

Preliminary Utility Report

Pine Canyon Filing 1
SDP 26-0021

Prepared for:

JRW Family Limited Partnership, LLLP
1200 17th Street, Suite 3000
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Contact: Kurt Walker
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Prepared by:



Redland

WHERE GREAT PLACES BEGIN

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September 25, 2026
Project No. 250100

ENGINEER'S STATEMENT

The enclosed utility report, and exhibits, were prepared by me or under my direct supervision and is correct to the best of my knowledge and belief. Said utility report has been prepared in accordance with applicable Town of Castle Rock criteria and is in conformance with the master utility plans for the affected area. I accept responsibility for any liability caused by negligent acts, errors, or omissions on my part in preparing this report.

Signature: _____

Evan Rumney, P.E.

Registered Professional Engineer

State Of Colorado No. 54401

Owner/Developer's Statement:

As Owner/Developer of Land(s) identified within this report; I agree to proceed, implement and comply with all recommendations and requirements outlined herein.

Name of Developer

Authorized Signature

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General Location and Description

Introduction

This report presents an analysis of the water and wastewater requirements for the Pine Canyon Filing 1 subdivision, hereafter referred to as the Site. Adequate water rights shall be conveyed to the Town for use by the Site upon property annexation.

Site Location

The Site is generally in portions of the eastern half of the southeastern quarter of Section 36, Township 7 South, as well as the northern half of the northeastern quarter of Section 1, Township 8 South, Range 67 West of the 6th P.M., in the County of Douglas, State of Colorado. Founders Parkway defined the eastern boundary of the site, near the intersections of Founders Parkway & Crimson Sun Drive, and Founders Parkway & Rising Sun Drive. See Appendix F for project Vicinity Map.

Description of Property and Land Use

The Site is roughly 63.9 acres undeveloped and located west of Founders Parkway, north of the Woodlands development, and south of the planned Pioneer Ranch development. Proposed development will include approximately 133 single family detached (SFD) dwellings, local roadways, open space, site infrastructure, and three detention ponds. The Site generally slopes to the northeast and consists of native grasses and vegetation. See Appendix F for a conceptual site utility plan.

Calculated Water Demands

This report analyzes the water system that services the Site's 133 SFE's. The proposed water flows for the Site have been calculated using the Town of Castle Rock Water System Design 2018 Criteria Manual. See relevant design criteria below:

Demand per SFE	400 gal/day/SFE (Single Family Residential/Duplex)
Maximum Day Factor	MDF = 2.5
Peak Hour Factor	PHF = 5.5
Maximum Day Demand	MDD = (Domestic ADD*MDF) + Irrigation ADD
Peak Hour Demand	PHD = (Domestic ADD*PHF) + Irrigation ADD

Average Day Demands (ADD)

Average Daily Demands were calculated using 400 gpd/SFE and 133 SFE for the design demand, resulting in an Average Daily Demand of 36.94 gpm excluding irrigation. Approximately 2.9 acres of the Site will be permanently irrigated, using a land use rate of 3,750 gpd/acre for the design demand, resulting in the calculated total irrigation ADD of 3.33

gpm. Total ADD, including irrigation, was calculated to be 44.50 gpm. For complete calculations, see Appendix A.

Residential Only

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Average Daily Demand	36.94	53,200	59.59

Residential & Irrigation

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Average Daily Demand	44.50	64,000	71.69

Maximum Day Demands (MDD)

Using the Maximum Day Factor of 2.5, the Maximum Day Demand was calculated to be 92.36 gpm excluding irrigation. Including irrigation, the MDD was calculated to be 95.69 gpm. For complete calculations, see Appendix A.

Residential Only

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Maximum Daily Demand	92.36	133,000	148.98

Residential & Irrigation

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Maximum Daily Demand	99.91	143,900	161.19

Peak Hour Demands (PHD)

Using the Peak Hour Factor of 5.5, the Peak Hour Demand was calculated to be 203.19 gpm, excluding irrigation. Including irrigation, the PHD was calculated to be 206.53 gpm. For complete calculations, see Appendix A.

Residential Only

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)
Maximum Daily Demand	203.19	292,600	327.75

Residential & Irrigation

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Acre-ft Per Year (af/yr)

Maximum Daily Demand	210.75	303,500	339.96
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Existing Water System

There are two water lines near the Site. There is a 20" ductile iron water line along the east side of Founders Parkway, and there is an 8" PVC water line along the west side of Founders Parkway that is capped south of the site.

The Site is currently not included in the Castle Rock Water Master Plan, but the 20" water line along Founders Parkway is served by a red pressure zone, known as Founders Red. Most of the development falls within the red pressure zone, except for a small portion on the southern portion of the site, where it becomes a green pressure zone. This green pressure zone is serviced by the 8" water line along the west side of Founders Parkway. The northern section is outside any designated pressure zone.

The elevation range of the proposed lots is 6521' - 6582'.

Proposed Water System

Proposed Distribution System

The proposed water system for the Site will connect to existing infrastructure at three points. Two connections are to the existing 20" main located along the east side of Founders Parkway, one at the southeast corner of the Site and the other located at the northeast corner of the Site. These two connections are in a red pressure zone. The third connection is the existing 8" main located south of the Site on the west side of Founders Parkway. This connection is in a green pressure zone.

The Site contains 133 SFD lots. The proposed water system will be composed 8" diameter PVC and will be routed throughout the Site, being looped between all existing connection points. Multiple 8" stubs will be constructed for the future connection points into future filings at the north side of the Site. There will be separate booster pumps installed at the irrigation taps to provide adequate pressure to the irrigation system off of the main water line.

Proposed Supply Facilities

The Site is served in the green pressure zone by Tanks 6A and 6C, with the combined capacity of 4.22 MG. The red pressure zone is served by Tank 16, with a capacity of 3.11 MG.

Required storage needed for the Site is based on proposed demands and is calculated below.

$$\begin{aligned}\text{Storage Volume} &= \text{Maximum Day Demand} + \text{Fire Flow} \\ &= (92.36\text{gpm} * 60\text{min/hr} * 24\text{hrs}) + (1500\text{gmp} * 60\text{min/hr} * 2\text{hrs}) \\ &= 133,000\text{ gallons} + 180,000\text{ gallons}\end{aligned}$$

Storage Volume = 313,000 gallons (0.313 MG)

Land Dedication Requirements

To support the municipal water supply for the property, the owner must convey water rights to the Town. The Town will not grant land use approvals for any additional development until this requirement is met. The site requires 133 SFE for domestic supply and 2.9 ac. anticipated for irrigation. Only permanently irrigated areas were used to calculate the anticipated SFE's, which excludes areas such as native grasses. The Town will reserve the groundwater allotted to the Site as per the water rights in Article V of the Pine Canyon Development Agreement.

Proposed water infrastructure not located within public right-of-way will be within a dedicated utility easement for access and maintenance. The minimum width of the easement is 20' for one utility, 30' for two utilities, and 40' for three utilities per the Town of Castle Rock Water System Design 2018 Criteria Manual. Any required easements will be dedicated on the final plat. Any future development of the existing water infrastructure needed to serve the Site is the responsibility of the developer.

Proposed Water System Analysis and Modeling

The proposed water analysis and modeling has been done in accordance with The Town of Castle Rock criteria. It requires the water distribution pipe system to deliver Maximum Day plus Fire Flows demand with a minimum dynamic pressure of 20 psi and a maximum velocity of 15 fps. The Town also requires the system to deliver Peak Hour demands with a minimum pressure of 25 psi and a maximum velocity of 10 fps under the same conditions. In addition, the minimum static pressure with zero demand criteria (20% tank stage) is 43 psi and the maximum static pressure with zero demand criteria (100% tank stage) is 125 psi.

Different flow models were completed and compared to the corresponding Town criteria. The models consisted of Average Day, Maximum Day, Maximum Day plus Fire Flow, Peak Hour, and both minimum and maximum static pressures with zero demand. The minimum static pressure (20% tank stage) HGL elevation used in the model was 6805', and the maximum static pressure (100% tank stage) HGL used in the model was 6824'.

Each model contains two outputs. The first being the Junction Report, which is used to check water pressure in the model against the Town's criteria. The second is the Pipe Report, which is used to check velocities and head loss against the Town's criteria. Full results for each scenario can be found in Appendix C.

The proposed water distribution system meets the Town of Castle Rock's design criteria, except for the minimum residual pressure under the maximum day plus fire flow scenario with the green connection closed. With a fire flow demand of 1,500 gpm applied at Junction J-B5, the modeled minimum residual pressure is 17 psi at Junction J-B4, below the Town's minimum requirement of 20 psi. This condition results from the junction's location and closure of the green connection. Alternatively, an additional connection to the existing watermain with an additional PRV can be considered to allow this scenario to meet the Town's minimum

criteria. However, it is our understanding that the Town would find this to be an unfavorable solution. As a result, a variance from the minimum residual pressure requirement is requested per Section 4.4 of the Town of Castle Rock Water System Design Criteria Manual.

Peak hour demand (PHD) conditions were modeled with and without one critical distribution loop isolated and out of service, consistent with the fire flow analysis. With the green connection closed, the minimum network pressure was 35 psi at Junction J-B5, and the maximum velocity was 0.75 fps. These results satisfy the Town's criteria for a minimum dynamic pressure of 35 psi and a maximum velocity of 10 fps under PHD conditions with one critical distribution loop out of service.

The minimum static pressure (20% tank stage) network was modeled to be 53 psi at Junction J-C2. This meets the Town's criteria for a minimum static pressure of 43 psi.

The maximum static pressure (100% tank stage) network was modeled to be 123 psi at Junction J-C5. This meets the Town's criteria for a maximum static pressure of 125 psi.

Calculated Wastewater Flows

This report analyzes the sanitary sewer system that services the Site's 133 SFE's. The proposed wastewater flows for the Site have been calculated using the Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual. See relevant design criteria below:

Demand per SFE	200 gal/day/SFE (Single Family Residential/Duplex)
Peak Factor	PF = 5.0
Infiltration/Inflow	I/I = 0.10*ADF
Peak Design Flow	PDF = (ADF*PF) + (I/I)

Average Day Wastewater Flows (ADF)

Average Daily Flows were calculated using 200 gpd/SFE and 133 SFE for the design basin, resulting in an Average Daily Flow of 18.47 gpm, for complete calculations see Appendix D.

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Cubic Feet Per Second (cfs)
Average Daily Flow	18.47	26,600	0.04

Peaking Factor

A maximum peaking factor of 5.0 was used to determine a Peak Design Flow for the Site. This demand includes infiltration/inflow demands, for complete calculations see Appendix D.

Peak Design Flows (PDF)

Using the Peaking Factor of 5.0, the Peak Design Flow was calculated to be 364.58 gpm. Including Infiltration/Inflow the Peak Design Flow was calculated to be 371.88 gpm, for complete calculations see Appendix D.

	Gallons Per Minute (gpm)	Gallons Per Day (gpd)	Cubic Feet Per Second (cfs)
Peak Design Flow	92.36	133,000	0.21
Peak Design Flow w/ Infiltration	94.21	135,660	0.21

Existing Wastewater System

Existing Collection System

There are four existing sanitary connections that have been outlined in the Pine Canyon Concept Utility Letter. One of these connections is made to the Woodlands interceptor, a 24" gravity main located along Woodlands Blvd. and Scott Blvd. This is the connection that will be used for Pine Canyon Filing 1. The Woodlands interceptor then flows underneath Interstate 25 and eventually connects with the Plum Creek interceptor. This interceptor eventually flows to the Plum Creek Wastewater Treatment Facility approximately 4.5 miles away from the Site. For analysis of the overall Pine Canyon PDP sanitary outfall capacity, please refer to the Pine Canyon Master Sanitary Report.

Proposed Wastewater System

Proposed Collection System

It is anticipated that the Site will be fully serviced by 8" in diameter sanitary sewer mains. All flow will be collected and conveyed to the northeast corner of the Site. Flows are then conveyed west of the site through future developments of Pine Canyon, eventually upsizing to a 12" sanitary sewer main west of the site. It then connects to the 24" Woodlands interceptor gravity main at the intersection of Woodlands Blvd. and Scott Blvd. This connection point is intended to capture flows from Filing 1, as well as future planning areas 1 through 13. Based on correspondence with the Town of Castle Rock, the Woodlands interceptor will be sufficient for handling these peak flows.

Land Dedication Requirements

Sanitary sewer infrastructure not located within public right-of-way will be within a dedicated utility easement for access and maintenance. The minimum width of the easement is 20' per the Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual. Due to the depth of the sanitary sewer outside of the Site, a 30' easement will be dedicated. Any future

development of the existing wastewater infrastructure needed to serve the Site is the responsibility of the developer.

Proposed Wastewater System Analysis and Modeling

The proposed wastewater analysis and modeling has been done in accordance with The Town of Castle Rock criteria. HydroFlow Express was used to analyze the sanitary pipe capacity and velocities for the development. See Appendix E for results of the modeling. Design constraints considered in the model are as follows:

Manning's Coefficient (PVC)	0.011
Maximum Velocity at Peak Design Flow	10 fps
Minimum Velocity at Peak Design Flow	2 fps
Minimum Pipe Slope (8 in)	0.5%
Maximum Pipe Slope (8in)	7.5%
Full Flow Capacity	75%

Average Day and Peak Design Flow scenarios were modeled to analyze the proposed pipe capacities and velocities. Both minimum and maximum velocity requirements were met at Peak Design Flows.

Peak Design Flow was calculated to be 0.21 cfs, the resulting pipe velocity was modeled to be 2.21 fps at a minimum pipe slope of 0.5%; this meets the Town's minimum velocity criteria. The pipe velocity was also modeled to be 5.55 fps at a maximum pipe slope of 7.5%; this meets the Town's maximum velocity criteria.

The total SFE's planned for the Pine Canyon PDP utilizing the Woodlands interceptor add up to 1,135 SFE's. This includes the SFEs in Planning Areas 1-13, including Pine Canyon Filing 1. A 12" sanitary line at a 0.5% slope has the capacity for 1,720 SFE's when flowing at a full flow capacity of 75%. Additionally, after discussion with the Town of Castle Rock, the Woodlands interceptor has the capacity to support the flows from the Site and future Pine Canyon filings. Please see the Pine Canyon Master Sanitary Report for further details and email correspondence and exhibits provided by the Town in the Appendix.

Potential Permitting Requirements

Permits for the proposed development will be applied for through the Town of Castle Rock and the State of Colorado, where applicable. Permits will be in place prior to the start of construction.

References

1. *Town of Castle Rock Water System Design 2018 Criteria Manual*, dated December 4, 2018.
2. *Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual*, dated December 4, 2018.
3. *Town of Castle Rock, 2022 Wastewater Master Plan*, dated 2022.
4. *Town of Castle Rock, 2023 Water Master Plan*, dated 2023.
5. *Pine Canyon Walker Parcels Concept Utility Letter*, dated April 22, 2025.
6. *Annexation and Vested Property Rights Development Agreement (Pine Canyon)*, dated September 29, 2025.
7. *Pine Canyon PA 1 – PA 15 Master Sanitary Report*, dated August 2026.

Appendix A – Water Demands

Pine Canyon Filing 1
Preliminary Utility Report

Redland
5/7/2026

Water Demands

Maximum Day Demand (MDD) 2.5
Peak Hour Demand (PHD) 5.5

Residential Only

Phase -Residential)	(SF Use	Dwelling Units	Area (AC)	Equivalent (SFE/DU)	SFE	Avg Day Demand (GPD/DU)	Avg Day (GPM/SFE)	Avg Day Demand (GPD)	Avg Day Demand (GPM)	Maximum Day Demand (GPM)	Peak Hour Demand (GPM)
1	SF	133	64.8	1.00	133.00	400	0.28	53,200.00	36.94	92.36	203.19
Totals:	-	133	64.8	-	133.00	-	0.28	53,200.00	36.94	92.36	203.19

*Per Town Of Castle Rock Water System Design 2018 Criteria Manual, Section 4.4.1

Irrigation

Phase	Use	Irrigated Area (AC)	Land Use Rate (GPD/AC)	Avg Day Demand (GPD)	Avg Day Demand (GPM)
1	IRR	2.90	3,750.00	10,875.00	7.55

*Per Town Of Castle Rock Water System Design 2018 Criteria Manual, Section 4.4.1

Residential & Irrigation

Phase	Use	Avg Day Demand (GPD)	Avg Day Demand (GPM)	Maximum Day Demand (GPM)	Peak Hour Demand (GPM)
1	SF & IRR	64,075.00	44.50	99.91	210.75

*Per Town Of Castle Rock Water System Design 2018 Criteria Manual, Section 4.4.1

Appendix B – Water Storage

Pine Canyon Filing 1
Preliminary Utility Report

Redland
7/31/2026

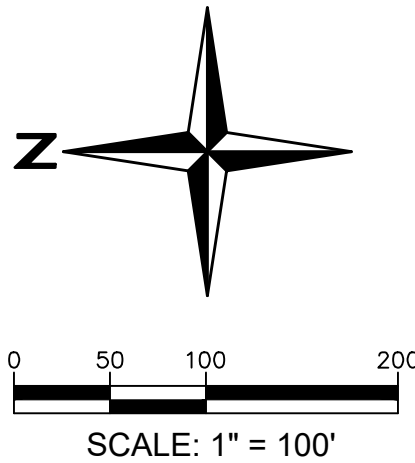
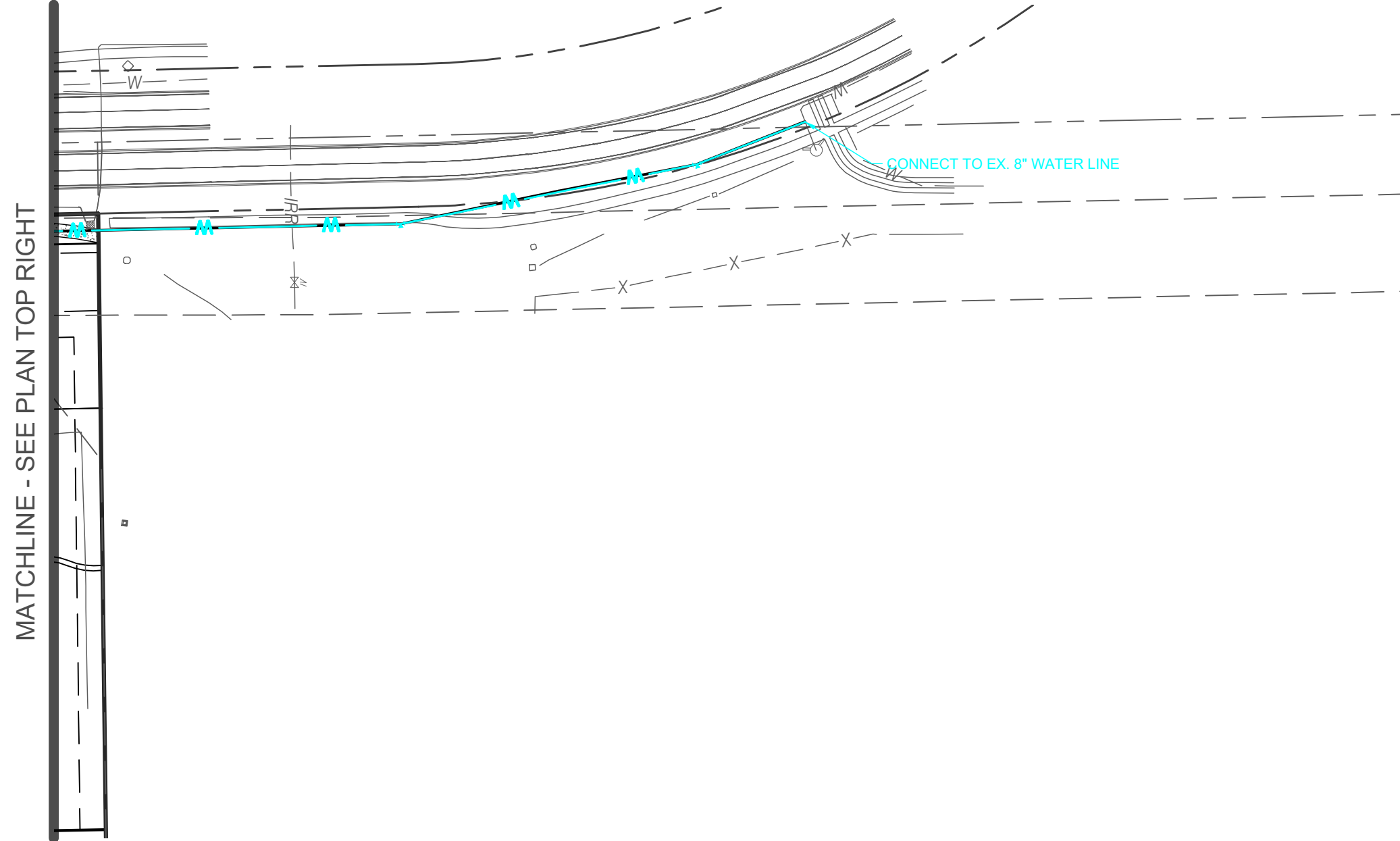
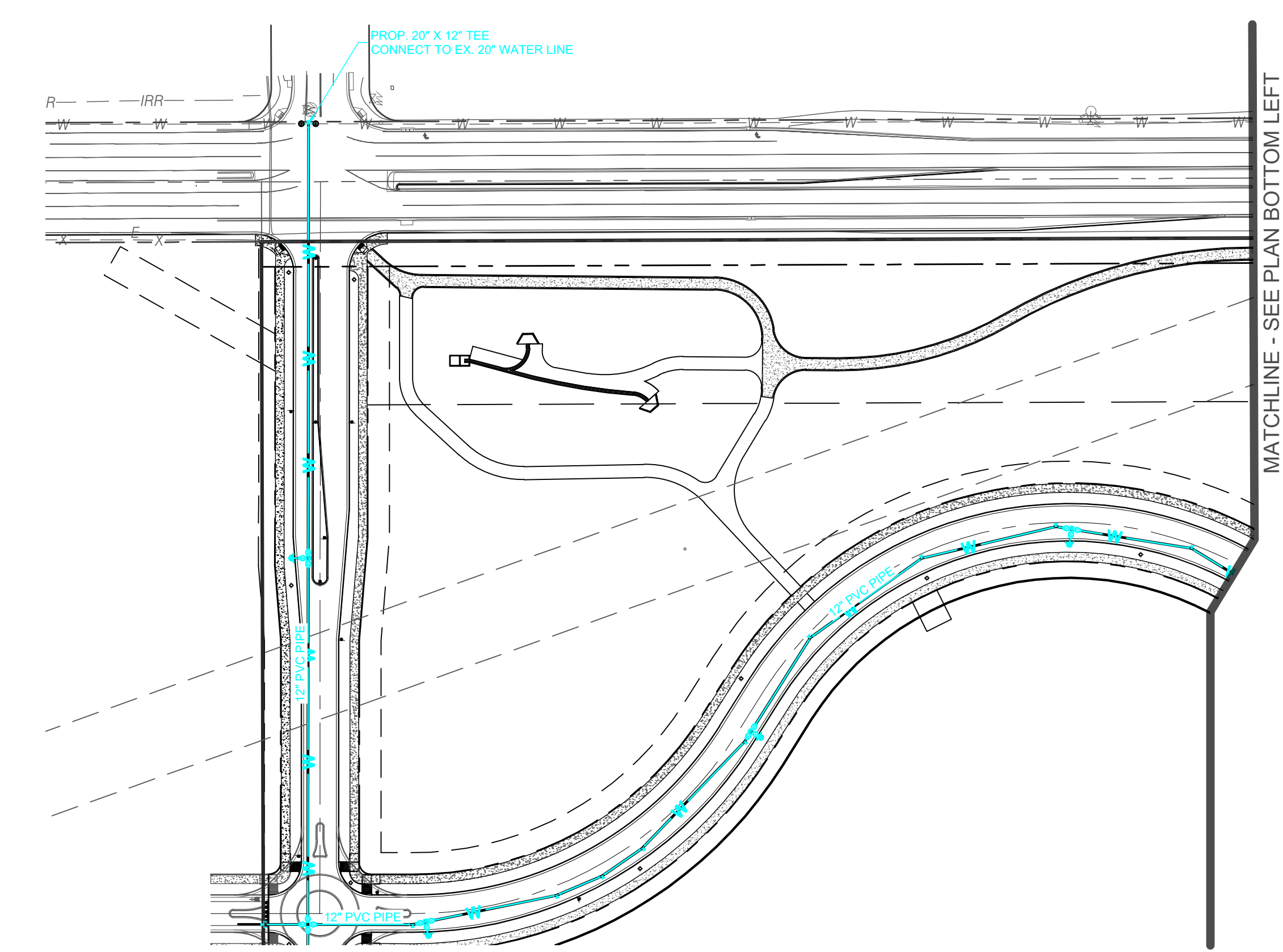
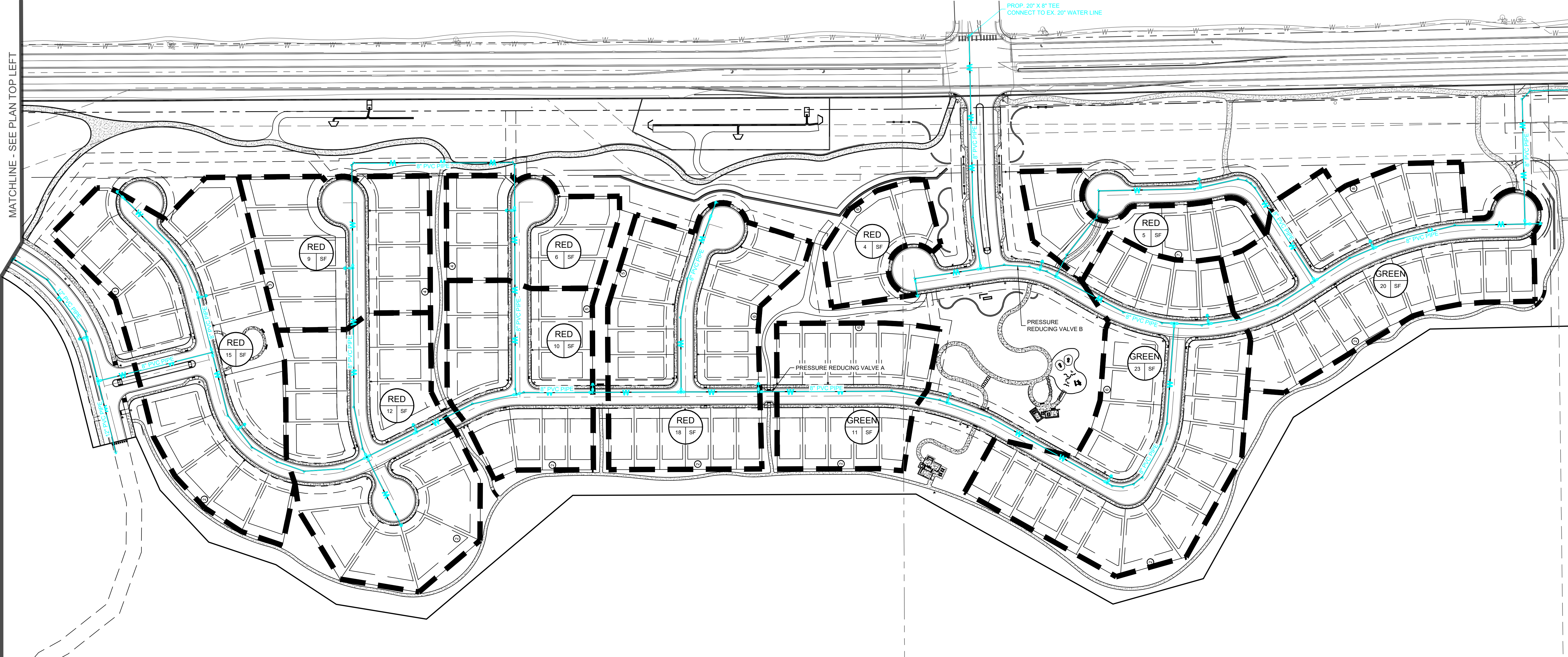
Water Storage
Maximum Day Demand (MDD) 2.5

Residential Only											
Type	Use	Dwelling Units	Area (AC)	Equivalent (SFE/DU)	SFE	Avg Day Demand (GPD/DU)	Avg Day (GPM/SFE)	Avg Day Demand (GPD)	Avg Day Demand (GPM)	Maximum Day Demand (GPM)	Total Storage (gallons)
Pine Canyon Filing 1	SF	133	64.8	1.00	133.00	400	0.28	53,200.00	36.94	92.36	133,000.00
Fire Flow											180,000.00
(1500 gpm @ 2 hrs)											
Totals:											313,000.00

*Per Town Of Castle Rock Water System Design 2018 Criteria Manual, Section 4.4.1

Appendix C – Water Hydraulic Analysis and Modeling

I:\Pine Canyon\250100 - Pine Canyon Filing 1\Exhibits\Engineering\Pine Canyon Filing 1 - Overall Water Map.dwg tab: Layout1 Sep 23, 2026 - 2:26pm asculer

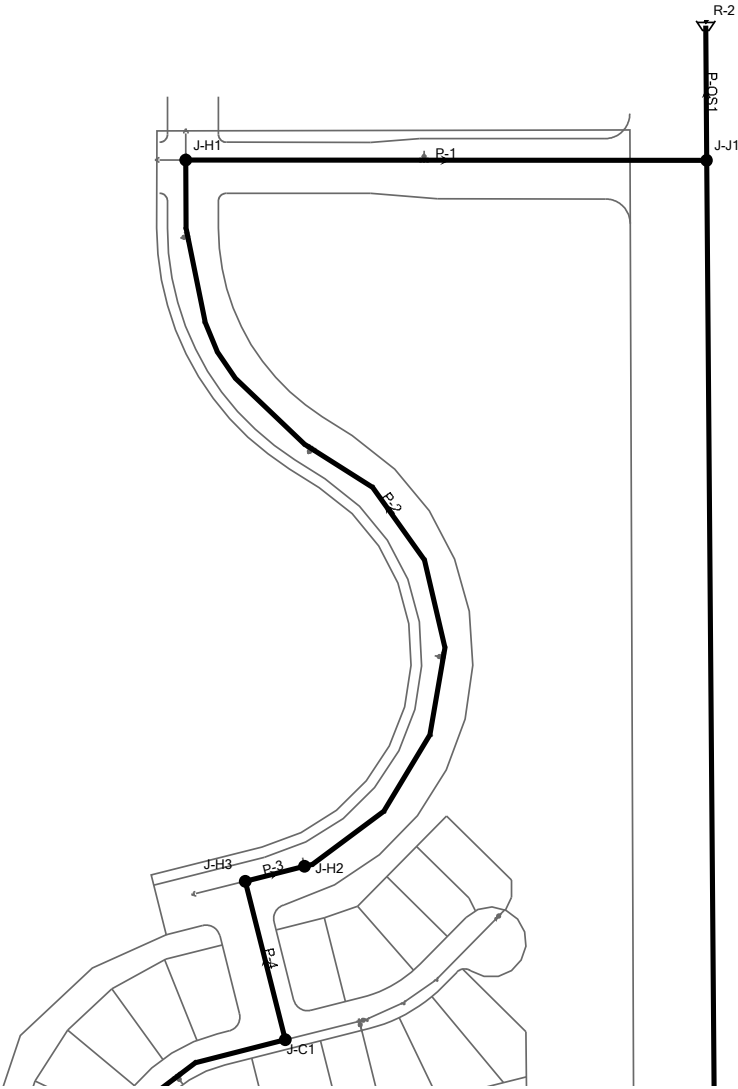


PINE CANYON FILING 1
CASTLE ROCK, COLORADO
OVERALL WATER MAP

PROJECT NO. 250087		NOTES	
DATE	NO.	DATE	NO.

**NOT FOR
CONSTRUCTION**

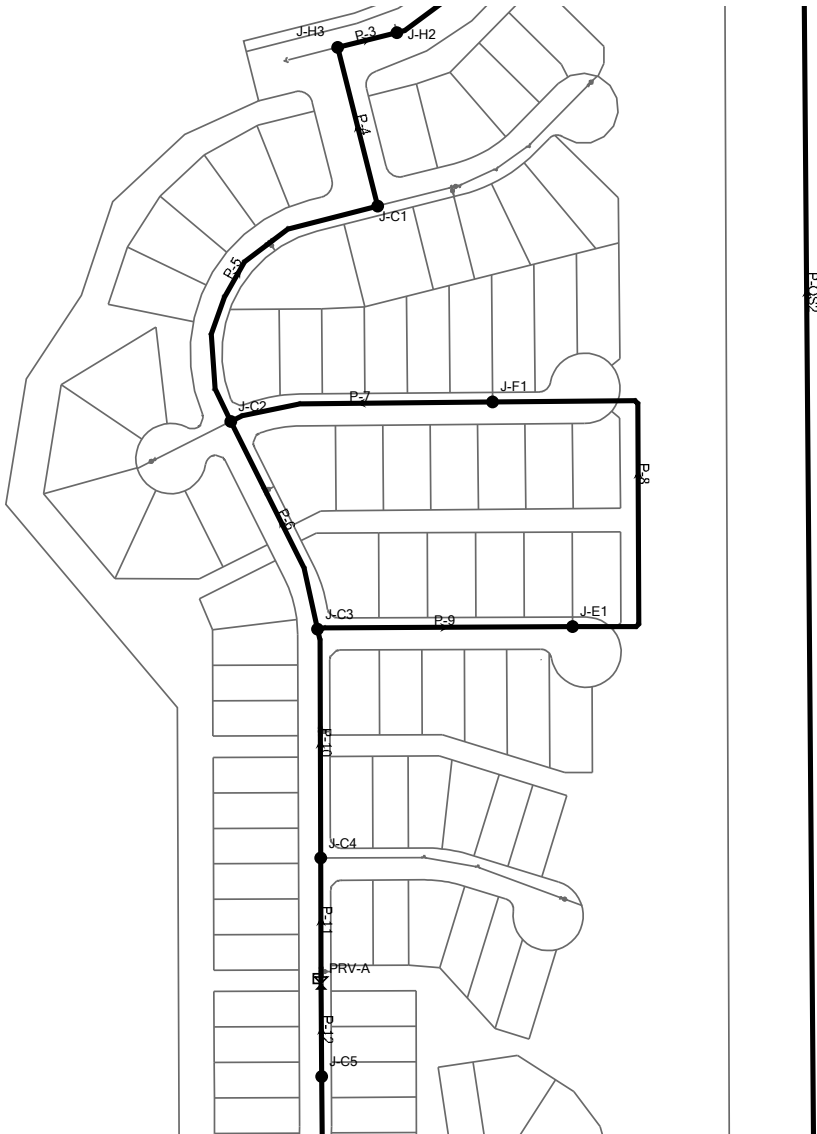
Pine Canyon Filing 1 WaterCAD Outputs
Site Map
North



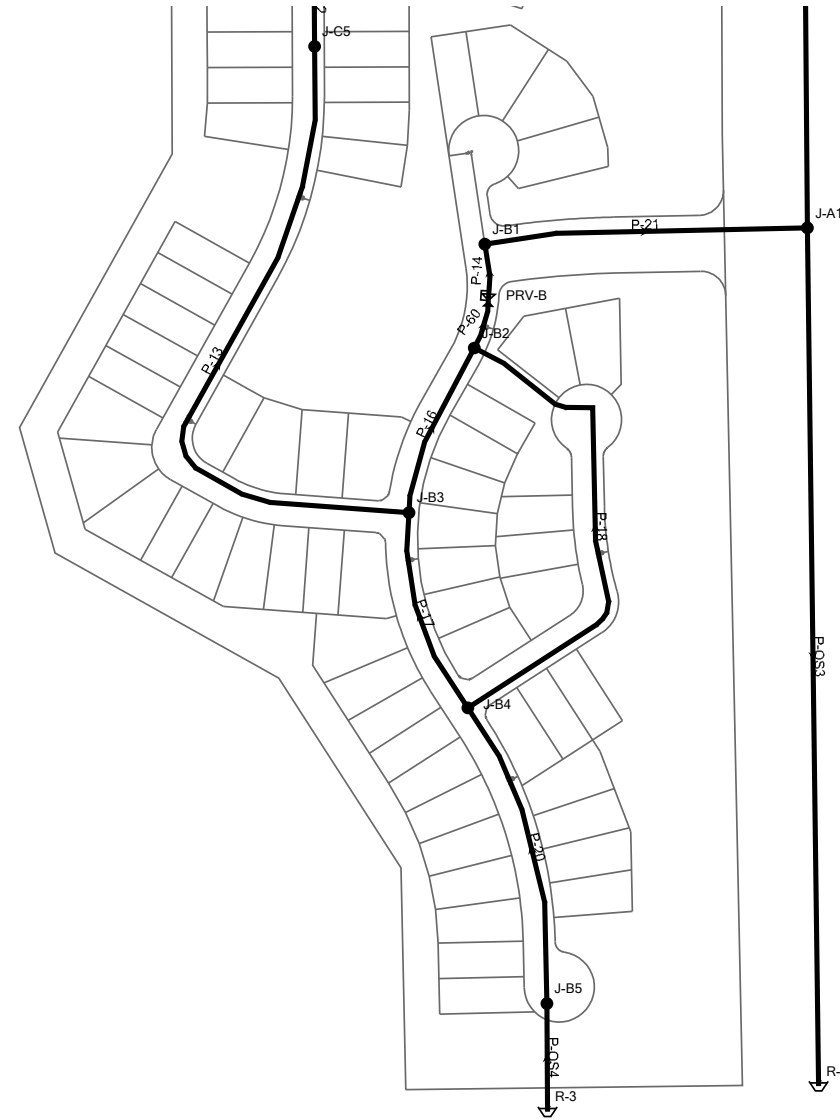
Pine Canyon Filing 1 WaterCAD Outputs

Site Map

Center



South



Pine Canyon Filing 1 WaterCAD Outputs
Average Day Flows

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
62	J-A1	6,517.55	RED	0	6,658.75	61
60	J-B1	6,528.94	RED	1	6,661.09	57
58	J-B2	6,535.77	RED	1	6,779.06	105
57	J-B3	6,550.14	GREEN	6	6,779.26	99
65	J-B4	6,557.02	GREEN	6	6,780.69	97
67	J-B5	6,577.36	GREEN	0	6,786.20	90
41	J-C1	6,532.71	RED	4	6,659.54	55
45	J-C2	6,538.87	RED	3	6,660.30	53
49	J-C3	6,535.76	RED	3	6,660.58	54
52	J-C4	6,537.33	RED	5	6,661.17	54
54	J-C5	6,540.54	GREEN	3	6,777.42	102
50	J-E1	6,519.00	RED	2	6,660.50	61
47	J-F1	6,522.27	RED	3	6,660.37	60
32	J-H1	6,494.18	RED	11	6,658.88	71
38	J-H2	6,528.40	RED	0	6,659.14	57
39	J-H3	6,532.49	RED	11	6,659.16	55
30	J-J1	6,472.32	RED	0	6,658.74	81

Pine Canyon Filing 1 WaterCAD Outputs

Average Day Flows

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
150	P-OS4	152	J-B5	R-3	8.0	PVC	120.0	False	0.000	-753	4.81	0.013	True	1,500
146	P-OS3	1,210	J-A1	R-1	20.0	Ductile Iron	120.0	False	0.000	351	0.36	0.000	True	10,000
142	P-OS2	2,723	J-J1	J-A1	20.0	Ductile Iron	120.0	False	0.000	-114	0.12	0.000	False	0
145	P-OS1	190	J-J1	R-2	20.0	Ductile Iron	120.0	False	0.000	344	0.35	0.000	True	10,000
165	P-60	71	PRV-B	J-B2	8.0	PVC	120.0	False	0.000	-466	2.97	0.005	False	0
102	P-21	457	J-B1	J-A1	8.0	PVC	120.0	False	0.000	464	2.96	0.005	False	0
124	P-20	440	J-B5	J-B4	8.0	PVC	120.0	False	0.000	753	4.81	0.013	False	0
141	P-18	723	J-B4	J-B2	8.0	PVC	120.0	False	0.000	298	1.90	0.002	False	0
123	P-17	295	J-B3	J-B4	8.0	PVC	120.0	False	0.000	-450	2.87	0.005	False	0
136	P-16	252	J-B3	J-B2	8.0	PVC	120.0	False	0.000	169	1.08	0.001	False	0
125	P-14	80	J-B1	PRV-B	8.0	PVC	120.0	False	0.000	-466	2.97	0.005	False	0
131	P-13	955	J-C5	J-B3	8.0	PVC	120.0	False	0.000	-274	1.75	0.002	False	0
140	P-12	132	PRV-A	J-C5	8.0	PVC	120.0	False	0.000	-271	1.73	0.002	False	0
139	P-11	177	J-C4	PRV-A	8.0	PVC	120.0	False	0.000	-271	1.73	0.002	False	0
121	P-10	323	J-C3	J-C4	8.0	PVC	120.0	False	0.000	-266	1.70	0.002	False	0
89	P-9	360	J-C3	J-E1	8.0	PVC	120.0	False	0.000	84	0.54	0.000	False	0
90	P-8	612	J-E1	J-F1	8.0	PVC	120.0	False	0.000	83	0.53	0.000	False	0
84	P-7	373	J-C2	J-F1	8.0	PVC	120.0	False	0.000	-80	0.51	0.000	False	0
118	P-6	319	J-C2	J-C3	8.0	PVC	120.0	False	0.000	-179	1.14	0.001	False	0
120	P-5	449	J-C1	J-C2	8.0	PVC	120.0	False	0.000	-256	1.63	0.002	False	0
78	P-4	231	J-H3	J-C1	8.0	PVC	120.0	False	0.000	-252	1.61	0.002	False	0
76	P-3	86	J-H2	J-H3	12.0	PVC	120.0	False	0.000	-241	0.68	0.000	False	0
129	P-2	1,210	J-H1	J-H2	12.0	PVC	120.0	False	0.000	-241	0.68	0.000	False	0
126	P-1	735	J-H1	J-J1	12.0	PVC	120.0	False	0.000	231	0.65	0.000	False	0

Pine Canyon Filing 1 WaterCAD Outputs

Average Day Flows

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
143	R-1	6,658.40	RED	-351	6,658.40
144	R-2	6,658.40	RED	-344	6,658.40
149	R-3	6,805.00	GREEN	753	6,805.00

PRV Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Diameter (Valve) (in)	Minor Loss Coefficient (Local)	Hydraulic Grade Setting (Initial) (ft)	Pressure Setting (Initial) (psi)	Flow (gpm)	Hydraulic Grade (From) (ft)	Hydraulic Grade (To) (ft)	Headloss (ft)
135	PRV-B	6,540.93	8.0	0.000	6,661.50	52	466	6,778.70	6,661.50	117.20
138	PRV-A	6,494.18	8.0	0.000	6,661.50	72	271	6,777.17	6,661.50	115.67

Pine Canyon Filing 1 WaterCAD Outputs

Peak Hour Flows

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
62	J-A1	6,517.55	RED	0	6,658.41	61
60	J-B1	6,528.94	RED	6	6,658.41	56
58	J-B2	6,535.77	RED	8	6,795.67	112
57	J-B3	6,550.14	GREEN	35	6,795.54	106
65	J-B4	6,557.02	GREEN	31	6,796.08	103
67	J-B5	6,577.36	GREEN	0	6,798.10	96
41	J-C1	6,532.71	RED	23	6,658.98	55
45	J-C2	6,538.87	RED	18	6,659.79	52
49	J-C3	6,535.76	RED	15	6,660.14	54
52	J-C4	6,537.33	RED	28	6,660.97	53
54	J-C5	6,540.54	GREEN	17	6,792.41	109
50	J-E1	6,519.00	RED	9	6,660.02	61
47	J-F1	6,522.27	RED	14	6,659.86	60
32	J-H1	6,494.18	RED	57	6,658.46	71
38	J-H2	6,528.40	RED	0	6,658.62	56
39	J-H3	6,532.49	RED	57	6,658.63	55
30	J-J1	6,472.32	RED	0	6,658.42	81

Pine Canyon Filing 1 WaterCAD Outputs

Peak Hour Flows

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
150	P-OS4	152	J-B5	R-3	8.0	PVC	120.0	False	0.000	-438	2.80	0.005	True	1,500
146	P-OS3	1,210	J-A1	R-1	20.0	Ductile Iron	120.0	False	0.000	55	0.06	0.000	True	10,000
142	P-OS2	2,723	J-J1	J-A1	20.0	Ductile Iron	120.0	False	0.000	62	0.06	0.000	False	0
145	P-OS1	190	J-J1	R-2	20.0	Ductile Iron	120.0	False	0.000	65	0.07	0.000	True	10,000
165	P-60	71	PRV-B	J-B2	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
102	P-21	457	J-B1	J-A1	8.0	PVC	120.0	False	0.000	-6	0.04	0.000	False	0
124	P-20	440	J-B5	J-B4	8.0	PVC	120.0	False	0.000	438	2.80	0.005	False	0
141	P-18	723	J-B4	J-B2	8.0	PVC	120.0	False	0.000	142	0.90	0.001	False	0
123	P-17	295	J-B3	J-B4	8.0	PVC	120.0	False	0.000	-266	1.70	0.002	False	0
136	P-16	252	J-B3	J-B2	8.0	PVC	120.0	False	0.000	-134	0.85	0.001	False	0
125	P-14	80	J-B1	PRV-B	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
131	P-13	955	J-C5	J-B3	8.0	PVC	120.0	False	0.000	-365	2.33	0.003	False	0
140	P-12	132	PRV-A	J-C5	8.0	PVC	120.0	False	0.000	-348	2.22	0.003	False	0
139	P-11	177	J-C4	PRV-A	8.0	PVC	120.0	False	0.000	-348	2.22	0.003	False	0
121	P-10	323	J-C3	J-C4	8.0	PVC	120.0	False	0.000	-321	2.05	0.003	False	0
89	P-9	360	J-C3	J-E1	8.0	PVC	120.0	False	0.000	103	0.66	0.000	False	0
90	P-8	612	J-E1	J-F1	8.0	PVC	120.0	False	0.000	94	0.60	0.000	False	0
84	P-7	373	J-C2	J-F1	8.0	PVC	120.0	False	0.000	-80	0.51	0.000	False	0
118	P-6	319	J-C2	J-C3	8.0	PVC	120.0	False	0.000	-202	1.29	0.001	False	0
120	P-5	449	J-C1	J-C2	8.0	PVC	120.0	False	0.000	-264	1.69	0.002	False	0
78	P-4	231	J-H3	J-C1	8.0	PVC	120.0	False	0.000	-241	1.54	0.002	False	0
76	P-3	86	J-H2	J-H3	12.0	PVC	120.0	False	0.000	-184	0.52	0.000	False	0
129	P-2	1,210	J-H1	J-H2	12.0	PVC	120.0	False	0.000	-184	0.52	0.000	False	0
126	P-1	735	J-H1	J-J1	12.0	PVC	120.0	False	0.000	126	0.36	0.000	False	0

Pine Canyon Filing 1 WaterCAD Outputs
Max Day Flows

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
62	J-A1	6,517.55	RED	0	6,658.43	61
60	J-B1	6,528.94	RED	3	6,658.43	56
58	J-B2	6,535.77	RED	3	6,798.90	114
57	J-B3	6,550.14	GREEN	16	6,798.81	108
65	J-B4	6,557.02	GREEN	14	6,799.18	105
67	J-B5	6,577.36	GREEN	0	6,800.50	97
41	J-C1	6,532.71	RED	10	6,659.21	55
45	J-C2	6,538.87	RED	8	6,660.04	52
49	J-C3	6,535.76	RED	7	6,660.37	54
52	J-C4	6,537.33	RED	13	6,661.08	54
54	J-C5	6,540.54	GREEN	8	6,796.43	111
50	J-E1	6,519.00	RED	4	6,660.27	61
47	J-F1	6,522.27	RED	6	6,660.12	60
32	J-H1	6,494.18	RED	26	6,658.56	71
38	J-H2	6,528.40	RED	0	6,658.79	56
39	J-H3	6,532.49	RED	26	6,658.81	55
30	J-J1	6,472.32	RED	0	6,658.44	81

Pine Canyon Filing 1 WaterCAD Outputs

Max Day Flows

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
150	P-OS4	152	J-B5	R-3	8.0	PVC	120.0	False	0.000	-348	2.22	0.003	True	1,500
146	P-OS3	1,210	J-A1	R-1	20.0	Ductile Iron	120.0	False	0.000	95	0.10	0.000	True	10,000
142	P-OS2	2,723	J-J1	J-A1	20.0	Ductile Iron	120.0	False	0.000	98	0.10	0.000	False	0
145	P-OS1	190	J-J1	R-2	20.0	Ductile Iron	120.0	False	0.000	109	0.11	0.000	True	10,000
165	P-60	71	PRV-B	J-B2	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
102	P-21	457	J-B1	J-A1	8.0	PVC	120.0	False	0.000	-3	0.02	0.000	False	0
124	P-20	440	J-B5	J-B4	8.0	PVC	120.0	False	0.000	348	2.22	0.003	False	0
141	P-18	723	J-B4	J-B2	8.0	PVC	120.0	False	0.000	116	0.74	0.000	False	0
123	P-17	295	J-B3	J-B4	8.0	PVC	120.0	False	0.000	-219	1.40	0.001	False	0
136	P-16	252	J-B3	J-B2	8.0	PVC	120.0	False	0.000	-112	0.72	0.000	False	0
125	P-14	80	J-B1	PRV-B	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
131	P-13	955	J-C5	J-B3	8.0	PVC	120.0	False	0.000	-315	2.01	0.002	False	0
140	P-12	132	PRV-A	J-C5	8.0	PVC	120.0	False	0.000	-307	1.96	0.002	False	0
139	P-11	177	J-C4	PRV-A	8.0	PVC	120.0	False	0.000	-307	1.96	0.002	False	0
121	P-10	323	J-C3	J-C4	8.0	PVC	120.0	False	0.000	-295	1.88	0.002	False	0
89	P-9	360	J-C3	J-E1	8.0	PVC	120.0	False	0.000	94	0.60	0.000	False	0
90	P-8	612	J-E1	J-F1	8.0	PVC	120.0	False	0.000	90	0.57	0.000	False	0
84	P-7	373	J-C2	J-F1	8.0	PVC	120.0	False	0.000	-83	0.53	0.000	False	0
118	P-6	319	J-C2	J-C3	8.0	PVC	120.0	False	0.000	-194	1.24	0.001	False	0
120	P-5	449	J-C1	J-C2	8.0	PVC	120.0	False	0.000	-269	1.72	0.002	False	0
78	P-4	231	J-H3	J-C1	8.0	PVC	120.0	False	0.000	-258	1.65	0.002	False	0
76	P-3	86	J-H2	J-H3	12.0	PVC	120.0	False	0.000	-232	0.66	0.000	False	0
129	P-2	1,210	J-H1	J-H2	12.0	PVC	120.0	False	0.000	-232	0.66	0.000	False	0
126	P-1	735	J-H1	J-J1	12.0	PVC	120.0	False	0.000	206	0.59	0.000	False	0

Pine Canyon Filing 1 WaterCAD Outputs
Zero Demand - 20% Tank Storage

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
62	J-A1	6,517.55	RED	0	6,658.74	61
60	J-B1	6,528.94	RED	0	6,660.75	57
58	J-B2	6,535.77	RED	0	6,661.42	54
57	J-B3	6,550.14	GREEN	0	6,799.29	108
65	J-B4	6,557.02	GREEN	0	6,801.83	106
67	J-B5	6,577.36	GREEN	0	6,803.40	98
41	J-C1	6,532.71	RED	0	6,659.61	55
45	J-C2	6,538.87	RED	0	6,660.38	53
49	J-C3	6,535.76	RED	0	6,660.65	54
52	J-C4	6,537.33	RED	0	6,661.20	54
54	J-C5	6,540.54	GREEN	0	6,797.66	111
50	J-E1	6,519.00	RED	0	6,660.57	61
47	J-F1	6,522.27	RED	0	6,660.45	60
32	J-H1	6,494.18	RED	0	6,658.91	71
38	J-H2	6,528.40	RED	0	6,659.19	57
39	J-H3	6,532.49	RED	0	6,659.21	55
30	J-J1	6,472.32	RED	0	6,658.73	81

Pine Canyon Filing 1 WaterCAD Outputs
Zero Demand - 100% Tank Storage

Junction Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
62	J-A1	6,517.55	RED	0	6,680.00	70
60	J-B1	6,528.94	RED	0	6,680.00	65
58	J-B2	6,535.77	RED	0	6,680.00	62
57	J-B3	6,550.14	GREEN	0	6,824.00	118
65	J-B4	6,557.02	GREEN	0	6,824.00	116
67	J-B5	6,577.36	GREEN	0	6,824.00	107
41	J-C1	6,532.71	RED	0	6,680.00	64
45	J-C2	6,538.87	RED	0	6,680.00	61
49	J-C3	6,535.76	RED	0	6,680.00	62
52	J-C4	6,537.33	RED	0	6,680.00	62
54	J-C5	6,540.54	GREEN	0	6,824.00	123
50	J-E1	6,519.00	RED	0	6,680.00	70
47	J-F1	6,522.27	RED	0	6,680.00	68
32	J-H1	6,494.18	RED	0	6,680.00	80
38	J-H2	6,528.40	RED	0	6,680.00	66
39	J-H3	6,532.49	RED	0	6,680.00	64
30	J-J1	6,472.32	RED	0	6,680.00	90

Peak Hour Flows - No Green
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
62	J-A1	6,517.55	RED	0	6,658.32	61
60	J-B1	6,528.94	RED	6	6,658.14	56
58	J-B2	6,535.77	RED	8	6,658.08	53
57	J-B3	6,550.14	GREEN	35	6,658.04	47
65	J-B4	6,557.02	GREEN	31	6,658.04	44
67	J-B5	6,577.36	GREEN	0	6,658.04	35
41	J-C1	6,532.71	RED	23	6,658.05	54
45	J-C2	6,538.87	RED	18	6,658.00	52
49	J-C3	6,535.76	RED	15	6,657.99	53
52	J-C4	6,537.33	RED	28	6,657.99	52
54	J-C5	6,540.54	GREEN	17	6,658.00	51
50	J-E1	6,519.00	RED	9	6,657.99	60
47	J-F1	6,522.27	RED	14	6,657.99	59
32	J-H1	6,494.18	RED	57	6,658.21	71
38	J-H2	6,528.40	RED	0	6,658.11	56
39	J-H3	6,532.49	RED	57	6,658.10	54
30	J-J1	6,472.32	RED	0	6,658.32	80

Peak Hour Flows - No Green
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
150	P-OS4	152	J-B5	R-3	8.0	PVC	120.0	False	0.000	(N/A)	(N/A)	(N/A)	True	1,500
146	P-OS3	1,210	J-A1	R-1	20.0	Ductile Iron	120.0	False	0.000	-158	0.16	0.000	True	10,000
142	P-OS2	2,723	J-J1	J-A1	20.0	Ductile Iron	120.0	False	0.000	-40	0.04	0.000	False	0
145	P-OS1	190	J-J1	R-2	20.0	Ductile Iron	120.0	False	0.000	-160	0.16	0.000	True	10,000
165	P-60	71	PRV-B	J-B2	8.0	PVC	120.0	False	0.000	112	0.71	0.000	False	0
102	P-21	457	J-B1	J-A1	8.0	PVC	120.0	False	0.000	-118	0.75	0.000	False	0
124	P-20	440	J-B5	J-B4	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
141	P-18	723	J-B4	J-B2	8.0	PVC	120.0	False	0.000	-37	0.24	0.000	False	0
123	P-17	295	J-B3	J-B4	8.0	PVC	120.0	False	0.000	-7	0.04	0.000	False	0
136	P-16	252	J-B3	J-B2	8.0	PVC	120.0	False	0.000	-67	0.43	0.000	False	0
125	P-14	80	J-B1	PRV-B	8.0	PVC	120.0	False	0.000	112	0.71	0.000	False	0
131	P-13	955	J-C5	J-B3	8.0	PVC	120.0	False	0.000	-38	0.25	0.000	False	0
140	P-12	132	PRV-A	J-C5	8.0	PVC	120.0	False	0.000	-22	0.14	0.000	False	0
139	P-11	177	J-C4	PRV-A	8.0	PVC	120.0	False	0.000	-22	0.14	0.000	False	0
121	P-10	323	J-C3	J-C4	8.0	PVC	120.0	False	0.000	6	0.04	0.000	False	0
89	P-9	360	J-C3	J-E1	8.0	PVC	120.0	False	0.000	3	0.02	0.000	False	0
90	P-8	612	J-E1	J-F1	8.0	PVC	120.0	False	0.000	-6	0.04	0.000	False	0
84	P-7	373	J-C2	J-F1	8.0	PVC	120.0	False	0.000	20	0.13	0.000	False	0
118	P-6	319	J-C2	J-C3	8.0	PVC	120.0	False	0.000	24	0.15	0.000	False	0
120	P-5	449	J-C1	J-C2	8.0	PVC	120.0	False	0.000	62	0.40	0.000	False	0
78	P-4	231	J-H3	J-C1	8.0	PVC	120.0	False	0.000	85	0.54	0.000	False	0
76	P-3	86	J-H2	J-H3	12.0	PVC	120.0	False	0.000	143	0.41	0.000	False	0
129	P-2	1,210	J-H1	J-H2	12.0	PVC	120.0	False	0.000	143	0.41	0.000	False	0
126	P-1	735	J-H1	J-J1	12.0	PVC	120.0	False	0.000	-200	0.57	0.000	False	0

Max Day + Fire Flow - No Green
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
62	J-A1	6,517.55	RED	0	6,658.38	61
60	J-B1	6,528.94	RED	3	6,658.34	56
58	J-B2	6,535.77	RED	3	6,658.33	53
57	J-B3	6,550.14	GREEN	16	6,658.32	47
65	J-B4	6,557.02	GREEN	14	6,658.32	44
67	J-B5	6,577.36	GREEN	0	6,658.32	35
41	J-C1	6,532.71	RED	10	6,658.32	54
45	J-C2	6,538.87	RED	8	6,658.31	52
49	J-C3	6,535.76	RED	7	6,658.31	53
52	J-C4	6,537.33	RED	13	6,658.31	52
54	J-C5	6,540.54	GREEN	8	6,658.31	51
50	J-E1	6,519.00	RED	4	6,658.31	60
47	J-F1	6,522.27	RED	6	6,658.31	59
32	J-H1	6,494.18	RED	26	6,658.36	71
38	J-H2	6,528.40	RED	0	6,658.33	56
39	J-H3	6,532.49	RED	26	6,658.33	54
30	J-J1	6,472.32	RED	0	6,658.38	80

WORST CASE SCENARIO AT JUNCTION J-B5

Max Day + Fire Flow - No Green

FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
150	P-OS4	152	J-B5	R-3	8.0	PVC	120.0	False	0.000	(N/A)	(N/A)	(N/A)	True	1,500
146	P-OS3	1,210	J-A1	R-1	20.0	Ductile Iron	120.0	False	0.000	-72	0.07	0.000	True	10,000
142	P-OS2	2,723	J-J1	J-A1	20.0	Ductile Iron	120.0	False	0.000	-18	0.02	0.000	False	0
145	P-OS1	190	J-J1	R-2	20.0	Ductile Iron	120.0	False	0.000	-73	0.07	0.000	True	10,000
165	P-60	71	PRV-B	J-B2	8.0	PVC	120.0	False	0.000	51	0.32	0.000	False	0
102	P-21	457	J-B1	J-A1	8.0	PVC	120.0	False	0.000	-54	0.34	0.000	False	0
124	P-20	440	J-B5	J-B4	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
141	P-18	723	J-B4	J-B2	8.0	PVC	120.0	False	0.000	-17	0.11	0.000	False	0
123	P-17	295	J-B3	J-B4	8.0	PVC	120.0	False	0.000	-3	0.02	0.000	False	0
136	P-16	252	J-B3	J-B2	8.0	PVC	120.0	False	0.000	-30	0.19	0.000	False	0
125	P-14	80	J-B1	PRV-B	8.0	PVC	120.0	False	0.000	51	0.32	0.000	False	0
131	P-13	955	J-C5	J-B3	8.0	PVC	120.0	False	0.000	-17	0.11	0.000	False	0
140	P-12	132	PRV-A	J-C5	8.0	PVC	120.0	False	0.000	-10	0.06	0.000	False	0
139	P-11	177	J-C4	PRV-A	8.0	PVC	120.0	False	0.000	-10	0.06	0.000	False	0
121	P-10	323	J-C3	J-C4	8.0	PVC	120.0	False	0.000	3	0.02	0.000	False	0
89	P-9	360	J-C3	J-E1	8.0	PVC	120.0	False	0.000	1	0.01	0.000	False	0
90	P-8	612	J-E1	J-F1	8.0	PVC	120.0	False	0.000	-3	0.02	0.000	False	0
84	P-7	373	J-C2	J-F1	8.0	PVC	120.0	False	0.000	9	0.06	0.000	False	0
118	P-6	319	J-C2	J-C3	8.0	PVC	120.0	False	0.000	11	0.07	0.000	False	0
120	P-5	449	J-C1	J-C2	8.0	PVC	120.0	False	0.000	28	0.18	0.000	False	0
78	P-4	231	J-H3	J-C1	8.0	PVC	120.0	False	0.000	39	0.25	0.000	False	0
76	P-3	86	J-H2	J-H3	12.0	PVC	120.0	False	0.000	65	0.18	0.000	False	0
129	P-2	1,210	J-H1	J-H2	12.0	PVC	120.0	False	0.000	65	0.18	0.000	False	0
126	P-1	735	J-H1	J-J1	12.0	PVC	120.0	False	0.000	-91	0.26	0.000	False	0

WORST CASE SCENARIO AT JUNCTION J-B5

Max Day + Fire Flow - No Green

Fire Flow Node FlexTable: Fire Flow Results Table

Label	Zone	Fire Flow Status	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)
J-J1	RED	Passed	P-OS1	0.88	1,500	1,501	1,500	1,501	5	80	20	51	J-C2	34	J-B5
J-H1	RED	Passed	P-1	3.93	1,500	1,501	1,526	1,527	5	69	20	50	J-C2	34	J-B5
J-H2	RED	Passed	P-1	3.60	1,500	1,501	1,500	1,501	5	52	20	48	J-C2	33	J-B5
J-H3	RED	Passed	P-1	3.58	1,500	1,501	1,526	1,527	5	50	20	48	J-C2	33	J-B5
J-C1	RED	Passed	P-4	7.09	1,500	1,501	1,510	1,511	5	48	20	46	J-C2	33	J-B5
J-C2	RED	Passed	P-4	6.22	1,500	1,501	1,508	1,509	5	42	20	44	J-C3	32	J-B5
J-F1	RED	Passed	P-4	6.14	1,500	1,501	1,506	1,507	5	47	20	43	J-C2	32	J-B5
J-C3	RED	Passed	P-4	5.96	1,500	1,501	1,507	1,508	5	43	20	43	J-C2	31	J-B5
J-E1	RED	Passed	P-4	6.08	1,500	1,501	1,504	1,505	5	48	20	43	J-C2	32	J-B5
J-C4	RED	Passed	P-4	5.46	1,500	1,501	1,512	1,513	5	42	20	44	J-C2	31	J-B5
J-C5	GREEN	Passed	P-21	5.16	1,500	1,501	1,508	1,509	5	40	20	30	J-B5	30	J-B5
J-B3	GREEN	Passed	P-21	6.69	1,500	1,501	1,516	1,517	5	39	20	27	J-B5	27	J-B5
J-B2	RED	Passed	P-21	6.94	1,500	1,501	1,503	1,504	5	46	20	48	J-C4	28	J-B5
J-B1	RED	Passed	P-21	7.30	1,500	1,501	1,503	1,504	5	50	20	47	J-B2	29	J-B5
J-A1	RED	Passed	P-OS3	0.88	1,500	1,501	1,500	1,501	5	60	20	51	J-C2	34	J-B5
J-B4	GREEN	Passed	P-21	6.81	1,500	1,501	1,514	1,515	5	34	20	25	J-B5	25	J-B5
J-B5	GREEN	Passed	P-20	9.58	1,500	1,501	1,500	1,501	5	17	20	34	J-B4	34	J-B4

Appendix D – Wastewater Flows

Wastewater Flow

Peaking Factor:

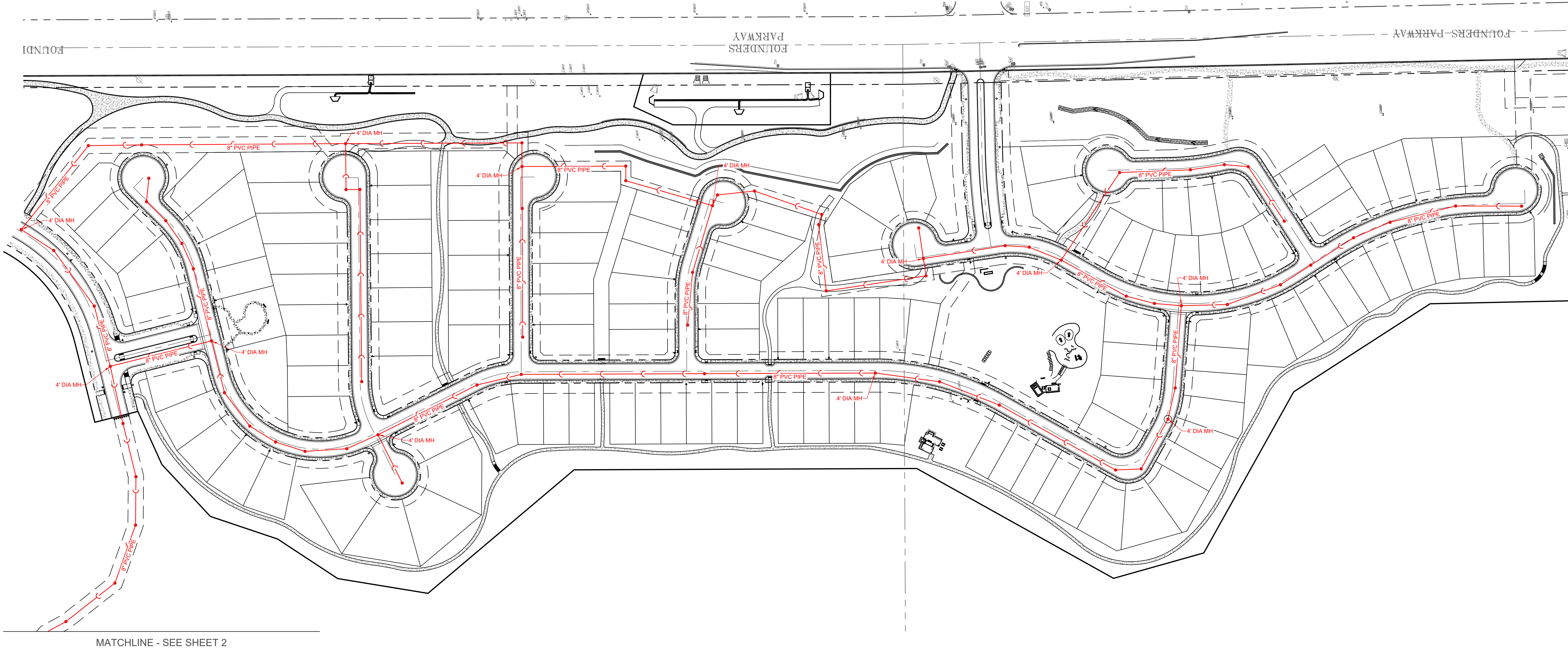
Peak Hour (PHD) 5.0

Phase (SF - Residential)	Use	Dwelling Units	Acres (AC)	Equivalent (SFE/DU)	SFE	Avg Day (GPD/DU)	Avg Day (GPD)	Avg Day (GPM)	Peak Design (GPM)	Peak Design (GPD)	Peak Design Including I/I (GPM)	Peak Design Including I/I (GPD)
1.00	SF	133	65.78	1.00	133	200	26600	18.47	92.36	133,000	94.21	135,660
Totals:	-	133	65.78	-	133	-	26600	18.47	92.36	133,000	94.21	135,660

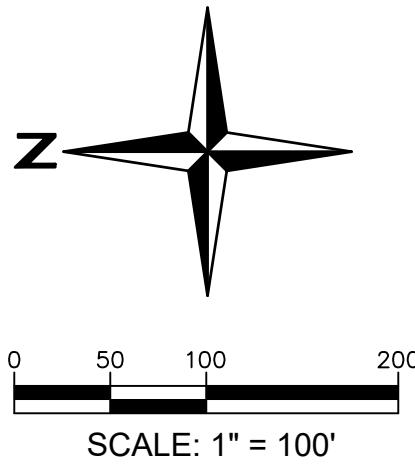
*Per Town Of Castle Rock Wastewater Collection Design 2018 Criteria Manual, Section 4.4.1

Appendix E – Wastewater Hydraulic Modeling

I:\Pine Canyon\250100 - Pine Canyon Filing 1\Exhibits\Engineering\Pine Canyon Filing 1_Overall Utility Maps\Pine Canyon Filing 1_Overall Sanitary Map.dwg tab: Layout1 Aug 05, 2028 - 12:13pm gardenson



MATCHLINE - SEE SHEET 2



PINE CANYON FILING 1
CASTLE ROCK, COLORADO
OVERALL SANITARY MAP

SHEET

1 OF 2

NOT FOR
CONSTRUCTION

PROJECT NO. 250087		NOTES	
DATE	NO.	DATE	NO.



WHERE GREAT PLACES BEGIN

720.283.6783

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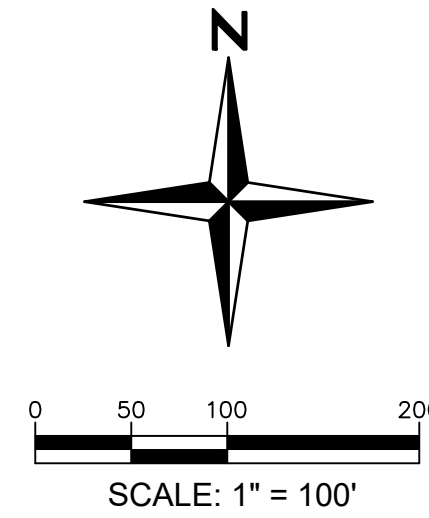
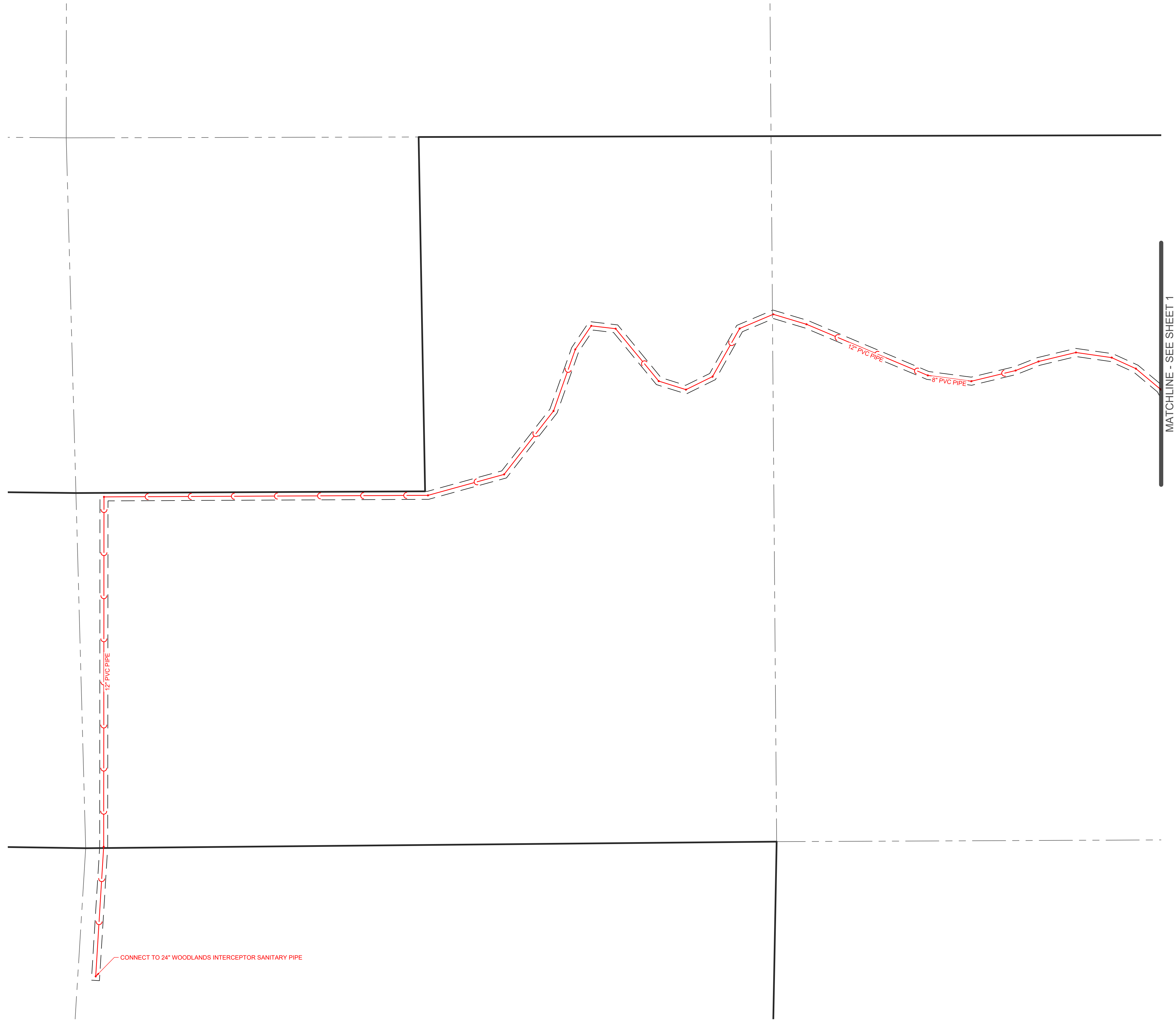
Land Planning

Civil Engineering

Construction Management

Landscaping Architecture

Construction Management



Design Point Flows

Design Point	Unit Progression	Total Units	Equivalent (SFE/DU)	SFE	Avg Day (GPD/DU)	Avg Day (GPD)	Avg Day (GPM)	Avg Day (CFS)	Peak Design (GPM)	Peak Design Including I/I (GPM)	Peak Design (CFS)
ALL	All Units	133	1.00	133.00	200	26,600.00	18.47	0.04	92.36	94.21	0.21
1.1	DP1.2-DP1.6 + 14 Units	75	1.00	75.00	200	15,000.00	10.42	0.02	52.08	53.13	0.12
1.2	DP1.3-DP1.6 + 10 Units	61	1.00	61.00	200	12,200.00	8.47	0.02	42.36	43.21	0.10
1.3	DP1.4-DP1.6 + 10 Units	51	1.00	51.00	200	10,200.00	7.08	0.02	35.42	36.13	0.08
1.4	DP1.5 + DP1.6 + 4 Units	41	1.00	41.00	200	8,200.00	5.69	0.01	28.47	29.04	0.06
1.5	DP1.6 + 10 Units	37	1.00	37.00	200	7,400.00	5.14	0.01	25.69	26.21	0.06
1.6	27 Units	27	1.00	27.00	200	5,400.00	3.75	0.01	18.75	19.13	0.04
2.1	DP2.2 + 16 Units	58	1.00	58.00	200	11,600.00	8.06	0.02	40.28	41.08	0.09
2.2	42 Units	42	1.00	42.00	200	8,400.00	5.83	0.01	29.17	29.75	0.07

*Per Town of Castle Rock Wastewater Collection Design 2018 Criteria Manual, Section 4.4.2

Channel Report

AVG FLOW @ 0.5%

Circular

Diameter (ft) = 0.67

Invert Elev (ft) = 100.00

Slope (%) = 0.50

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 0.04

Highlighted

Depth (ft) = 0.09

Q (cfs) = 0.040

Area (sqft) = 0.03

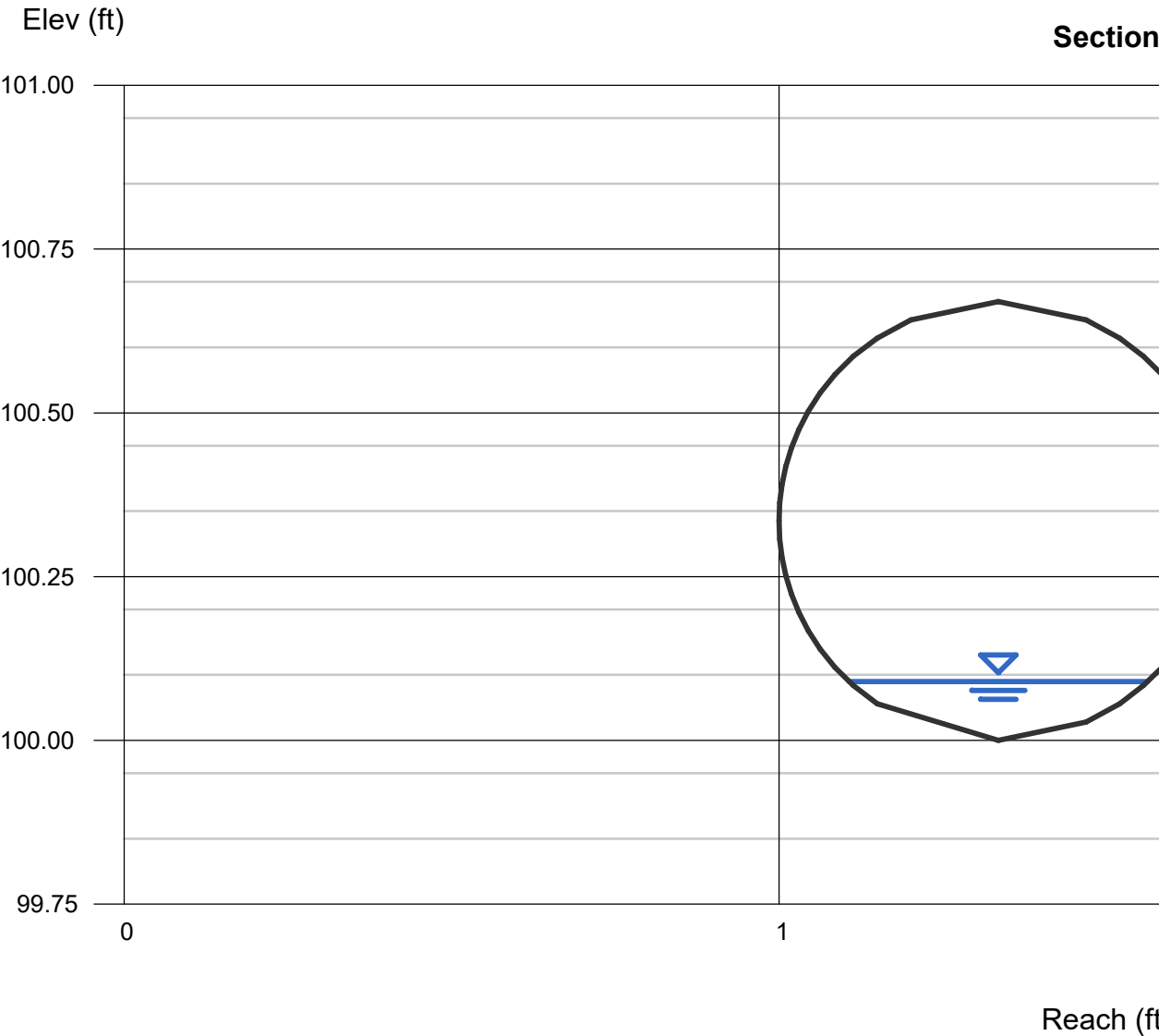
Velocity (ft/s) = 1.39

Wetted Perim (ft) = 0.51

Crit Depth, Yc (ft) = 0.09

Top Width (ft) = 0.46

EGL (ft) = 0.12



Channel Report

AVG FLOW @ 7.5%

Circular

Diameter (ft) = 0.67

Invert Elev (ft) = 100.00

Slope (%) = 7.50

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 0.04

Highlighted

Depth (ft) = 0.05

Q (cfs) = 0.040

Area (sqft) = 0.01

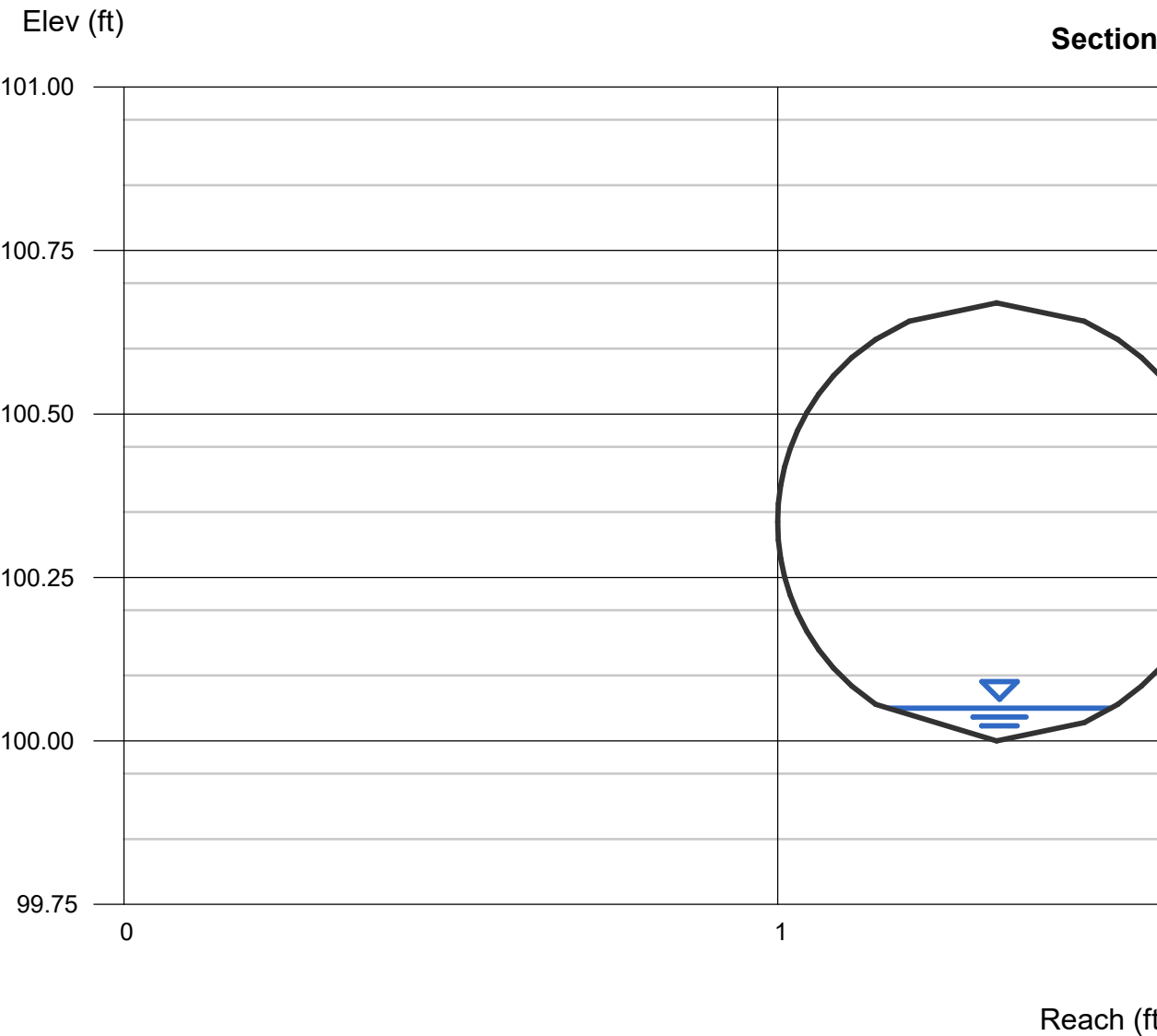
Velocity (ft/s) = 3.33

Wetted Perim (ft) = 0.37

Crit Depth, Yc (ft) = 0.09

Top Width (ft) = 0.35

EGL (ft) = 0.22



Channel Report

PEAK FLOW @ 0.5%

Circular

Diameter (ft) = 0.67

Invert Elev (ft) = 100.00

Slope (%) = 0.50

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 0.21

Highlighted

Depth (ft) = 0.21

Q (cfs) = 0.210

Area (sqft) = 0.09

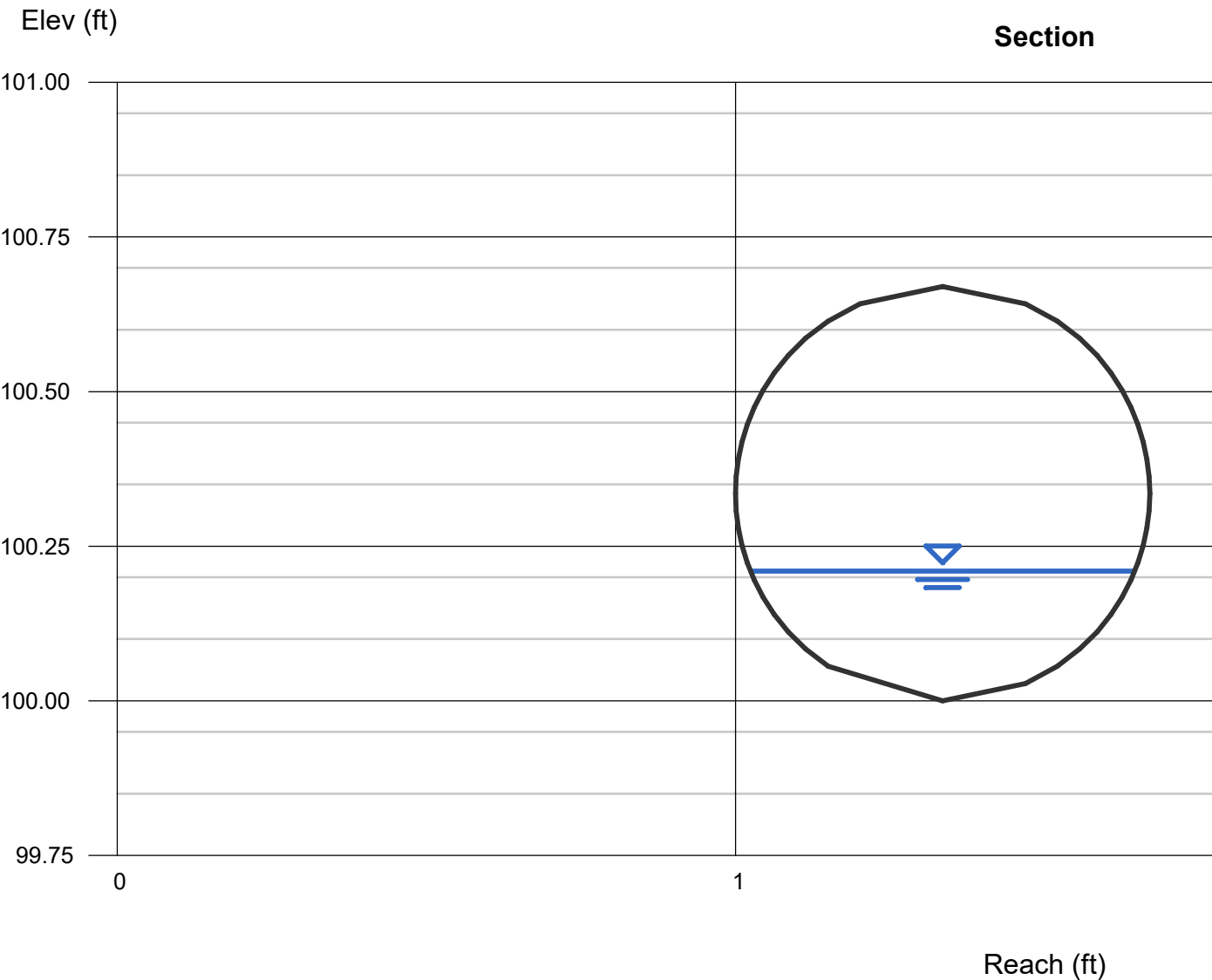
Velocity (ft/s) = 2.21

Wetted Perim (ft) = 0.80

Crit Depth, Yc (ft) = 0.22

Top Width (ft) = 0.62

EGL (ft) = 0.29



Channel Report

PEAK FLOW @ 7.5%

Circular

Diameter (ft) = 0.67

Invert Elev (ft) = 100.00

Slope (%) = 7.50

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 0.21

Highlighted

Depth (ft) = 0.11

Q (cfs) = 0.210

Area (sqft) = 0.04

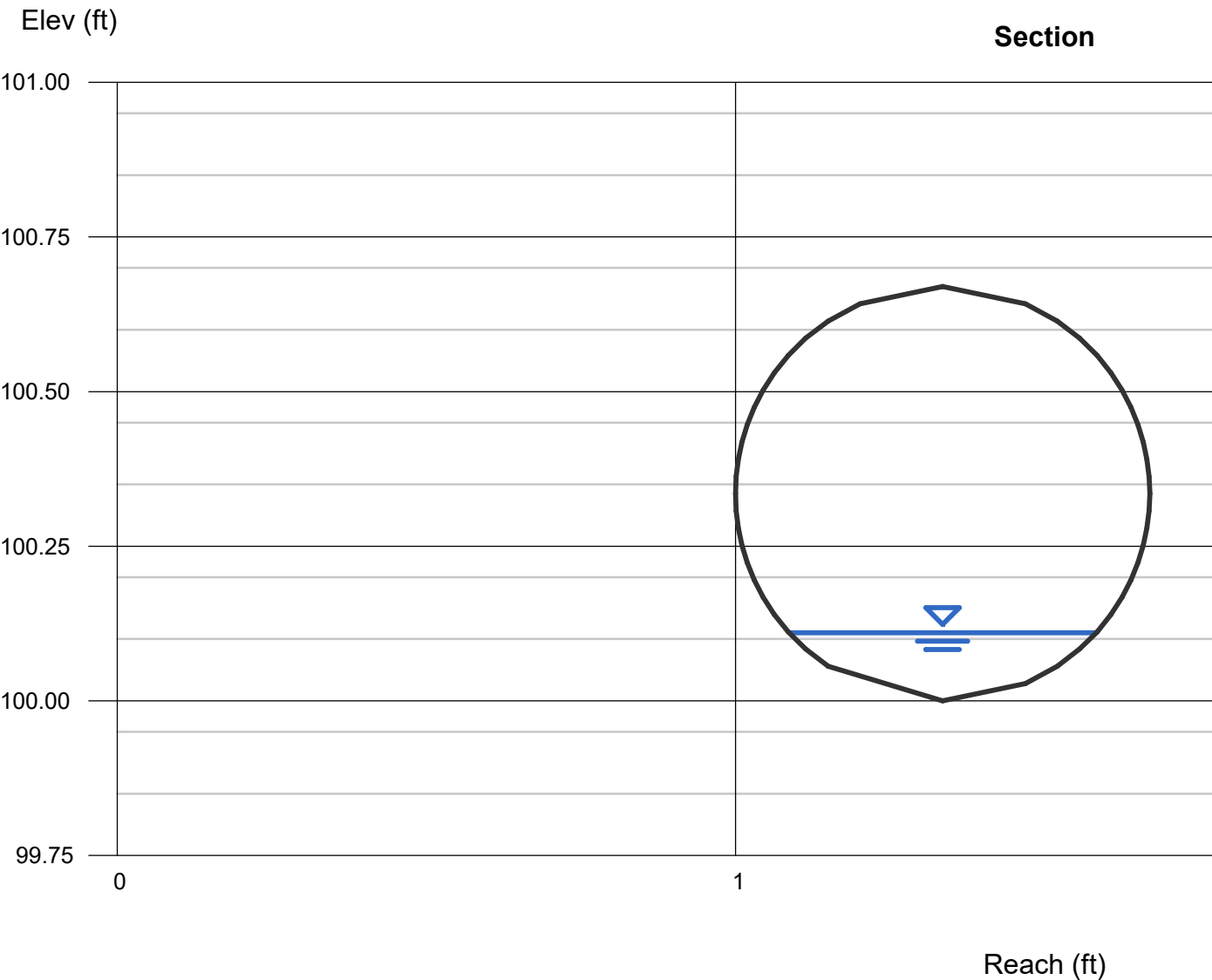
Velocity (ft/s) = 5.55

Wetted Perim (ft) = 0.56

Crit Depth, Yc (ft) = 0.22

Top Width (ft) = 0.50

EGL (ft) = 0.59



Pine Canyon
Master Sanitary Report

Redland
8/5/2026

Wastewater Flow

Peaking Factor:
Peak Hour (PHD) 5.0

Phase (SF - Residential)	Use	Dwelling Units	SFE/Unit	Acres (AC)	Non-Dwelling Unit	SFE/Unit	SFE	Avg Day (GPD/DU)	Avg Day (GPD)	Avg Day (GPM)	Peak Design (GPM)	Peak Design (GPD)	Peak Design Including I/I (GPM)	Peak Design Including I/I (GPD)	Peak CFS
PA1	SFd	75	1	21.19	-	-	75	200	15,000	10.42	52.08	75,000	53.13	76,500	0.12
PA2+PA3	SFe	133	1	65.78	-	-	133	200	26,600	18.47	92.36	133,000	94.21	135,660	0.21
PA4	SFd	90	1	53.59	-	-	90	200	18,000	12.50	62.50	90,000	63.75	91,800	0.14
PA5	Park	-	-	9.00	-	-	-	-	-	-	-	-	-	-	
PA6	Resort/SFd	-	-	21.43	225	0.375	84	200	16,875	11.72	58.59	84,375	59.77	86,063	0.13
	Restaurant				5,000	0.0075	38	200	7,500	5.21	26.04	37,500	26.56	38,250	0.06
	Spa				13,000	0.00125	16	200	3,250	2.26	11.28	16,250	11.51	16,575	0.03
PA7	Park	-	1	10.27	-	-	-	-	-	-	-	-	-	-	
PA8	SFe	105	1	25.33	-	-	105	200	21,000	14.58	72.92	105,000	74.38	107,100	0.17
PA9	SFd	135	1	32.08	-	-	135	200	27,000	18.75	93.75	135,000	95.63	137,700	0.21
PA10	SFd	35	1	14.88	-	-	35	200	7,000	4.86	24.31	35,000	24.79	35,700	0.06
PA11	SFd	40	1	12.64	-	-	40	200	8,000	5.56	27.78	40,000	28.33	40,800	0.06
PA12	SFe	90	1	19.49	-	-	90	200	18,000	12.50	62.50	90,000	63.75	91,800	0.14
PA13	SFe	85	1	21.04	-	-	85	200	17,000	11.81	59.03	85,000	60.21	86,700	0.13
PA14	School	1	42.5	12.72	12.7	13.1	209	200	41,774	29.01	145.05	208,870	147.95	213,047	0.33
PA15	Park	-	-	3.45	-	-	-	-	-	-	-	-	-	-	
Totals:		789					1,135	2,600	226,999	158	788	1,134,995	804	1,157,695	1.79

*Per Town Of Castle Rock Wastewater Collection Design 2018 Criteria Manual, Section 4.4.1

Channel Report

AVERAGE FLOW @ 0.5%

Circular

Diameter (ft) = 1.00

Invert Elev (ft) = 100.00

Slope (%) = 0.50

N-Value = 0.011

Highlighted

Depth (ft) = 0.23

Q (cfs) = 0.350

Area (sqft) = 0.14

Velocity (ft/s) = 2.53

Wetted Perim (ft) = 1.00

Crit Depth, Yc (ft) = 0.25

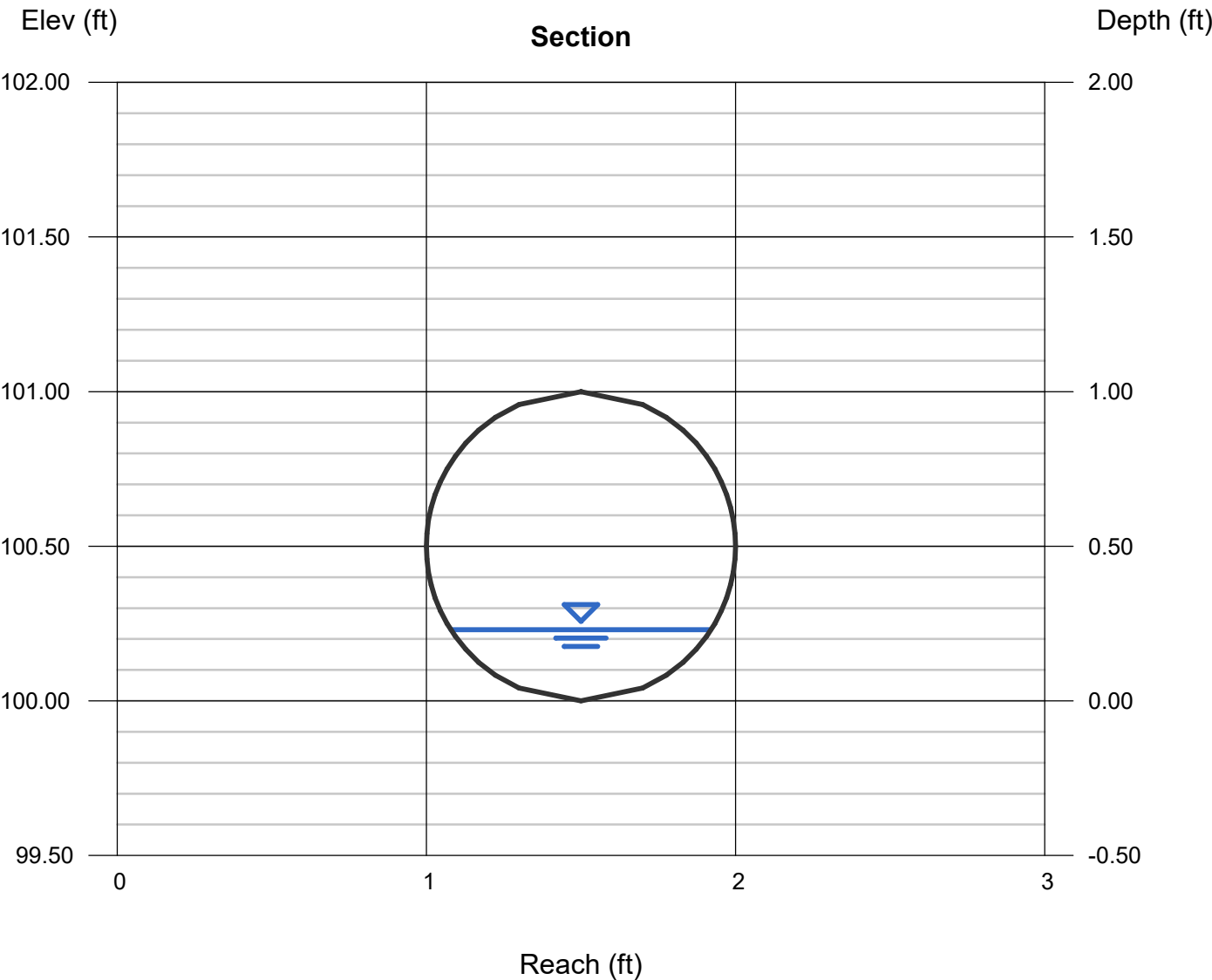
Top Width (ft) = 0.84

EGL (ft) = 0.33

Calculations

Compute by: Known Q

Known Q (cfs) = 0.35



Channel Report

AVERAGE FLOW @ 7.5%

Circular

Diameter (ft) = 1.00

Invert Elev (ft) = 100.00

Slope (%) = 7.50

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 0.35

Highlighted

Depth (ft) = 0.12

Q (cfs) = 0.350

Area (sqft) = 0.05

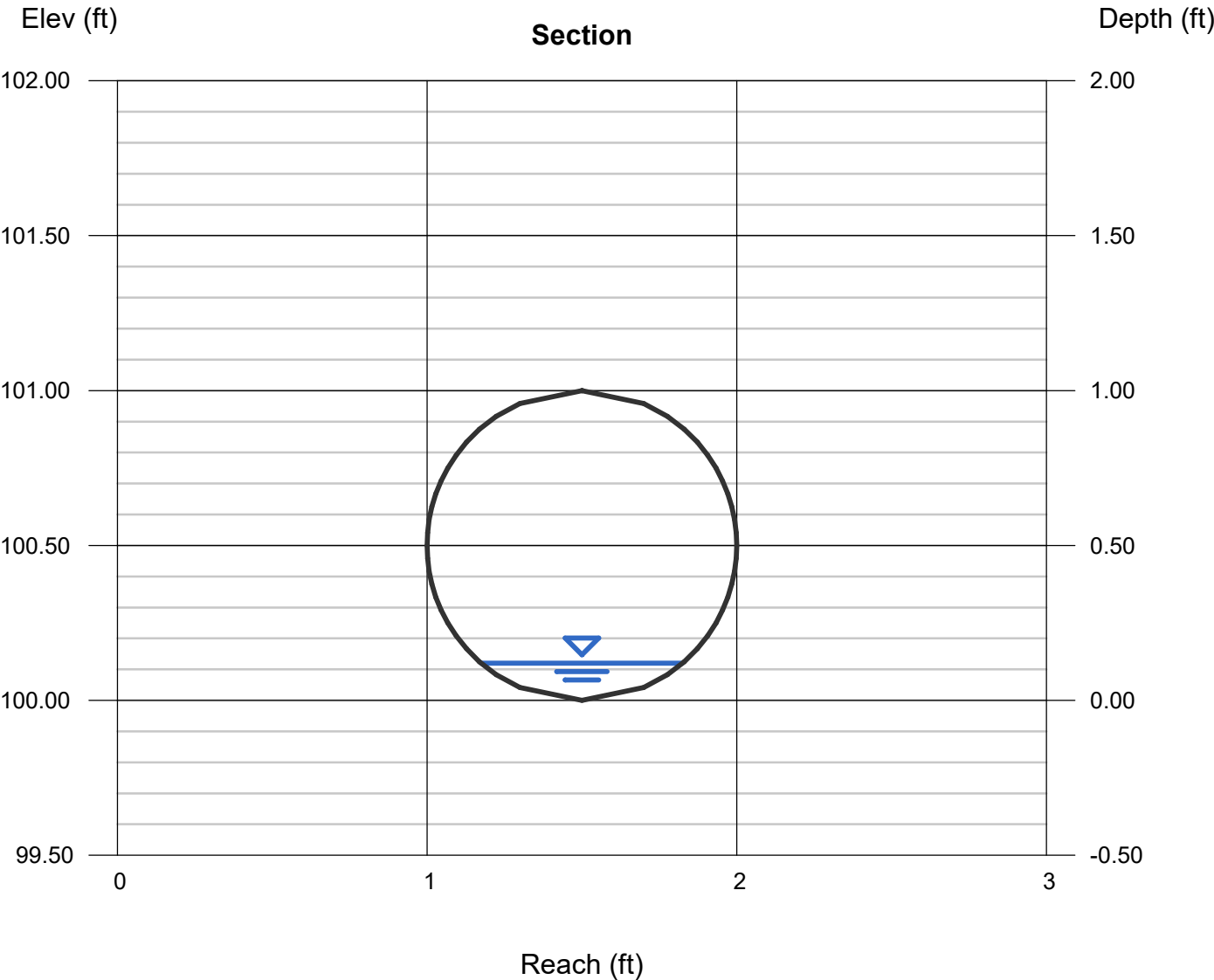
Velocity (ft/s) = 6.49

Wetted Perim (ft) = 0.71

Crit Depth, Yc (ft) = 0.25

Top Width (ft) = 0.65

EGL (ft) = 0.78



Channel Report

PEAK FLOW @ 0.5%

Circular

Diameter (ft) = 1.00

Invert Elev (ft) = 100.00

Slope (%) = 0.50

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 1.79

Highlighted

Depth (ft) = 0.56

Q (cfs) = 1.790

Area (sqft) = 0.45

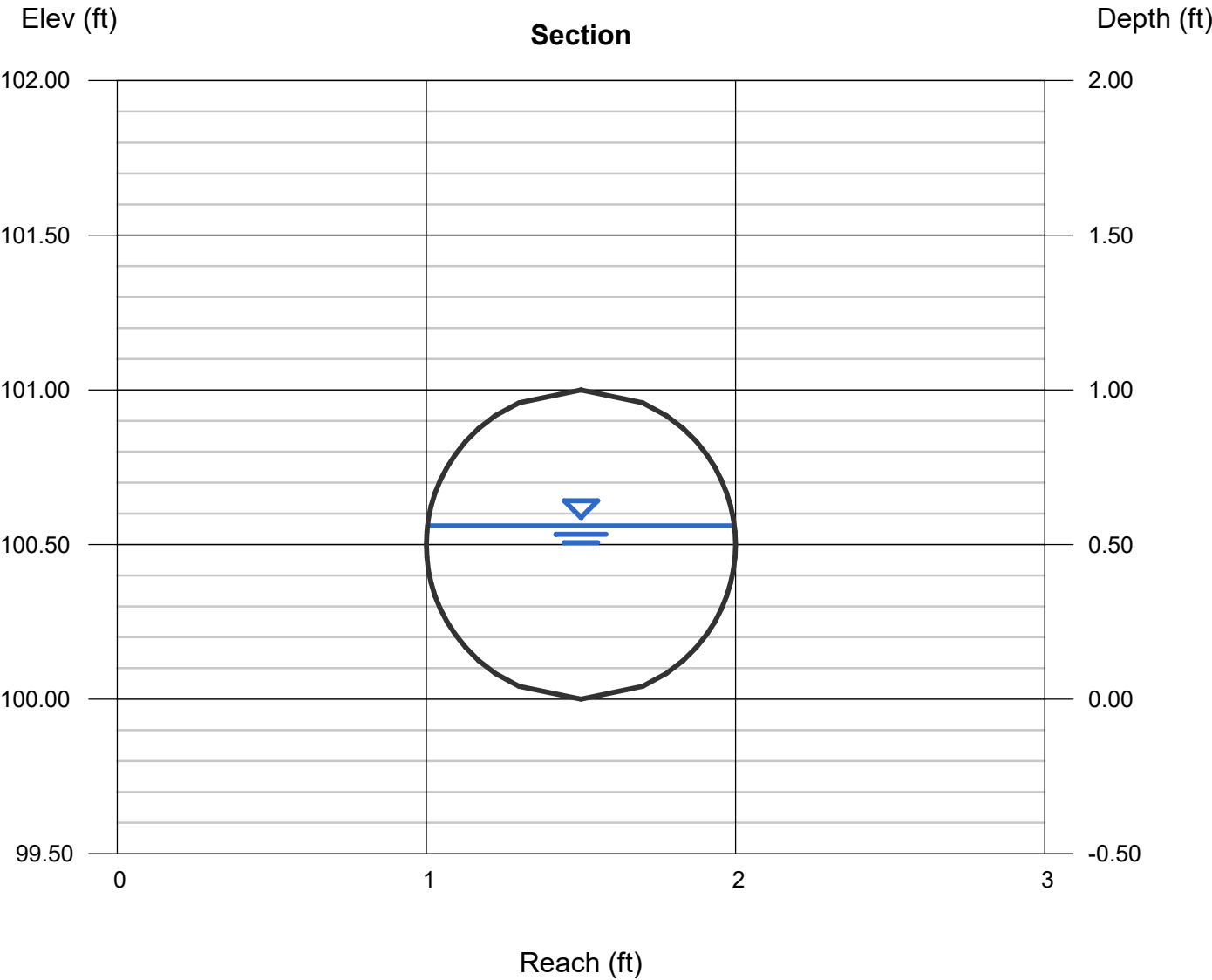
Velocity (ft/s) = 3.94

Wetted Perim (ft) = 1.69

Crit Depth, Yc (ft) = 0.57

Top Width (ft) = 0.99

EGL (ft) = 0.80



Channel Report

PEAK FLOW @ 7.0%

Circular

Diameter (ft) = 1.00

Invert Elev (ft) = 100.00

Slope (%) = 7.00

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 1.79

Highlighted

Depth (ft) = 0.28

Q (cfs) = 1.790

Area (sqft) = 0.18

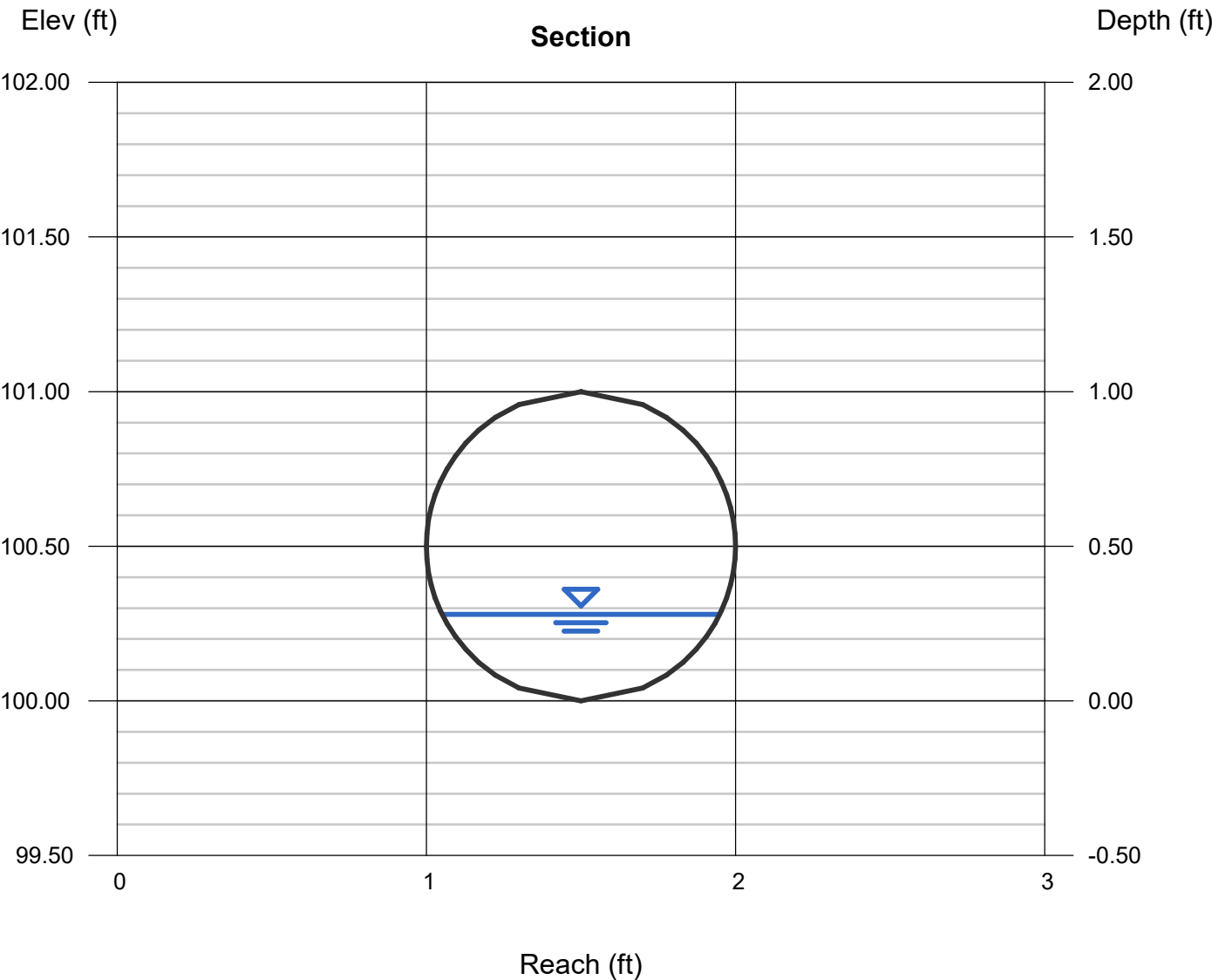
Velocity (ft/s) = 9.84

Wetted Perim (ft) = 1.12

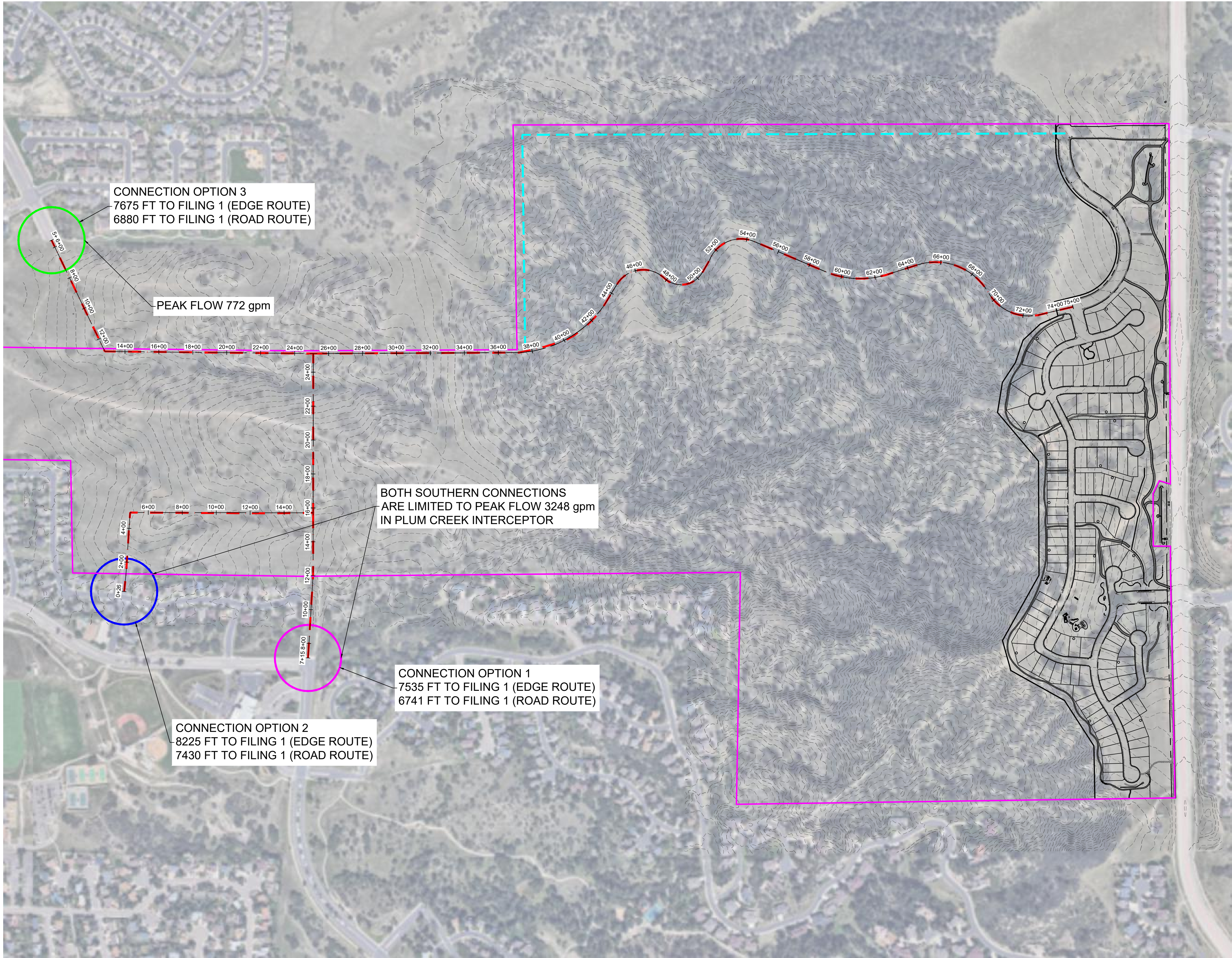
Crit Depth, Yc (ft) = 0.57

Top Width (ft) = 0.90

EGL (ft) = 1.78



I:\Pine Canyon\250100 - Pine Canyon Filing 1\Exhibits\Engineering\2026-05-05_Pine Canyon Filing 1_Preliminary Sanitary Layout\Pine Canyon Filing 1_Preliminary Sanitary Connection_2026-05-05.dwg, tab: Layout1 Sep 23, 2026 - 12:29pm mwassacker



SANITARY ROUTING ALTERNATIVES
OVERLL MAP
PINE CANYON FILING 1
CASTLE ROCK, COLORADO

SHEET

EXH 1

PROJECT NO.	250100	DATE	NO.	NOTES

NOT FOR
CONSTRUCTION

RE: [External] RE: Pine Canyon Sanitary Exhibit

From Matthew Hayes <MHayes@crgov.com>

Date Tue 8/4/2026 11:26 AM

To Garrett Anderson <ganderson@redland.com>; Mark Henderson <MHenderson@crgov.com>; Evan Rumney <erumney@redland.com>

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

That limitation on the PCI would only impact the flows from the Woodlands connection. Any flows that go through Metzler will flow into the PCI north of the limiting section. The Woodlands interceptor should be able to handle the 800 gpm peak flow. The connection to the 8" main would need to be more closely evaluated.

Matthew Hayes, PE
Technical Engineering Manager
Castle Rock Water – Town of Castle Rock
mhayes@crgov.com
303-210-1678

From: Garrett Anderson <ganderson@redland.com>

Sent: Tuesday, August 4, 2026 10:15 AM

To: Matthew Hayes <MHayes@crgov.com>; Mark Henderson <MHenderson@crgov.com>; Evan Rumney <erumney@redland.com>

Subject: Re: [External] RE: Pine Canyon Sanitary Exhibit

Hello Matthew,

This is a very helpful diagram; thank you. Our snip was pulled from the CR Wastewater Master Plan, which does not provide any sizing.

Our main remaining question is in terms of the 3248 gpm max flow provided in the earlier map sent to us. Is this number the maximum flow that we can send between the two connections, or the max flow that the Plum Creek Interceptor can handle? Our plan is to connect directly to the Woodlands interceptor at the intersection of Woodlands & Scott, so we are more curious about the flow maximums we can send into this connection as opposed to the 8 inch lines. We are currently looking at a 800 gpm peak flow into this Woodlands interceptor connection. If we do connect to the 8" line north of Scott, it sounds like that will have to be manually calculated.

Thank you,

GARRETT ANDERSON, E.I.T.

Engineer IV

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1500 West Canal Court
Littleton, CO 80120
Office: (720) 283-6783 x175
Cell: (916) 660-2578
ganderson@redland.com

From: Matthew Hayes <MHayes@crgov.com>

Sent: Tuesday, August 4, 2026 9:52 AM

To: Garrett Anderson <ganderson@redland.com>; Mark Henderson <MHenderson@crgov.com>; Evan Rumney <erumney@redland.com>

Subject: RE: [External] RE: Pine Canyon Sanitary Exhibit

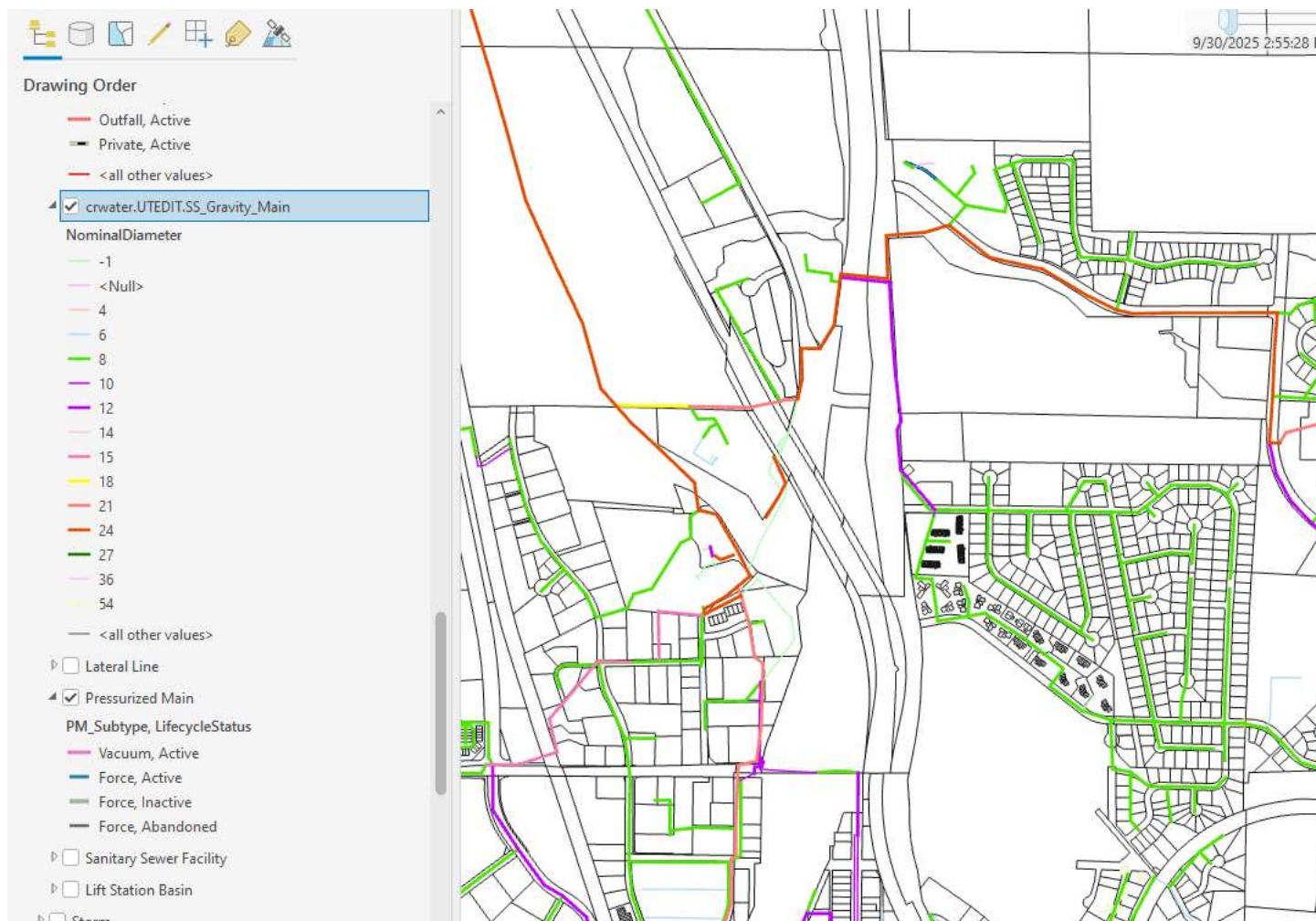
[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

The Plum Creek Interceptor runs along the creek, and the Woodland Interceptor is the one that runs down Scott Blvd. The attached map shows the location along the Plum Creek Interceptor where the capacity is limited. Our model does include the Woodlands Interceptor, but not all the 8" collection lines. Most of the used capacity in the Woodlands Interceptor is used for flows from two large lift station located in Terrain and Founders. We have seen peaks around 1,900-2,000 gpm at our flume on the west side of the interstate.

The Woodlands Interceptor has a single 24" main running down Scott. I cannot figure out what the different colors pipes on your map are representing.

I am not sure if I answered all of your questions. Please let me know if there is anything that I missed or if something is not clear.

All of the 8 in mains are shown in green on the clip below.



Matthew Hayes, PE
 Technical Engineering Manager
 Castle Rock Water – Town of Castle Rock
mhayes@crgov.com
 303-210-1678

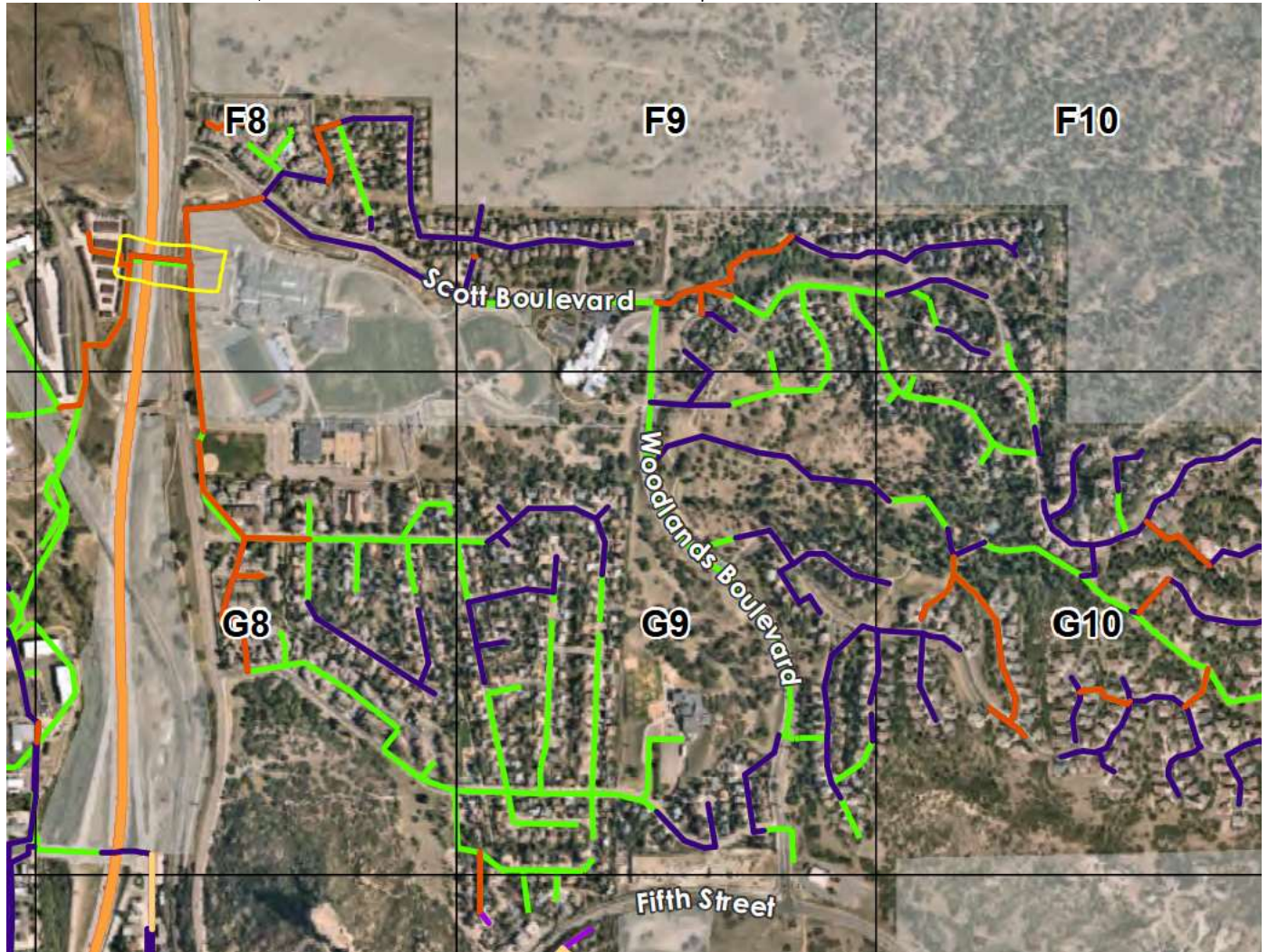
From: Garrett Anderson <ganderson@redland.com>
Sent: Monday, August 3, 2026 3:45 PM
To: Matthew Hayes <MHayes@crgov.com>; Mark Henderson <MHenderson@crgov.com>; Evan Rumney <erumney@redland.com>
Subject: Re: [External] RE: Pine Canyon Sanitary Exhibit

Hello Matt and Mark,

Thank you for sending over this exhibit. We do have a couple of questions when it comes to the southern connections.

1. We are unfamiliar with the location of the Plum Creek Interceptor, as it sounds like that is the choke point for the southern sanitary connections. I believe you are referring to the yellow boxed area running underneath I-25 on the included snip, but wanted to confirm. Also, I understand that the area is not modeled, but do we have a flow rate or estimate of flow rate for the interceptor itself as a starting point? We are already looking at ~800 gpm peak flow

between these two connections, and have limited information on the Woodlands development.



2) Are all of the pipes within this area 8" sanitary lines? Or are there any larger diameter lines within the snip above? (e.g.: Woodlands Blvd and Scott Blvd.)? It appears that the interceptor is dual lines (8" dia?).

If you could please provide some background to these questions, we would appreciate it!

Thank you,

GARRETT ANDERSON, E.I.T.

Engineer IV

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1500 West Canal Court
Littleton, CO 80120
Office: (720) 283-6783 x175
Cell: (916) 660-2578
ganderson@redland.com

From: Matthew Hayes <MHayes@crgov.com>
Sent: Monday, June 22, 2026 3:22 PM
To: Evan Rumney <erumney@redland.com>
Cc: Kurt Walker <kuwalker@gmail.com>; Mark Henderson <Hello M>
Subject: [External] RE: Pine Canyon Sanitary Exhibit

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Evan,

I have listed the available capacity at each connection. This is the maximum peak flow that the downstream pipe can handle.

The two southern connections are limited by a single pipe in the Plum Creek Interceptor. We do not have the 8-inch pipes modeled, You would need to verify that the existing 8-inch pipes in can handle the flows in the neighborhood for the southwest connection.

Please let me know if you have any questions.

Thanks,

Matt

Matthew Hayes, PE

Technical Engineering Manager

Castle Rock Water – Town of Castle Rock

mhayes@crgov.com

303-210-1678

From: Evan Rumney <erumney@redland.com>

Sent: Thursday, June 4, 2026 3:43 PM

To: Matthew Hayes <MHayes@crgov.com>; Roy Gallea <RGallea@crgov.com>

Cc: Kurt Walker <kuwalker@gmail.com>

Subject: Pine Canyon Sanitary Exhibit

Matt and Roy,

Thank you for meeting with us today. Here are the sanitary out fall exhibit and the Core report that was done with the Annexation. Please let me know if you have any other questions.

Thank you,

EVAN RUMNEY, P.E.

Project Manager

Associate Principal

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Littleton, CO 80120

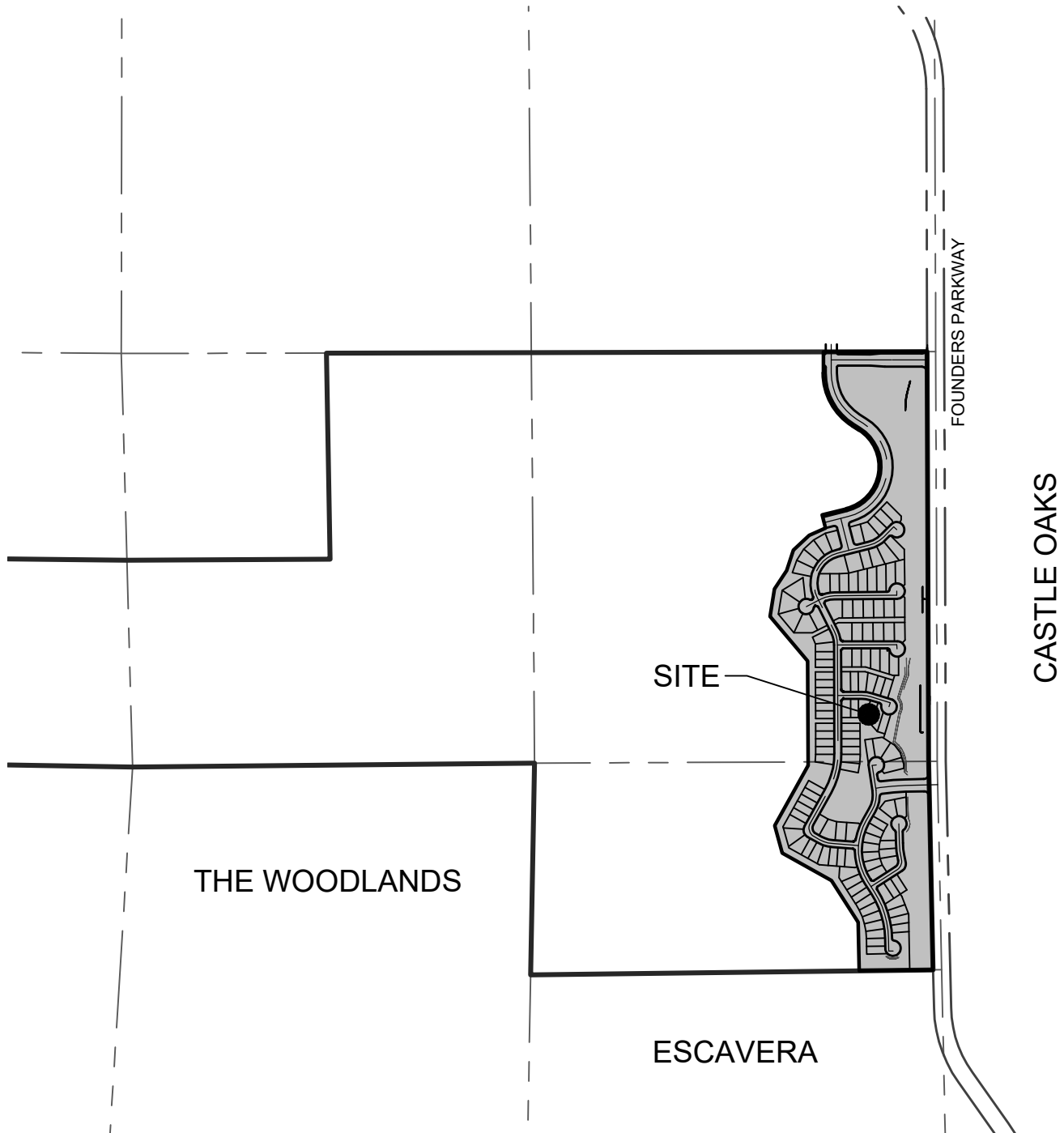
Office: (720) 283-6783 x135

Cell: (720) 626-8185

erumney@redland.com

Appendix F – Maps and Plans

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0 500 1000
SCALE : 1" = 1000'

VICINITY MAP

PINE CANYON FILING 1
CASTLE ROCK, COLORADO



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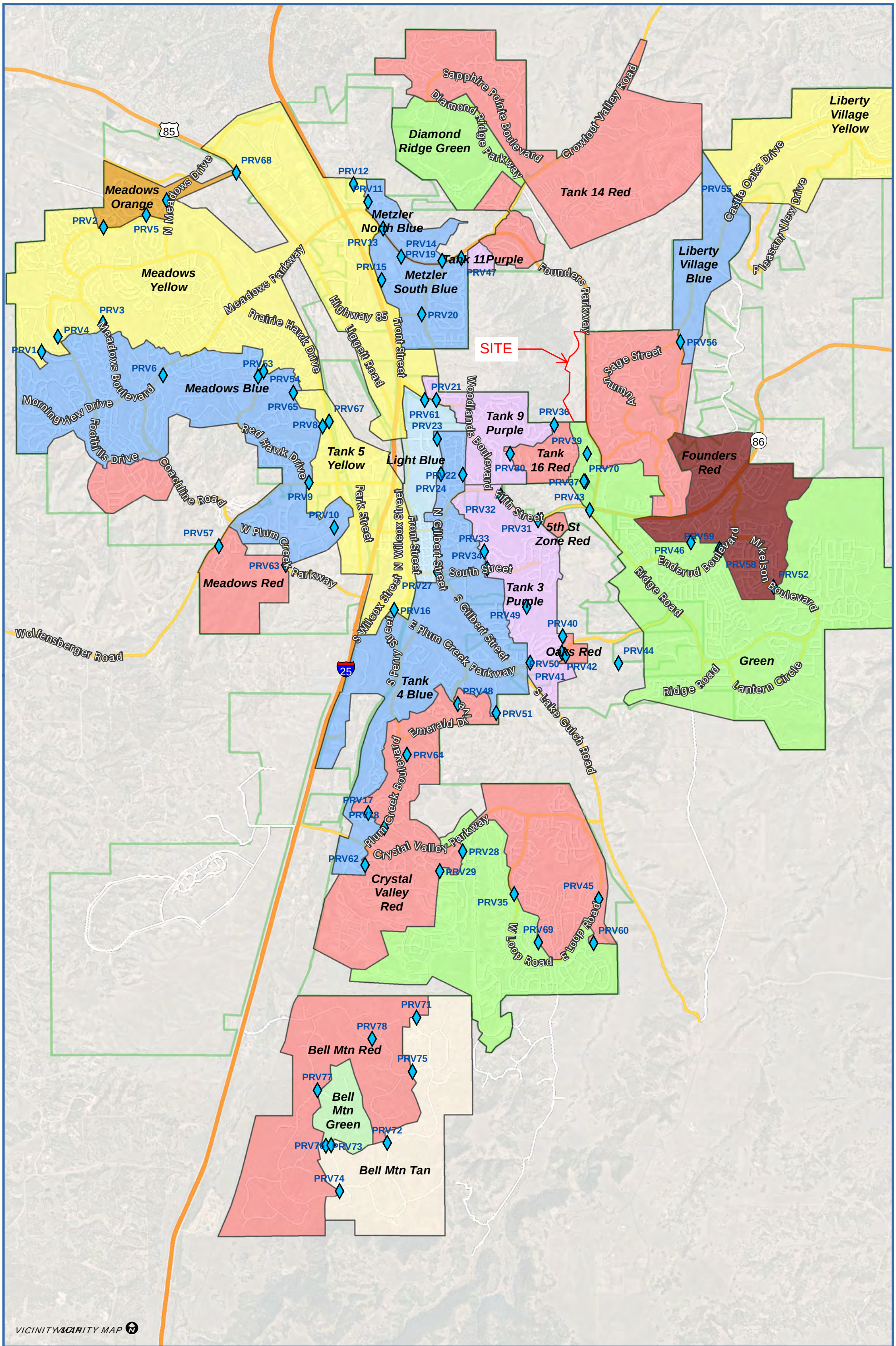
▪ Land Planning ▪ Landscape Architecture
▪ Civil Engineering ▪ Construction Management

PROJECT NO: 250100

DATE: 05/08/2026

DRAWING NO:

VIC



VICINITY MAP



0 1,950 3,900 7,800 11,700 Feet

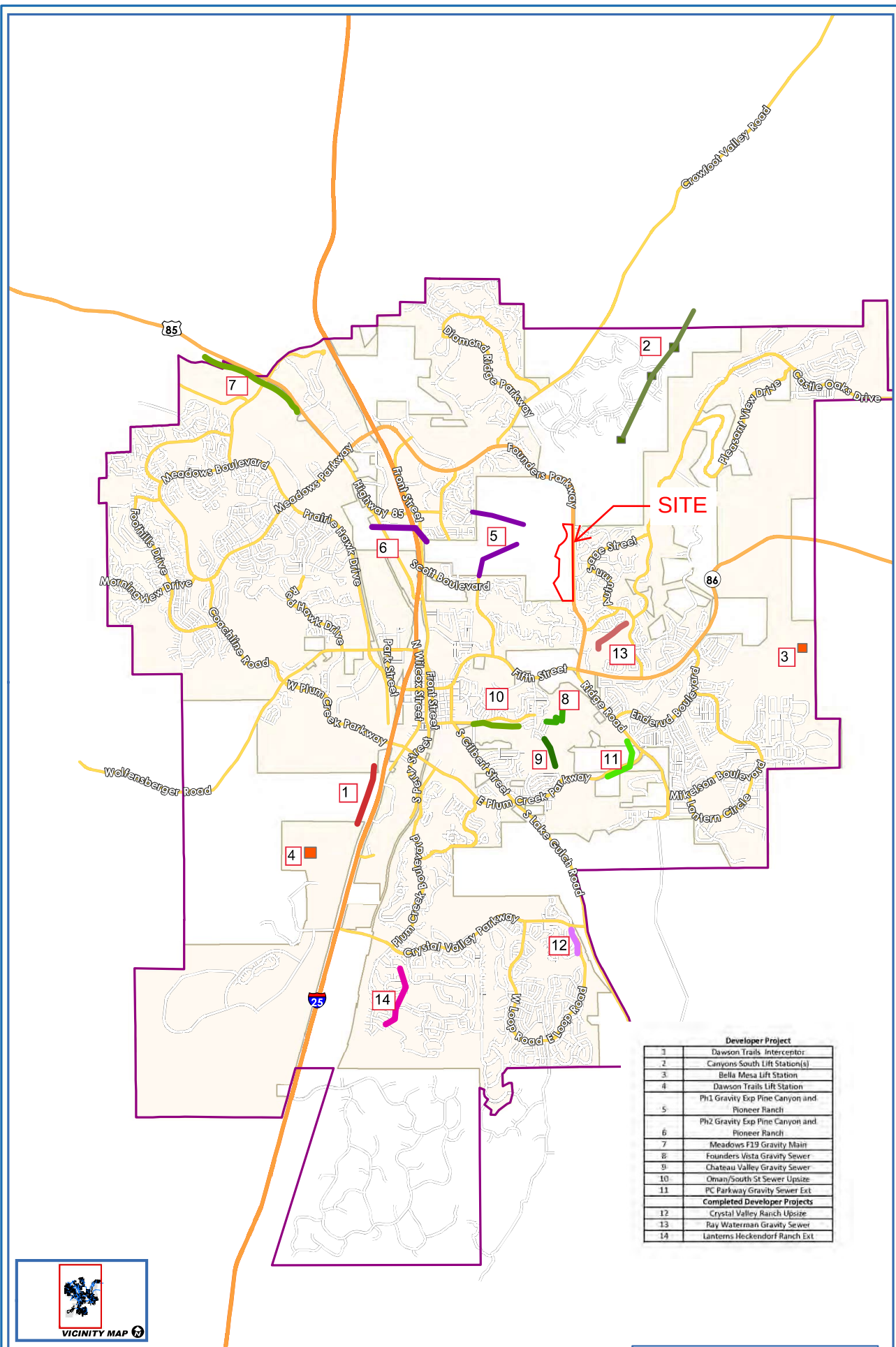
1 inch = 3,833 feet



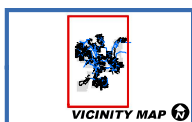
Date: 3/9/2023 Document Path: J:\GIS\Standard Maps\10.6\11x17 Portrait.mxd

Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product the Town of Castle Rock assumes no liability for its use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Utilities Department, Town of Castle Rock, (720) 733-6056. Copyright 2022, Town of Castle Rock Utilities Mapping.

CASTLE ROCK WATER
FIGURE 2.7
PRESSURE ZONES AND PRVs



Developer Project	
3	Dawson Trails Interceptor
2	Canyons South Lift Station(s)
3	Bella Mesa Lift Station
4	Dawson Trails Lift Station
5	Ph1 Gravity Exp Pine Canyon and Pioneer Ranch
6	Ph2 Gravity Exp Pine Canyon and Pioneer Ranch
7	Meadows F19 Gravity Main
8	Founders Vista Gravity Sewer
9	Chateau Valley Gravity Sewer
10	Oman/South St Sewer Upsize
11	PC Parkway Gravity Sewer Ext
Completed Developer Projects	
12	Crystal Valley Ranch Upsize
13	Ray Waterman Gravity Sewer
14	Lanterns Heckendorf Ranch Ext



0 2,350 4,700 9,400 14,100 Feet
1 inch = 4,667 feet



**CASTLE ROCK
2022 WASTEWATER MASTER PLAN
DEVELOPER WASTEWATER PROJECTS
FIGURE 4.1**

LOCATED IN THE PORTIONS OF THE SOUTHWEST QUARTER SECTION 4, THE SOUTHEAST QUARTER OF SECTION 5, THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 8, AND THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 8 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND A PORTION OF THE EAST HALF OF SECTION 6, TOWNSHIP 8 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO.



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5. THE MINIMUM SEPARATION BETWEEN WATER SERVICE LINES IS 5 FEET.
6. ANY TIE-IN, CROSSING OR LOWERING OF TOWN CRITICAL INFRASTRUCTURE WILL REQUIRE A TIME AND MATERIALS PERMIT (TMU) WITH FEES REQUIRED PRIOR TO CONSTRUCTION.

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	EXISTING R.O.W.
	EXISTING LOT LINE
	EXISTING EASEMENT
	SECTION LINE
	ROAD CENTERLINE
	EDGE OF PAVEMENT
	CURB AND GUTTER
	CONCRETE
	FENCE
	RETAINING WALL
	EXISTING WATERLINE
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING ELECTRIC LINE
	EXISTING GAS LINE
	EXISTING OVERHEAD ELECTRIC LINE

	PROPOSED PROPERTY LINE
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	PROPOSED CURB AND GUTTER (SPILL)
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	PROPOSED MANHOLE w/ DIA. (FT.)
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	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED PLUG/CAP
	PROPOSED RETAINING WALL
	TRACT BOUNDARY
	PROPOSED SWALE LINE
	UNDERDRAIN
	LIGHT POLE



SITE DEVELOPMENT PLAN
PINE CANYON
PROJECT NUMBER SDP26-0021

NOT FOR
CONSTRUCTION

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PINE CANYON SITE DEVELOPMENT I PLAN

CASTLE ROCK, COLORADO

UTILITY PLAN

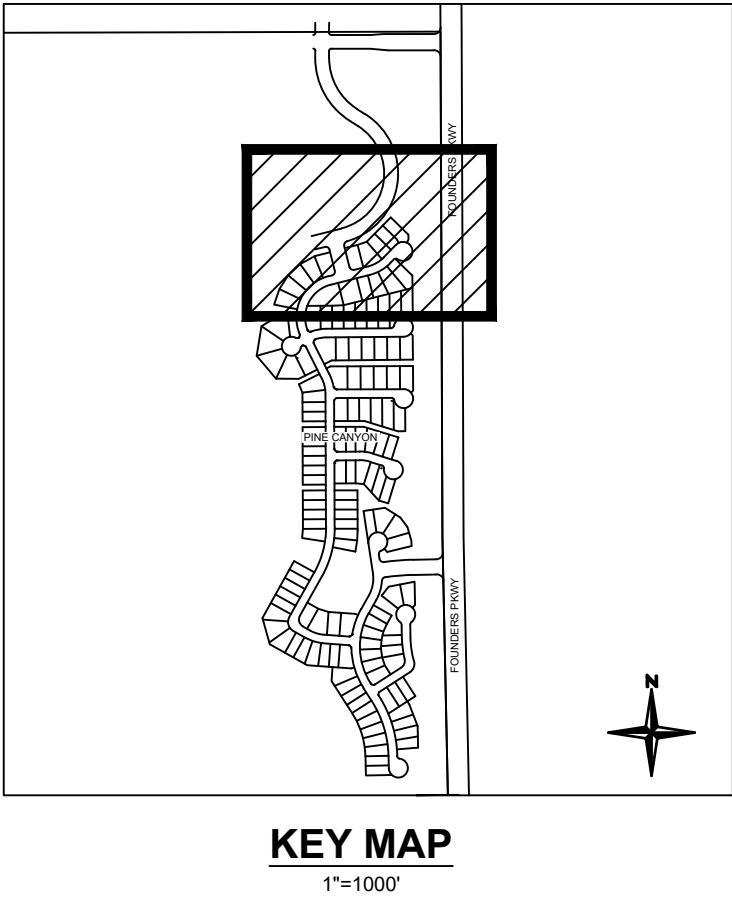
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SITE DEVELOPMENT PLAN
PINE CANYON

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MATCHLINE - SEE SHEET 16



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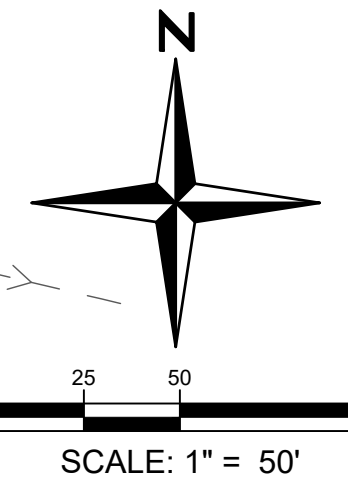
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	PROPOSED RETAINING WALL
	TRACT BOUNDARY
	PROPOSED SWALE LINE
	UNDERDRAIN
	LIGHT POLE



SITE DEVELOPMENT PLAN
PINE CANYON
TOWN OF CASTLE ROCK PROJECT NUMBER SDP26-0021

PINE CANYON SITE DEVELOPMENT PLAN
CASTLE ROCK, COLORADO
UTILITY PLAN

SHEET

17

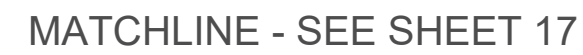
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MATCHLINE - SEE SHEET 21

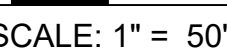
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MATCHLINE - SEE SHEET 18

LOCATED IN THE PORTIONS OF THE SOUTHWEST QUARTER SECTION 4, THE SOUTHEAST QUARTER OF SECTION 5, THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 8, AND THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 8 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND A PORTION OF THE EAST HALF OF SECTION 6, TOWNSHIP 8 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO.



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	TRACT BOUNDARY
	PROPOSED SWALE LINE
	UNDERDRAIN
	LIGHT POLE



SCALE: 1" = 50'

TOWN OF CASTLE ROCK PROJECT NUMBER SDP26-0021

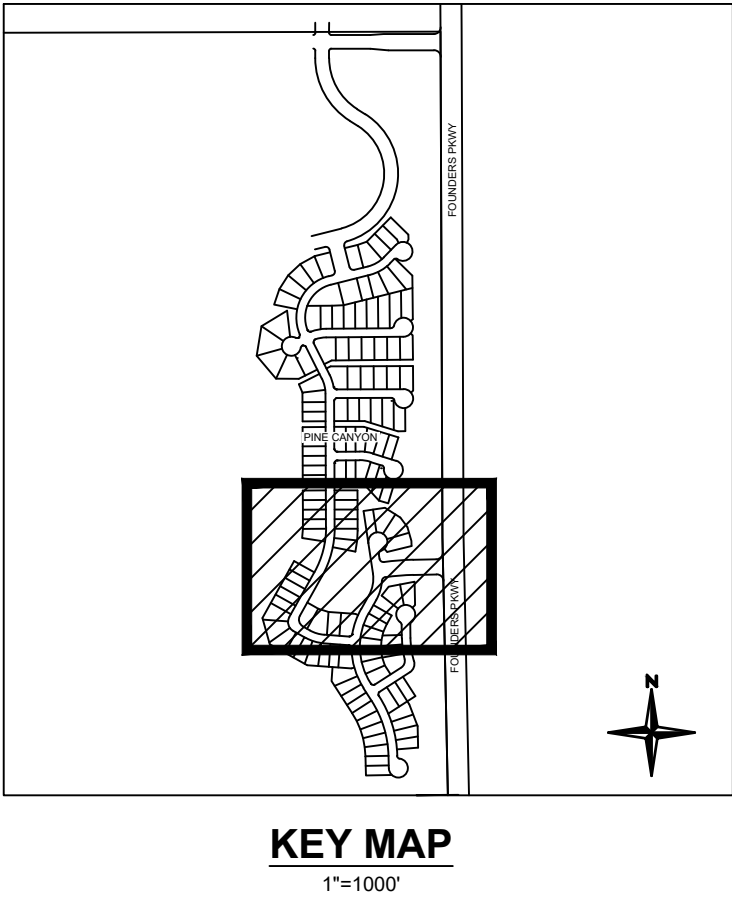
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SITE DEVELOPMENT PLAN
PINE CANYON

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MATCHLINE - SEE SHEET 18



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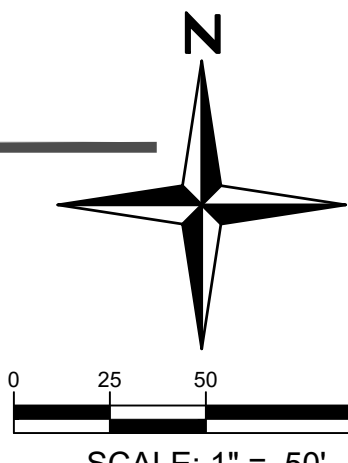
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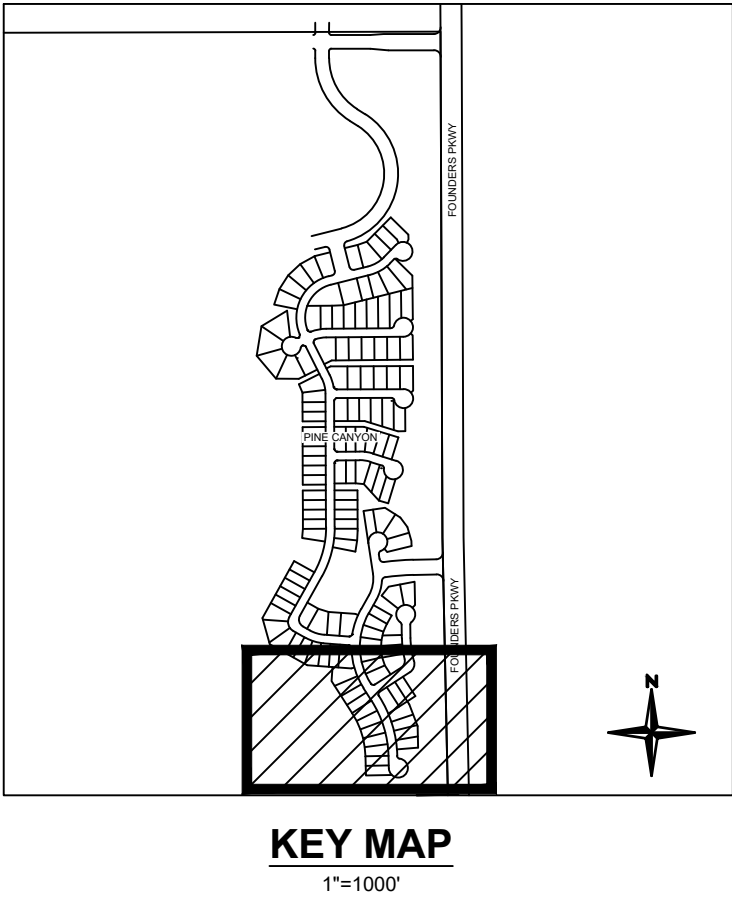
SITE DEVELOPMENT PLAN
PINE CANYON
TOWN OF CASTLE ROCK PROJECT NUMBER SDP26-0021

PINE CANYON SITE DEVELOPMENT PLAN
CASTLE ROCK, COLORADO
UTILITY PLAN

SHEET

SITE DEVELOPMENT PLAN
PINE CANYON

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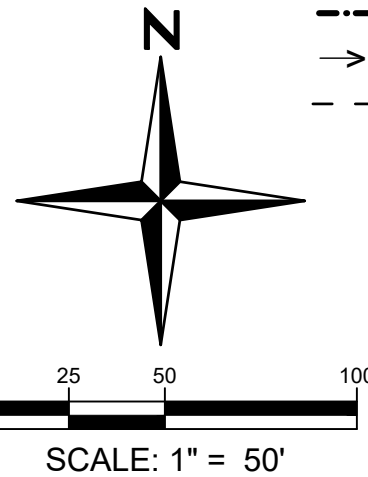
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SITE DEVELOPMENT PLAN
PINE CANYON
TOWN OF CASTLE ROCK PROJECT NUMBER SDP26-0021

PINE CANYON SITE DEVELOPMENT PLAN
CASTLE ROCK, COLORADO
UTILITY PLAN

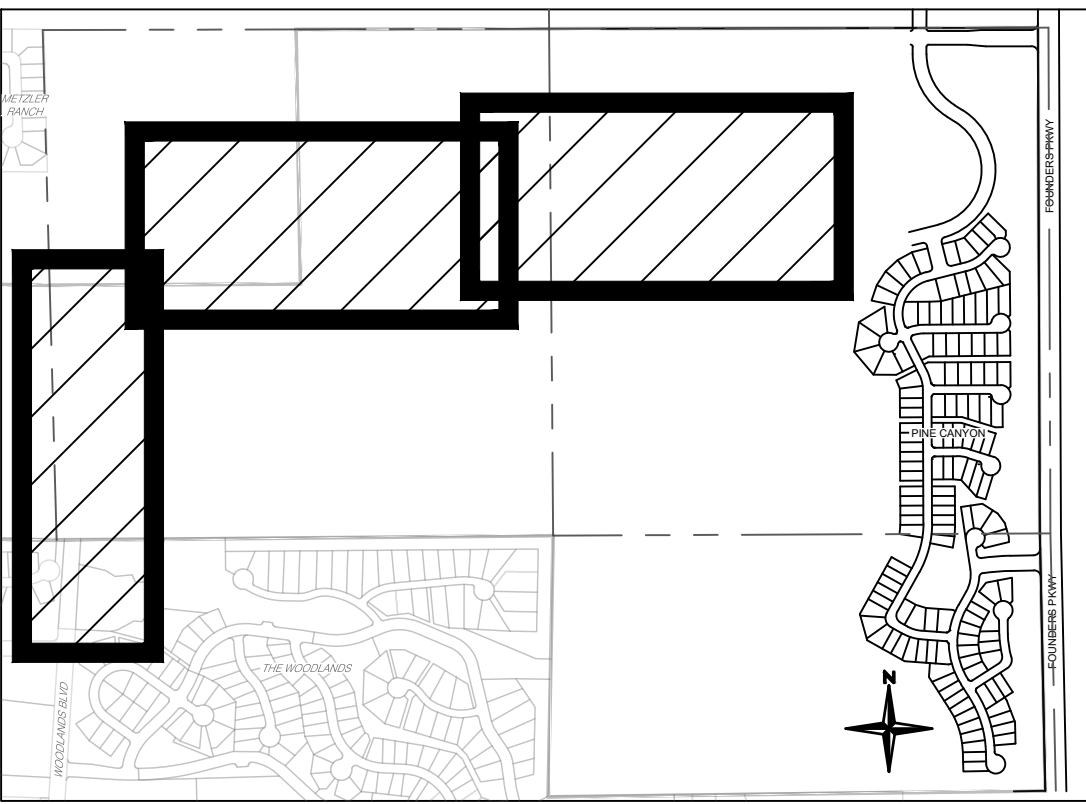
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OF 32

SITE DEVELOPMENT PLAN
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KEY MAP
1"=1000'

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- UNDERDRAIN
- LIGHT POLE

NOT FOR
CONSTRUCTION

PINE CANYON SITE DEVELOPMENT PLAN
CASTLE ROCK, COLORADO
UTILITY PLAN

SHEET

21

OF 32

Appendix G – Water Rights

further subject to the limited application of the Town Regulations to the Property as provided in ARTICLE XI, Town shall allow and permit the development of the Property in accordance with the Town Regulations and the PDP, upon submission of proper application(s), payment of lawful fees, exactions and charges imposed by the Town Regulations, including Development Fees, and compliance with conditions precedent to permitting imposed by this Agreement, the PDP, or Town Regulations. The Town shall review and process all submittals for land use approvals, plans, specifications, drawings, details, permit applications, subdivision plats or other pertinent data required in connection with the Property in a prompt and efficient manner, in accordance with applicable Town Regulations, the PDP, and this Agreement. Town shall not unreasonably delay, condition, withhold or deny consent to or approval of any development request or permit relating to the Property and/or the Project.

4.04 Coordination. Subject to prior review, Town shall coordinate with and affirmatively support the Owner in any filings or applications before other governmental jurisdictions necessary for the Owner to fulfill its obligations under this Agreement or to allow development of the Property, in accordance with the PDP and this Agreement.

4.05 Required Easements. To the extent necessary to provide access to or Municipal Services to the Property, Owner shall provide any reasonably necessary and sufficient easements (sized no larger than necessary to provide such needed access) on the Property or, if Owner has a legal right to do so, adjacent to the Property, to the Town, as the Town may reasonably request, prior to or concurrently with the Recording of any applicable Plat; provided, however, such easements shall not impair the development rights granted by the PDP and this Agreement.

ARTICLE V

GROUNDWATER RIGHTS AND RENEWABLE WATER RESOURCES

5.01 Limited Groundwater Dedication; Retained Groundwater. As a precondition to Town Council approval of any annexation, rezoning, or subdivision, Sections 4.04.050.A, B, and C of the Code require landowners to dedicate all water rights appurtenant to and associated with such landowner's property to Town. Notwithstanding these provisions, upon the Effective Date, Owner will convey to Town 757.5 average annual acre-feet of groundwater appurtenant to the Property ("**Dedicated Groundwater**") and retain 106.4 average annual acre-feet of groundwater appurtenant to the Property ("**Retained Groundwater**") solely for irrigation, stock watering, domestic, other agricultural purposes, and commercial use in connection with agricultural commercial buildings and a museum for the Homestead Property. In order to meet the Project's water supply requirements under Town Regulations, Town will reserve an adequate amount of average annual acre-feet of Town-owned nonrenewable groundwater to serve the Project over and above that which is being provided by Owner. Accordingly, Owner and Town acknowledge and agree that no additional Dedicated Groundwater will be required to serve the Project; provided, however, that Town reserves the right to require additional Dedicated Groundwater as a condition of any amendment to increase Project density above that which is approved in the PDP.

Upon the Effective Date, Owner and Town will execute and Record a restrictive covenant substantially in the form attached as **Exhibit 3** that: (i) restricts Owner's use of the Retained Groundwater for agriculture, irrigation, and limited commercial purposes associated with the

Homestead Property; and (ii) grants Town a right of first refusal to purchase the Retained Groundwater. Upon conveyance by the Owner to Town of the Dedicated Groundwater pursuant to Section 5.02, below, the Town will own such Dedicated Groundwater. Town shall have no obligation to issue land use approvals for development on the Property unless the Owner is in compliance with the provisions of this ARTICLE V.

5.02 Conveyance. Upon the Effective Date, Owner shall convey the Dedicated Groundwater to Town by special warranty deed generally consistent with the form attached as **Exhibit 4**. The conveyance of the Dedicated Groundwater shall transfer to Town the right to use, reuse, lease or sell the water withdrawn under the Groundwater Rights associated with such Dedicated Groundwater. As a condition to Town's acceptance of such special warranty deed, Owner, at its sole expense, has provided Town with a water title opinion letter dated May 13, 2025, from a qualified Colorado attorney, upon which Town has relied and determined that: (i) Owner owns the Groundwater Rights, including the Dedicated Groundwater and (ii) upon Recordation of the special warranty deed conveying the Dedicated Groundwater to the Town, Town will have good and marketable title to the Dedicated Groundwater, free of liens, encumbrances or other title defects (the "**Title Opinion**"). Owner shall further reimburse Town for all actual, reasonable costs incurred by Town in retaining legal counsel to review the Title Opinion. Town has relied upon such opinion in accepting conveyance of the Dedicated Groundwater as provided in this ARTICLE V.

After conveyance of the Dedicated Groundwater, Owner shall execute such further reasonable and additional instruments of conveyance and other documents which Town reasonably determines necessary to grant to the Town the exclusive ownership, management and control of the Dedicated Groundwater; provided, however, such additional instruments and other documents shall not impair the development rights granted by the PDP and this Agreement. No updated Title Opinion or additional title documentation pursuant to this Section 5.02, or otherwise under this Agreement, shall be required by the Town.

5.03 Water Conservation. The Project shall comply with all water use conservation measures adopted by Town Regulations and applied uniformly throughout the Town. All builders of residential and non-residential construction on the Property shall be required to implement and follow all such water use conservation measures.

5.04 Infill Property. The Town determined the Project is considered "Infill" under the Water Plan and, therefore, Owner is exempt from any requirement to provide renewable water under Sections 4.04.045.B and 20.02.015 of the Code. In addition, Town will not require Owner to dedicate any groundwater in excess of the Dedicated Groundwater or make payments of cash-in-lieu in addition to such Dedicated Groundwater.

ARTICLE VI PUBLIC IMPROVEMENTS DEVELOPMENT

6.01 Generally. Owner may develop the Property in accordance with this Agreement, the PDP, applicable Town Regulations, and applicable state and federal laws and regulations. The Public Improvements shall be developed in strict accordance with Town Regulations, the PDP, this Agreement, the Phasing Plan and the applicable SDP, Plat, and SIA. Except for the Town Water

EXHIBIT B-1

Groundwater

A. The following Denver Basin groundwater and groundwater rights adjudicated as underlying the property described in **EXHIBIT A**.

CASE NUMBER, DISTRICT COURT, WATER DIVISION NO. 1	LOWER DAWSON NOT-NON-TRIB (Average Annual AF) <i>FOR PERMITTED USES</i>	DENVER NOT-NON-TRIB (Average Annual AF) <i>FOR PERMITTED USES</i>	LARAMIE FOX HILLS NON-TRIB (Average Annual AF) <i>RESERVED FOR POST-PUMPING DEPLETIONS ONLY</i>
98CW403	33.3	54.8	18.3
01CW82	9	9	0
97CW97	0	0	88.1
TOTAL	42.3	63.8	106.4

Including all rights under the plan for augmentation decreed in Case No. 00CW68, District Court, Water Division No. 1, and an undivided *pro rata* interest under the plan for augmentation decreed in Case No. 11CW18, District Court, Water Division No. 1.



Preliminary Utility Report Checklist

The Preliminary Utility Report must be in conformance with the latest Town of Castle Rock Water and Wastewater System Design Criteria Manuals, available on the Town's website.

For the Preliminary Utility Report, information contained in the Concept Utility Letter shall be updated to reflect the latest projections for land use and densities. Hydraulic modeling shall only be required for the site proposed in the Site Development Plan (SDP). This modeling may be waived on a case-by-case basis at the discretion of the Utilities Department if it is adequately demonstrated that the SDP is already consistent with the Town's Water/Wastewater Master Plans and that the existing adjacent water/wastewater infrastructure is adequate to support the development without modifications or if the SDP is for a commercial structure on a single lot. The modeling shall accurately reflect the sizes and locations of all proposed water mains associated with the SDP layout. In addition to providing updated land use and density information, the following items shall be specifically addressed:

- Further analysis of any concerns raised in the Concept Utility Letter regarding the Town's ability to serve the development.
- Updated discussion of appurtenant water/wastewater facilities other than distribution mains that will be necessary to serve the development, and the principal design parameters that will be utilized in the final design of such facilities.
- Status of any variances that have been obtained, or will be pursued.
- Updated discussion of maintenance access and any associated concerns.
- Updated status of permitting requirements.
- Updated appendices.

The following outline sets forth the **required minimum** content to be provided in the Preliminary Utility Report that shall be submitted with the SDP. This report must be prepared by, or the report preparation supervised by a registered Professional Engineer licensed in Colorado. A copy of this checklist must be submitted with the Preliminary Utility Report.

Please check off the following items to assure your report is complete. Appropriate notations shall be provided with the checklist. For example, if a specific item is not addressed or not applicable, an explanation needs to be provided.

Included	N/A	
X		TITLE SHEET
X		A. Name of Project, including legal name of development
X		B. Address
X		C. Owner
X		D. Developer
X		E. Engineer
X		F. Submittal date and revision dates as applicable

Preliminary Utility Report – Formatting Checklist

Included	N/A	
X		APPROVAL BLOCK SHEET (Available on Town's website)
X		TABLE OF CONTENTS
X		PROJECT LOCATION AND DESCRIPTION
X		A. Site Location
X		B. Description of Property and Land Use
X		CALCULATED WATER DEMANDS
X		A. Average Day Demands (ADD)
X		B. Max Day Demands (MDD)
X		C. Peak Hour Demands (PHD)
X		EXISTING WATER SYSTEM
X		A. Existing Distribution System
X		B. Existing Supply Facilities
X		PROPOSED WATER SYSTEM
X		A. Proposed Distribution System
X		B. Proposed Supply Facilities
X		C. Land Dedication Requirements
X		PROPOSED WATER SYSTEM ANALYSIS AND MODELING
X		A. Hydraulic Models
X		B. Hydraulic Modeling Scenarios
X		C. Hydraulic Modeling Output and Required Schematics
X		CALCULATED WASTEWATER FLOWS
X		A. Average Day Wastewater Flows (ADF)
X		B. Peaking Factor
X		C. Peak Design Flows (PDF)
X		EXISTING WASTEWATER SYSTEM
X		A. Existing Collection System
X		PROPOSED WASTEWATER SYSTEM
X		A. Proposed Collection System
X		B. Proposed Wastewater Facilities
X		C. Land Dedication Requirements
X		PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING
X		A. Hydraulic Models
X		B. Hydraulic Modeling Scenarios
X		C. Hydraulic Modeling Output and Required Schematics

Preliminary Utility Report – Formatting Checklist

Included	N/A	
✗		POTENTIAL PERMITTING REQUIREMENTS
✗		REFERENCES
✗		APPENDICES
✗		Appendix A — Water Demands
✗		Appendix B — Water Storage
✗		Appendix C — Water Hydraulic Analysis and Modeling
✗		Appendix D — Wastewater Flows
✗		Appendix E — Wastewater Hydraulic Modeling
✗		Appendix F — Maps and Plans
✗		A. Vicinity Map
✗		B. Utility Map(s) provided by the Utilities Department
✗		C. Site Development Plan
✗		D. Water/Wastewater Utility Plan(s)

Notes/Comments: