

**WATER & SANITARY SEWER REPORT
FOR
HILLCAMP**

Prepared for:

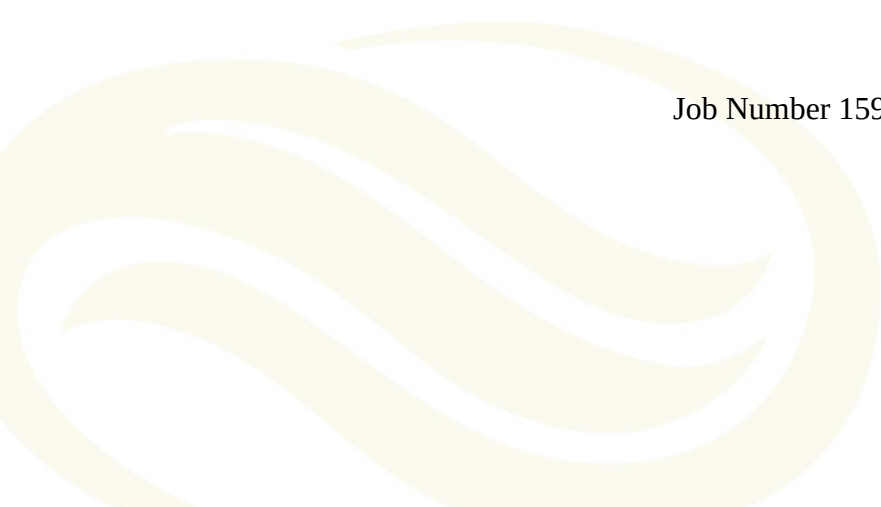
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December 12th, 2025

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 and is planned to have 343 residential S.F.D. along with open space, parks, and an amenity center. It is within two (2) separate Planned Development Districts (PDD). The eastern portion of the site is located in the Southridge Preserve Planned Development District, and will consist of approximately 165 acres, 82 single family residential lots, and open space. The western portion of the site is the RidgeGate Planned Development District. This portion will consist of approximately 221 acres and 261 single family 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 various 8-inch and 10 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	2,500 gpm*
---------------	------------

*2,500 gpm required per fire code for larger houses on dead-end cul-de-sac'

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 137 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. 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.

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 137 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. 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. The fire flow demand was set to 1,500 gpm (reduced for standard non-sprinklered requirements - IFC Appendix B exception) at dead end cul de sacs. The model confirms the system can deliver 1,500 gpm at critical dead-end hydrants and 2,500 gpm at internal hydrants while maintaining a minimum residual pressure of 20 psi.

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	199/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 177 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 A2 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.

CONCLUSION

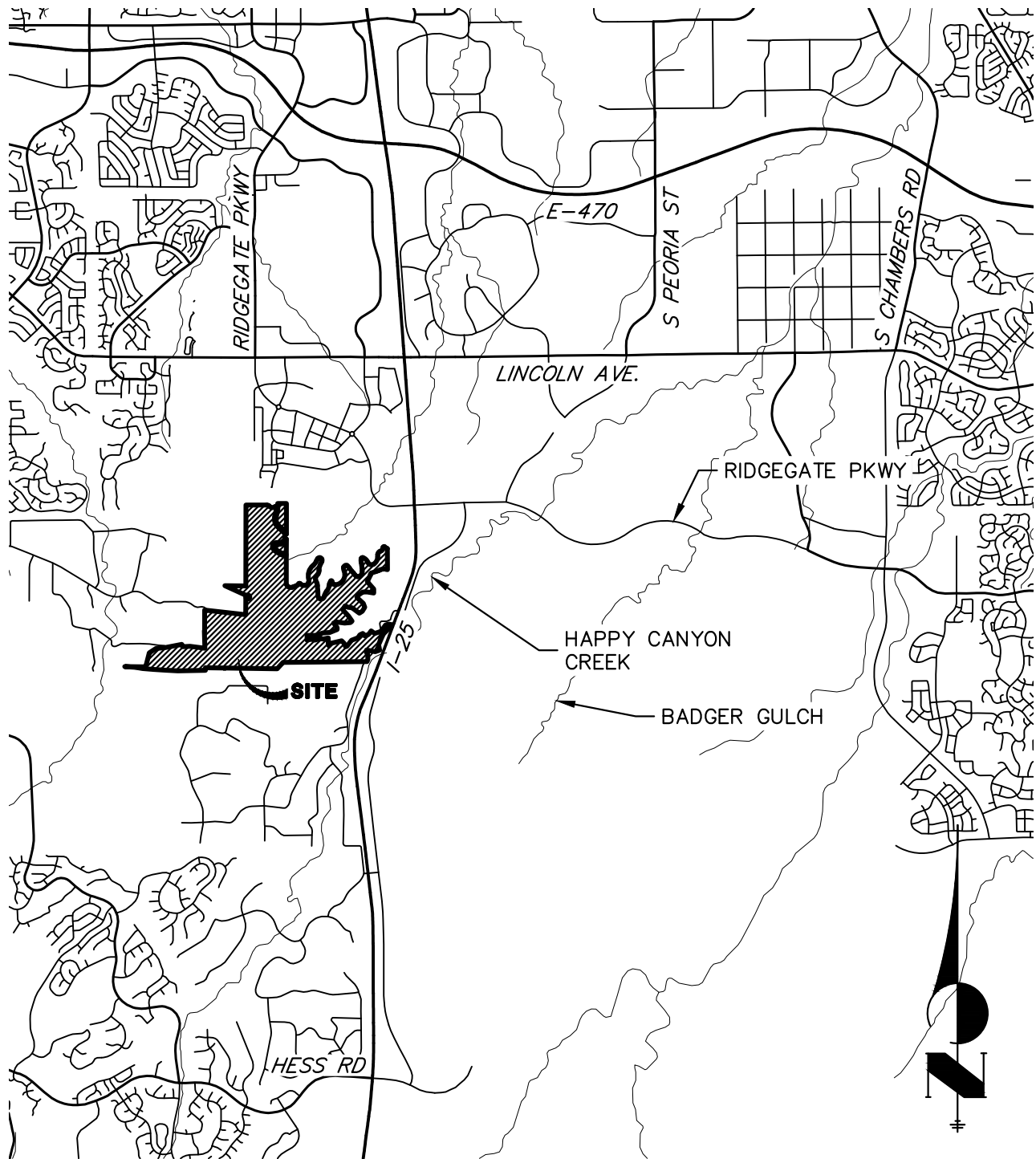
The water modeling included in this report is preliminary and based on the best available data. It is noted that pressures may vary, and that more detailed information from PWSD may be available when considering the overall design of the regional water system. The proposed water and sanitary sewer systems 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 will be applied for through the PWSD and the State of Colorado, where applicable. The permits will be in place prior to the start of construction.

REFERENCES

1. Engineering Department Standards And Specifications Manual, Parker Water and Sanitation District (PWSD), 2017.
2. Parker Water & Sanitation District 2020 Water & Wastewater Master Plan, Providence Infrastructure Consultants, 2020.
3. Ridgegate East Regional Master Plans for Water and Wastewater Utilities, Merrick and Company, March 2017.
4. Wastewater Engineering Treatment and Reuse, Metcalf & Eddy, Inc., 4th Edition, 2004.

APPENDIX A

VICINITY MAP, MASTER PLANS & SITE PLAN



VICINITY MAP

SCALE 1"=5000'

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FEBRUARY 14, 2025
SHEET 1 OF 1

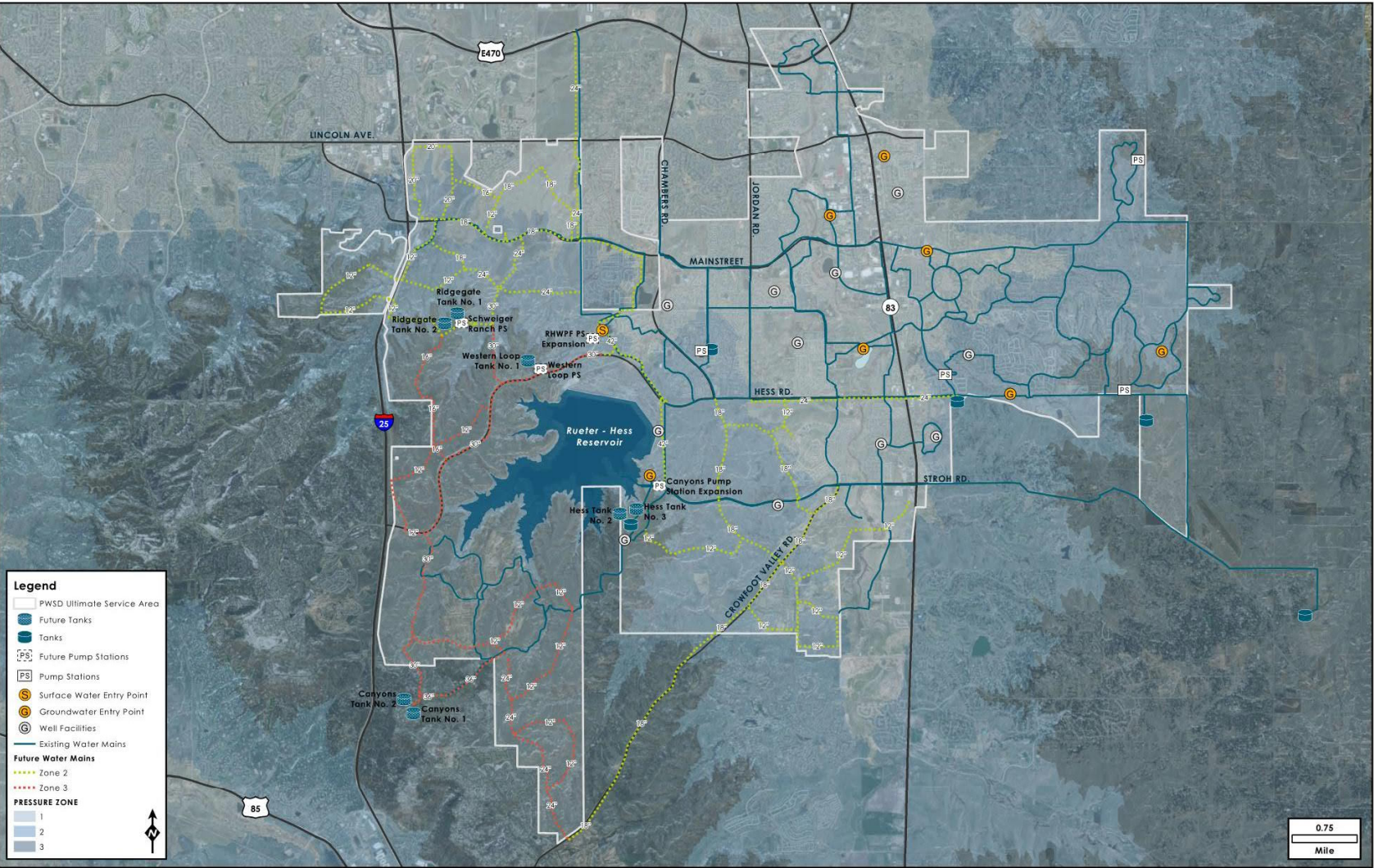


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A Westrian Company

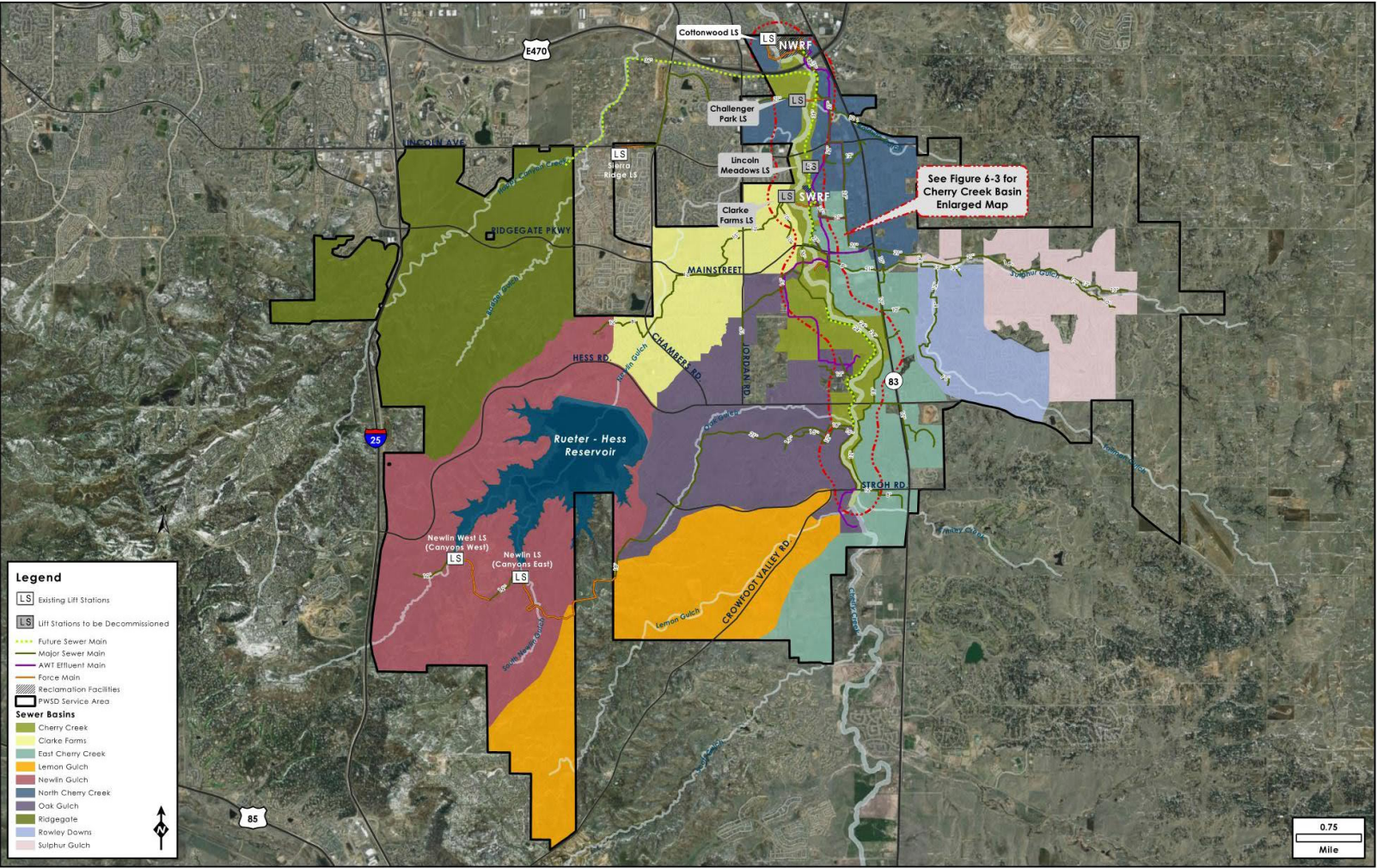
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Figure 5-6 | Transmission Pipelines Future Improvements Map



Chapter 6 – Wastewater Collection System Evaluation

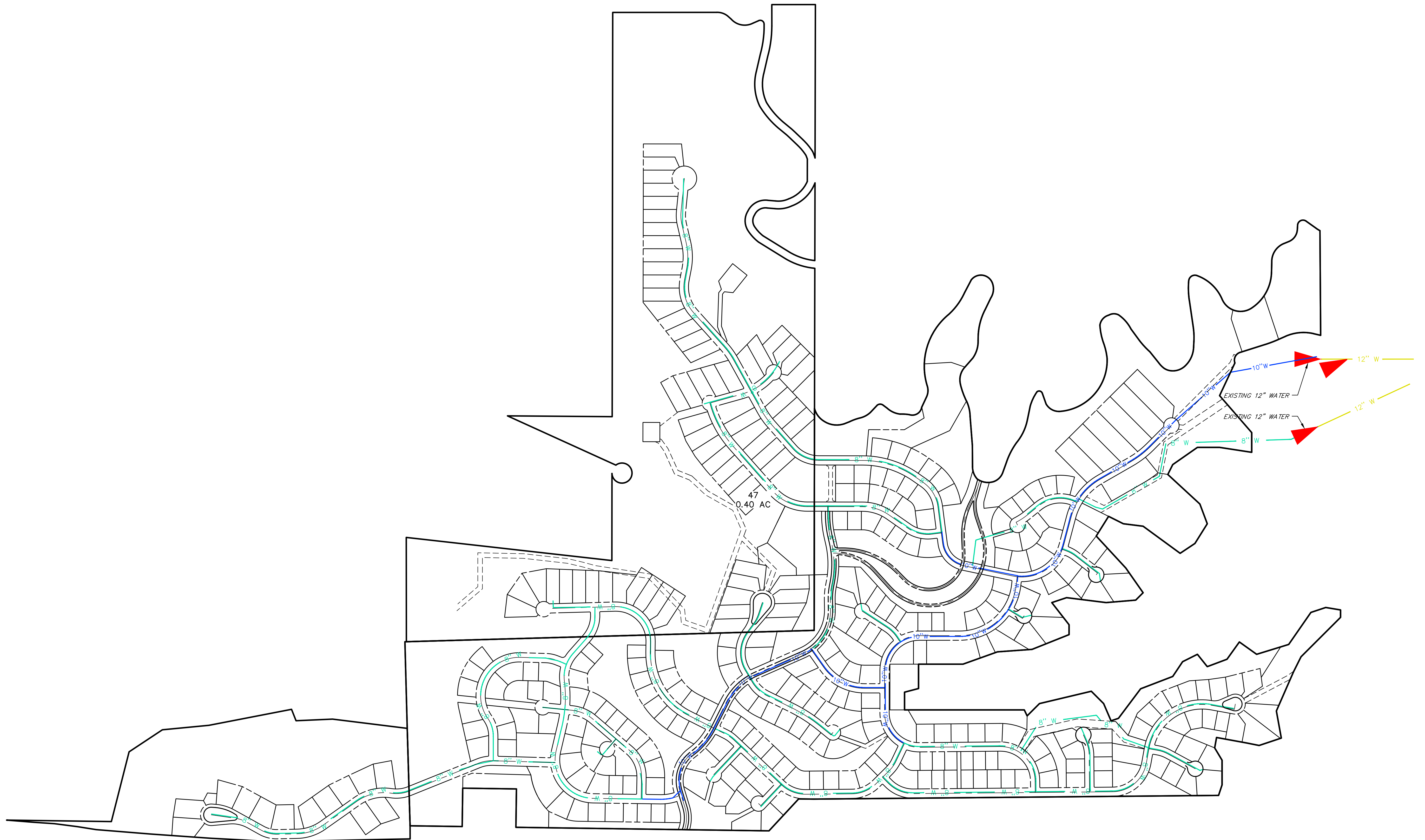
Figure 6-2 | Future Wastewater Collection System



Parker Water & Sanitation District

APPENDIX B

WATERLINE EXHIBIT



LEGEND

	EXISTING 12" WATER MAIN
	PROPOSED 8" WATER MAIN
	PROPOSED 10" WATER MAIN



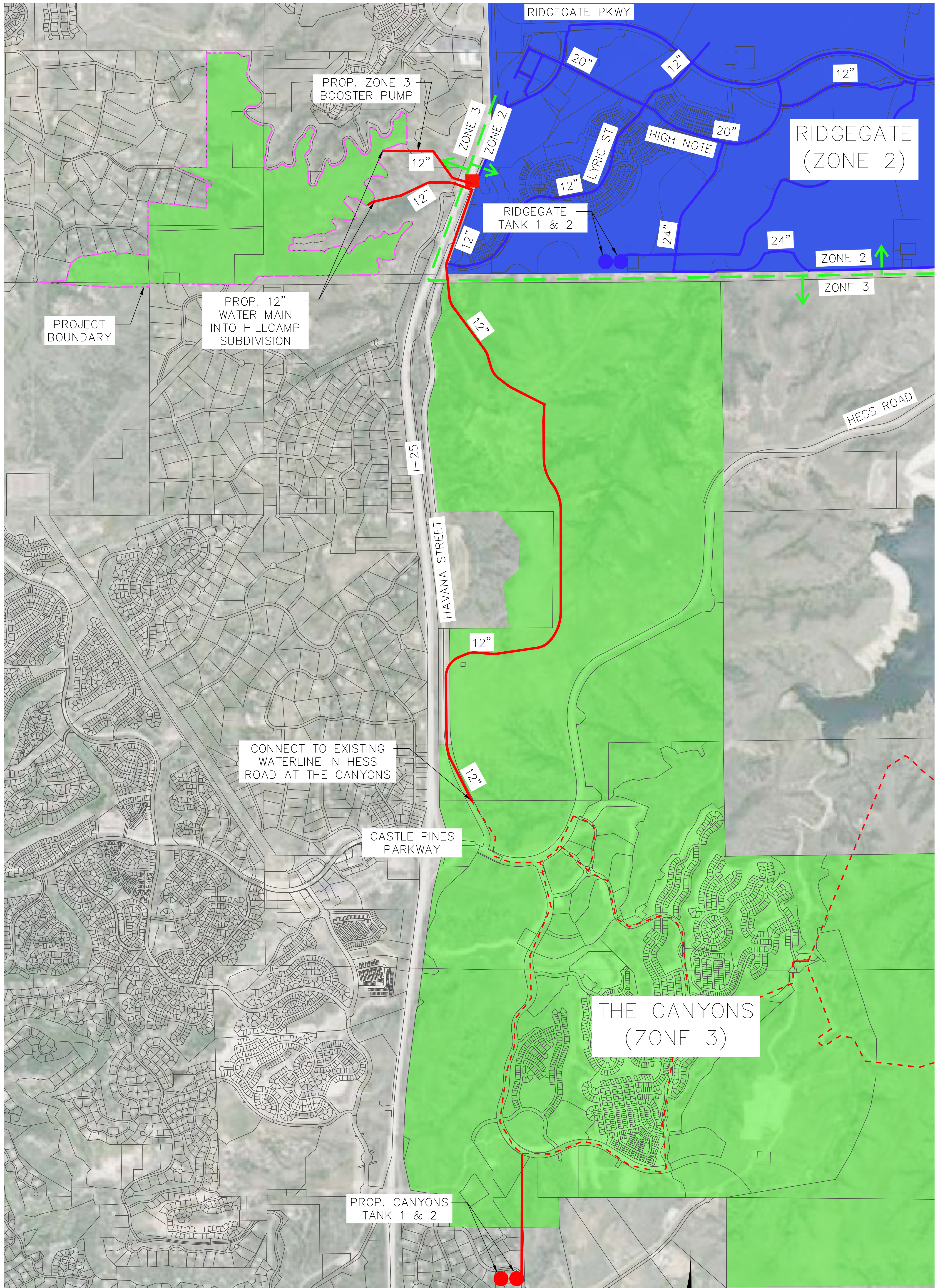
300 150 0 300 600
ORIGINAL SCALE: 1" = 300'

WATER LINE EXHIBIT
HILLCAMP SUBDIVISION
JOB NO. 15950.12
12/10/25
SHEET 1 OF 1



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MESA TOPS WATER BUILD-OUT EXHIBIT

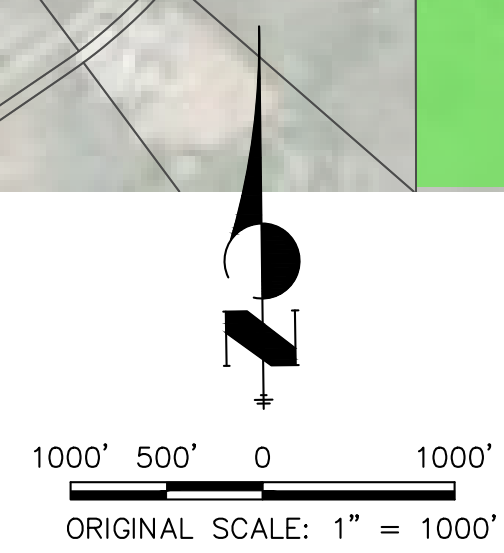


NOTES:

1. WATER MAIN SIZES TO BE COORDINATED WITH FINAL DEMANDS AND PWSD.

LEGEND:

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



JOB NO. 15950.12
DECEMBER 10, 2025

APPENDIX C

DEMAND SPREADSHEET, WATERCAD MODEL & RESULTS

Hillcamp - FireFlow Results Comp.														
Label	ID	Zone	Satisfies Fire Flow Constr	Fire Flow Status	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed)	Flow (Total Available)	Pressure (psi)	Is Fire Flow Run Balanced?	Demand (gpm)	Is Active?	Velocity (Upper Limit)	Velocity of Maximum Pipe (ft/s)
P-1	66	<None>	TRUE	Passed	2,500	2,705	2,505	2,710	124	TRUE	5	TRUE	10	10
P-2	67	<None>	TRUE	Passed	2,500	3,000	2,508	3,008	113	TRUE	8	TRUE	10	9.29
P-2.1	207	<None>	TRUE	Passed	2,500	2,612	2,508	2,621	110	TRUE	8	TRUE	10	10
P-2a	290	<None>	TRUE	Passed	2,500	2,611	2,500	2,611	103	TRUE	0	TRUE	10	10
P-3	68	<None>	TRUE	Passed	2,500	2,986	2,591	3,077	99	TRUE	91	TRUE	10	10
P-4	69	<None>	TRUE	Passed	2,500	2,788	2,527	2,816	94	TRUE	27	TRUE	10	10
P-5	190	<None>	TRUE	Passed	2,500	3,000	2,609	3,109	85	TRUE	109	TRUE	10	9.79
P-5.1	299	<None>	TRUE	Passed	2,500	2,834	2,500	2,834	74	TRUE	0	TRUE	10	10
P-6	191	<None>	TRUE	Passed	2,500	3,000	2,500	3,000	74	TRUE	0	TRUE	10	9.92
P-7	192	<None>	TRUE	Passed	2,500	3,000	2,522	3,022	66	TRUE	22	TRUE	10	9.92
P-8	193	<None>	TRUE	Passed	2,500	3,000	2,596	3,096	60	TRUE	96	TRUE	10	9.92
P-9	194	<None>	TRUE	Passed	2,500	3,000	2,502	3,002	62	TRUE	2	TRUE	10	9.92
P-9.1	309	<None>	TRUE	Passed	2,500	3,000	2,524	3,024	54	TRUE	24	TRUE	10	9.92
P-9.2	307	<None>	TRUE	Passed	2,500	3,000	2,500	3,000	48	TRUE	0	TRUE	10	9.92
P-10	195	<None>	TRUE	Passed	2,500	3,000	2,509	3,009	87	TRUE	9	TRUE	10	9.94
P-10.1	270	<None>	TRUE	Passed	2,500	3,000	2,509	3,009	82	TRUE	9	TRUE	10	9.93
P-11	196	<None>	TRUE	Passed	2,500	2,945	2,514	2,959	76	TRUE	14	TRUE	10	10
P-11.1	267	<None>	TRUE	Passed	2,500	2,718	2,500	2,718	69	TRUE	0	TRUE	10	10
P-12	197	<None>	TRUE	Passed	2,500	2,854	2,511	2,864	73	TRUE	11	TRUE	10	10
P-13	199	<None>	TRUE	Passed	2,500	2,812	2,500	2,812	61	TRUE	0	TRUE	10	10
P-13.2	277	<None>	TRUE	Passed	2,500	2,757	2,598	2,855	55	TRUE	98	TRUE	10	10
P-14	200	<None>	TRUE	Passed	1,500	1,567	1,500	1,567	87	TRUE	0	TRUE	10	10
P-15	198	<None>	TRUE	Passed	2,500	3,000	2,505	3,005	54	TRUE	5	TRUE	10	9.93
P-16	295	<None>	TRUE	Passed	2,500	3,000	2,521	3,021	67	TRUE	21	TRUE	10	9.8
P-17	297	<None>	TRUE	Passed	1,500	1,567	1,500	1,567	76	TRUE	0	TRUE	10	10
P-18	302	<None>	TRUE	Passed	2,500	3,000	2,508	3,008	48	TRUE	8	TRUE	10	9.92
P-19	304	<None>	TRUE	Passed	2,500	3,000	2,500	3,000	52	TRUE	0	TRUE	10	9.92
P-20	314	<None>	TRUE	Passed	2,500	2,910	2,500	2,910	51	TRUE	0	TRUE	10	10
P-21	316	<None>	TRUE	Passed	1,500	1,557	1,510	1,567	88	TRUE	10	TRUE	10	10
P-22	318	<None>	TRUE	Passed	1,500	1,557	1,500	1,557	76	TRUE	0	TRUE	10	10
P-110	323	<None>	TRUE	Passed	2,500	3,000	2,510	3,010	52	TRUE	10	TRUE	10	9.92
P-117	343	<None>	TRUE	Passed	2,500	2,622	2,508	2,629	66	TRUE	8	TRUE	10	10
P-119	354	<None>	TRUE	Passed	2,500	3,000	2,500	3,000	95	TRUE	0	TRUE	10	9.54
P-131	391	<None>	TRUE	Passed	2,500	2,533	2,500	2,533	99	TRUE	0	TRUE	10	10

HILLCAMP SUBDIVISION MDD (Max Day Demand) Pipe Table								
Label	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Is Active?
319	P-35	1,384	8	PVC	130	0	0	0
339	P-147	682	8	PVC	130	0	0	0
298	P-25	1,453	8	PVC	130	0	0	0
308	P-32	349	8	PVC	130	1	0	0
326	P-139	639	8	PVC	130	3	0	0
394	P-162	477	8	PVC	130	3	0	0
325	P-30(2)	323	8	PVC	130	-4	0	0
352	P-151	841	8	PVC	130	-5	0	0
312	P-31	685	8	PVC	130	-6	0	0
392	P-34(1)	407	8	PVC	130	7	0	0
324	P-30(1)	455	8	PVC	130	9	0.06	0
393	P-34(2)	584	8	PVC	130	10	0	0
268	P-16.2	283	10	PVC	130	-15	0	0
350	P-149	1,246	8	PVC	130	-16	0	0
311	P-28	276	10	PVC	130	-35	0.14	0
257	P-12	562	10	PVC	130	38	0.15	0
344	P-23(1)	216	8	PVC	130	-29	0.18	0
355	P-5(1)	317	10	PVC	130	50	0.2	0
265	P-18	1,031	8	PVC	130	35	0.22	0
345	P-23(2)	360	8	PVC	130	-36	0.23	0
259	P-22	708	8	PVC	130	-41	0.26	0
390	P-161	990	8	PVC	130	48	0.31	0
351	P-150	908	8	PVC	130	-50	0.32	0
300	P-26	1,098	8	PVC	130	-52	0.33	0
301	P-27	281	8	PVC	130	-52	0.33	0
337	P-145	767	8	PVC	130	64	0.41	0
273	P-15.1	581	8	PVC	130	-65	0.41	0
296	P-24	1,727	8	PVC	130	73	0.47	0
256	P-11	408	10	PVC	130	121	0.5	0
382	P-9	970	8	PVC	130	79	0.5	0
260	P-17	252	8	PVC	130	-86	0.55	0
255	P-10	438	10	PVC	130	143	0.59	0
271	P-16	406	10	PVC	130	-164	1	0
252	P-7	780	8	PVC	130	136	0.87	0
356	P-5(2)	333	10	PVC	130	236	1	0
384	P-15	327	10	PVC	130	-238	0.97	0
360	P-148	982	10	PVC	130	247	1	0
293	P-2.1	497	8	PVC	130	186	1	0.001
353	P-152	418	8	PVC	130	186	1	0.001
294	P-2.2	1,284	8	PVC	130	218	1.39	0.001
248	P-2	846	10	PVC	130	372	1.52	0.001
201	P-1	554	10	PVC	130	378	1.54	0.001
250	P-4	362	10	PVC	130	387	1.58	0.001
249	P-3	319	10	PVC	130	396	1.62	0.001

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
MDD (Max Day Demand) Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Is Active?
J-1	6,287.96	5	6,591.44	131	TRUE
J-2	6,291.72	8	6,590.60	129	TRUE
J-2.1	6,296.00	8	6,590.25	127	TRUE
J-2a	6,302.13	0	6,590.20	125	TRUE
J-3	6,301.48	91	6,589.86	125	TRUE
J-4	6,308.00	27	6,589.71	122	TRUE
J-5	6,296.62	109	6,589.36	127	TRUE
J-5.1	6,296.58	0	6,589.44	127	TRUE
J-6	6,314.63	0	6,589.20	119	TRUE
J-7	6,322.72	22	6,589.13	115	TRUE
J-8	6,330.32	96	6,589.08	112	TRUE
J-9	6,307.31	2	6,589.07	122	TRUE
J-9.1	6,318.86	24	6,589.06	117	TRUE
J-9.2	6,319.15	0	6,589.06	117	TRUE
J-10	6,299.36	9	6,589.41	125	TRUE
J-10.1	6,304.69	9	6,589.27	123	TRUE
J-11	6,310.33	14	6,589.18	121	TRUE
J-11.1	6,306.15	0	6,589.09	122	TRUE
J-12	6,313.36	11	6,589.13	119	TRUE
J-13	6,317.58	0	6,589.09	117	TRUE
J-13.2	6,303.66	98	6,589.03	123	TRUE
J-14	6,297.98	0	6,589.03	126	TRUE
J-15	6,333.21	5	6,589.10	111	TRUE
J-16	6,297.96	21	6,589.46	126	TRUE
J-17	6,306.59	0	6,589.46	122	TRUE
J-18	6,311.01	8	6,589.07	120	TRUE
J-19	6,310.66	0	6,589.06	120	TRUE
J-20	6,298.55	0	6,589.06	126	TRUE
J-21	6,301.22	10	6,589.06	125	TRUE
J-22	6,271.29	0	6,589.06	137	TRUE
J-110	6,307.95	10	6,589.06	122	TRUE
J-117	6,335.63	8	6,589.08	110	TRUE
J-119	6,307.65	0	6,589.85	122	TRUE
J-131	6,319.04	0	6,589.06	117	TRUE

HILLCAMP SUBDIVISION
PHD (Peak Hour Demand) Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Is Active?
J-1	6,287.96	10.00	6,591.54	131.00	TRUE
J-2	6,291.72	16.00	6,590.87	129	TRUE
J-2.1	6,296.00	16.00	6,590.59	127	TRUE
J-2a	6,302.13	0.00	6,590.55	125.00	TRUE
J-3	6,301.48	20.00	6,590.30	125.00	TRUE
J-4	6,308.00	52.00	6,590.15	122.00	TRUE
J-5	6,296.62	55.00	6,589.89	127.00	TRUE
J-5.1	6,296.58	0.00	6,589.92	127.00	TRUE
J-6	6,314.63	0.00	6,589.70	119.00	TRUE
J-7	6,322.72	42.00	6,589.62	115	TRUE
J-8	6,330.32	30.00	6,589.58	112.00	TRUE
J-9	6,307.31	4.00	6,589.55	122.00	TRUE
J-9.1	6,318.86	46.00	6,589.54	117.00	TRUE
J-9.2	6,319.15	0.00	6,589.54	117.00	TRUE
J-10	6,299.36	17.00	6,589.88	126.00	TRUE
J-10.1	6,304.69	17.00	6,589.75	123.00	TRUE
J-11	6,310.33	27	6,589.68	121	TRUE
J-11.1	6,306.15	0.00	6,589.65	123.00	TRUE
J-12	6,313.36	20.00	6,589.65	120	TRUE
J-13	6,317.58	14.00	6,589.64	118.00	TRUE
J-13.2	6,303.66	34.00	6,589.63	124.00	TRUE
J-14	6,297.98	0.00	6,589.63	126	TRUE
J-15	6,333.21	9.00	6,589.60	111	TRUE
J-16	6,297.96	40.00	6,589.93	126.00	TRUE
J-17	6,306.59	0.00	6,589.93	123.00	TRUE
J-18	6,311.01	14.00	6,589.54	121.00	TRUE
J-19	6,310.66	0.00	6,589.54	121.00	TRUE
J-20	6,298.55	0.00	6,589.54	126.00	TRUE
J-21	6,301.22	19.00	6,589.53	125.00	TRUE
J-22	6,271.29	0.00	6,589.53	138.00	TRUE
J-110	6,307.95	19.00	6,589.54	122.00	TRUE
J-117	6,335.63	14.00	6,589.58	110.00	TRUE
J-119	6,307.65	0	6,590.29	122.00	TRUE
J-131	6,319.04	0	6,589.53	117	TRUE

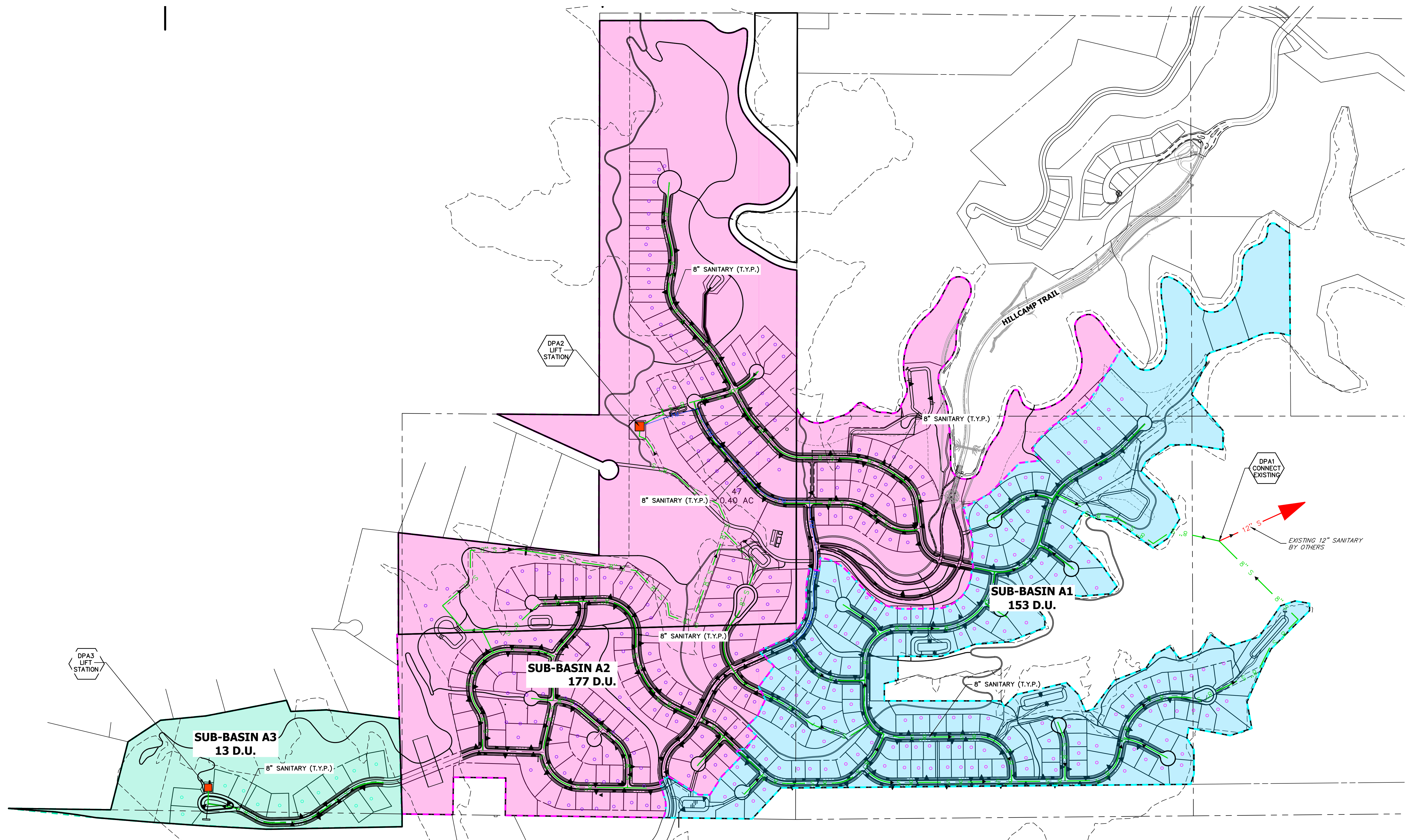
HILLCAMP SUBDIVISION
PHD (Peak Hour Demand) Pipe Table

Label	Length (Scaled) (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-147	682	8	PVC	130	0	0	0
P-35	1,384	8	PVC	130	0	0	0
P-25	1,453	8	PVC	130	0	0	0
P-32	349	8	PVC	130	2	0.01	0
P-139	639	8	PVC	130	6	0.04	0
P-162	477	8	PVC	130	6	0.04	0
P-18	1,031	8	PVC	130	7	0.05	0
P-30(2)	323	8	PVC	130	-8	0.05	0
P-151	841	8	PVC	130	-10	0.06	0
P-31	685	8	PVC	130	-11	0.07	0
P-34(1)	407	8	PVC	130	13	0.08	0
P-16.2	283	10	PVC	130	-24	0.1	0
P-30(1)	455	8	PVC	130	17	0.11	0
P-150	908	8	PVC	130	-17	0.11	0
P-161	990	8	PVC	130	18	0.11	0
P-34(2)	584	8	PVC	130	19	0.12	0
P-23(1)	216	8	PVC	130	-25	0.16	0
P-26	1,098	8	PVC	130	-29	0.18	0
P-27	281	8	PVC	130	-29	0.18	0
P-149	1,246	8	PVC	130	-31	0.2	0
P-23(2)	360	8	PVC	130	-40	0.25	0
P-145	767	8	PVC	130	42	0.27	0
P-28	276	10	PVC	130	-67	0.27	0
P-12	562	10	PVC	130	71	0.29	0
P-5(1)	317	10	PVC	130	72	0.29	0
P-22	708	8	PVC	130	-48	0.31	0
P-15.1	581	8	PVC	130	-60	0.38	0
P-11	408	10	PVC	130	106	0.44	0
P-24	1,727	8	PVC	130	69	0.44	0
P-17	252	8	PVC	130	-76	0.48	0
P-9	970	8	PVC	130	88	0.56	0
P-16	406	10	PVC	130	-144	0.59	0
P-10	438	10	PVC	130	148	0.6	0
P-7	780	8	PVC	130	114	0.73	0
P-15	327	10	PVC	130	-222	0.91	0
P-5(2)	333	10	PVC	130	235	0.96	0
P-148	982	10	PVC	130	239	0.98	0
P-2.1	497	8	PVC	130	163	1.04	0
P-152	418	8	PVC	130	163	1.04	0
P-2.2	1,284	8	PVC	130	195	1.24	0.001
P-2	846	10	PVC	130	330	1.35	0.001
P-4	362	10	PVC	130	331	1.35	0.001
P-1	554	10	PVC	130	340	1.39	0.001
P-3	319	10	PVC	130	347	1.42	0.001

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

APPENDIX D

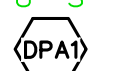
SANITARY SEWER EXHIBIT



BASIN TABLE

	BASIN A1 - 153 DU
	BASIN A2 - 177 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



300 150 0 300 600
ORIGINAL SCALE: 1" = 300'

SANITARY SEWER EXHIBIT
HILLCAMP SUBDIVISION
JOB NO. 15950.12
12/4/25
SHEET 1 OF 1

 **J-R ENGINEERING**
A Westrian Company

Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

APPENDIX E

SANITARY SEWER SYSTEM DATA AND CALCULATIONS

Project Name

Project No.

Calculated By

Checked By

Date

Hillcamp

15950.12

ARJ

12/10/2025

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)	----	153	30,447	0.030	0.047	21.14	3.200	0.151	0.003	0.005	69.77	0.155	-	-
	Total	----	153	30,447	0.030	0.047	21.14	3.200	0.151	0.003	0.005	69.77	0.155	0.0040	8
Sub-Basin 2	(units)	----	177	35,223	0.035	0.054	24.46	3.200	0.174	0.004	0.005	80.72	0.180	-	-
		1 - 2000 gpd avg daily flow	177	37,223	0.037	0.058	25.85	3.200	0.184	0.004	0.006	85.30	0.190	0.0040	8
Sub-Basin 3	(units)	----	13	2,587	0.003	0.004	1.80	3.200	0.013	0.0003	0.000	5.93	0.013	-	-
	Total	----	13	2,587	0.003	0.004	1.80	3.200	0.013	0.0003	0.000	5.93	0.013	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

69.00 gpcd

Occupants per DU

3.20

Average Daily Flow Calculation

199 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)
Hillcamp (343 SFE) (199 gpd/SFE)	343.0		68,257	0.068	0.106	47.40	3.20	0.34	0.007	0.011	0.10	0.35

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

Hilcamp

15950.12

ARI

10/13/2025

Flow Master Results																						
Label	Solve For	Friction Method	Roughness	Channel Slope (ft/ft)	Normal Dd 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			0.013	0.004	2.4	8	0.16	0.1	0.8	1.4	0.61	2.2	30.6	0.006	1.72	0.05	0.25	0.789	0.82	0.76	0	Subcritical
Sub Basin A2			0.013	0.004	2.7	8	0.18	0.1	0.8	1.5	0.63	2.4	33.4	0.006	1.8	0.05	0.27	0.789	0.82	0.76	0	Subcritical
Sub Basin A3			0.013	0.004	0.7	8	0.01	0	0.4	0.5	0.38	0.6	9.1	0.008	0.83	0.01	0.07	0.718	0.82	0.76	0	Subcritical

Notes

Messages

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
- X

 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



Site

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

RIDGEGATE EAST REGIONAL WATER SYSTEM MASTER PLAN

DWG III-A

