Appendix K-1

Draft Sub-Area Master Plan

Gateway Village SAMP

DRAFT
Potable, Sewer, and Non-Potable Water Onsite and Offsite System Analyses

Stantec

Prepared for:
Brookfield

Prepared by:
Stantec

February 6, 2025

Project/File:
184032476

Stantec Consulting Services Inc.

Table of Contents

List of Tables

List of Figures

1 Introduction

Brookfield Properties is developing Gateway Village on an approximately 117-acre property. The development is bounded by Jeffrey Road to the north, Bee Canyon Access Road to the south, private property to the east (Irvine Ranch Conservancy Native See Farm), and Portola Parkway to the west.

The scope of this Sub-Area Master Plan (SAMP) includes conceptual preliminary investigations of the potable water system, sanitary sewer collection system, and non-potable water system impacts to the existing Irvine Ranch Water District (IRWD) infrastructure and proposed IRWD infrastructure that may be required. Previous IRWD SAMPs have been prepared by Stantec in the surrounding area such as Orchard Hills, Portola Hills, Stonegate, and Eastwood Village, including the Bee Canyon Recycled Water Pump Station and pipeline along Bee Canyon Road. Specifically, this area was previously planned to be a park as part of the Planning Area 9B & 9C SAMP prepared in 2006. In 2023, due diligence analyses were conducted, and technical memoranda prepared and coordinated with IRWD with offsite improvement alternatives analyzed and recommendations determined. Sewer alternatives remain to be evaluated for this study. The following Stantec reports serve as the basis of understanding and background to the existing IRWD infrastructure and previous planning for the Project:

- Planning Area 9B & 9C SAMP, February 2006
- Planning Areas 1 & 2 SAMP, April 15, 2016
- IRWD Sewer Capacity Evaluation for [FRB] Landfill Sewer Flow Discharge in Portola Parkway Technical Memorandum, July 2, 2020
- Gateway Park Due Diligence – Non-Potable Water (Recycled Water) System Technical Memorandum, May 31, 2023
- Gateway Park Due Diligence – Sewer Collection System Technical Memorandum, June 5, 2023
- Gateway Park Due Diligence – Potable Water System Alternatives Technical Memorandum, June 14, 2023

2 Land Use

Gateway Village was previously planned to consist of a gym, community center, trailhead, and restrooms. Brookfield Properties is now proposing to develop Gateway Village as a residential development plan for up to 1,360 residential dwelling units (DU) within 14 Parcel Areas (shown as PA 1a to PA 3e per Figure 2-1). The residential development also includes 7.9 acres of park land use, assumed to be community passive parks, and 9.5 acres of landscape associated with the Jeffrey Open Space Trail (JOST). The development also includes 34.2 acres of open space land use which includes right of way and streets.

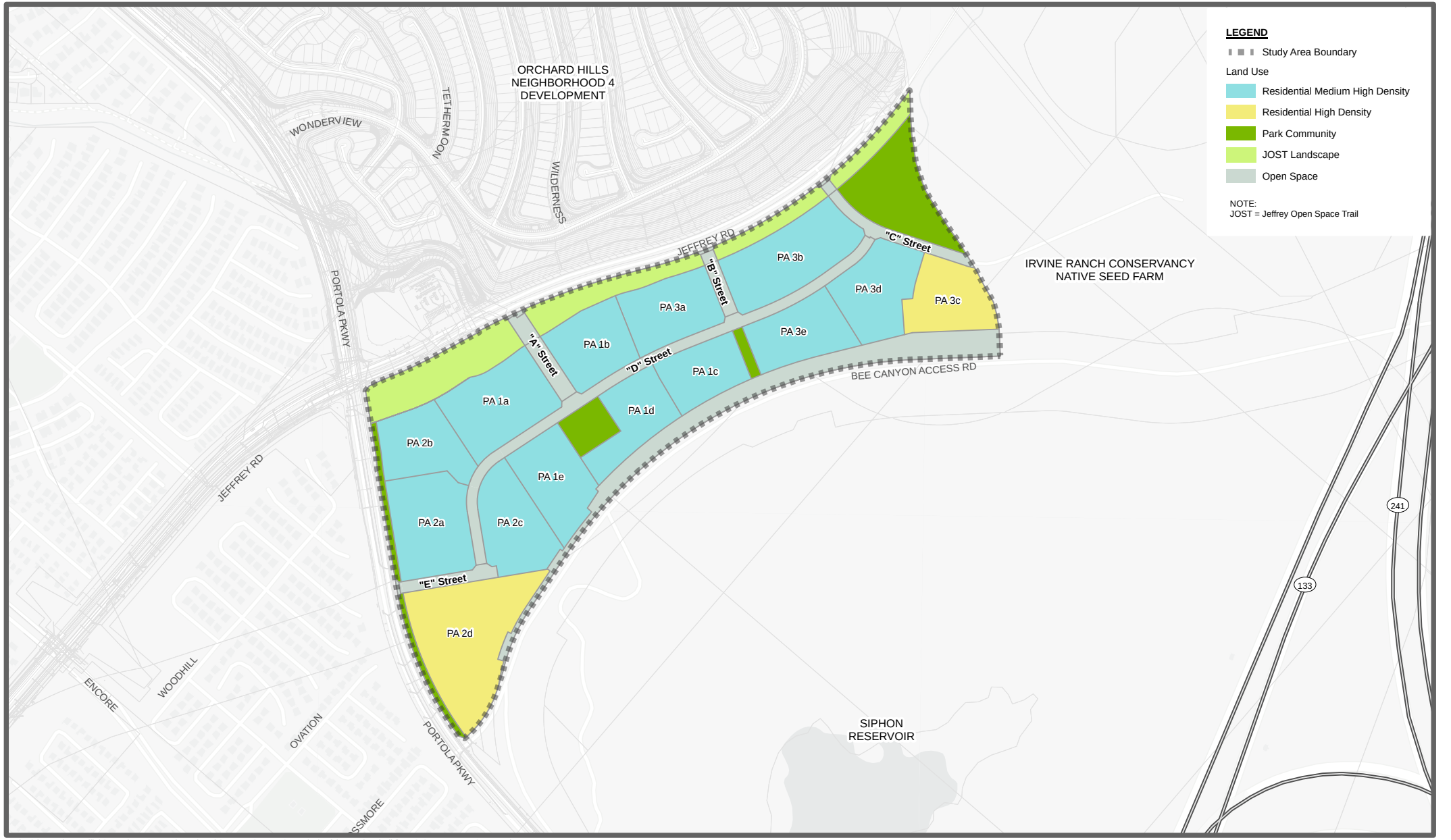
Figure 2-1 and Table 2-1 show the proposed land uses from the latest plan for the Project.

Table 2-1. Proposed Land Use

Land Use	Dwelling Units	Acres
Medium-High Density Residential	927	53.0
High Density Residential	433	12.6
Park[1]	-	7.9
JOST Landscape	-	9.5
Open Space[2]	-	34.2
Total	**1,360**	**117.2**

[1] Park land use assumed to be passive parks

[2] Open Space land use includes right of way and streets



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx Date Exported: 2/6/2025 3:31 AM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE: Irvine Ranch WATER DISTRICT

0 500 1,000 Feet

SAMP for the Gateway Village Development

Land Use

Figure 2-1

3 Potable Water

3.1 Proposed Demands

Water demands for this study are estimated based on the maximum 1,360 DU allowed by existing zoning. However, the proposed development is planning for 1,236 DU, with 927 DU of medium-high density and 309 DU of high density residential. As such, 124 DU will be added and designated as high density residential. Using IRWD water factors, the average day demand (ADD) is approximately 235 acre-feet per year (afy) with a maximum day demand (MDD) of 0.35 million gallons per day (MGD). The peak hour demand (PHD) is estimated to be 530 gallons per minute (gpm). Table 3-2 summarizes the proposed potable water demands.

Table 3-2. Proposed Potable Water Demands

Land Use	DU	Acres	ADD (gpm)	MDD (gpm)[1]	PHD (gpm)[2]
Medium-High Density Residential	927	53.0	103	170	374
High Density Residential	433	12.6	43	71	156
Park	-	7.9	-	-	-
JOST Landscape	-	9.5	-	-	-
Open Space	-	34.2	-	-	-
Total	**1,360**	**117.2**	**146**	**241**	**530**

[1] MDD calculated by multiplying ADD by max day factor of 1.65

[2] PHD calculated by multiplying ADD by peak hour factor of 3.63

Based on fire flow criteria from the latest IRWD WRMP, and assuming fire sprinklers to the buildings will be incorporated, fire flow requirements are 3,000 gpm for both medium-high- and high-density residential land uses. The required minimum residual pressure pursuant to IRWD design criteria is 20 psi. Actual fire flow requirements are determined upon final tract approval and provided by the Orange County Fire Authority. Detailed information regarding building areas and types of construction is needed to provide a more exact estimate of the required fire flows.

3.2 Hydraulic Analysis

3.2.1 Potable Water Supply

The Gateway Village development will receive potable water supply from the existing Zone 5 system, currently supplying the adjacent Orchard Hills development, which has a hydraulic grade line (HGL) of 735-ft. The Zone 5 supply facilities are the existing Zone 3 to 5 Orchard Hills Booster Pump Station located along Portola Parkway and the existing Zone 5 Orchard Hills Reservoir.

3.2.2 Pressure Zone Requirements

The proposed development has two existing options for supply on Portola Parkway, the Zone 3 existing 30-inch pipeline near Jeffrey Road or the Zone 5 existing 16-inch pipeline near Wonderview, which supplies part of the new Orchard Hills development. The ground elevations of the Project are assumed to range between 342 and 430 feet. These elevations exceed the minimum service elevations for IRWD's Zone 3 pressure zone. The low elevations are in the westerly areas along Portola Parkway and elevations increase to the east. The nearby Zone 5, with a 735-ft HGL, is too high which would result in system onsite pressures to exceed IRWD's criteria. Therefore, the onsite system is proposed to be a pressure reduced zone with an HGL of 575 ft that is supplied by Zone 5 and to be identified as proposed Subzone 5R. Based on this HGL, the static pressure range is expected to be between 63 to 100 pounds per square inch (psi).

To meet the IRWD requirements for a looped system with at least a second source to the onsite system, three pressure reducing valves (PRVs) are proposed, one on Portola Parkway and two at the west and east entrance to the site from Jeffrey Road.

3.2.3 Proposed Offsite Infrastructure

Four alternatives for offsite improvements to the site were analyzed in a previous technical memorandum dated June 14, 2023, which determined a preferred alternative. The proposed alternative is described below.

The onsite development will receive Zone 5 water supply from three point of connections to the existing Zone 5 system as shown on Figure 3-2 and described as follows:

The first supply connection is to the existing 16-inch Zone 5 pipeline on Portola Parkway near Wonderview, approximately 1,400 feet northwest of Jeffrey Road at the entrance to Orchard Hills Neighborhood 4 development. A 12-inch Zone 5 pipeline is proposed along Portola Parkway from Wonderview to proposed "E" Street, approximately 2,710 linear feet (lf).

The second supply connection is to the existing 12-inch pipeline on Jeffrey Road, at the intersection of proposed "A" Street. The existing 12-inch pipeline reduces to a 10-inch diameter pipeline and continues to the southwest where it connects to an existing 30-inch Zone 3 pipeline on Portola Parkway. The existing 10- and 12-inch pipeline on Jeffrey Road will need to be disconnected from the existing 30-inch Zone 3 pipeline and reconnected to the proposed 12-inch Zone 5 pipeline on Portola Parkway.

The third supply point of connection is to the existing 12-inch pipeline on Jeffrey Road near the intersection of proposed "C" Street. The existing 12-inch pipeline on Jeffrey Road extends from the point of connection to the southwest near the intersection of Wilderness, connecting to the existing 12-inch pipeline crossing the slope area towards the Orchard Hills development.

Additionally, there is an approximate 30-foot gap between the two existing 12-inch pipelines on Jeffrey Road. Approximately 30-lf of new 12-inch Zone 5 pipeline is proposed to connect the two existing pipelines on Jefferey Road.

The proposed 12-inch Zone 5 pipeline in Portola Parkway and Zone 5 pipelines in Jeffrey Road will allow a loop to be created onsite from Jefferey Road to Portola Parkway, in addition to the looped system in the Orchard Hills development to the north of the proposed project.

3.2.4 Proposed Onsite Infrastructure

To meet pressures onsite within IRWD criteria, a subzone is proposed (Subzone 5R) by installing three PRVs – one near the intersection of Portola Parkway and "E" Street, and two PRVs on Jeffrey Road at the intersections of "A" Street and "C" Street. Subzone 5R pipelines will provide looping between the three PRVs including proposed 12-inch pipelines along "A" Street and "C" Street as well as a proposed 10-inch pipeline along "D" Street as shown on Figure 3-2.

3.2.5 Model Results

The potable water system hydraulic analysis was performed using Infowater Pro modeling software. The system was analyzed with a 24 hour extended period simulations (EPS) for MDD and assumes only the primary PRV-1 is operating. Minimum pressure and velocity were analyzed to meet the IRWD criteria of 45 psi and 7 fps, respectively. Table 3-3 presents the model results.

Table 3-3. Potable Water System MDD Model Results

Minimum Pressure Range	Maximum Pipe Velocity
69 – 108 psi	1.5 ft/s

The system was also analyzed for MDD plus fire flow conditions. To stress the system based on worst case conditions, one PRV is assumed to be closed. Assuming PRV-2 is closed, the primary PRV-1 and secondary PRV-3 are assumed to be operating during MDD plus fire flow conditions. Minimum pressure and velocity were analyzed to meet the IRWD criteria of 20 psi and 15 fps, respectively. Table 3-4 summarizes the model results.

Table 3-4. Potable Water System MDD plus Fire Flow Model Results

Required Fire Flow[1]	Minimum Residual Pressure[2,3]	Maximum Pipe Velocity[3]
3,000 gpm	22 psi	13 ft/s

[1] Modeled fire flow to be split between two fire hydrants.

[2] Minimum fire flow residual pressure located at the 10-inch dead end on "C" Street, along the north boundary of PA 3c.

[3] Evaluated worst case MDD plus fire flow conditions by closing PRV-2, supplied only by PRV-1 and PRV-3.

As shown in Tables 3-3 and 3-4, IRWD velocity and pressure criteria was met for both MDD and MDD plus fire flow conditions.

Table 3-5 presents a summary of the three proposed PRVs that will serve the proposed Project.

Table 3-5. Proposed Pressure Reducing Valves

Valve No.	Location	Zone		HGL (feet)		Setting (psi)	Min. Flow (gpm)	Avg. Flow (gpm)	Peak Hr. Flow (gpm)	MDD plus FF (pm)
		U/S	D/S	U/S	D/S					
PRV-1	Jeffrey Rd & “A” St	5	5R[1]	726	591	95	138	253	531	3,253
PRV-2	Jeffrey Rd & ”C” St	5	5R[1]	726	587	70				
PRV-3	Portola Pkwy & “E” St	5	5R[1]	727	582	105				

[1] Proposed new Subzone 5R
U/S = upstream
D/S = downstream

PRV-1 is proposed to be the primary station, PRV-2 and PRV-3 will be the secondary stations. The settings for each valve are shown on Table 3-6. The primary PRV will require telemetry.

Table 3-6. Proposed PRV Settings

	Primary PRV 1	1st Secondary PRV-2	2nd Secondary PRV-3
Downstream HGL (ft)	591	587	582
PRV Pad Elevation (ft)	372	425	340
Downstream Pressure (psi)	95	70	105
3" CLA-VAL Setting (HGL)	591	587	582
3" CLA-VAL Setting (psi)	95	70	105
8" CLA-VAL Setting (HGL)	580	568	564
8" CLA-VAL Setting (psi)	90	62	97

3.2.6 Pump Station and Reservoir Evaluation

Water is supplied to Zone 5 by the PA1 Orchard Hills Booster Pump Station (BPS) and the Orchard Hills Reservoir. The Orchard Hills BPS consists of three pumps and is supplied by Zone 3. Based on the MDD EPS analysis, one pump operates for 24 hours, a second pump for 9 hours, and the third pump operates for just one hour. At hour 21, all three pumps are operating. The BPS control operations may be able to able to be adjusted to prevent one pump from continuously operating for 24 hours and maintain efficiency. However, all pumps operated within their design capacity. The Orchard Hills Reservoir maintains a tank

level between 14 and 16 feet until hour 8, then begins to fill to 19 feet until hour 12 where it remains full to the end of the 24 hours. Based on the MDD EPS analysis results, there is sufficient pumping and storage capacity. The Zone 5 BPS and Orchard Hills Zone 5 storage reservoir are adequate for the proposed development.

ORCHARD HILLS
NEIGHBORHOOD 4
DEVELOPMENT

IRVINE RANCH CONSERVANCY
NATIVE SEED FARM

SIPHON
RESERVOIR

PROPOSED PRV-2

Proposed 30 lf of 12" pipe to connect two existing 12" pipelines

Existing 10" & 12" Zone 3 pipe on Jeffrey Rd to be converted to Zone 5, disconnect from existing 30" Zone 3 pipe at Portola Pkwy, install new 10" pipe to connect to new 12" Zone 5 pipe in Portola Pkwy.

PROPOSED PRV-1

PROPOSED PRV-3

WONDERVIEW
TETHERMOON
WILDERNESS
JEFFREY RD
PORTOLA PKWY
"A" Street
"B" Street
"C" Street
"D" Street
"E" Street
BEE CANYON ACCESS RD
ENCORE
WOODHILL
OVATION
STILLMORE

PA 1a
PA 1b
PA 1c
PA 1d
PA 1e
PA 2a
PA 2b
PA 2c
PA 2d
PA 3a
PA 3b
PA 3c
PA 3d
PA 3e

241
133

LEGEND

- Study Area Boundary

Existing Pipeline
- Zone 3 (470 HGL)
- Zone 5 (735 HGL)

Proposed Pipeline
- Zone 3 (470 HGL)
- Zone 5 (735 HGL)
- Subzone 5R (575 HGL)
- Abandon Existing Zone 3 Pipeline
- Existing Zone 3 Converted to Zone 5

Proposed Pressure Reducing Valve (PRV)
- Primary PRV Station with Telemetry
- Secondary PRV Station
- Existing Reducer

NOTE:
Private internal looping is required for development areas where 2 hydrants serve more than 28 dwelling units, or if a lateral is over 600-ft long. Looping to be connected to proposed 10-inch water main in "D" St.

Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx

Date Exported: 2/6/2025 3:33 AM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE:
Irvine Ranch WATER DISTRICT

N

0 500 1,000 Feet

SAMP for the Gateway Village Development

Potable Water System Facilities

Figure 3-2

4 Sanitary Sewer

4.1 Proposed Sewer Flows

Sewer flows are estimated based on the preliminary development plan of 1,360 DU, with 927 medium-high density and 433 high density units. Using IRWD generation factors for these densities and number of units, the average daily flow is approximately 0.168 mgd (0.26 cfs). With a peaking factor of 2.2, the peak hour flow is approximately 0.369 mgd, (0.571 cfs). Table 4-7 summarizes the flows.

Table 4-7. Proposed Sewer Flows

Land Use	DU	Acres	Average Flow (cfs)	Peak Flow (cfs) [1]
Medium-High Density Residential	927	53.0	0.179	0.394
High Density Residential	433	12.6	0.080	0.177
Park	-	7.9	-	-
JOST Landscape	-	9.5	-	-
Open Space	-	34.2	-	-
Total	**1,360**	**117.2**	**0.260**	**0.571**

[1] Peak flow calculated by multiplying average flow by peaking factor of 2.2

4.2 Hydraulic Analysis

4.2.1 Onsite Sewer Drainage Areas

Based on the elevation contours, the site generally flows to the westerly portion of the Project to the existing 8-inch sewer crossing Portola Parkway. However, there is a low area at the southwesterly area of the site that will naturally flow towards the existing drainage basin. This yields two sewer drainage areas based on the existing contours.

In the previous due diligence TM analysis performed in 2023, two alternatives were analyzed for the smaller southwesterly drainage area. Alternative 1 was to construct a new sewer across Portola Parkway to the existing manhole on Ovation within the Stonegate development. Alternative 2 would require significant grading to raise the elevations to allow a gravity sewer to flow to the existing 8-inch sewer crossing of Portola Parkway. Based on review of the development planning and design information, Alternative 2 is determined not feasible in being able to provide gravity flow to the existing point of connection to the existing sewer crossing Portola Parkway. Therefore, only Alternative 1 is proposed and was used in this analysis.

4.2.2 Proposed Infrastructure

The Project site is proposed to be split into two drainage areas with two points of connection to the existing sanitary sewer system.

Drainage Area A – This drainage area captures sewer flow from parcel PA 2b, and parcels PA 1a through 3c along “D” Street as shown on Figure 4-3. Flows from this drainage area are conveyed offsite with a connection to the existing sewer crossing Portola Parkway to Woodhill.

Drainage Area B – The second and smaller drainage area captures flow from only three parcels: PA 2a, 2c, and 2d. The flows from these parcels are collected and conveyed offsite via a new 8-inch gravity main routed southerly along the northerly boundary of Portola Parkway, across Portola Parkway to the existing 8-inch sewer at the dead-end cul-de-sac on Ovation, south of Portola Parkway. Construction of this sewer is assumed to require trenchless construction methods, such as jack and bore method.

The sanitary sewer system proposed infrastructure is shown on Figure 4-3.

4.2.3 Offsite Sewer Drainage

The Frank R. Bowerman (FRB) Landfill and the Irvine Company’s Agricultural Headquarter Facilities, also known as the Irvine Ranch Conservancy Native Seed Farm (Conservancy), were taken into consideration when conducting the sewer analysis. The FRB Landfill is located east of the study area, across California State Route 241, and the Conservancy adjoins the study area to the northeast. The IRWD Sewer Capacity Evaluation for FRB Landfill Sewer Flow Discharge in Portola Parkway Technical Memorandum, published on July 2, 2020, evaluates both the FRB Landfill and the Conservancy. Sewer flows and modeling results of the technical memorandum are considered in the sewer system evaluation of the Gateway Village development.

As indicated in the technical memorandum, the FRB Landfill has an average sewer flow of approximately 0.089 mgd (0.138 cfs), with a peak flow of 0.217 mgd (0.335 cfs). The FRB Landfill sewer point of connection is proposed at Manhole 6 in Rossmore Street as shown on Figure 4-3. The Conservancy is assumed to have an average sewer flow of 0.006 mgd (0.009 cfs) and a peak flow of 0.014 mgd (0.022 cfs). The Conservancy point of connection is proposed to be at the upstream-most manhole proposed for the Project site, as shown on Figure 4-3. Given the small flows, the Conservancy flows do not impact the Gateway Village proposed infrastructure sizing.

4.2.4 Model Results

The sanitary sewer system hydraulic analysis was performed using InfoSWMM modeling software. The hydraulic analysis was based on the proposed land use, flows generated, and peaking factor. The proposed sewer segments have a minimum slope of 0.004, per IRWD criteria, with the exception of sewer segments A2 and A3 as indicated in Table 4-8. Velocity and d/D were analyzed to meet the IRWD criteria. Table 4-8 provides a summary of the hydraulic analysis results with the flows for the new development. Figure 4-4 shows the sewer drainage Areas A and B as well as the sewer segments evaluated in Table 4-8.

Table 4-8. Sewer Analysis Results

Area	Sewer ID	Onsite/ Offsite	Status	Location	Pipe Dia (in)	Slope	Peak Flow (cfs)	d/D	Velocity (fps)
A	A1	Offsite	Existing	Portola Parkway Crossing (north of Woodhill)	8	0.014	0.40	0.31	4.3
	A2	Onsite	Proposed	Southern boundary of PA 2b (east of Portola Parkway)	8	0.005	0.40	0.46	2.6
	A3	Onsite	Proposed	"D" Street (from PA 2b to near "A" St)	8	0.005	0.38	0.48	2.3
B	B1	Offsite	Existing	Existing Ovation (south of Encore)	8	0.005 to 0.007	0.95[1]	0.82	3.1
	B2	Offsite	Proposed	Portola Parkway Crossing (north of Ovation)	8	0.004	0.17	0.27	2.3

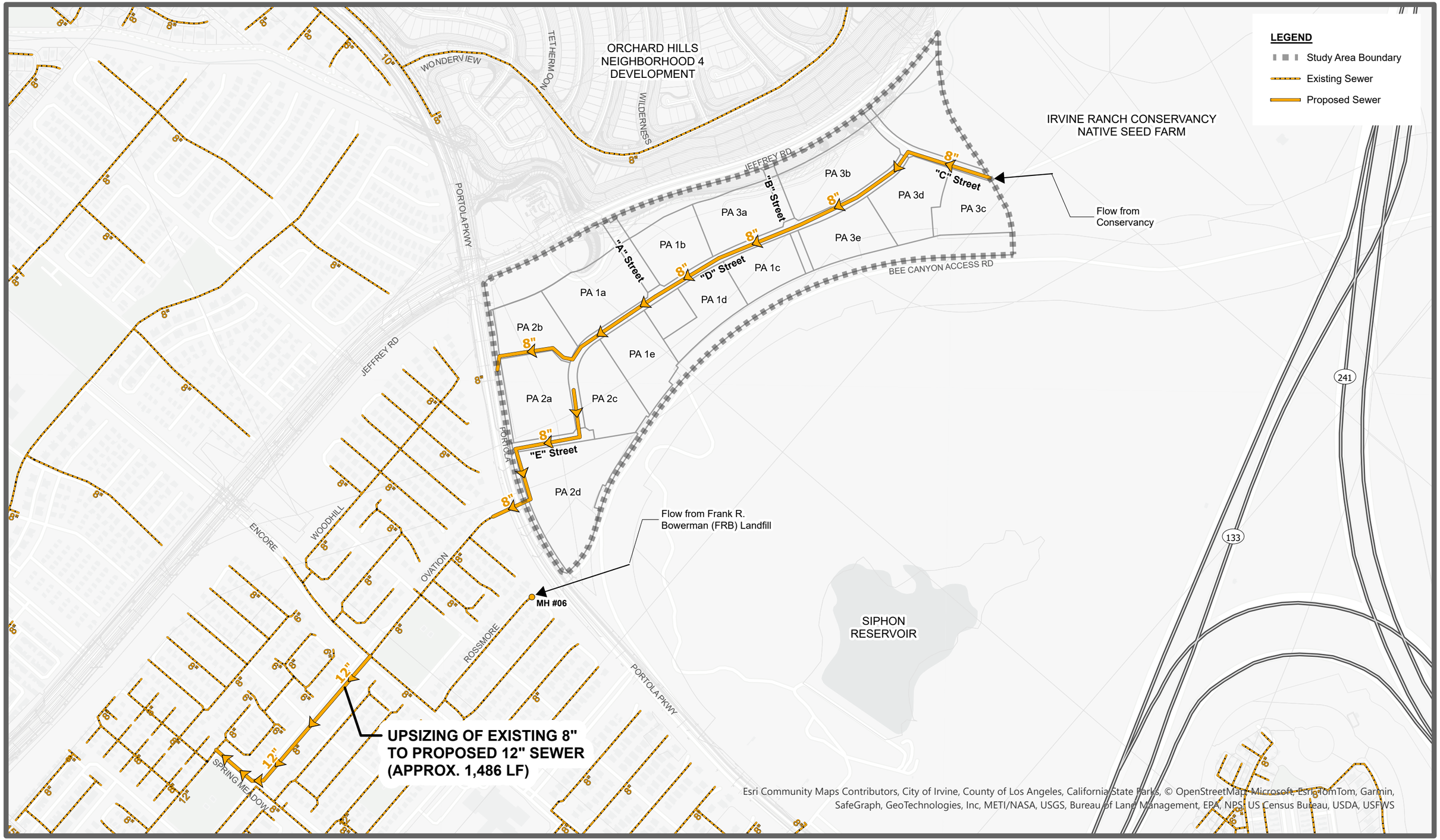
[1] Peak flow includes flows from FRB Landfill and Conservancy, which are assumed to be existing for this analysis.

The analysis included the sewer flows from Conservancy to the northeast of the Project, routed to "C" Street and through the Gateway development. With the inclusion of the Conservancy's flow, the analysis results do not change the proposed sizing or impacts to the onsite system proposed for existing system as described.

4.2.5 Offsite Sewer Impacts

No upsizing is required for the existing sewers north of Encore. However, as shown in Table 4-2, the existing 8-inch sewer on Ovation south of Encore does not meet the d/D criteria. Approximately 1,460 linear feet of existing 8-inch sewer on Ovation will require upsizing to 12-inch from south of Encore to the intersection of Spring Meadow, as illustrated on Figure 4-3. Flow monitoring at Ovation is being performed for this location to verify existing capacity and flow to verify modeling results.

The hydraulic model analysis included the existing 33-inch Jeffrey Road trunk sewer, from Irvine Boulevard to Barranca Parkway. Based on the hydraulic model analysis, after including the proposed Project flows, the d/D in the 33-inch trunk sewer increased from 0.64 to 0.76 which is only marginally above the IRWD criteria of 0.75. Therefore, the proposed Project does not significantly impact the existing 33-inch Jeffrey Road Trunk Sewer and no mitigation improvements are proposed.



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx Date Exported: 2/6/2025 3:34 AM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

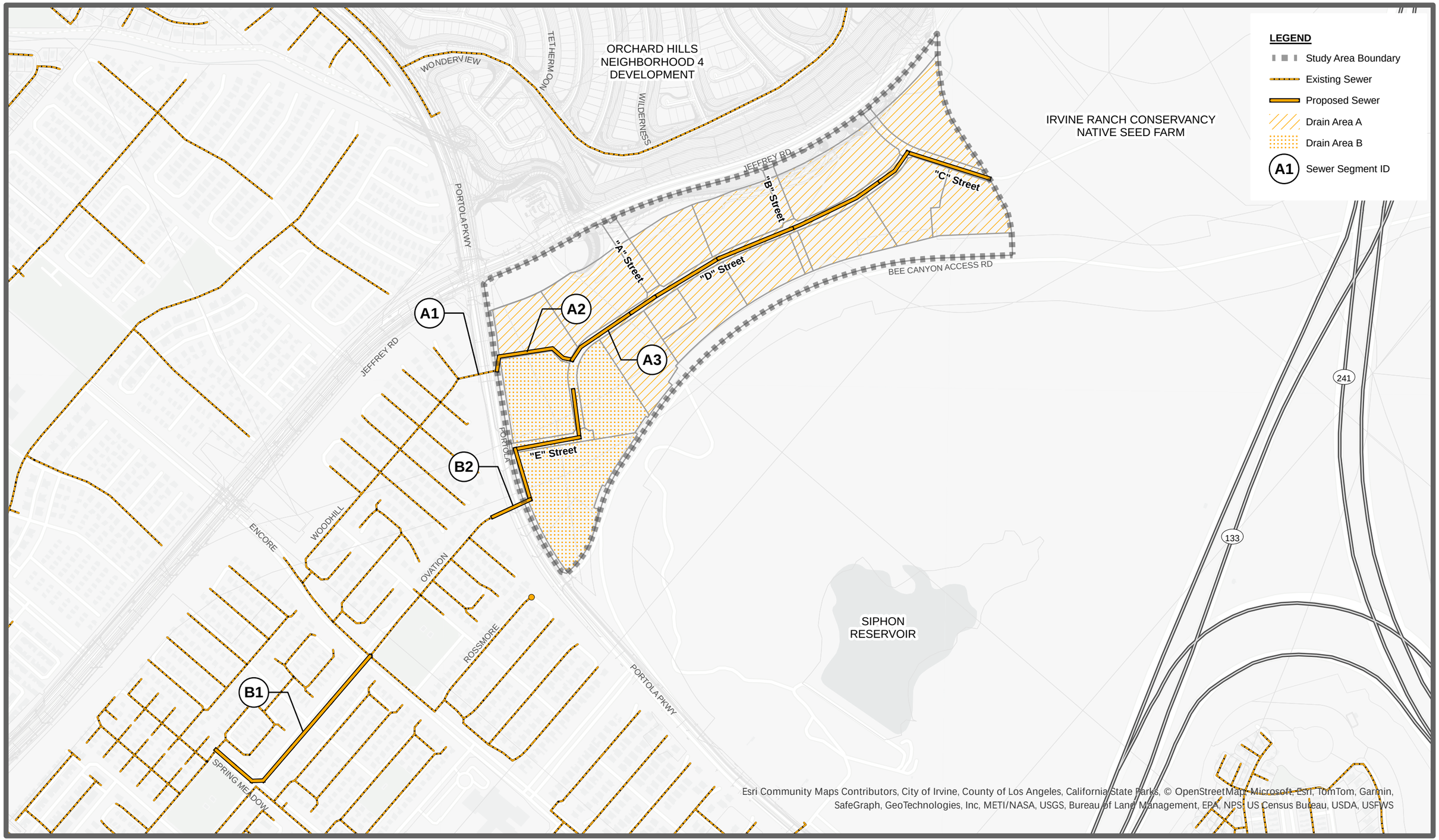
PREPARED FOR THE:
Irvine Ranch
WATER DISTRICT

N

0 300 600 1,200 Feet

SAMP for the Gateway Village Development

Sanitary Sewer System Facilities
Figure 4-3



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx Date Exported: 2/6/2025 12:14 PM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE:
Irvine Ranch WATER DISTRICT

0 300 600 1,200 Feet

SAMP for the Gateway Village Development

Sanitary Sewer System Drainage Areas
Figure 4-4

5 Non-Potable Water

5.1 Proposed Demands

Non-potable water demands are estimated based on the recent development plan including 1,360 DU covering 65.6 acres, 7.9 acres of park area, and 9.5 acres of landscaping with a total irrigation area estimated to be approximately 83 acres. Using IRWD irrigation use factors, the ADD is estimated to be 105 gpm with an MDD of 285 gpm, or 0.41 mgd. The PHD is estimated to be 580 gpm. Table 5-9 summarizes the non-potable demands for the proposed Project.

Table 5-9. Proposed Potable Water Demands

Land Use	DU	Acres	Percent Irrigable	ADD (gpm)[1]	MDD (gpm)[2]	PHD (gpm)[3]
Medium-High Density Residential	927	53.0	22%	40	109	222
High Density Residential	433	12.6	20%	9	24	48
Park	-	7.9	86%	23	63	129
JOST Landscape	-	9.5	100%	33	89	181
Open Space	-	34.2	-	-	-	-
Total	**1,360**	**117.2**		**105**	**285**	**580**

[1] ADD calculated by dividing PHD by peak hour factor of 5.5

[2] MDD calculated by multiplying ADD by max day factor of 2.7

[3] PHD calculated by multiplying acres by percent irrigable by factor of 19 gpm/ac

5.2 Hydraulic Analysis

5.2.1 Non-Potable Water Supply

Non-potable water will be supplied to the Gateway Village project from the existing Zone C system, providing a nominal HGL to the site of 640-ft. Zone C water is primarily supplied to the area from the existing Eastwood Zone C Pump Station near the intersection of Jeffrey Road and Irvine Boulevard, and the existing Zone C Reservoir within the Portola Springs area. An existing 12-inch pipeline in Jeffrey Road and 16-inch pipeline along Portola Parkway are available supply connections to the site.

5.2.2 Pressure Zone Requirements

The lowest elevations are in the southwest areas along Portola Parkway and elevations increase to the northeast. The ground elevations requiring irrigation by the non-potable water system and analysis are

assumed to range between 340 and 460 feet. These elevations can be supplied by the service elevations from IRWD's Zone C pressure zone. Based on the Zone C HGL, the onsite system static pressures range between 78 and 130 psi.

5.2.3 Proposed Infrastructure

The proposed non-potable water system will be supplied by two points of connection of the existing Zone C pipeline on Jefferey Road. One point of connection is at "C" Street with a proposed 6-inch pipeline. The second point of connection is at "A" Street with a proposed 6-inch pipeline. The two points of connection are looped by a proposed 4-inch pipeline along "D" Street. The proposed 4-inch pipeline on "D" Street continues to the southwest and ends at the intersection of "E" Street. The proposed non-potable water pipelines are shown on Figure 5-4.

5.2.4 Model Results

The non-potable water system hydraulic analysis was performed using Infowater Pro modeling software. The system was analyzed with a 24-hour EPS for MDD conditions. The peak hour service pressures based on the hydraulic model show the minimum pressure is 49 psi at the park site located in the northerly area of the Project with the highest elevations, and the maximum peak hour service pressure is 130 psi at the southerly area (PA2d). Model results are shown in Table 5-10.

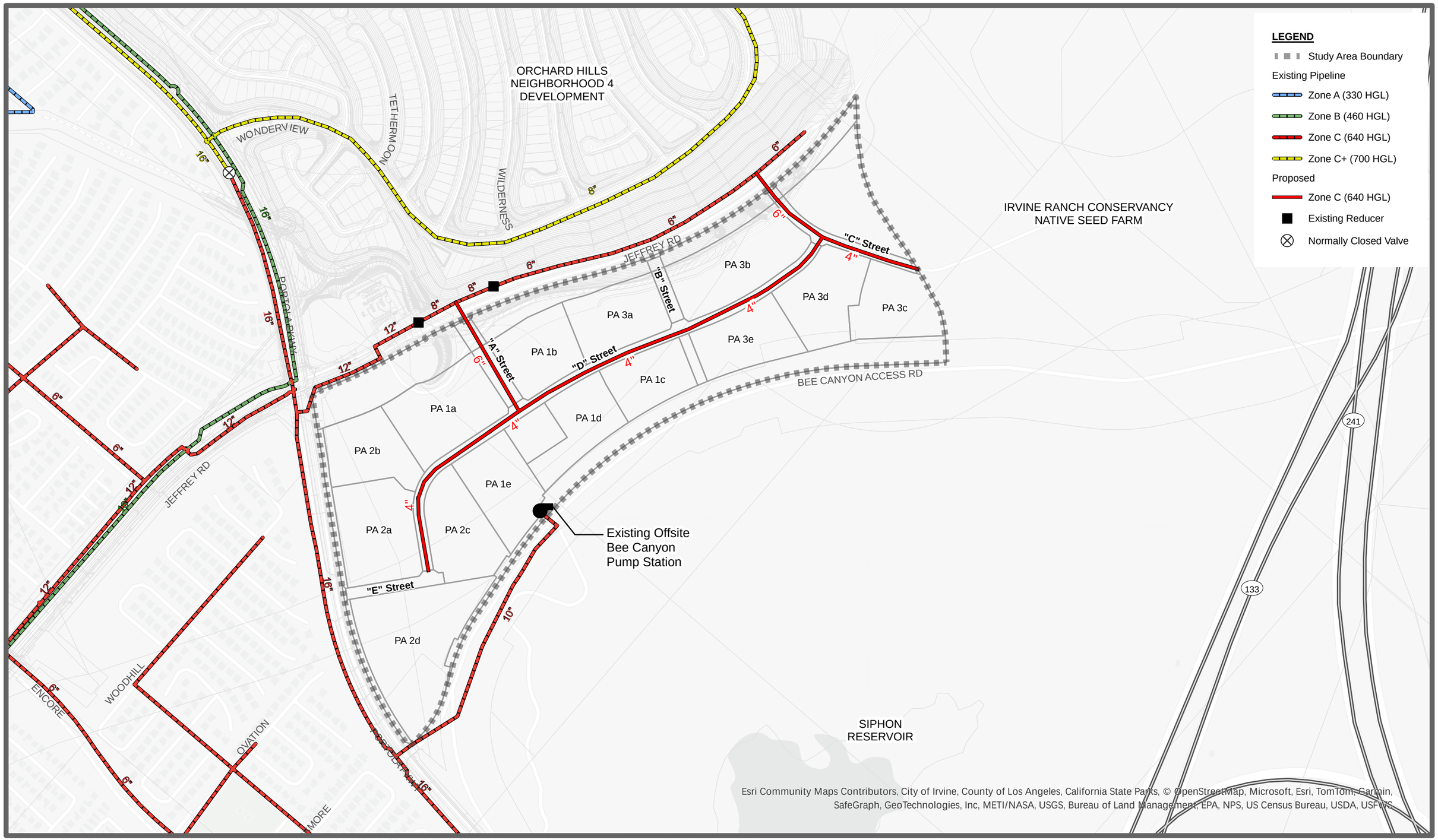
Table 5-10. Non-potable Water System MDD EPS Model Results

Zone	Minimum Pressure Range[1]	Maximum Pipe Velocity
C	48 – 87 psi	5.8 ft/s

[1] Minimum pressure range includes a summary of all the demand nodes within the proposed Project over the 24-EPS period.

5.2.5 Other Considerations

In addition to the proposed pipelines and connections shown on Figure 5-4, the existing Bee Canyon Pump Station is an outdoor offsite facility. This facility should be evaluated for sound attenuation or hardscape improvements as this will be located adjacent to proposed residential areas.



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx

Date Exported: 2/6/2025 12:11 PM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE:
Irvine Ranch WATER DISTRICT

0 500 1,000 Feet

SAMP for the Gateway Village Development

Non-Potable Water System Facilities

Figure 5-5

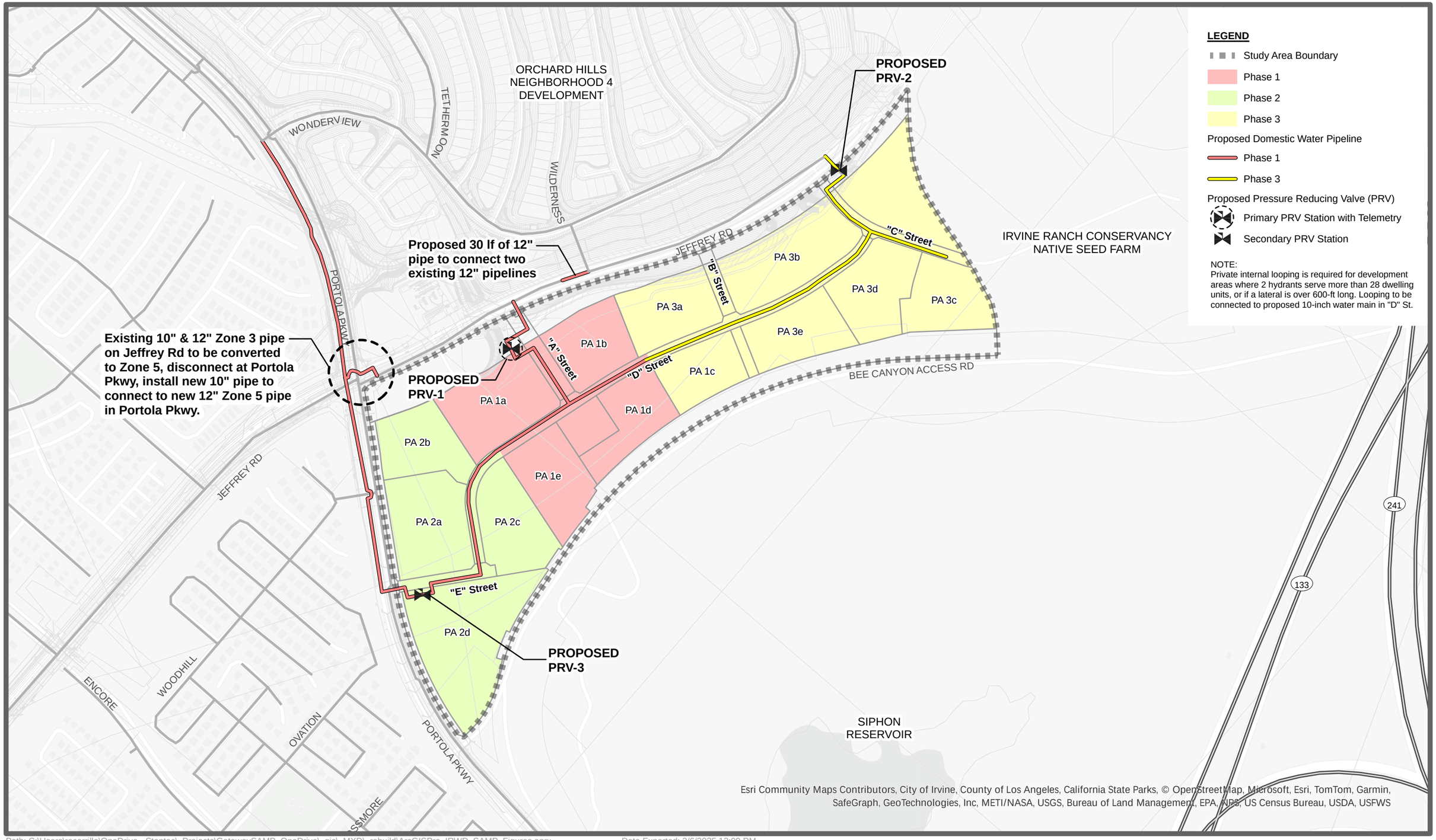
6 Phasing

The project is planned to be developed in three phases. Phase 1 encompasses the central portion, Phase 2 the western portion, and Phase 3 the eastern portion of the Project.

Phasing for the potable water system assumes the Orchard Hills Development proposed pipeline looping on Wonderview has been installed and is considered existing. Phase 1 includes the proposed PRV-1 and PRV-3. PRV-3 and the pipeline within the southern portion of “D” Street and “E” Street, although are located within the Phase 2 development area, are required for Phase 1 to provide adequate looping and a secondary supply. Therefore, there are no additional proposed Phase 2 potable water infrastructure. Phase 3 includes the proposed PRV-2 and pipelines within this phase. Phasing for the proposed infrastructure of the potable water system is shown on Figure 6-5.

Phasing for the sanitary sewer system assumes the FRB Landfill flows are existing. Phase 1 requires the sewer system be constructed in “D” Street to the point of connection to the existing sewer crossing Portola Parkway. Phase 2 will require the onsite sewer constructed on “D” Street and “E” Street, including the new offsite sewer crossing Portola Parkway to Ovation and the offsite upsizing from 8-inch to 12-inch along Ovation in the Stonegate development. Phase 3 sewer improvements will follow the development’s Phase 3 area improvements. Phasing for the proposed infrastructure of the sanitary sewer system is shown on Figure 6-6.

Phasing for the proposed infrastructure of the non-potable water system will follow the development phasing and is shown on Figure 6-7.



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx

Date Exported: 2/6/2025 12:09 PM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

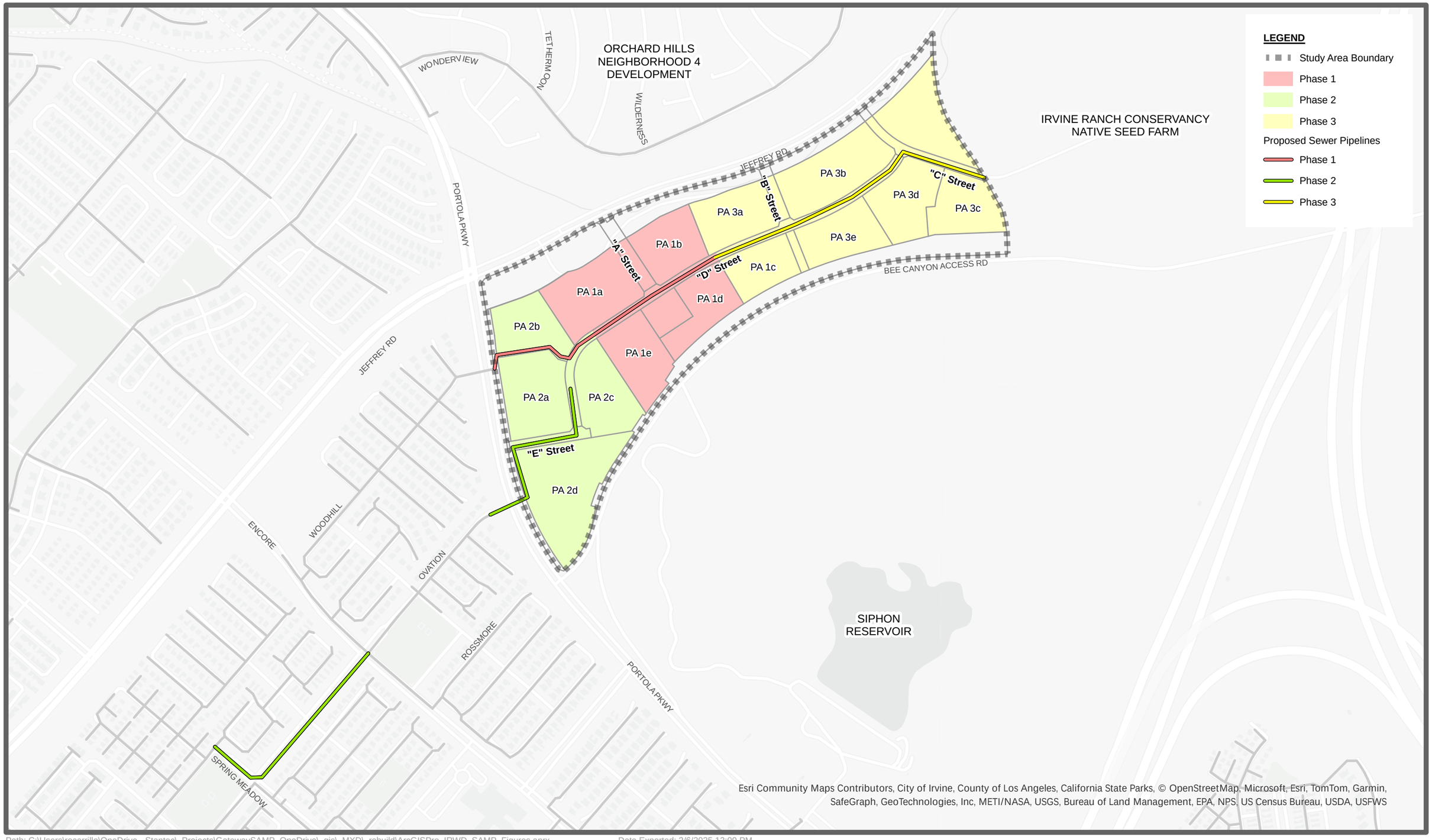
PREPARED FOR THE:
Irvine Ranch WATER DISTRICT

0 500 1,000 Feet

SAMP for the Gateway Village Development

Potable Water System Phasing

Figure 6-6



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx Date Exported: 2/6/2025 12:09 PM

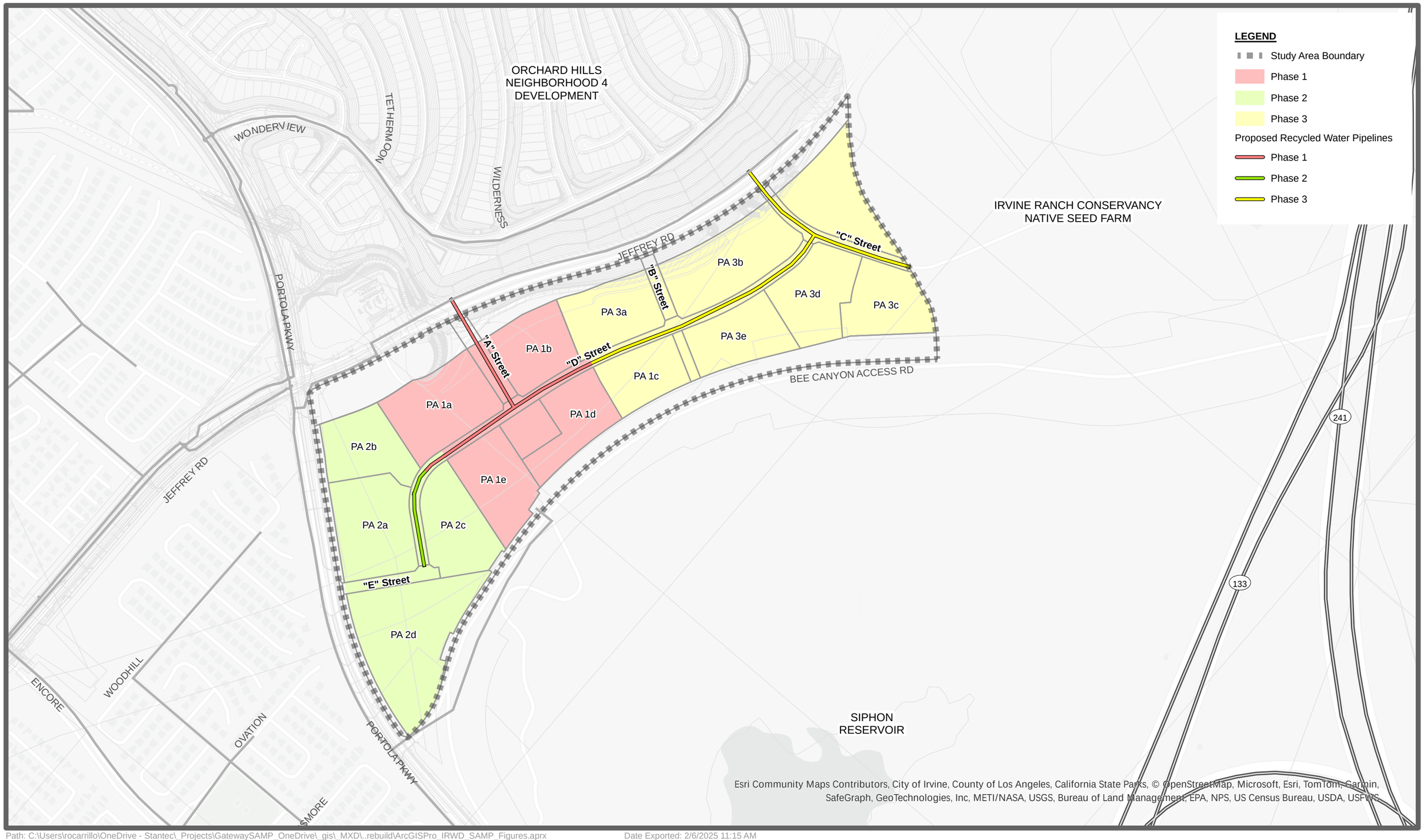
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE:
Irvine Ranch WATER DISTRICT

0 300 600 1,200 Feet

SAMP for the Gateway Village Development

Sanitary Sewer System Phasing
Figure 6-7



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx

Date Exported: 2/6/2025 11:15 AM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE:
Irvine Ranch WATER DISTRICT

0 500 1,000 Feet

SAMP for the Gateway Village Development

Non-Potable Water System Phasing

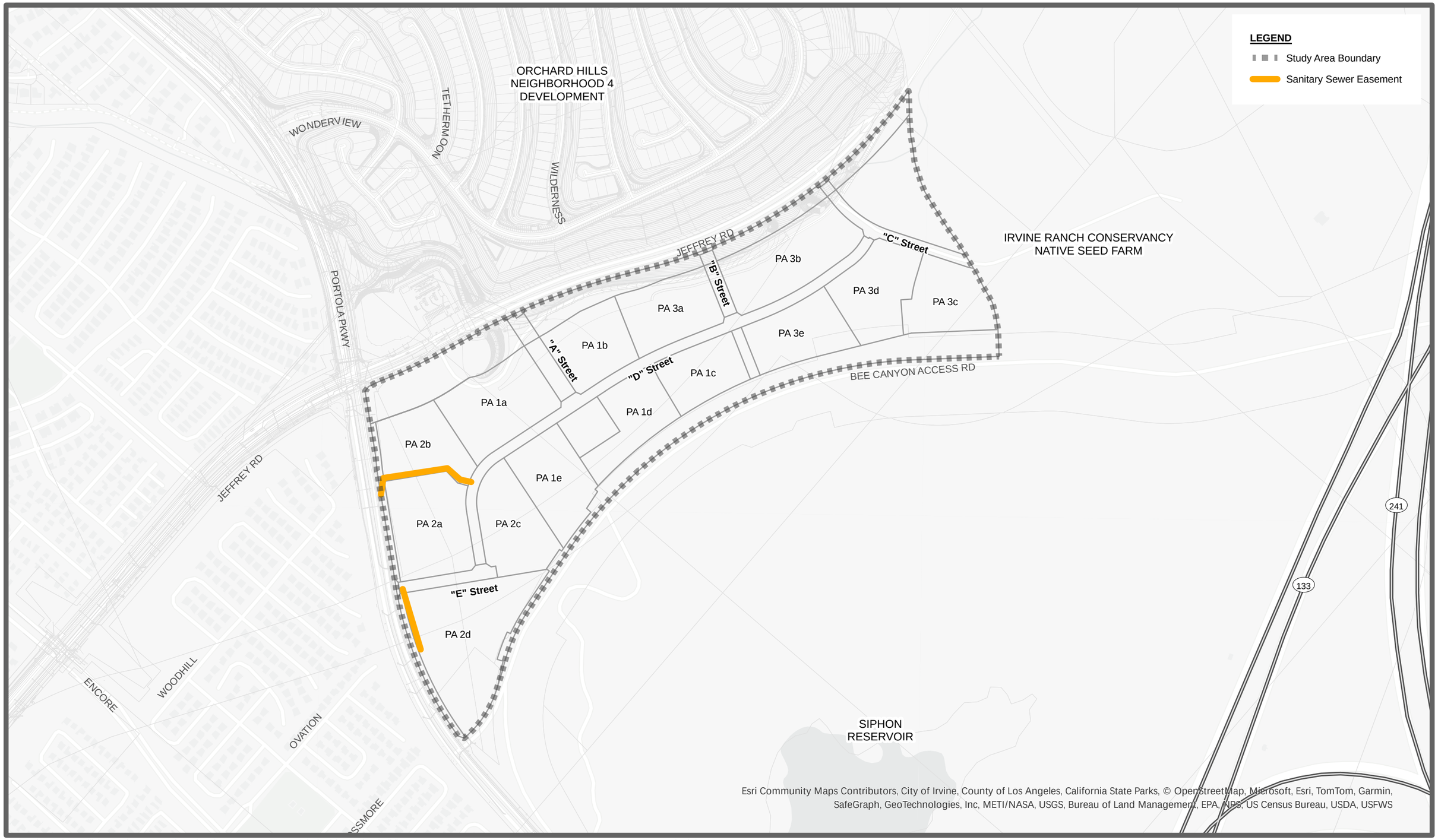
Figure 6-8

7 Easements

IRWD will require unlimited access to their facilities for routine maintenance, operation, repair, replacements, monitoring, and other critical functions. The minimum easement width for water shall be 10 feet and the minimum easement width for sewer facilities shall be 20 feet. In the case of parallel facilities, the easement width shall not overlap. Actual easement widths for sewers that are deeper than 10-feet are to be coordinated with IRWD for specific easement requirements.

All required IRWD pipelines or facilities outside of the public right of way will require easements within the individual tracts or parcels. It is understood that easements for all IRWD maintained facilities will be required in accordance with IRWD guidelines and requirements. Where a proposed easement is required over multiple private properties, roads, or driveways, a separate permanent easement will be necessary from each property owner.

Based on the proposed infrastructure discussed in this report, segments of the proposed sanitary sewer alignments are located within private property and will require easements. The PRVs may need an easement if they are installed outside of the right-of-way or behind the sidewalk and would need to be coordinated with IRWD during the final design. The IRWD sewer facilities within private property requiring easements dedicated to IRWD are shown on Figure 7-8.



Path: C:\Users\rocarrillo\OneDrive - Stantec_Projects\GatewaySAMP_OneDrive_gis_MXD\..rebuild\ArcGISPro_IRWD_SAMP_Figures.aprx Date Exported: 2/6/2025 11:14 AM

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE:
Irvine Ranch WATER DISTRICT

0 250 500 1,000 Feet

SAMP for the Gateway Village Development

Proposed Easements
Figure 7-9

8 Project Costs

The IRWD policy is to fund and construct the "backbone" facilities necessary to serve the proposed development while it is the developer's responsibility to fund and construct the smaller onsite or in-tract facilities. There are no changes to the criteria for determining which facilities are funded by IRWD versus by the developer.

The engineering cost opinions presented in this section are for the proposed facilities in the Project as shown on Figures 3-2, 4-3, and 5-4. The cost opinions for the proposed facilities are provided in Tables 8-11 through 8-13 below.

Table 8-11. Proposed Potable Water System Facility Cost

Item	Quantity	Unit	Unit Costs	Total	IRWD's Portion	Developer's Portion
10-inch PVC Pipe	3,329	LF	$370	$1,231,730	$- -	$1,231,730
10-inch PVC Pipe (Offsite)	245	LF	$460	$112,700	$- -	$112,700
12-inch PVC Pipe	2,058	LF	$570	$1,173,060	$1,173,060	$- -
12-inch PVC Pipe (Offsite)	2,808	LF	$660	$1,853,280	$1,853,280	$- -
Primary PRV[1]	1	EA	$425,000	$425,000	$- -	$425,000
Secondary PRV	2	EA	$350,000	$700,000	$- -	$700,000
Total Potable Water Construction Cost Subtotal				$5,495,770	$3,026,340	$2,469,430
Contingency, Engineering, Admin (50%)				$2,747,885	$1,513,170	$1,234,715
Total Project Cost for Study Area				**$8,243,655**	**$4,539,510**	**$3,704,145**

[1] Primary PRV unit cost includes electrical and telemetry equipment

Table 8-12. Proposed Sewer System Facility Cost

Item	Quantity	Unit	Unit Costs	Total	IRWD's Portion	Developer's Portion
8-inch PVC Pipe	5,511	LF	$400	$2,204,400	$- -	$2,204,400
12-inch PVC Pipe (Offsite)	1,486	LF	$825	$1,225,950	$1,225,950	$- -
Total Sewer Construction Cost Subtotal				$3,430,350	$1,225,950	$2,204,400
Contingency, Engineering, Admin (50%)				$1,715,175	$612,975	$1,102,200
Total Project Cost for Study Area				**$5,145,525**	**$1,838,925**	**$3,306,600**

Table 8-13. Proposed Non-Potable Water System Facility Cost

Item	Quantity	Unit	Unit Costs	Total	IRWD's Portion	Developer's Portion
4-inch PVC Pipe	3,129	LF	$225	$704,025	$- -	$704,025
6-inch PVC Pipe	1,814	LF	$345	$625,830	$625,830	$- -
Total Non-Potable Water Construction Cost Subtotal				$1,329,855	$625,830	$704,025
Contingency, Engineering, Admin (50%)				$664,928	$312,915	$352,013
Total Project Cost for Study Area				**$1,994,783**	**$938,745**	**$1,056,038**

With every community, we redefine what's possible.

Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

Stantec Consulting Services Inc.
38 Technology Drive, Suite 200
Irvine CA 92618-5310
stantec.com