

**WATER & SANITARY SEWER REPORT
FOR
HILLCAMP**

Prepared for:

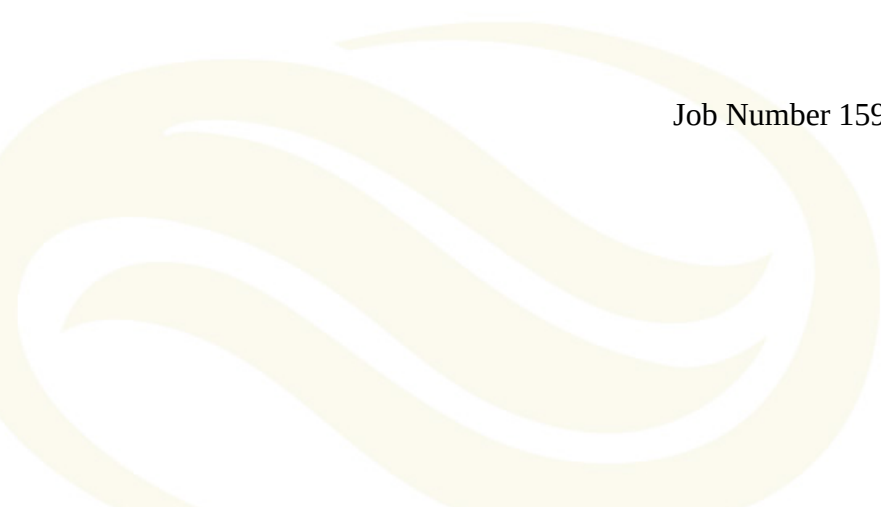
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March 27th, 2026

Job Number 15950.12



CERTIFICATIONS

I hereby affirm that this report (plan) for the overall utility design of Hillcamp was prepared by me (or under my direct supervision) for the owners thereof in accordance with the provisions of the Parker Water & Sanitation District Standard Specifications. I understand that Parker Water & Sanitation District will not assume liability for water or sanitary sewer facilities designed by others.

Kevin Rohrbough, Registered Professional Engineer
Colorado Professional Engineer No. 48992
For and On Behalf of JR Engineering, LLC.

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PROJECT LOCATION AND DESCRIPTION

The Hillcamp development is located in Sections 21, 22, and 28, Township 6 South, Range 67 West of the 6th Principal Meridian. The site is located to the south of RidgeGate Parkway, west of Interstate Highway 25 (I-25). The site is shown in the Vicinity Map in Appendix A.

The proposed Hillcamp Subdivision development is approximately 392 acres of lots and open space and is planned to have 343 single-family detached residential units along with open space, parks, and an amenity center. It is within two (2) separate Planned Development Districts (PDD). The western portion of the site is located in the Southridge Preserve Planned Development District, and will consist of approximately 165 acres, 82 single-family detached residential lots, and open space. The eastern portion of the site is the RidgeGate Planned Development District. This portion will consist of approximately 221 acres and 261 single-family detached residential lots with an Amenity center.

The property is currently vacant and undeveloped with no existing water wells or wastewater treatment system. Parker Water and Sanitation District (PWSD) will provide water and sewer service to the Site.

WATER DISTRIBUTION SYSTEM

General Description

The proposed water distribution system for Hillcamp will consist of 8-inch looped water mains throughout the site. The site's elevation ranges from 6,342' to 6,192' and will be located in Zone 3 of PWSD's system.

The Hillcamp Subdivision will connect into two (2) water mains near the eastern edge of the Site. These water mains will be designed and constructed by Rampart Range Metropolitan District. These mains will be connected to PWSD's system on the east side of I-25. One connection will be made to the Zone 3 water system in RidgeGate and a new booster pump will be constructed to lift the water up to the Zone 3 pressure zone. The other connection will be a gravity feed that connects to the existing water system at the Canyons that is served by the existing Canyons Tank No. 1 by a transmission main. See Exhibit 1 in Appendix A for overall water system connection map.

Hydraulic Design

Design criteria used to analyze the hydraulics of the site were established using the "Parker Water and Sewer Standard Specifications Manual", the "Parker Water & Sanitation District 2020 Water & Wastewater Master Plan".

The following is a summary of the criteria:

Max Day Criteria

Minimum Pressure	40 psi
Maximum Pressure	120 psi
Maximum Velocity	5 ft/s
Maximum Head Loss	1 ft/100 ft

Max Hour Criteria

Minimum Pressure	40 psi
Maximum Pressure	120 psi
Maximum Velocity	10 ft/s
Maximum Head Loss	1 ft/100 ft

Max Day Demand + Fire Flow Criteria

Minimum Pressure	20 psi
Maximum Pressure	120 psi
Maximum Velocity	10 ft/s
Maximum Head Loss	5 ft/100 ft

Fire Flow Demand

Single Family Detached	1,500 gpm*
------------------------	------------

Per IFC Appendix B, Section B105.1 and Table B105.1(1), the required fire flow for one- and two-family dwellings may be reduced by 50% when the building is equipped with an approved automatic sprinkler system installed in accordance with Section 903.3.1.3 (NFPA 13D). All homes in the Hillcamp Subdivision are single-family detached and will be equipped with automatic fire sprinkler systems. Applying this 50% reduction reduces the fire flow demand from the base requirement; however, per the local requirements of the Authority Having Jurisdiction (South Metro Fire Rescue Authority), the resulting fire flow is subject to a minimum floor of 1,500 gpm.

Domestic Demand Design

The unit demands for the western portion of the Site were taken from the approved Southridge Preserve PDD which identifies a maximum of 82 residential units. The unit demands for eastern portion of the site was taken from the approved RidgeGate Planned Development District PDD which identifies a maximum of 261 residential units for a total of 343 residential units on the Site. The criteria within the “Parker Water & Sanitation District 2020 Water & Wastewater Master Plan” was used to determine the domestic water demands for the Site. A single-family equivalent (SFE) was determined to be an average of 3.2 persons. Domestic demand criteria used for the site

analysis is summarized below.

Potable Water Demands

129 gallons/day/capita

PWSD Master Plan – Table 3-3

1 SFE = 3.2 capita

Average Day Demand (ADD) = 129 gallons/day/capita x 3.2 capita x **343 DU's**

Maximum Day Factor (MDF) = 2.65

Peak Hour Factor = 5

Irrigation demand was determined by factoring a demand of 80 gallons per min during the max day demand event. The Amenity Center was assumed to have a demand of 12,500 gallons per day.

System Design Analysis

A WaterCAD model was created for the site to analyze the hydraulics of the proposed water system. “Hillcamp Subdivision - Water Line Exhibit” has been provided within Appendix B for reference of the proposed water system. Scenarios were computed to analyze max day demand, peak hour demand, and max day plus fire flow demand conditions. The site falls within pressure Zone 3 from the “Parker Water & Sanitation District 2020 Water & Wastewater Master Plan” which has a design hydraulic gradient of 6592’ and serves elevations of 6205-6440. Two reservoir connections were modeled, one for the booster pump, to be constructed, with a maximum static hydraulic grade line HGL of 6,592’. The other reservoir connection is for the gravity feed from Canyons Tank No. 1 with a maximum static hydraulic grade line HGL of 6,592’.

It is noted that the preliminary water modeling is based off of the Tank Elevation of Canyons Tank No. 1 which is located ~2 miles south of the Site, and that the actual HGL may vary at this location. PWSD will provide updated pressure information based off of their more detailed regional models.

Maximum Day

The maximum day demand scenario was generated utilizing the criteria established above. The lowest and highest onsite residual pressures for the max day model, with the Canyons Tank No. 1 HGL of 6,592’ and booster pump HGL of 6,592’, were 110 and 134 psi, respectively. All junctions were above the minimum pressure of 40 psi. PRV’s may be required at each residential unit if pressures are to be found to be above the allowable ranges during final design of the water system. Individual PRVs will be required for all lots within pressure zones exceeding 80 psi per IPC §604.8

and PWSD standards. Some of the pressures were above 120 psi. C900 DR14 pipe will be used in high-pressure zones. The maximum pipe velocity in the system was 2.26 ft/s, which is well below the maximum day criteria of 5 ft/s. All nodes and pipes met PWSD residual pressure and velocity requirements. Model results have been tabulated in Appendix C. The max day flow included irrigation as shown in the demand spreadsheet and results section of the report in Appendix C.

The maximum pipe velocity is higher in the Maximum Day model because it accounts for a large, localized irrigation point-demand that drives up localized flow. In contrast, the Peak Hour model correctly this irrigation demand, resulting in lower maximum velocities since the flows are more evenly distributed across the residential network.

Peak Hour

The peak hour demand scenario was generated utilizing the criteria established above. The lowest and highest onsite residual pressures for the peak hour model, with the Canyons Tank No. 1 HGL of 6,592' and booster pump HGL of 6,592', were 110 and 134 psi, respectively. All junctions were above the minimum pressure of 40 psi. PRV's may be required at each residential unit if pressures are to be found to be above the allowable ranges during final design of the water system. The maximum pipe velocity in the system was 1.95 ft/s, which is well below the peak hour criteria of 10 ft/s. All nodes and pipes met PWSD residual pressure and velocity requirements. Model results have been tabulated in Appendix C. Peak Hour Flows did not include irrigation.

Maximum Day + Fire Flow

A comprehensive fire flow analysis was performed using Bentley WaterCAD software to evaluate the hydraulic capacity of the proposed water distribution system. The model simulated system performance under Maximum Day Demand plus Fire Flow conditions to ensure compliance with PWSD and South Metro Fire Rescue Authority requirements. All homes within the Hillcamp Subdivision are single-family detached and will be equipped with automatic fire sprinkler systems installed in accordance with NFPA 13D. Per IFC Appendix B, Section B105.1, the required fire flow for one- and two-family dwellings equipped with an approved automatic sprinkler system may be reduced by 50%, with a minimum fire flow of 1,500 gpm. Accordingly, the fire flow demand for the Hillcamp Subdivision is capped at 1,500 gpm. Fire flow was tested at all nodes in the WaterCAD model to verify that the system can deliver the required 1,500 gpm while

maintaining a minimum residual pressure of 20 psi at all junctions throughout the distribution system.

All junctions were above the minimum pressure of 20 psi. PRV's may be required at each residential unit if pressures are to be found to be above the allowable ranges during final design of the water system. All nodes and pipes met PWSD residual pressure and velocity requirements. Model results have been tabulated in Appendix C.

SANITARY SEWER SYSTEM

General Description

The Hillcamp Subdivision will connect into the sewer main near the eastern edge of the Site. This sewer main will be designed and constructed by Rampart Range Metropolitan District. This main will be connected to PWSD's system on the east side of I-25, see appendix D for Sanitary Sewer Exhibit. Sanitary sewer flows will be conveyed east, across I-25, through the Lyric development and ultimately get treated at the North Water Reclamation Facility. These flows were accounted for in the downstream infrastructure as identified in the *Rampart Range Metropolitan District No. 1 – RidgeGate East Regional Master Plans for Water and Wastewater Utilities*, prepared by Merrick & Company, approved April 10, 2017, see Appendix F.

The proposed Hillcamp development will be serviced by an internal sanitary sewer system comprised of 8-inch mains located within the roadways. The wastewater collection system is broken into 3 separate sanitary sewer basins. SB 1 will gravity outfall to east. SB2 will convey sewer flows to a lift station located along the western boundary of the project. These flows will be lifted in a force main to the east where they will tie into a manhole and ultimately gravity outfall to the east. SB3 consists of only 13 units, and will require a small lift station to convey sewer flows to the east where they will tie into a manhole and ultimately gravity outfall to the east, see Appendix D for Sanitary Sewer Exhibit.

Sanitary Sewer Loading Design

The sanitary loads within the site were determined using the criteria in Table 1 below. The Master Study utilizes an average size per household of 3.2 occupants per dwelling unit and 69 gallons per

capita day. The study also indicates that the 69 gpcd will increase by 0.2% every year until 2035 making it 69.96 gpcd at the time of this report.

Table 1:

Type of Use	Unit Flow (Average Daily Flow)	Peaking Factor (Peak Flow vs. Avg. Day)
Residential: Single Family	223.9/SFE	3.20
Recreation Center	40 gpvd	3.20

Table 1: Ridgeway Sanitary Loading Criteria

SFE: Single Family Equivalent

gpvd: Gallons per Visitor per Day

Using the above criteria, the sanitary loading was developed for the overall site and is shown in Appendix E as *Wastewater Loading for Hillcamp Subdivision*.

Pipe Analysis

Each pipe/conduit in the proposed sanitary sewer system was designed to meet all of the Parker Water & Sanitation Department's design standards and criteria as shown within **Table 3-1** below.

TABLE 3 – 1: SEWER LINE SLOPES		
Pipe Diameter (Inches)	Minimum Slope (Feet Per Hundred)	Maximum Slope (Feet Per Hundred)
4	2	25
6	0.5	20
8	0.4	15
10	0.28	12
12	0.2	11
15	0.15	8.5
18	0.12	6.5
21	0.092	5
24	0.08	4.5
27	0.065	3.5
30	0.06	3.2

Pipe sizes were selected based on design flows and proposed pipe slopes to provide adequate capacity. Minimum slopes were utilized within the preliminary calculations. Sanitary trunkline conduits were designed with a maximum velocity of 8 feet per second with pipes flowing no more than 80% full per Table 6-3 of the Parker Water and Sanitation District's 2020 Master Plan. All of the trunkline sanitary conduits in the proposed Hillcamp Subdivision conform to these parameters (see calculations in Appendix E). A manning's roughness coefficient of 0.013 was utilized for pipeline analysis.

Sanitary Sewer Routing

The basins on the site were delineated to evaluate the primary trunkline(s) that will service the Hillcamp sanitary collection system. For additional information regarding average daily flows, peaking factors, velocity, conduit capacity, sanitary main sizes, and infiltration, refer to Appendices D and E.

Sanitary Basin A

Basin A consists of the entire Hillcamp development, consisting of 343 single-family units, and an amenity center. Basin A was broken up into three (3) smaller sub-basins to analyze the sewer system and loading within each sub-basin, see Exhibit D. Loads from Basin A will all ultimately outfall east into the outfall constructed by Rampart Range Metropolitan District.

Sanitary Sub-Basin A1

Sub-Basin A1 is located in the eastern portion of the development. The sanitary collection system for Sub-Basin A1 will receive flows from single-family units as well as flows from Sub-Basins A2 and A3.

Sanitary Sub-Basin A2

Sub-Basin A2 is located in the western portion of the development. The sanitary collection system for Sub-Basin A2 will be comprised of sanitary loading generated from 182 single-family units and a proposed amenity center. An 8" sewer main will convey flows to a sanitary sewer lift station located at the western edge of the Site (Design Point A2). Flows will be lifted, in a force main, to the east and tie into a manhole where they will connect into Sub-Basin A1. The total combined wastewater loading within Sub-Basin A2 can be found in the calculations at Design Point A2 (DPA2).

Sanitary Sub-Basin A3

Sub-Basin A3 consists of the far southwestern portion of the Site, which will receive onsite sanitary loads from 13 single-family units. The sanitary collection system for Sub-Basin A3 services the smallest number of units. Due to its location on the west side of a large drainageway, Sub-Basin A3 requires a lift station (Design Point A3). Flows will be lifted, in a force main, to the east and tie into a manhole where they will connect into Sub-Basin A1. The total combined wastewater loading within Sub-Basin A3 can be found in the calculations at Design Point A3 (DPA3).

For additional information regarding average daily flows, peaking factors, velocity, conduit capacity, sanitary main sizes, and infiltration, refer to the "Wastewater Loading for Hillcamp Subdivision" calculation sheet as shown within Appendix E and the Sanitary Sewer Exhibit located within Appendix D.

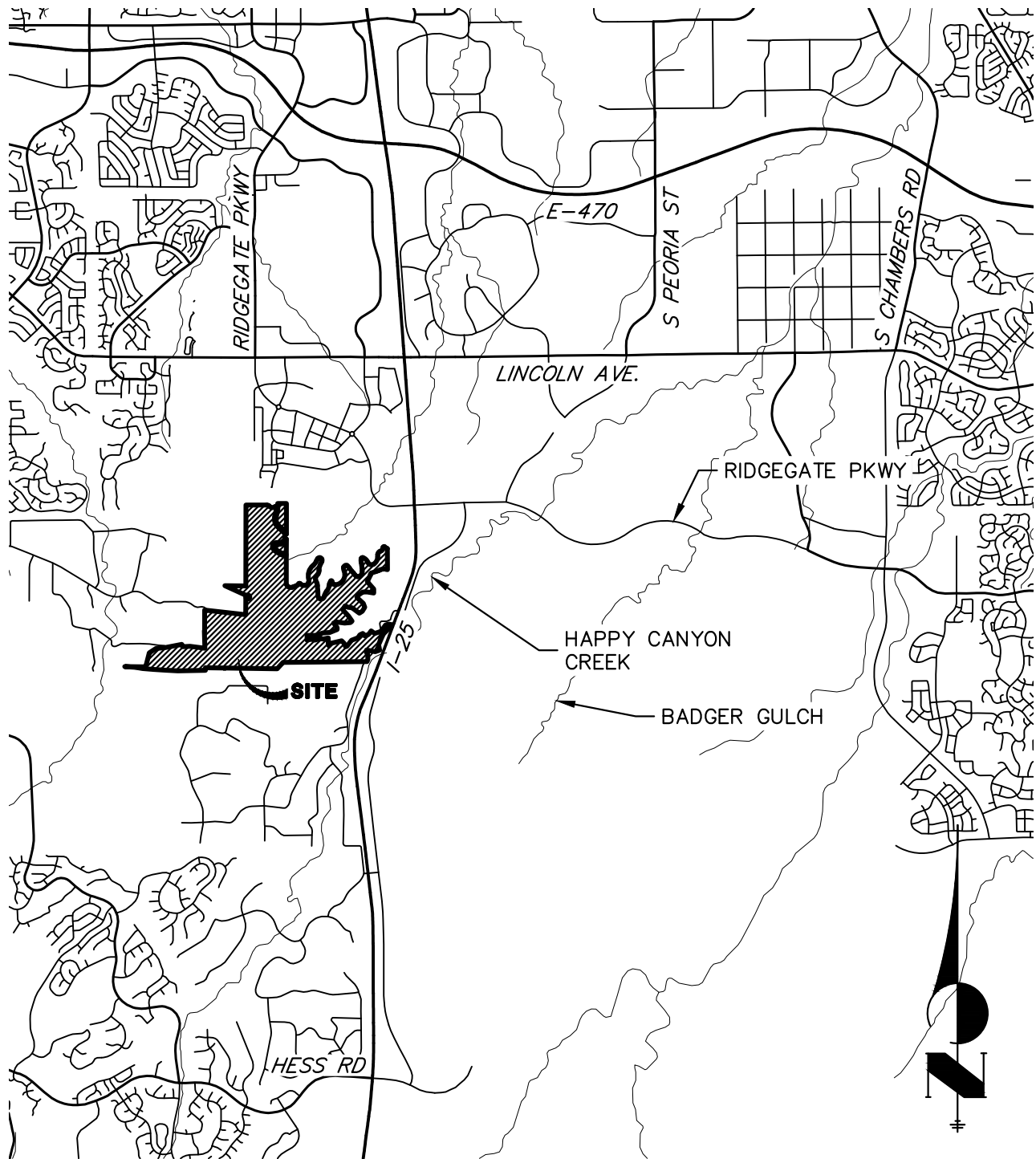
Based on the analysis, the total sewage generated from the Hillcamp Subdivision site is able to be conveyed within an 8-inch sanitary sewer main. The site is served by two (2) lift stations (Sub-Basin A2 and Sub-Basin A3), which will pump flows into the gravity system at varying rates depending on operational conditions. The pump rates for each lift station are not anticipated to exceed the total peak flow of the site. The peak sanitary sewer flow for the site was analyzed using Bentley FlowMaster software, and the outfall main was found to flow at 50.6% full, which is well under the 80% maximum capacity criteria established by the Parker Water and Sanitation District's 2020 Master Plan. This confirms that the proposed 8-inch on-site sanitary sewer has adequate capacity going into the 12-inch outfall to the east of the site, including combined contributions from the gravity basins and both lift stations.

CONCLUSION

The water modeling included in this report is preliminary and based on the best available data. It is noted that pressures may vary, and that more detailed information from PWSD may be available when considering the overall design of the regional water system. The proposed water and sanitary sewer systems that will service the Hillcamp Subdivision development site will be in compliance with the standards set forth by Parker Water and Sanitation District. Permits for the proposed site

APPENDIX A

VICINITY MAP, MASTER PLANS & SITE PLAN



VICINITY MAP

SCALE 1"=5000'

1595012
FEBRUARY 14, 2025
SHEET 1 OF 1

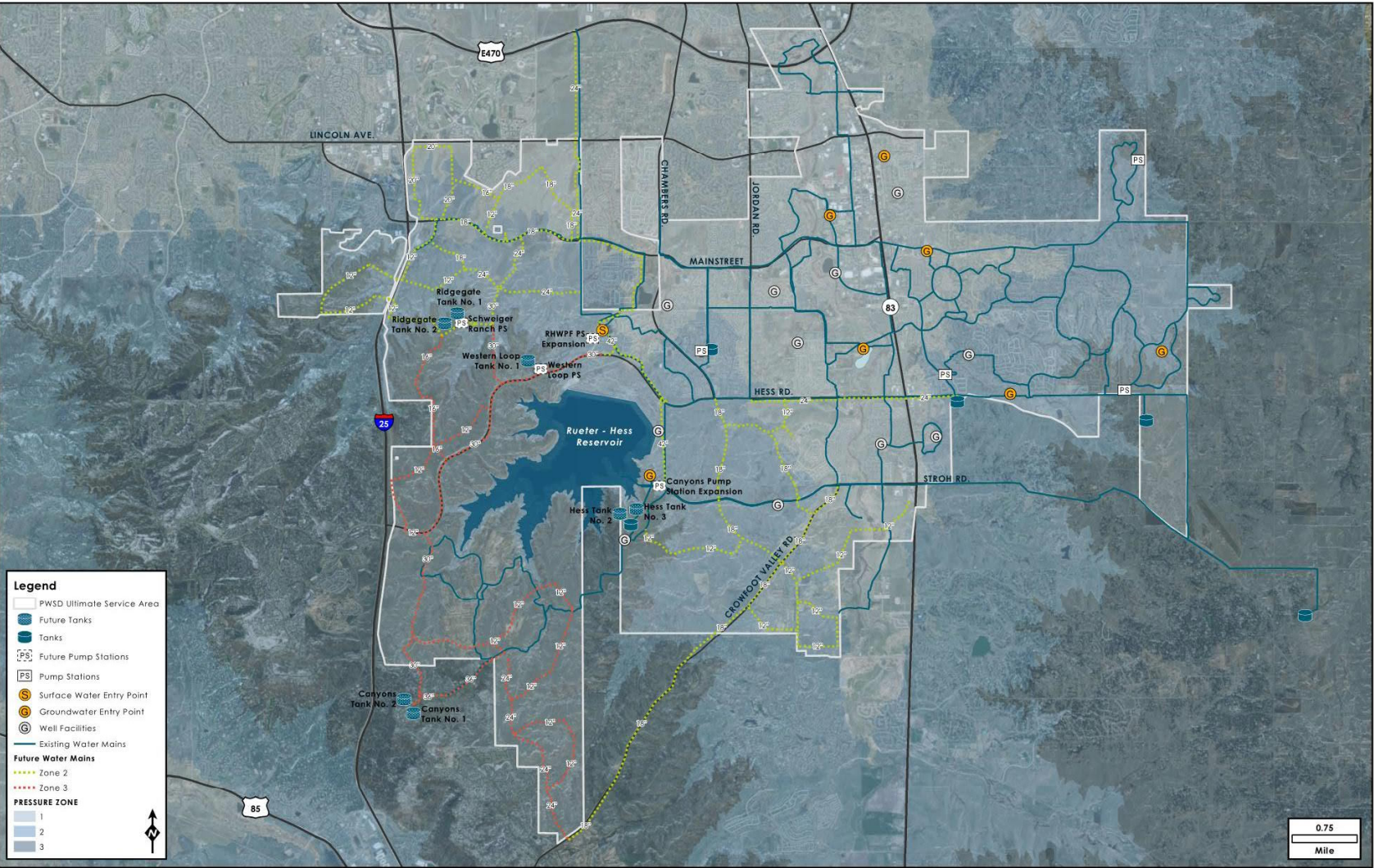


J-R ENGINEERING

A Westrian Company

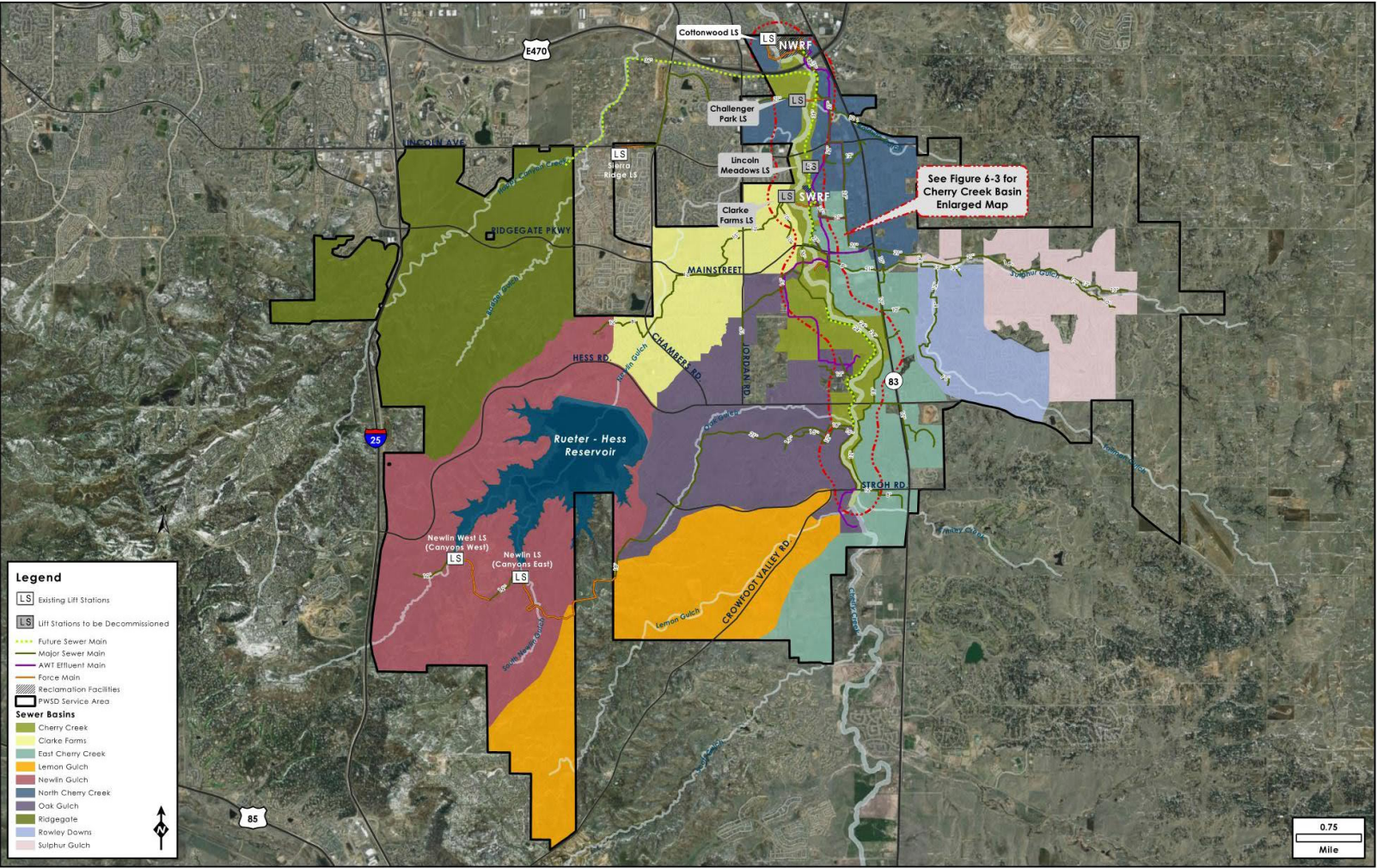
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Figure 5-6 | Transmission Pipelines Future Improvements Map



Chapter 6 – Wastewater Collection System Evaluation

Figure 6-2 | Future Wastewater Collection System

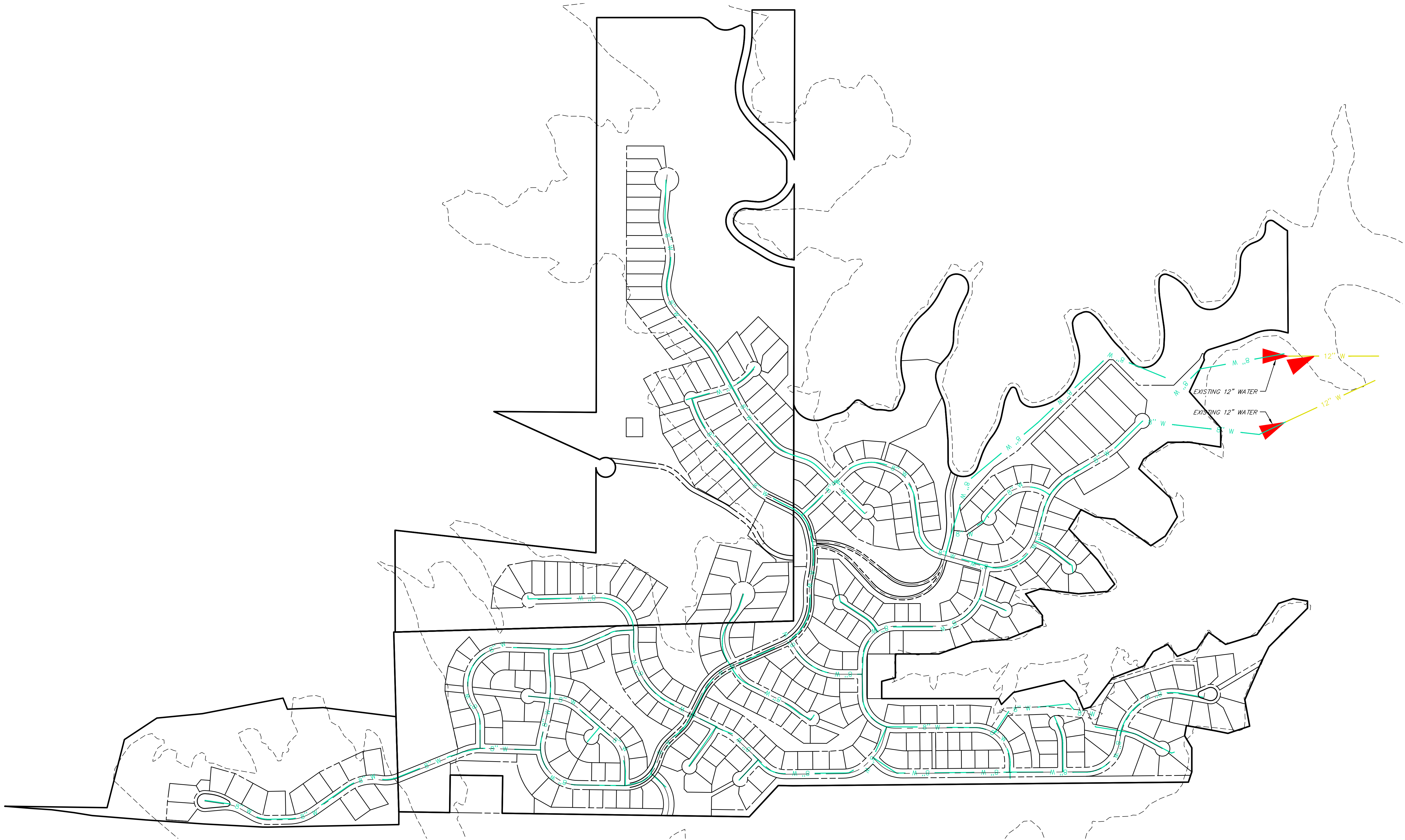


Parker Water & Sanitation District

APPENDIX B

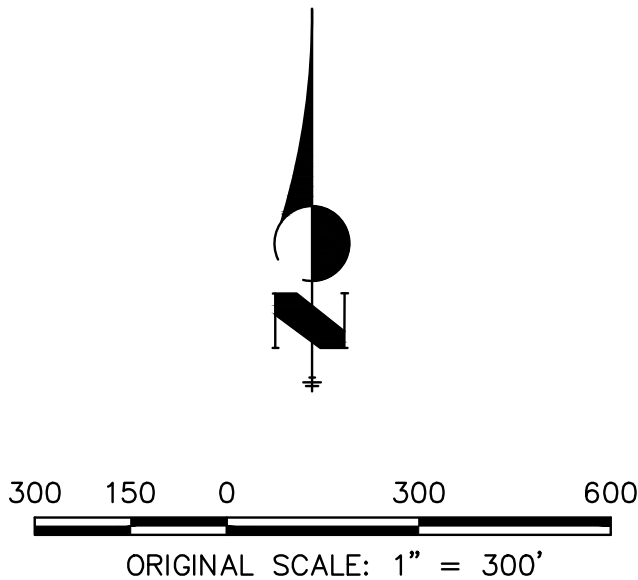
WATERLINE EXHIBIT

C:\Users\JFO\Documents\Engineering\1595012\Project Files\WordReports\Utility Report\Utility Report\Appendix B (Waterline Exhibit)\1595012 Water Line Exhibit.dwg, 24x36 Title Landscape, 3/23/2026 4:24:39 PM, FC



LEGEND

- | | | | |
|--|-------|--|-------------------------|
| | 12" W | | EXISTING 12" WATER MAIN |
| | 8" W | | PROPOSED 8" WATER MAIN |

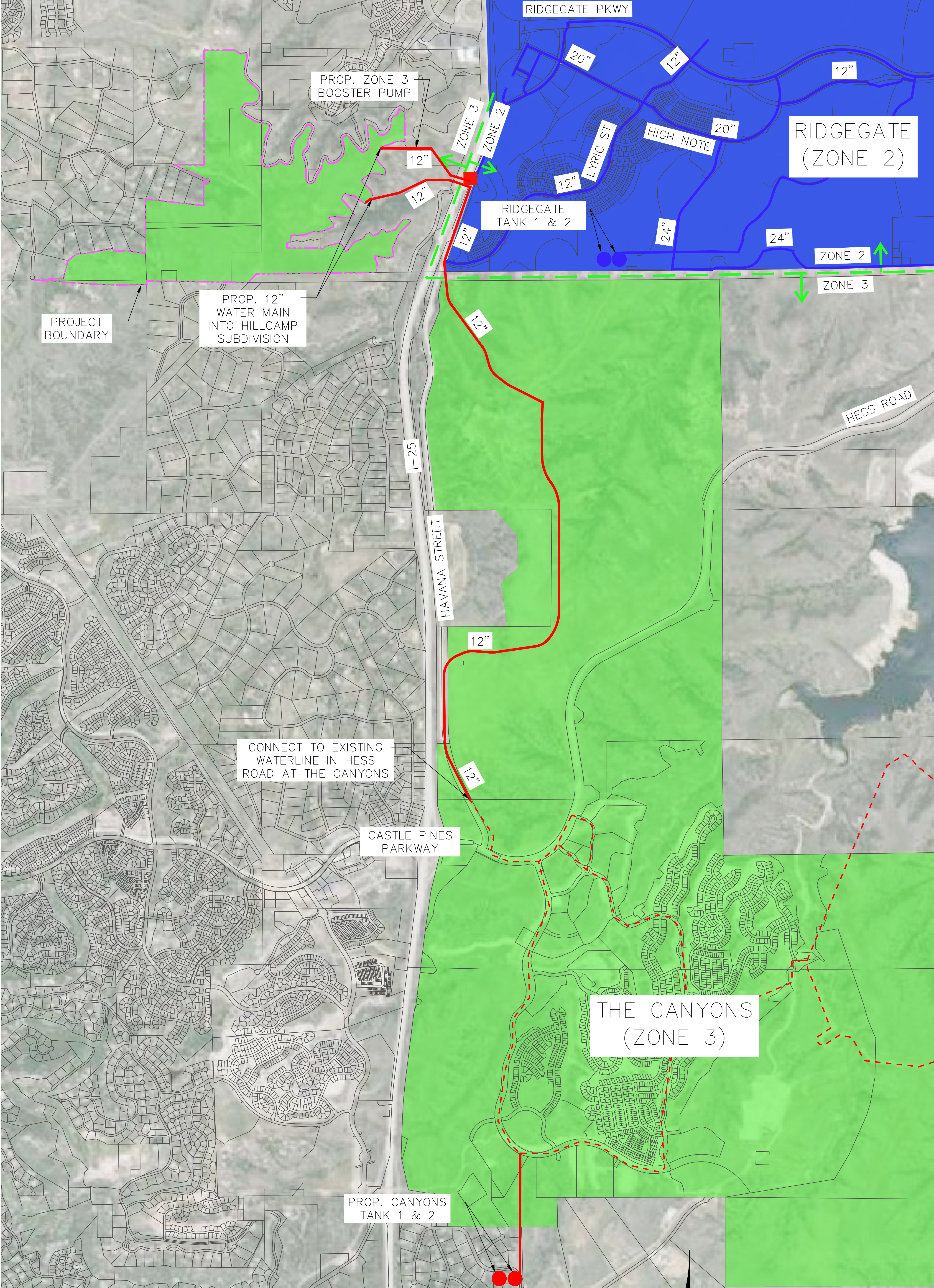


WATER LINE EXHIBIT
HILLCAMP SUBDIVISION
JOB NO. 15950.12
3/23/26
SHEET 1 OF 1

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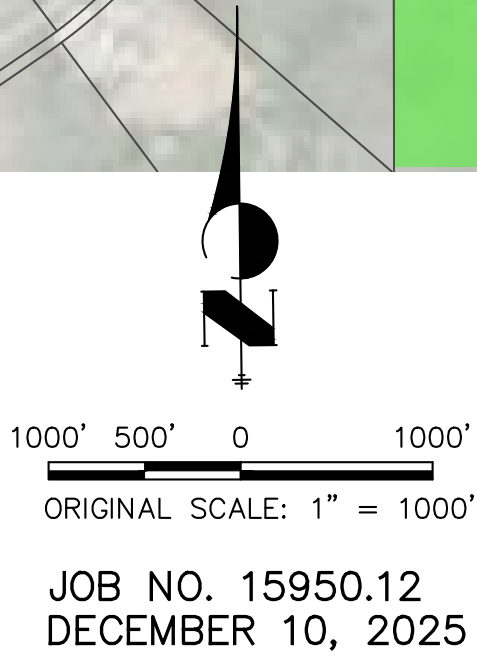
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MESA TOPS WATER BUILD-OUT EXHIBIT



NOTES:
1. WATER MAIN SIZES TO BE COORDINATED WITH FINAL DEMANDS AND PWS.

LEGEND:	
	ZONE 2 WATER TANK
	ZONE 3 WATER TANK
	ZONE 3 PUMP STATION
	FUTURE ZONE 3 TRANSMISSION MAIN
	EXISTING ZONE 3 TRANSMISSION MAIN
	PROJECT BOUNDARY
	ZONE 2 TRANSMISSION MAIN
	TRANSITION FROM ZONE 2 TO ZONE 3
	ZONE 3 WATER ZONE
	ZONE 2 WATER TANK



APPENDIX C

DEMAND SPREADSHEET, WATERCAD MODEL & RESULTS

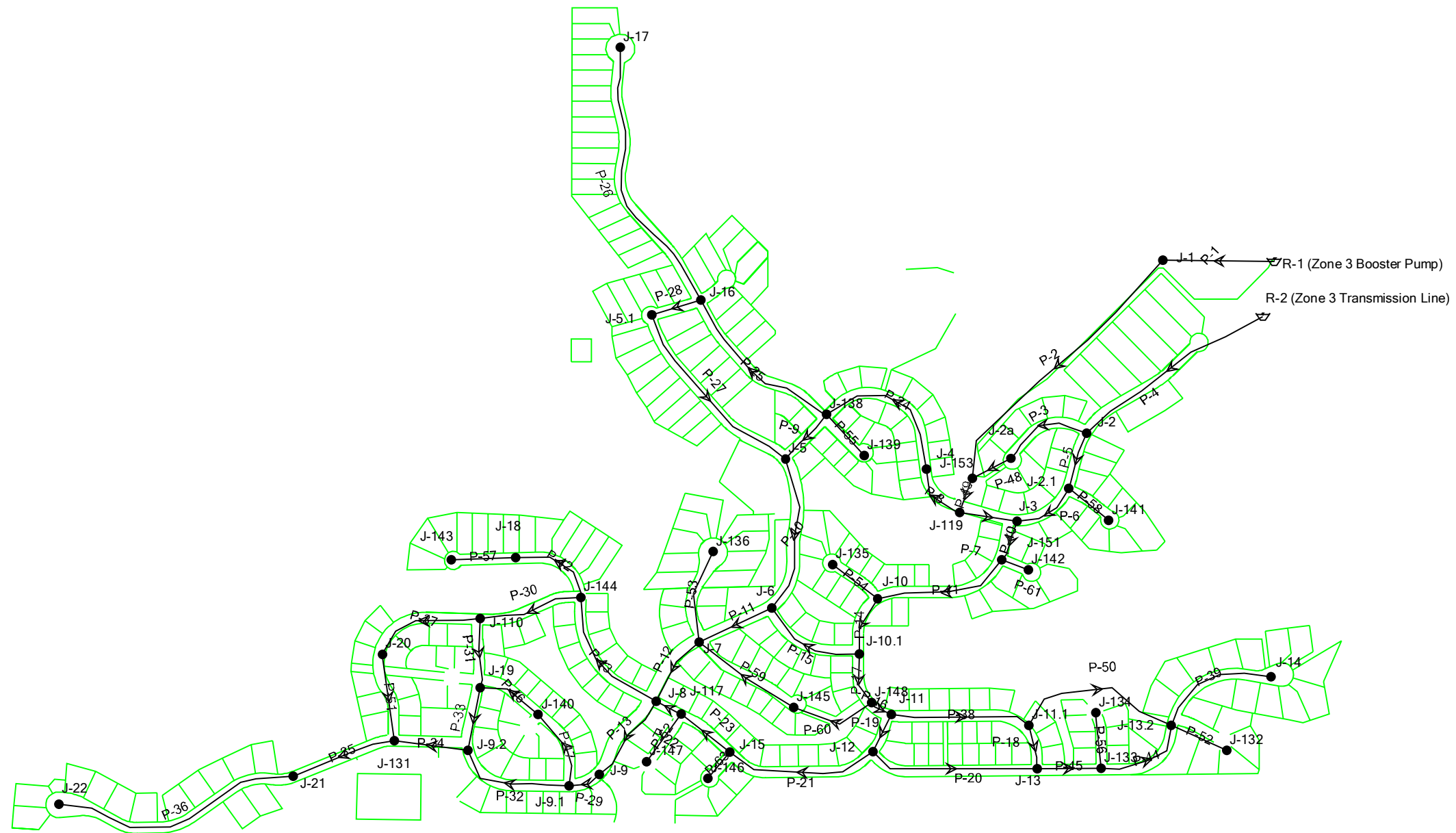
Hillcamp POTABLE WATER DEMAND CALCULATIONS (DISTRIBUTION LINES ONLY) PROJ. NO. 1595012 1/4/2025																		
POTABLE WATER DEMAND CALCULATIONS (DISTRIBUTION LINES ONLY)																		
PHASE JUNCTION NODE IS IN	WATERCAD NODE	AREA (AC)	ZONING/LAND USE	NO. OF DWELLING UNITS/ BUILDING SF	GROSS ACREAGE	NO. OF STUDENTS	AVERAGE DAY (GDP/DU)	AVERAGE DAY DEMAND (GPD)	AVERAGE DAY DEMAND (GPM)	IRRIGATION DEMAND (GPM)	MAX DAY FACTOR	MAX DAY DEMAND (GPD)	MAX DAY DEMAND (GPM)	PEAK HOUR FACTOR	PEAK HOUR DEMAND (GPD)	PEAK HOUR DEMAND (GPM)	STORAGE REQUIREMENTS MAX DAY + FIRE FLOW DEMAND (Gallons)	MAX DAY + FIRE FLOW
	J-1		Single Family Residential and Duplexes	7	---	---	412.80	2,889.6	2.01	---	2.65	7,657.4	5.32	5.00	14,448.0	10.03	180,005.3	1,505.3
	J-2		Single Family Residential and Duplexes	12	---	---	412.80	4,953.6	3.44	---	2.65	13,127.0	9.12	5.00	24,768.0	17.20	180,009.1	1,509.1
	J-2.1		Single Family Residential and Duplexes	13	---	---	412.80	5,366.4	3.73	---	2.65	14,221.0	9.88	5.00	26,832.0	18.63	180,009.9	1,509.9
	J-3		Single Family Residential and Duplexes	16	---	---	412.80	6,604.8	4.59	80.00	2.65	22,302.7	92.15	5.00	33,024.0	22.93	180,092.2	1,592.2
	J-10		Single Family Residential and Duplexes	12	---	---	412.80	4,953.6	3.44	---	2.65	13,127.0	9.12	5.00	24,768.0	17.20	180,009.1	1,509.1
	J-10.1		Single Family Residential and Duplexes	12	---	---	412.80	4,953.6	3.44	---	2.65	13,127.0	9.12	5.00	24,768.0	17.20	180,009.1	1,509.1
	J-7		Single Family Residential and Duplexes	29	---	---	412.80	11,971.2	8.31	---	2.65	31,723.7	22.03	5.00	59,856.0	41.57	180,022.0	1,522.0
	J-8		Single Family Residential and Duplexes	21	---	---	412.80	8,668.8	6.02	80.00	2.65	27,772.3	95.95	5.00	43,344.0	30.10	180,096.0	1,596.0
	J-9		Single Family Residential and Duplexes	3	---	---	412.80	1,238.4	0.86	---	2.65	3,281.8	2.28	5.00	6,192.0	4.30	180,002.3	1,502.3
	J-117		Single Family Residential and Duplexes	11	---	---	412.80	4,540.8	3.15	---	2.65	12,033.1	8.36	5.00	22,704.0	15.77	180,008.4	1,508.4
	J-15		Single Family Residential and Duplexes	5	---	---	412.80	2,064.0	1.43	---	2.65	5,469.6	3.80	5.00	10,320.0	7.17	180,003.8	1,503.8
	J-12		Single Family Residential and Duplexes	15	---	---	412.80	6,192.0	4.30	---	2.65	16,408.8	11.40	5.00	30,960.0	21.50	180,011.4	1,511.4
	J-11		Single Family Residential and Duplexes	17	---	---	412.80	7,017.6	4.87	---	2.65	18,596.6	12.91	5.00	35,088.0	24.37	180,012.9	1,512.9
	J-13		Single Family Residential and Duplexes	9	---	---	412.80	3,715.2	2.58	---	2.65	9,845.3	6.84	5.00	18,576.0	12.90	180,006.8	1,506.8
	J-13.2		Single Family Residential and Duplexes	19	---	---	412.80	7,843.2	5.45	80.00	2.65	25,584.5	94.43	5.00	39,216.0	27.23	180,094.4	1,594.4
	J-4		Single Family Residential and Duplexes	38	---	---	412.80	15,686.4	10.89	---	2.65	41,569.0	28.87	5.00	78,432.0	54.47	180,028.9	1,528.9
This includes Amenity center 12,500 GPD	J-5		Single Family Residential and Duplexes	8	---	---	412.80	15,802.4	10.97	80.00	2.65	46,676.4	109.08	5.00	79,012.0	54.87	180,109.1	1,609.1
	J-16		Single Family Residential and Duplexes	28	---	---	412.80	11,558.4	8.03	---	2.65	30,629.8	21.27	5.00	57,792.0	40.13	180,021.3	1,521.3
	J-18		Single Family Residential and Duplexes	10	---	---	412.80	4,128.0	2.87	---	2.65	10,939.2	7.60	5.00	20,640.0	14.33	180,007.6	1,507.6
	J-110		Single Family Residential and Duplexes	13	---	---	412.80	5,366.4	3.73	---	2.65	14,221.0	9.88	5.00	26,832.0	18.63	180,009.9	1,509.9
	J-9.1		Single Family Residential and Duplexes	32	---	---	412.80	13,209.6	9.17	---	2.65	35,005.4	24.31	5.00	66,048.0	45.87	180,024.3	1,524.3
	J-21		Single Family Residential and Duplexes	13	---	---	412.80	5,366.4	3.73	---	2.65	14,221.0	9.88	5.00	26,832.0	18.63	180,009.9	1,509.9
	TOTALS	0.0	---	343	---	---	---	154,090.4	107.0		---	427,539.6	603.6	---	770,452.0	535.0	3,960,603.6	33,603.6

*Note: Irrigation demand only assumed to be for an hour when calculating the max day demand

*Irrigation demand only added to max day gpm and gpd and factored into max day + fire flow

*Irrigation MAX DAY -ONLY ASSUMED FOR AN HOUR

Scenario: All Fire -Auto



HILLCAMP SUBDIVISION
MDD (Max Day Demand) Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Is Active?
J-1	6,280.46	5	6,591.11	134	TRUE
J-22	6,286.61	0	6,586.14	130	TRUE
J-2	6,289.70	9	6,589.01	129	TRUE
J-2.1	6,294.06	10	6,588.61	127	TRUE
J-138	6,295.42	0	6,586.88	126	TRUE
J-151	6,295.89	0	6,587.90	126	TRUE
J-141	6,296.83	0	6,588.61	126	TRUE
J-142	6,297.04	0	6,587.90	126	TRUE
J-14	6,297.05	0	6,586.11	125	TRUE
J-16	6,297.80	21	6,586.77	125	TRUE
J-2a	6,298.34	0	6,588.88	126	TRUE
J-20	6,298.57	0	6,586.14	124	TRUE
J-153	6,298.64	0	6,588.81	126	TRUE
J-5	6,298.82	109	6,586.69	125	TRUE
J-10	6,299.36	9	6,586.93	124	TRUE
J-5.1	6,300.21	0	6,586.75	124	TRUE
J-134	6,300.43	0	6,586.14	124	TRUE
J-3	6,300.69	92	6,588.19	124	TRUE
J-110	6,300.70	10	6,586.14	123	TRUE
J-21	6,301.03	10	6,586.14	123	TRUE
J-4	6,301.98	29	6,587.82	124	TRUE
J-11.1	6,302.26	0	6,586.16	123	TRUE
J-139	6,303.39	0	6,586.88	123	TRUE
J-13.2	6,304.10	94	6,586.11	122	TRUE
J-10.1	6,305.27	9	6,586.54	122	TRUE
J-135	6,305.45	0	6,586.93	122	TRUE
J-17	6,305.56	0	6,586.77	122	TRUE
J-136	6,306.36	0	6,586.32	121	TRUE
J-119	6,306.40	0	6,588.28	122	TRUE
J-132	6,306.75	0	6,586.11	121	TRUE
J-19	6,307.55	0	6,586.14	121	TRUE
J-18	6,309.68	8	6,586.14	120	TRUE
J-11	6,310.10	13	6,586.25	119	TRUE
J-148	6,310.11	0	6,586.33	120	TRUE
J-131	6,310.49	0	6,586.14	119	TRUE
J-144	6,311.52	0	6,586.14	119	TRUE
J-133	6,312.41	0	6,586.14	118	TRUE
J-13	6,313.18	7	6,586.16	118	TRUE
J-143	6,313.61	0	6,586.14	118	TRUE
J-9.2	6,315.54	0	6,586.14	117	TRUE
J-12	6,316.11	11	6,586.20	117	TRUE
J-6	6,317.39	0	6,586.51	116	TRUE
J-145	6,321.61	0	6,586.32	115	TRUE
J-9	6,321.62	2	6,586.14	114	TRUE
J-147	6,322.17	0	6,586.16	114	TRUE
J-140	6,322.46	0	6,586.14	114	TRUE
J-8	6,326.17	96	6,586.16	112	TRUE
J-146	6,326.51	0	6,586.17	112	TRUE
J-7	6,327.82	22	6,586.32	112	TRUE
J-9.1	6,328.27	24	6,586.14	112	TRUE
J-117	6,329.42	8	6,586.16	111	TRUE
J-15	6,333.06	4	6,586.17	110	TRUE

HILLCAMP SUBDIVISION MDD (Max Day Demand) Pipe Table								
Label	Length (Scaled) (ft)	Material	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Is Active?
P-1	610	PVC	8	130	256	1.64	0	TRUE
P-2	1,626	PVC	8	130	251	1.6	0	TRUE
P-3	506	PVC	8	130	102	0.65	0	TRUE
P-4	1,160	PVC	8	130	347	2.22	0	TRUE
P-5	319	PVC	8	130	236	1.5	0	TRUE
P-6	362	PVC	8	130	226	1.44	0	TRUE
P-7	317	PVC	8	130	-105	0.67	0	TRUE
P-8	333	PVC	8	130	249	1.59	0	TRUE
P-9	332	PVC	8	130	155	0.99	0	TRUE
P-10	864	PVC	8	130	90	0.57	0	TRUE
P-11	438	PVC	8	130	133	0.85	0	TRUE
P-12	408	PVC	8	130	126	0.81	0	TRUE
P-13	514	PVC	8	130	30	0.19	0	TRUE
P-14	327	PVC	8	130	-229	1.46	0	TRUE
P-15	581	PVC	8	130	-43	0.28	0	TRUE
P-16	129	PVC	8	130	-161	1.03	0.001	TRUE
P-17	289	PVC	8	130	-177	1.13	0.001	TRUE
P-18	244	PVC	8	130	-16	0.1	0	TRUE
P-19	226	PVC	8	130	-86	0.55	0	TRUE
P-20	936	PVC	8	130	39	0.25	0	TRUE
P-21	847	PVC	8	130	-36	0.23	0	TRUE
P-22	153	PVC	8	130	-24	0.15	0	TRUE
P-23	337	PVC	8	130	-32	0.2	0	TRUE
P-24	844	PVC	8	130	220	1.4	0.001	TRUE
P-25	962	PVC	8	130	65	0.42	0	TRUE
P-26	1,539	PVC	8	130	0	0	0	TRUE
P-27	1,102	PVC	8	130	-44	0.28	0	TRUE
P-28	281	PVC	8	130	-44	0.28	0	TRUE
P-29	187	PVC	8	130	-28	0.18	0	TRUE
P-30	572	PVC	8	130	-16	0.1	0	TRUE
P-31	380	PVC	8	130	2	0.01	0	TRUE
P-32	654	PVC	8	130	-3	0.02	0	TRUE
P-33	349	PVC	8	130	3	0.02	0	TRUE
P-34	407	PVC	8	130	6	0.04	0	TRUE
P-35	584	PVC	8	130	10	0.06	0	TRUE
P-36	1,384	PVC	8	130	0	0	0	TRUE
P-37	620	PVC	8	130	4	0.03	0	TRUE
P-38	768	PVC	8	130	63	0.4	0	TRUE
P-39	682	PVC	8	130	0	0	0	TRUE
P-40	228	PVC	8	130	238	1.52	0.001	TRUE
P-41	754	PVC	8	130	238	1.52	0.001	TRUE
P-42	490	PVC	8	130	-8	0.05	0	TRUE
P-43	760	PVC	8	130	-24	0.15	0	TRUE
P-44	519	PVC	8	130	-48	0.3	0	TRUE
P-45	340	PVC	8	130	-48	0.3	0	TRUE
P-46	368	PVC	8	130	-1	0.01	0	TRUE
P-47	451	PVC	8	130	-1	0.01	0	TRUE
P-48	240	PVC	8	130	102	0.65	0	TRUE
P-49	200	PVC	8	130	353	2.26	0.003	TRUE
P-50	933	PVC	8	130	47	0.3	0	TRUE
P-51	477	PVC	8	130	4	0.03	0	TRUE
P-52	330	PVC	8	130	0	0	0	TRUE
P-53	519	PVC	8	130	0	0	0	TRUE
P-54	310	PVC	8	130	0	0	0	TRUE
P-55	307	PVC	8	130	0	0	0	TRUE
P-56	305	PVC	8	130	0	0	0	TRUE
P-57	350	PVC	8	130	0	0	0	TRUE
P-58	278	PVC	8	130	0	0	0	TRUE
P-59	627	PVC	8	130	-15	0.1	0	TRUE
P-60	479	PVC	8	130	-15	0.1	0	TRUE
P-61	156	PVC	8	130	0	0	0	TRUE
P-62	322	PVC	8	130	0	0	0	TRUE
P-63	187	PVC	8	130	0	0	0	TRUE

HILLCAMP SUBDIVISION
MDD (Max Day Demand) Reservoir Table

Label	Hydraulic Grade (ft)	Zone	Flow (Out net) (gpm)
R-1 (Zone 3 Booster Pump)	6,592.00	3	378.00
R-2 (Zone 3 Transmission Line)	6,592.00	3	218.00

HILLCAMP SUBDIVISION
PHD (Peak Hour Demand) Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Is Active?
J-1	6,280.46	10	6,591.27	134.00	TRUE
J-22	6,286.61	0	6,587.23	130	TRUE
J-2	6,289.70	17	6,589.64	130	TRUE
J-2.1	6,294.06	19	6,589.33	128.00	TRUE
J-138	6,295.42	0	6,587.93	127	TRUE
J-151	6,295.89	0	6,588.79	127	TRUE
J-141	6,296.83	0	6,589.33	127.00	TRUE
J-142	6,297.04	0	6,588.79	126	TRUE
J-14	6,297.05	0	6,587.36	126	TRUE
J-16	6,297.80	40	6,587.82	125.00	TRUE
J-2a	6,298.34	0	6,589.54	126	TRUE
J-20	6,298.57	0	6,587.24	125	TRUE
J-153	6,298.64	0	6,589.49	126.00	TRUE
J-5	6,298.82	55	6,587.80	125	TRUE
J-10	6,299.36	17	6,587.94	125	TRUE
J-5.1	6,300.21	0	6,587.82	124.00	TRUE
J-134	6,300.43	0	6,587.36	124	TRUE
J-3	6,300.69	23	6,589.05	125	TRUE
J-110	6,300.70	19	6,587.24	124.00	TRUE
J-21	6,301.03	19	6,587.23	124	TRUE
J-4	6,301.98	54	6,588.64	124	TRUE
J-11.1	6,302.26	0	6,587.37	123.00	TRUE
J-139	6,303.39	0	6,587.93	123	TRUE
J-13.2	6,304.10	27	6,587.36	123	TRUE
J-10.1	6,305.27	17	6,587.62	122.00	TRUE
J-135	6,305.45	0	6,587.94	122	TRUE
J-17	6,305.56	0	6,587.82	122	TRUE
J-136	6,306.36	0	6,587.43	122.00	TRUE
J-119	6,306.40	0	6,589.08	122	TRUE
J-132	6,306.75	0	6,587.36	121	TRUE
J-19	6,307.55	0	6,587.24	121.00	TRUE
J-18	6,309.68	14	6,587.25	120	TRUE
J-11	6,310.10	24	6,587.40	120	TRUE
J-148	6,310.11	0	6,587.45	120.00	TRUE
J-131	6,310.49	0	6,587.24	120	TRUE
J-144	6,311.52	0	6,587.26	119	TRUE
J-133	6,312.41	0	6,587.36	119.00	TRUE
J-13	6,313.18	13	6,587.36	119	TRUE
J-143	6,313.61	0	6,587.25	118	TRUE
J-9.2	6,315.54	0	6,587.24	118.00	TRUE
J-12	6,316.11	22	6,587.37	117	TRUE
J-6	6,317.39	0	6,587.60	117	TRUE
J-145	6,321.61	0	6,587.44	115.00	TRUE
J-9	6,321.62	4	6,587.25	115	TRUE
J-147	6,322.17	0	6,587.30	115	TRUE
J-140	6,322.46	0	6,587.24	115.00	TRUE
J-8	6,326.17	30	6,587.30	113	TRUE
J-146	6,326.51	0	6,587.32	113	TRUE
J-7	6,327.82	42	6,587.43	112.00	TRUE
J-9.1	6,328.27	46	6,587.24	112	TRUE
J-117	6,329.42	16	6,587.30	112	TRUE
J-15	6,333.06	7	6,587.32	110.00	TRUE

HILLCAMP SUBDIVISION PHD (Peak Hour Demand) Pipe Table								
Label	Length (Scaled) (ft)	Material	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Is Active?
P-1	610	PVC	8	130	229	1.46	0	TRUE
P-2	1,626	PVC	8	130	219	1.4	0	TRUE
P-3	506	PVC	8	130	87	0.55	0	TRUE
P-4	1,160	PVC	8	130	306	1.95	0	TRUE
P-5	319	PVC	8	130	202	1.29	0	TRUE
P-6	362	PVC	8	130	184	1.17	0	TRUE
P-7	317	PVC	8	130	-62	0.4	0	TRUE
P-8	333	PVC	8	130	244	1.56	0	TRUE
P-9	332	PVC	8	130	126	0.8	0	TRUE
P-10	864	PVC	8	130	94	0.6	0	TRUE
P-11	438	PVC	8	130	126	0.81	0	TRUE
P-12	408	PVC	8	130	111	0.71	0	TRUE
P-13	514	PVC	8	130	57	0.36	0	TRUE
P-14	327	PVC	8	130	-205	1.31	0	TRUE
P-15	581	PVC	8	130	-32	0.21	0	TRUE
P-16	129	PVC	8	130	-130	0.83	0	TRUE
P-17	289	PVC	8	130	-156	1	0	TRUE
P-18	244	PVC	8	130	-20	0.13	0	TRUE
P-19	226	PVC	8	130	-71	0.45	0	TRUE
P-20	936	PVC	8	130	5	0.03	0	TRUE
P-21	847	PVC	8	130	-44	0.28	0	TRUE
P-22	153	PVC	8	130	-21	0.14	0	TRUE
P-23	337	PVC	8	130	-37	0.24	0	TRUE
P-24	844	PVC	8	130	189	1.21	0	TRUE
P-25	962	PVC	8	130	63	0.41	0	TRUE
P-26	1,539	PVC	8	130	0	0	0	TRUE
P-27	1,102	PVC	8	130	-23	0.15	0	TRUE
P-28	281	PVC	8	130	-23	0.15	0	TRUE
P-29	187	PVC	8	130	-53	0.34	0	TRUE
P-30	572	PVC	8	130	-31	0.2	0	TRUE
P-31	380	PVC	8	130	4	0.03	0	TRUE
P-32	654	PVC	8	130	-5	0.03	0	TRUE
P-33	349	PVC	8	130	6	0.04	0	TRUE
P-34	407	PVC	8	130	11	0.07	0	TRUE
P-35	584	PVC	8	130	19	0.12	0	TRUE
P-36	1,384	PVC	8	130	0	0	0	TRUE
P-37	620	PVC	8	130	8	0.05	0	TRUE
P-38	768	PVC	8	130	35	0.22	0	TRUE
P-39	682	PVC	8	130	0	0	0	TRUE
P-40	228	PVC	8	130	223	1.42	0	TRUE
P-41	754	PVC	8	130	223	1.42	0	TRUE
P-42	490	PVC	8	130	-14	0.09	0	TRUE
P-43	760	PVC	8	130	-45	0.29	0	TRUE
P-44	519	PVC	8	130	-12	0.08	0	TRUE
P-45	349	PVC	8	130	-12	0.08	0	TRUE
P-46	368	PVC	8	130	-2	0.01	0	TRUE
P-47	451	PVC	8	130	-2	0.01	0	TRUE
P-48	240	PVC	8	130	87	0.55	0	TRUE
P-49	200	PVC	8	130	306	1.95	0	TRUE
P-50	933	PVC	8	130	15	0.1	0	TRUE
P-51	477	PVC	8	130	8	0.05	0	TRUE
P-52	330	PVC	8	130	0	0	0	TRUE
P-53	519	PVC	8	130	0	0	0	TRUE
P-54	310	PVC	8	130	0	0	0	TRUE
P-55	307	PVC	8	130	0	0	0	TRUE
P-56	305	PVC	8	130	0	0	0	TRUE
P-57	350	PVC	8	130	0	0	0	TRUE
P-58	278	PVC	8	130	0	0	0	TRUE
P-59	627	PVC	8	130	-26	0.16	0	TRUE
P-60	479	PVC	8	130	-26	0.16	0	TRUE
P-61	156	PVC	8	130	0	0	0	TRUE
P-62	322	PVC	8	130	0	0	0	TRUE
P-63	187	PVC	8	130	0	0	0	TRUE

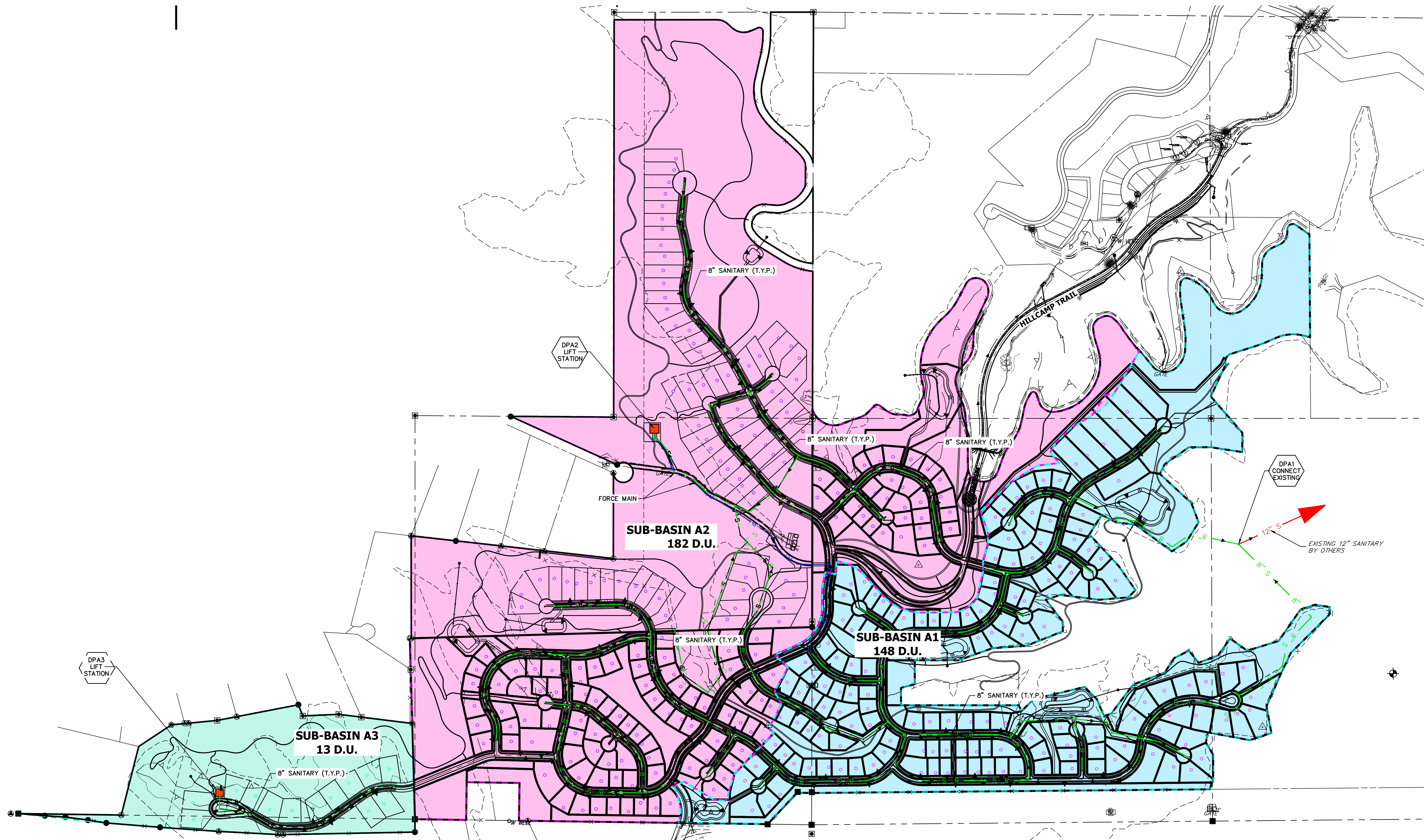
HILLCAMP SUBDIVISION PHD (Peak Hour Demand) Reservoir Table			
Label	Hydraulic Grade (ft)	Zone	Flow (Out net) (gpm)
R-1 (Zone 3 Booster Pump)	6,592.00	3	340.00
R-2 (Zone 3 Transmission Line)	6,592.00	3	195.00

Relating: FireFlow Results Comp.																	
Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow Status	Fire Flow (Needed)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Required)	Pressure (Calculated Result)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Location w/ Minimum Pressure	Pressure (System Lower Limit)	Pressure (Calculated System Lower Limit) (psi)	Location w/ Velocity	Flow w/ Maximum Velocity	Is Fire Flow Run Balanced?
C1	Phoenix	TRUE	Passes	1,000	1,885	1,000	1,900	20	134	21	102-15	(N/A)		102-15	10 P-4	TRUE	
C2	Phoenix	TRUE	Passes	1,000	2,033	1,000	2,045	20	110	21	90-15	(N/A)		90-15	10 P-4	TRUE	
C2-1	Phoenix	TRUE	Passes	1,000	2,088	1,000	2,078	20	103	21	87-15	(N/A)		87-15	10 P-4	TRUE	
C2a	Phoenix	TRUE	Passes	1,000	2,117	1,000	2,117	20	102	21	86-15	(N/A)		86-15	10 P-4	TRUE	
C4	Phoenix	TRUE	Passes	1,000	2,084	1,000	2,085	20	98	21	87-15	(N/A)		87-15	10 P-4	TRUE	
C4a	Phoenix	TRUE	Passes	1,000	2,125	1,000	2,145	20	99	21	87-15	(N/A)		87-15	10 P-4	TRUE	
C5	Phoenix	TRUE	Passes	1,000	1,974	1,000	2,083	20	84	21	74-15	(N/A)		74-15	10 P-49	TRUE	
C5-1	Phoenix	TRUE	Passes	1,000	1,971	1,000	1,971	20	76	21	73-15	(N/A)		73-15	10 P-49	TRUE	
C6	Phoenix	TRUE	Passes	1,000	2,000	1,000	2,002	20	74	21	68-15	(N/A)		68-15	10 P-49	TRUE	
C7	Phoenix	TRUE	Passes	1,000	2,007	1,000	2,029	20	65	21	64-15	(N/A)		64-15	10 P-49	TRUE	
C8	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,104	20	61	21	60-15	(N/A)		60-15	10 P-49	TRUE	
C9	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,010	20	55	21	53-15	(N/A)		53-15	10 P-49	TRUE	
C9-1	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,002	20	53	21	51-15	(N/A)		51-15	10 P-49	TRUE	
C9-2	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,008	20	54	21	52-15	(N/A)		52-15	10 P-49	TRUE	
C10	Phoenix	TRUE	Passes	1,000	2,031	1,000	2,040	20	84	21	70-15	(N/A)		70-15	10 P-49	TRUE	
C10-1	Phoenix	TRUE	Passes	1,000	2,031	1,000	2,021	20	86	21	69-15	(N/A)		69-15	10 P-49	TRUE	
C11	Phoenix	TRUE	Passes	1,000	1,841	1,000	1,854	20	77	21	69-15	(N/A)		69-15	10 P-36	TRUE	
C11-1	Phoenix	TRUE	Passes	1,000	1,880	1,000	1,880	20	72	21	61-15	(N/A)		61-15	10 P-36	TRUE	
C12	Phoenix	TRUE	Passes	1,000	1,960	1,000	2,001	20	68	21	62-15	(N/A)		62-15	10 P-36	TRUE	
C13	Phoenix	TRUE	Passes	1,000	1,888	1,000	1,895	20	67	21	67-15	(N/A)		67-15	10 P-36	TRUE	
C13-1	Phoenix	TRUE	Passes	1,000	1,982	1,000	1,978	20	65	21	64-15	(N/A)		64-15	10 P-36	TRUE	
C14	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	70	21	70-15	(N/A)		70-15	10 P-39	TRUE	
C15	Phoenix	TRUE	Passes	1,000	2,038	1,000	2,012	20	58	21	59-15	(N/A)		59-15	10 P-49	TRUE	
C16	Phoenix	TRUE	Passes	1,000	1,970	1,000	1,992	20	77	21	74-15	(N/A)		74-15	10 P-49	TRUE	
C17	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	61	21	60-15	(N/A)		60-15	10 P-36	TRUE	
C18	Phoenix	TRUE	Passes	1,000	1,909	1,000	1,907	20	70	21	68-15	(N/A)		68-15	10 P-42	TRUE	
C19	Phoenix	TRUE	Passes	1,000	1,908	1,000	1,908	20	68	21	53-15	(N/A)		53-15	10 P-49	TRUE	
C20	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,008	20	88	21	53-15	(N/A)		53-15	10 P-49	TRUE	
C21	Phoenix	TRUE	Passes	1,000	1,957	1,000	1,957	20	69	21	72-15	(N/A)		72-15	10 P-35	TRUE	
C22	Phoenix	TRUE	Passes	1,000	1,957	1,000	1,957	20	90	21	69-15	(N/A)		69-15	10 P-35	TRUE	
C110	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,018	20	62	21	53-15	(N/A)		53-15	10 P-49	TRUE	
C117	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,016	20	89	21	59-15	(N/A)		59-15	10 P-49	TRUE	
C119	Phoenix	TRUE	Passes	1,000	1,898	1,000	1,898	20	100	21	88-15	(N/A)		88-15	10 P-49	TRUE	
C121	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,008	20	59	21	52-15	(N/A)		52-15	10 P-49	TRUE	
C132	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	72	21	70-15	(N/A)		70-15	10 P-32	TRUE	
C133	Phoenix	TRUE	Passes	1,000	1,885	1,000	1,885	20	63	21	67-15	(N/A)		67-15	10 P-36	TRUE	
C134	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	77	21	77-15	(N/A)		77-15	10 P-55	TRUE	
C135	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	89	21	63-15	(N/A)		63-15	10 P-54	TRUE	
C136	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	85	21	70-15	(N/A)		70-15	10 P-53	TRUE	
C138	Phoenix	TRUE	Passes	1,000	1,965	1,000	1,965	20	87	21	70-15	(N/A)		70-15	10 P-49	TRUE	
C139	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	95	21	89-15	(N/A)		89-15	10 P-55	TRUE	
C140	Phoenix	TRUE	Passes	1,000	1,908	1,000	1,908	20	61	21	62-15	(N/A)		62-15	10 P-49	TRUE	
C141	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	108	21	84-15	(N/A)		84-15	10 P-58	TRUE	
C142	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	103	21	90-15	(N/A)		90-15	10 P-61	TRUE	
C143	Phoenix	TRUE	Passes	1,000	1,959	1,000	1,959	20	61	21	70-15	(N/A)		70-15	10 P-42	TRUE	
C144	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,008	20	98	21	90-15	(N/A)		90-15	10 P-49	TRUE	
C145	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,008	20	85	21	84-15	(N/A)		84-15	10 P-49	TRUE	
C146	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	73	21	70-15	(N/A)		70-15	10 P-63	TRUE	
C147	Phoenix	TRUE	Passes	1,000	1,967	1,000	1,967	20	73	21	70-15	(N/A)		70-15	10 P-62	TRUE	
C148	Phoenix	TRUE	Passes	1,000	2,008	1,000	2,008	20	74	21	64-15	(N/A)		64-15	10 P-49	TRUE	
C151	Phoenix	TRUE	Passes	1,000	1,865	1,000	1,865	20	104	21	88-15	(N/A)		88-15	10 P-40	TRUE	
C153	Phoenix	TRUE	Passes	1,000	2,189	1,000	2,189	20	102	21	87-15	(N/A)		87-15	10 P-4	TRUE	

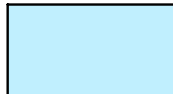
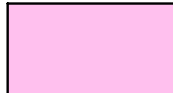
APPENDIX D

SANITARY SEWER EXHIBIT

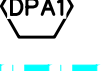
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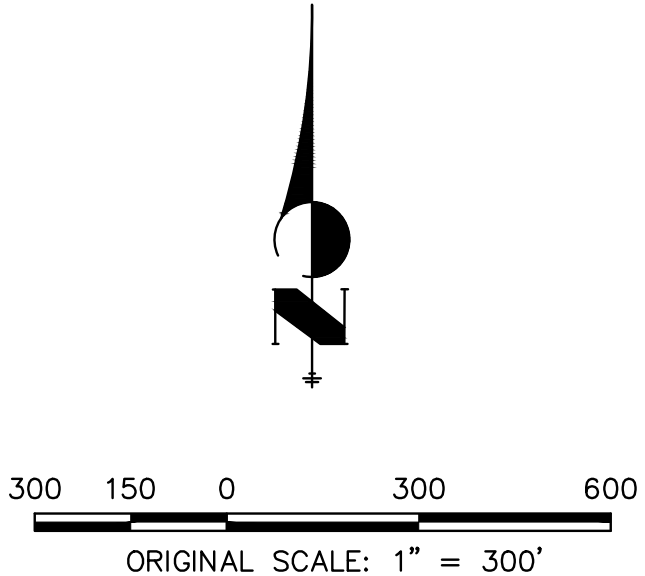


BASIN TABLE

	BASIN A1 - 148 DU
	BASIN A2 - 182 DU
	BASIN A3 - 13 DU

LEGEND

-  FM FORCE MAIN
-  12" S EXISTING 12" SANITARY SEWER
-  8" S PROPOSED 8" SANITARY SEWER
-  (DPA) DESIGN POINT
-  BASIN A1
-  BASIN A2
-  BASIN A3
-  SEWER FLOW DIRECTION ARROW
-  SEWAGE LIFT STATION



SANITARY SEWER EXHIBIT
HILLCAMP SUBDIVISION
JOB NO. 15950.12
3/23/26
SHEET 1 OF 1



Centennial 303-740-9393 • Colorado Springs 719-593-2593
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APPENDIX E

SANITARY SEWER SYSTEM DATA AND CALCULATIONS

Project Name

Project No.

Calculated By

Checked By

Date

Hillcamp

15950.12

ARJ

3/23/2026

Wastewater Loading for Hillcamp Subdivision Development															
Run	Basin Delineator	Amenity Center	Single Family Units	Average Daily Flow	Average Daily Flow (MGD)	Average Daily Flow (cfs)	Average Daily Flow (gpm)	Peak Factor Used	Peak Flow (cfs)	Infiltration/Contigency (10% of ADF, MGD)	Infiltration/Contigency (10% of ADF, cfs)	Peak Design Flow (gpm)	Peak Design Flow (cfs)	Min. Pipe Slope (ft/ft)	Pipe Diameter (D,in)
Sub-Basin 1	(units)	----	148	33,133	0.033	0.051	23.01	3.200	0.164	0.003	0.005	75.93	0.169	-	-
	Total	----	148	33,133	0.033	0.051	23.01	3.200	0.164	0.003	0.005	75.93	0.169	0.0040	8
Sub-Basin 2	(units)	----	182	40,745	0.041	0.063	28.29	3.200	0.202	0.004	0.006	93.37	0.208	-	-
		1 - 2000 gpd avg daily flow	182	42,745	0.043	0.066	29.68	3.200	0.212	0.004	0.007	97.96	0.218	0.0040	8
Sub-Basin 3	(units)	----	13	2,910	0.003	0.005	2.02	3.200	0.014	0.0003	0.000	6.67	0.015	-	-
	Total	----	13	2,910	0.003	0.005	2.02	3.200	0.014	0.0003	0.000	6.67	0.015	0.004	8

Mannings Value

0.013

Mannings n from Table 6-3 from PWSD Master Plan for Ridgagate

Sanitary trunkline conduits were designed with a maximum velocity of 8 feet per second with pipes flowing no more than 80% full.

Capacity & Velocity from Table 6-3 from PWSD Master Plan for Ridgagate

Average Daily Flow

69.96 gpcd

Occupants per DU

3.20

Average Daily Flow Calculation

223.9 gpd/SFE

Peaking Factor used

3.20

0

Capacity & Velocity from Table 6-3 from PWSD Master Plan for Ridgagate											
	Quantity	Average Daily Flow (GPD)	Average Daily Flow (MGD)	Average Daily Flow (cfs)	Average Daily Flow (gpm)	Peak Factor Used	Peak Flow (cfs)	Infiltration (10% of ADF, MGD)	Infiltration (10% of ADF, cfs)	Peak Design Flow (gpm)	Peak Design Flow (cfs) ->DPA1
Hillcamp (343 SFE) (199 gpd/SFE)	343.0	76,788	0.077	0.119	53.33	3.20	0.38	0.008	0.012	0.10	0.39

Abbreviations:		
gpd		Gallons/Day
gpsd		Gallons/Student/Day
DU		Dwelling Units
ac		Acre
SFE		Single Family Equivalent
SFA		Single Family Area

Project Name

Project No.

Calculated By

Checked By

Date

Hillcamp

15950.12

ARJ

3/23/2026

Flow Master Results																						
Label	Solve For	Friction Method	Roughness	Channel Slope (ft/ft)	Normal Depth (in)	Diameter (in)	Discharge (cfs)	Flow Area (ft²)	Wetted Perimeter (ft)	Hydraulic Radius (in)	Top Width (ft)	Critical Depth (in)	Percent Full (%)	Critical Slope (ft/ft)	Velocity (ft/s)	Velocity Head (ft)	Specific Energy (ft)	Froude Number	Maximum Discharge (cfs)	Discharge Full (cfs)	Slope Full (ft/ft)	Flow Type
Sub Basin A1	Normal Depth	Manning's Formula	0.013	0.004	2.5	8	0.17	0.1	0.8	1.4	0.62	2.2	31.8	0.006	1.75	0.05	0.26	0.767	0.82	0.76	0	Subcritical
Sub Basin A2 - DPA2	Normal Depth	Manning's Formula	0.013	0.004	2.9	8	0.22	0.1	0.9	1.6	0.64	2.6	36.3	0.006	1.89	0.05	0.3	0.764	0.82	0.76	0	Subcritical
Sub Basin A3 - DPA3	Normal Depth	Manning's Formula	0.013	0.004	0.8	8	0.02	0	0.4	0.5	0.39	0.7	9.7	0.008	0.96	0.01	0.08	0.722	0.82	0.76	0	Subcritical
Total - DPA1	Normal Depth	Manning's Formula	0.013	0.004	4	8	0.39	0.2	1.1	2	0.67	3.5	50.6	0.007	2.2	0.06	0.41	0.753	0.82	0.76	0.001	Subcritical

APPENDIX F

RIDGEGATE EAST REGIONAL MASTER PLANS FOR WATER AND WASTEWATER – EXCERPTS

Appendix F - Excerpts

RAMPART RANGE

METROPOLITAN DISTRICT NO. 1

RidgeGate East Regional Master Plans for Water and Wastewater Utilities



5970 Greenwood Plaza Blvd. • Greenwood Village, CO 80111
Tel: 303-751-0741 • Fax: 303-751-2581

APPROVED BY PWSD PER
4/10/17 EMAIL FROM
REBECCA TEJADA

LEGEND:

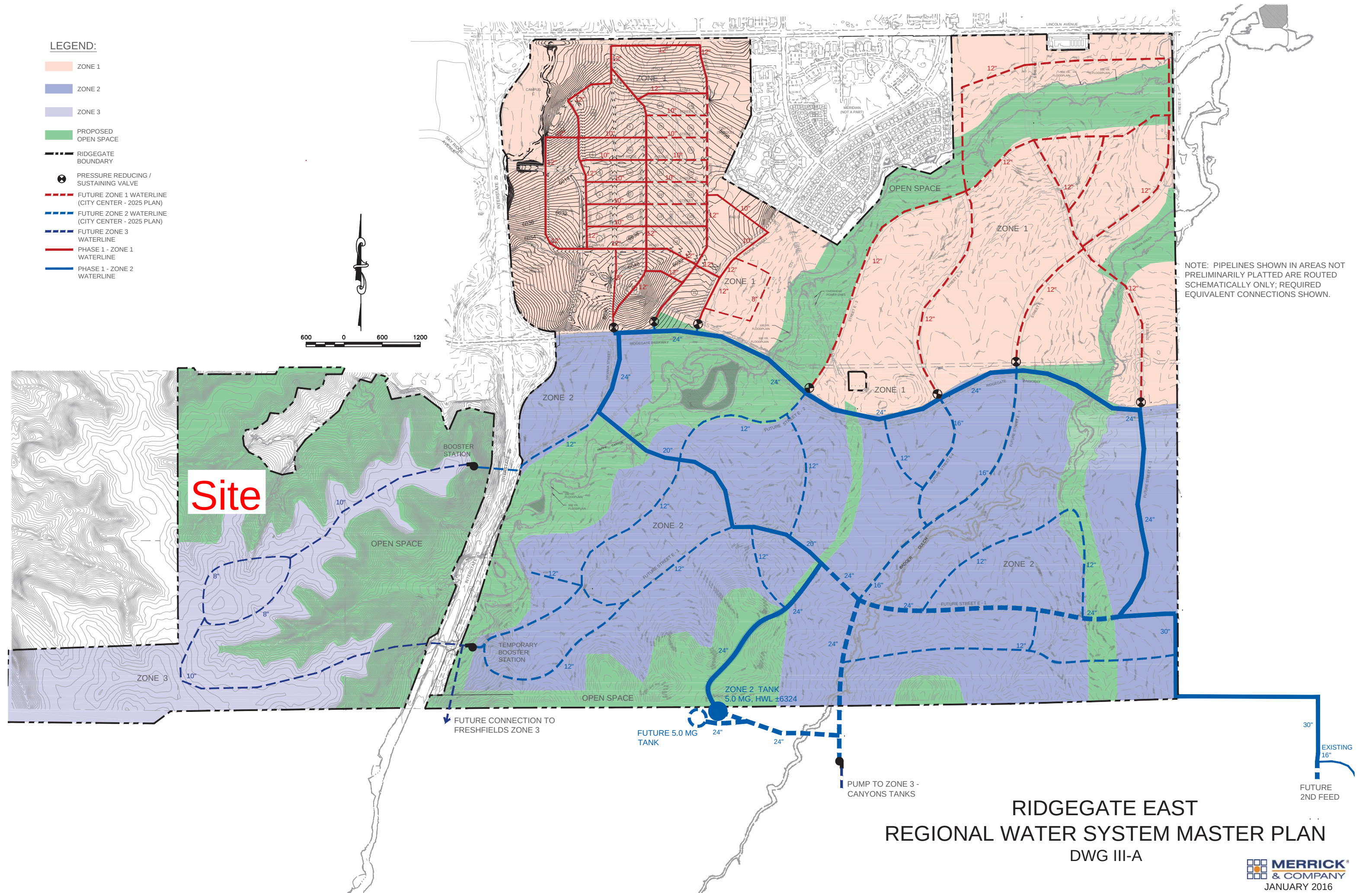
- ZONE 1
- ZONE 2
- ZONE 3
- PROPOSED OPEN SPACE
- RIDGEGATE BOUNDARY
- PRESSURE REDUCING / SUSTAINING VALVE
- FUTURE ZONE 1 WATERLINE (CITY CENTER - 2025 PLAN)
- FUTURE ZONE 2 WATERLINE (CITY CENTER - 2025 PLAN)
- FUTURE ZONE 3 WATERLINE
- PHASE 1 - ZONE 1 WATERLINE
- PHASE 1 - ZONE 2 WATERLINE

600 0 600 1200

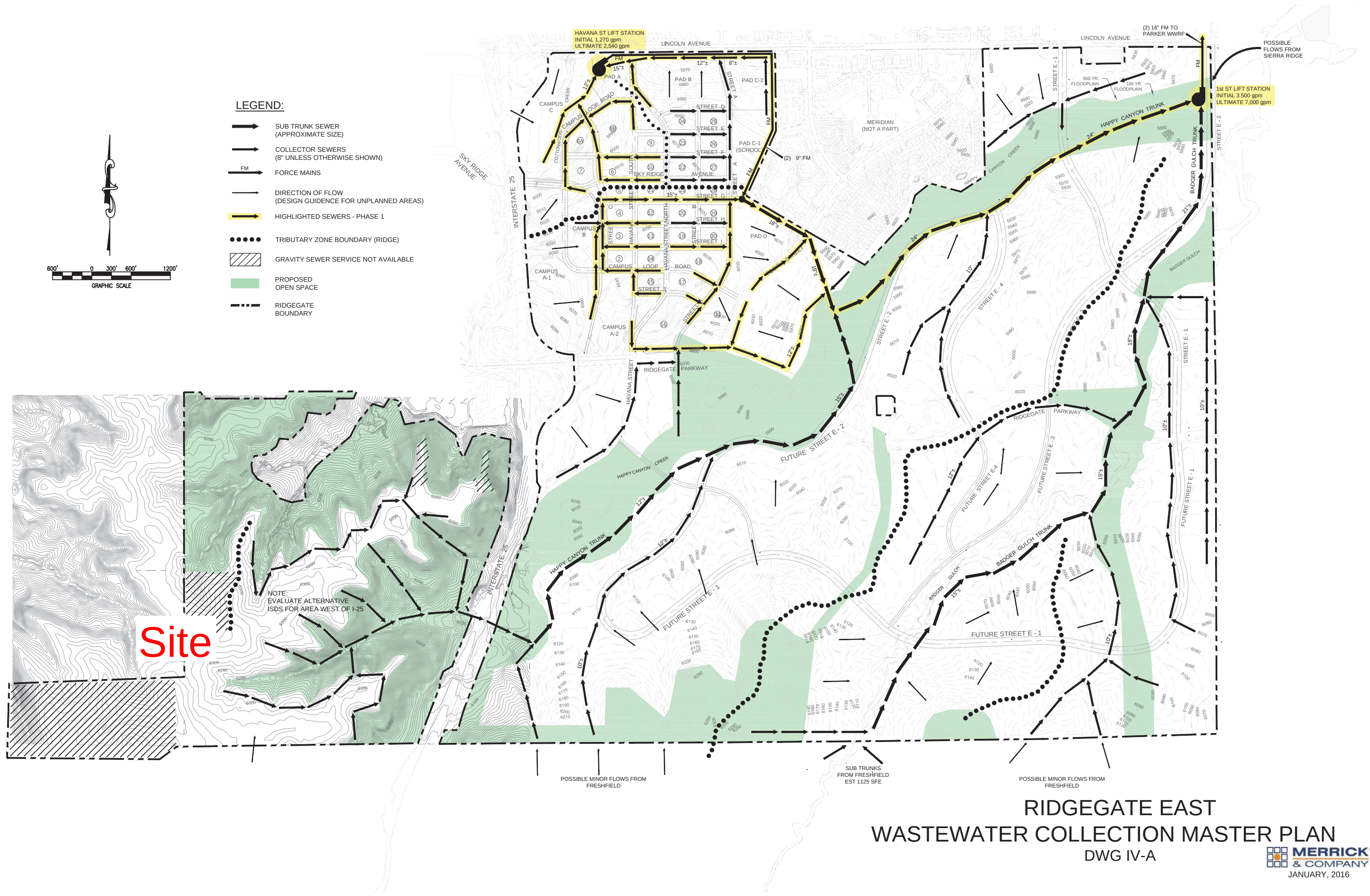


NOTE: PIPELINES SHOWN IN AREAS NOT PRELIMINARILY PLATTED ARE ROUTED SCHEMATICALLY ONLY; REQUIRED EQUIVALENT CONNECTIONS SHOWN.

Site



RIDGEGATE EAST REGIONAL WATER SYSTEM MASTER PLAN DWG III-A



RIDGEGATE EAST WASTEWATER COLLECTION MASTER PLAN DWG IV-A