow with the proposed Project
- Peak Dry Weather Flow with existing flows at the Project site
- Peak Dry Weather Flow with the proposed Project
- Peak Wet Weather Flow with existing flows at the Project site
- Peak Wet Weather Flow with the proposed Project

The peak dry weather curve is:

$$\text{Peak Dry Weather Factor} = 2.16 \times (\text{Average Dry Weather Flow Rate})^{-0.1618}$$

The wet weather peak curve is:

$$\text{Peak Wet Weather Factor} = 2.78 \times (\text{Average Dry Weather Flow Rate})^{-0.087}$$

Wastewater Model Results

Modeling focused not only on the sewer collection infrastructure in the direct vicinity of the Project, but also on all downstream infrastructure from the development to Lift Station No. 1 on San Marcos Boulevard that would be impacted by the Project flows (see Figures 3 - 6).

The modeling results show that with the addition of the proposed project, there are system deficiencies in pipeline segments in the vicinity of the development as well as downstream pipelines under peak wet weather flows during ultimate build-out conditions. Table 4 presents a summary of the modeling results from this analysis.

In order to alleviate these deficiencies, the following pipeline improvements would need to occur:

- Upsize approximately 1,528 feet of existing 8-inch diameter sewer main in Mission Road, through Alley to Pico Ave to 10-inch diameter sewer main (VS-6 through VS-9 and VS-12 through VS-14).
- Upsize approximately 1,176 feet of existing 8-inch diameter sewer main in Pico Avenue to San Marcos Boulevard to 12-inch diameter sewer main (VS-15 through VS-19).

The VWD 2018 Master Plan identified the replacement of 1,500 feet of 8-inch sewer main with 12-inch (VS-6 through VS-9 and VS-12 through VS-14) as CIP SP-18 (Mission Alley Pipeline Replacement). CIP SP-18 is a Phase 1 project which is completely funded by development without contribution from the District's capacity fund.

The VWD 2018 Master Plan identified the replacement of 1,400 feet of 8-inch sewer main with 12-inch main (VS-15 through VS-19) as CIP SP-8 (Pico Avenue Sewer Pipeline Replacement). CIP SP-8 is a Phase 1 project which is completely funded by development without contribution from the District's capacity fund.

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

				Wastewater Flows with Existing Density at Project Site				Wastewater Flows with Proposed Project Development			
Pipe ID Number	Length (ft)	Diameter (in)	Slope	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diamter Ratio	Replacement Diamater (in)	Replacement PWWF Depth-to-Diamater Ratio	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diamter Ratio	Replacement Diamater (in)	Replacement PWWF Depth-to-Diamater Ratio
VS-1	349	8	0.006	2	0.06			19	0.15		
VS-2	276	8	0.011	118	0.31			135	0.34		
VS-3	39	8	0.003	118	0.44			135	0.48		
VS-4	330	8	0.004	126	0.42			143	0.46		
VS-5	199	8	0.004	128	0.43			145	0.46		
VS-6	208	8	0.004	180	0.52	10	0.37	197	0.55	10	0.39
VS-7	146	8	0.004	183	0.52	10	0.38	200	0.55	10	0.39
VS-8	123	8	0.004	184	0.53	10	0.38	201	0.56	10	0.40
VS-9	188	8	0.004	195	0.55	10	0.39	212	0.57	10	0.41
VS-10	350	8	0.004	0	0.00			16	0.15		
VS-11	200	8	0.041	50	0.15			66	0.17		
VS-12	263	8	0.004	225	0.60	10	0.42	256	0.65	10	0.45
VS-13	253	8	0.004	238	0.62	10	0.43	269	0.67	10	0.46
VS-14	347	8	0.010	263	0.50	10	0.36	294	0.53	10	0.38
VS-15	211	8	0.005	332	0.72	10	0.49	363	0.78	12	0.39
VS-16	130	8	0.005	334	0.73	10	0.49	365	0.78	12	0.40
VS-17	385	8	0.004	336	0.81	12	0.40	367	0.92	12	0.42
VS-18	412	8	0.004	351	0.85	12	0.41	382	<1	12	0.43
VS-19	38	8	0.008	361	0.65	10	0.45	392	0.69	12	0.36
VS-20	249	12	0.011	365	0.33			396	0.34		
VS-21	184	12	0.040	365	0.23			396	0.24		
VS-22	23	12	0.183	365	0.16			396	0.17		
VS-23	318	36	0.004	6547	0.41			6578	0.41		
VS-24	39	36	0.004	6547	0.41			6578	0.41		
VS-25	319	36	0.004	6547	0.41			6578	0.41		
VS-26	38	36	0.004	6547	0.41			6578	0.41		
CIP SP-18 (VS-6 through VS-9 & VS-12 through VS-14)						CIP SP-8 (VS-15 through VS-19)					

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

				Wastewater Flows with Existing Density at Project Site				Wastewater Flows with Proposed Project Development			
Pipe ID Number	Length (ft)	Diameter (in)	Slope	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diamter Ratio	Replacement Diamater (in)	Replacement PWWF Depth-to-Diamater Ratio	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diamter Ratio	Replacement Diamater (in)	Replacement PWWF Depth-to-Diamater Ratio
VS-27	139	36	0.004	8802	0.48			8833	0.49		
VS-28	294	36	0.003	8804	0.53			8835	0.53		
VS-29	12	36	0.017	8804	0.33			8835	0.33		
VS-30	438	36	0.005	8806	0.45			8837	0.46		
VS-31	229	36	0.005	8807	0.45			8838	0.46		
VS-32	371	36	0.006	8807	0.43			8838	0.43		
VS-33	124	36	0.005	8809	0.45			8840	0.46		
VS-34	167	36	0.005	8812	0.45			8843	0.46		
VS-35	201	36	0.004	9107	0.49			9138	0.49		
VS-36	91	36	0.005	9109	0.46			9140	0.46		
VS-37	220	36	0.005	9111	0.46			9142	0.46		
VS-38	286	36	0.005	9112	0.46			9143	0.46		
VS-39	210	39	0.004	9207	0.44			9238	0.44		
VS-40	176	39	0.003	9210	0.48			9241	0.48		
VS-41	271	39	0.002	9213	0.54			9244	0.54		
VS-42	297	39	0.002	9217	0.54			9248	0.54		
VS-43	452	39	0.002	9221	0.54			9252	0.54		
VS-44	337	39	0.002	9223	0.54			9254	0.54		
VS-45	123	39	0.008	9416	0.37			9447	0.37		
VS-46	58	42	0.004	9418	0.40			9449	0.40		
VS-47	308	42	0.003	9420	0.43			9451	0.43		
VS-48	69	42	0.001	9424	0.60			9455	0.60		
VS-49	448	42	0.003	9428	0.43			9459	0.43		
VS-50	448	42	0.003	9433	0.43			9464	0.43		
VS-51	404	42	0.006	9778	0.37			9809	0.37		
VS-52	404	42	0.006	9782	0.37			9813	0.37		

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

				Wastewater Flows with Existing Density at Project				Wastewater Flows with Proposed Project			
Pipe ID Number	Length (ft)	Diameter (in)	Slope	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diamter Ratio	Replacement Diamater (in)	Replacement PWWF Depth-to-Diamater Ratio	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diamter Ratio	Replacement Diamater (in)	Replacement PWWF Depth-to-Diamater Ratio
VS-53	368	42	0.003	9787	0.44			9818	0.44		
VS-54	368	42	0.003	9791	0.44			9822	0.44		
VS-55	368	42	0.003	9795	0.44			9826	0.44		
VS-56	120	42	0.002	9853	0.50			9884	0.50		
VS-57	457	42	0.004	9855	0.41			9886	0.41		
VS-58	650	42	0.004	9858	0.41			9889	0.41		
VS-59	677	42	0.004	9861	0.41			9892	0.41		
VS-60	373	42	0.004	9868	0.41			9899	0.41		
VS-61	420	42	0.004	9871	0.41			9902	0.41		
VS-62	20	42	0.001	9875	0.62			9906	0.62		
VS-63	486	42	0.004	9901	0.41			9932	0.41		
VS-64	500	42	0.004	9904	0.41			9935	0.41		
VS-65	84	42	0.008	10352	0.35			10383	0.35		
VS-66	20	42	0.013	10354	0.31			10385	0.31		
VS-67	15	42	0.053	14053	0.25			14084	0.25		
VS-68	138	42	0.003	14055	0.54			14086	0.55		
VS-69	347	42	0.002	14065	0.62			14096	0.62		
VS-70	18	42	0.006	14067	0.45			14098	0.45		
VS-71	10	42	0.030	14069	0.29			14100	0.29		
VS-72	10	42	0.010	14261	0.39			14292	0.39		
VS-73	73	42	0.004	14839	0.52			14870	0.52		
CIP SP-18 (VS-6 through VS-9 & VS-12 through VS-14)						CIP SP-8 (VS-15 through VS-19)					

Wastewater Lift Station Analysis

Lift stations are sized for peak wet weather flow with manufacturer's recommended cycling times for pumping equipment. Since the proposed Project is not located in a sewer shed that is served by a lift station, there are no lift station upgrade requirements for this project.

Parallel Land Outfall Analysis

VWD's existing land outfall is shown in Figure 7. The outfall is approximately 8 miles in length and consists of 4 gravity pipeline sections and 3 siphon sections varying in diameter from 20 inches to 54 inches. VWD maintains the entire pipeline from Lift Station No. 1 to the Encina Water Pollution Control Facility (EWPCF). From Lift Station No. 1 to El Camino Real, VWD is the sole user of this pipeline. From El Camino Real to the EWPCF, the ownership capacity is as shown in Table 5 below:

Table 5 – Land Outfall Capacity Ownership by Agency

Agency	Ownership Percentage	Capacity (MGD)
Carlsbad	23.98%	5.00
Vista	17.99%	3.75
VWD	58.03%	12.10
Totals	**100.00%**	**20.85**

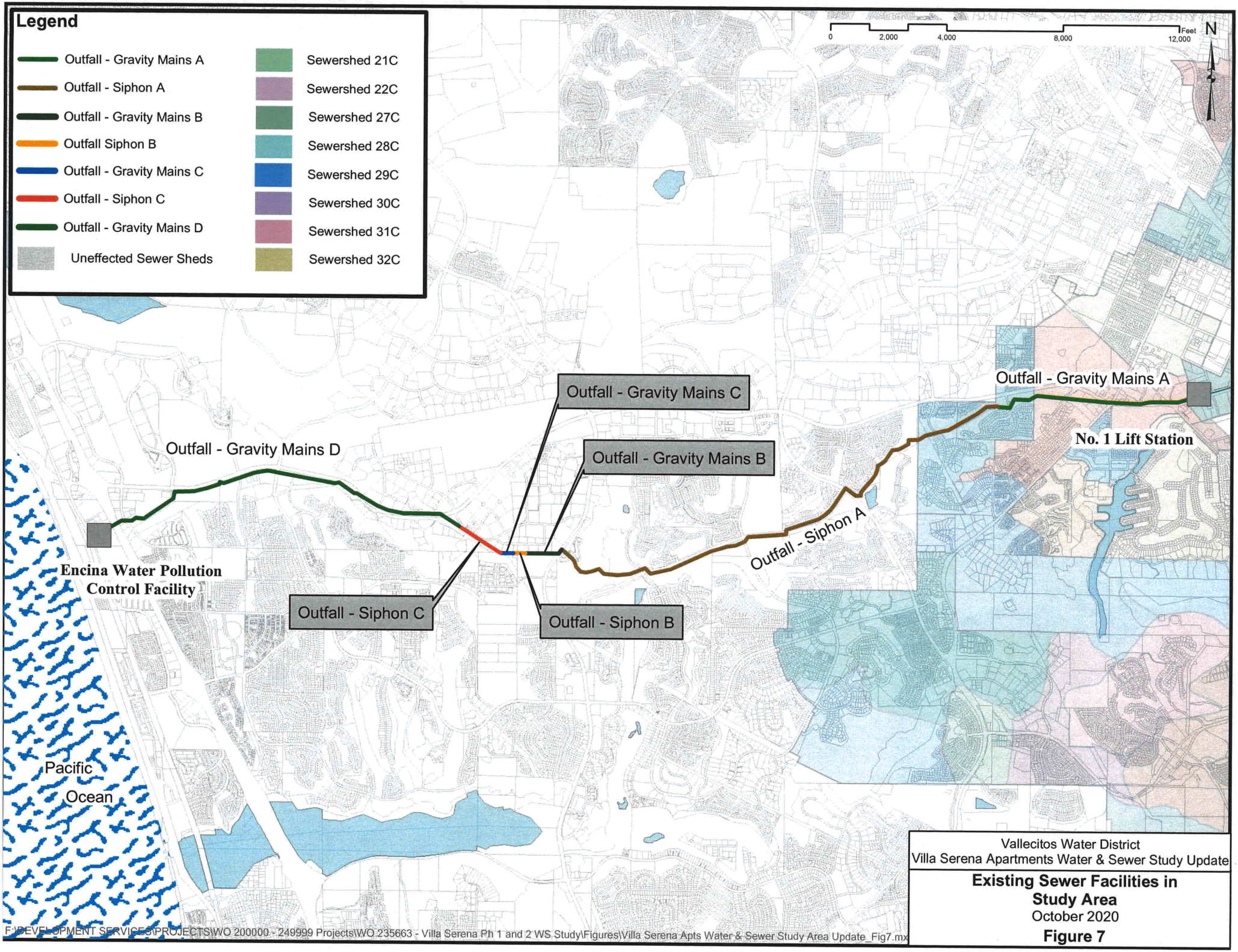
The Meadowlark Water Reclamation Facility (MRF) has a capacity of 5.0 MGD with a peak wet weather capacity of 8.0 MGD. Therefore, VWD has a combined peak wet weather wastewater collection capacity of 20.10 MGD (12.10 MGD + 8.0 MGD).

VWD's 2014 average daily wastewater flow through the land outfall was 7.5 MGD. This corresponds to a peak wet weather flow of 17.5 MGD, which falls within VWD's combined peak wet weather collection capacity.

The 2018 Master Plan estimated that, under approved land uses, VWD has an ultimate build-out average dry weather flow of 14.4 MGD. This corresponds to a peak wet weather flow of 31.7 MGD, which exceeds VWD's combined peak wet weather collection capacity. To accommodate additional wastewater flows from planned development, the 2018 Master Plan recommended conveyance of peak flows to the EWPCF through a parallel land outfall.

The Project proposes to generate 12,480 gallons per day of additional average wastewater flow that was not accounted for in the Land Outfall's capacity studied in the 2018 Master Plan.

The analysis finds that outfall capacity is currently available to serve the Project's proposed wastewater generation. Wastewater Capital Facility Fees paid by this Project will be used toward design and construction of a parallel land outfall to be sized to accommodate ultimate build-out wastewater flows.



Vallecitos Water District
Villa Serena Apartments Water & Sewer Study Update

Existing Sewer Facilities in Study Area
October 2020
Figure 7

F:\DEVELOPMENT SERVICES\PROJECTS\WO 200000 - 249999 Projects\WO 235663 - Villa Serena Ph 1 and 2 WS Study\Figures\Villa Serena Apts Water & Sewer Study Area Update_Fig7.mxd

Wastewater Treatment Facility Analysis

VWD utilizes two wastewater treatment facilities to treat wastewater collected within its sewer service area.

- The Meadowlark Reclamation Facility (MRF) has liquids treatment capacity of up to 5.0 MGD with a peak wet weather capacity of 8.0 MGD. MRF does not have solids treatment capacity, and therefore all solids are treated at the Encina Water Pollution Control Facility (EWPCF).
- The EWPCF is located in the City of Carlsbad. This is a regional facility with treatment capacity of up to 40.51 MGD. VWD's current ownership capacity is noted below.

Solids Treatment Capacity
VWD currently owns 10.47 MGD of solids treatment capacity at EWPCF. VWD's 2014 average daily wastewater flow was 7.5 MGD. Therefore, the analysis finds that adequate solids treatment capacity exists at this time to serve the Project.

The ultimate average wastewater flow identified in the 2018 Master Plan is 14.4 MGD, resulting in a projected solids treatment capacity deficiency of 3.93 MGD.

Liquids Treatment Capacity
VWD currently owns 7.67 MGD of liquids treatment capacity at the EWPCF in addition to the liquid's treatment capacity of 5.0 MGD at MRF for a total of 12.67 MGD of liquids treatment capacity. VWD's 2014 average daily wastewater flow was 7.5 MGD. Therefore, the analysis finds that adequate liquids treatment capacity exists at this time to serve the Project.

The ultimate average wastewater flow identified in the 2018 Master Plan is 14.4 MGD, resulting in a projected liquids treatment capacity deficiency of 1.73 MGD.

Ocean Disposal Capacity
VWD currently owns 10.47 MGD of ocean disposal capacity at the EWPCF. VWD's 2014 average daily wastewater flow was 7.5 MGD. Therefore, the analysis finds that adequate ocean disposal capacity exists at this time to serve the Project.

The ultimate average wastewater flow identified in the 2018 Master Plan is 14.4 MGD, resulting in an ocean disposal deficiency of 3.93 MGD.

The District has determined that adequate wastewater treatment and disposal capacity exists for the proposed Project at this time subject to the qualifications referenced in the Conclusions and Conditions.

CONCLUSION AND CONDITIONS

The proposed Villa Serena Project is expected to increase average daily water demands by 8,320 gallons per day and wastewater flows by 12,480 gallons per day over the ultimate flows projected in the 2018 Master Plan.

The study concludes that the proposed development will result in the following impacts:

- An increase of 41,600 gallons of potable water storage requirement.
- An increase of 12,480 gallons per day in solids handling, liquids handling and ocean disposal capacity requirements at Encina Water Pollution Control Facility.
- An increase of 12,480 gallons per day in the parallel land outfall's capacity requirement.

The following items are required for providing service to the proposed Project:

- Payment of all applicable Water and Wastewater Capital Facility Fees in affect at the time service is committed in accordance with District rules and regulations.
- Construction and acceptance of all on-site water and sewer facilities prior to service.
- Construction and acceptance of all off-site sewer collection facility improvements identified in Table 4 to provide service to the proposed Project, including, but not limited to, the following:

    - Upsize approximately 1,528 feet of existing 8-inch diameter sewer main in Mission Road and Alley to 10-inch diameter sewer main (VS-6 through VS-9 and VS-12 through VS-14). This is identified as CIP SP-18 in the 2018 Master Plan to upsize to a 12-inch sewer main.

    - Upsize approximately 1,176 feet of existing 8-inch diameter sewer main to 12-inch diameter sewer main in Pico Avenue to San Marcos Boulevard (VS-15 through VS-19). This is identified as CIP SP-8 in the 2018 Master Plan.

The District currently has water and sewer capacity available to serve the Project as proposed. However, the ability to provide water and sewer service in the future depends upon ultimate build-out of the Project and could change depending upon the timing of the build-out, as well as build-outs of other development projects, continued reliable water supplies from the San Diego County Water Authority, the District's treatment capacity at the EWPCF and other factors affecting growth in the District which may change over time.

This Study is based on the current adopted land use utilized in VWD's 2018 Master Plan. The study addresses the incremental facility impacts of this Project only and does not include or consider any additional projects within VWD's service area that have deviated from adopted Master Plan land uses. Any land use changes upstream and/or downstream of the Study area may necessitate a revision of any onsite and offsite studies. VWD shall determine if and when revisions to the Study are necessary. Costs for revising this Study shall be borne by the Developer.