



Soleana Subdivision

Preliminary Utility Report

IMEG #20002764.00

Prepared for:

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UTILITY REPORT APPROVAL BLOCKS**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: _____

Rick Rome, P.E.

Registered Professional Engineer

State Of Colorado No.35103

(Affix Seal)

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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Preliminary Utility Report
Soleana Subdivision

PROJECT LOCATION AND DESCRIPTION

A. Site Location

The project is located in the north half of Section 26 T7S R67W 6th PM and is currently unplatted land. The property is bounded on the east by the Diamond Ridge subdivision, on the south by the Cooper Hook subdivision and on the west by the Silver Heights subdivision. The property ownership is divided into two parcels submitted as a single project with the north half owned by Tierra Investors LLC and the southern portion owned by 455 Alexander LLC. The owners are the developers for the property. IMEG is the consulting engineer providing civil engineering services. The overall project boundary encompasses approximately 77.96 acres.

B. Description of Property and Land Use

Development of the project includes 55 single-family detached lots ranging from a half-acre to nearly one acre in size. Additionally, there are 22 duplex units proposed for the southwest corner of the site with access to Brewer Court. Single family and duplex development account for one Single Family Equivalent (SFE) per dwelling unit or 77 SFE's in total.

The northern portion of the property had historically been in the Silver Heights Water and Sanitation District. During the process of annexation of the property into the Town of Castle Rock, this area was removed from the Silver Heights Water and Sanitation District. Sewer service for the development will be served with main line collecting effluent from the property in Brewer Court (AKA Flamecrest Trail). Grading for the project is such that standard depth can be maintained for the sewer system collecting flows and draining south. The total 77 SFE's represents a sufficiently small flow that the downstream capacity of the existing sewer system will not be adversely affected.

CALCULATED WATER DEMANDS

A water demand calculation for each junction was completed to determine the Average Day Demands (ADD), Max Day Demands (MDD), and Peak Hour Demands (PHD), assuming 400 gpd per du, for single family and duplex demand, that can be found in Appendix A.

A. Average Day Demands (ADD)

The calculated average ADD for the overall water system is based on 77 SFE's being 21.4 gpm.

B. Max Day Demands (MDD)

The calculated average MDD for the water system is 53.5 gpm.

C. Peak Hour Demands (PHD)

The calculated average PHD for the water system is 117.6 gpm.

Storage Requirement:

The storage requirement for this project is based on the Max Daily Demand (MDD) being

53.5 gpm x 60 min/hr x 24 hr	= 77,040 gallons
Plus 1500 gpm x 60 min/hr x 24 hr	= 180,000 gallons
Total required storage	= 257,040 gallons

EXISTING WATER SYSTEM

A. Existing Distribution System

The property is in the Metzler North Blue zone with an 8-inch water stub-out located at the north end of Brewer Court. A 12" main is located at the east end of the improved road section for Alexander Place. This project is being developed in coordination with the with the Cooper Hook Lot 4 property immediately south of the property. As such, a coordinated access and water connection location is proposed approximately 700 feet east of Brewer Court. A tertiary connection may be considered east of the access road as some point in the future depending on development schedule and timing of construction.

This configuration optimizes the use of both properties and provides water distribution looping for fire suppression and water quality.

B. Existing Supply Facilities

The existing water supply is provided from the Town of Castle Rock. As part of the annexation agreement the owner has agreed to supply significant water rights which support the demands in the development. The terms and conditions of that agreement have been negotiated separately from this report. The water system in this area is an established system. Storage demands on the existing system include a calculated 257,040 gallons including fire flow storage requirements.

PROPOSED WATER SYSTEM

The proposed water system includes installation of 8" water main oriented in a looped format to provide fire, domestic and irrigation service to the lots in the subdivision.

A. Proposed Distribution System

The distribution system includes installation of 8" water main oriented in a looped format to provide fire, domestic and irrigation service to the lots in the subdivision. A series of residential



taps will be included for individual house services with a potential for irrigation taps to support public landscape proposed internal tot the project.

The distribution system will be limited to internal distribution for service to the site. A stub is provided at the north end of Brewer Court for a potential future extension that will be designed and constructed by others.

B. Proposed Supply Facilities

Supply facilities currently existing within the Town limits have adequate capacity to support the 77 single family equivalents proposed on the site. There are no offsite modifications proposed as part of this development.

PROPOSED WATER SYSTEM ANALYSIS AND MODELING

A. Hydraulic Models

The hydraulic model presented with this analysis was developed using the Bently WatrCAD software package. The hydraulic parameters are based on the Town stated high and low hydraulic grade line elevations for the operation at the PRV being 6476 feet at the high setting and 6456 at the low setting.

B. Hydraulic Modeling Scenarios

The hydraulic models include three scenarios including peak hour and Maximum daily demand with fire flow applied at the most remote locations within the subdivision. These locations are at hydrant 1 at the northernmost end of the development. This includes a dead-end service within the parameters of the Town of Castle Rock fire department criteria. The second location is at the south east corner of the site (hydrant 10) representing the highest elevation in the zone.

C. Hydraulic Modeling Output and Required Schematics

A hydraulic analysis is provided to illustrate the system performance under Peak Hour conditions and two fire flow scenarios where hydrants are operated at design fire flow at the north and south cul-de-sacs in the proposed development. Design flows are based on 400 gpd per dwelling unit and a 1500 gpm fire flow assuming application of flow at various locations on the site.

Minimum performance requirements are presented in the table below:

Event	Parameter	Criteria	Model
Static Pressure	Minimum	43 psi	44 psi
Static Pressure	Maximum	125 psi	111 psi
Peak Hour	Velocity	10 fps max	0.75 fps
	Pressure	35 psi min	41 psi
Fire Hydrant 1	Velocity	15 fps max	9.92 fps
	Pressure	20 psi min	25 psi
Fire Hydrant 10	Velocity	15 fps max	9.92 fps
	Pressure	20 psi min	20 psi



Table assumes that Pipe P-9 is closed during the peak event.

The hydraulic model is based on a series of assumptions related to the proposed system. The Town has indicated that the project is in the Metzler Blue zone which has operating pressure controlled by PRV's between elevations 6476 feet and 6456 feet as the operational hydraulic conditions. Based on conversations with the Town, this hydraulic operational range is consistent with the operational needs for the existing users in the area and is considered a requirement for the operation of the proposed water system expansion.

In order to meet the Town's requirements for operational pressures, it will be necessary to provide an internally looped system to service the upper elevations in the water system. There are several options that may accommodate this need. For the purpose of demonstrating compliance in this preliminary report, we have presented the loop occurring through tracts in the southeast corner of the site providing looped water connectivity. Alternatives are being explored that may provide a solution that uses the mains through the adjacent subdivision as the secondary water loop.

Design flows are based on 400 gpd per dwelling unit and a 1500 gpm fire flow assuming application of flow at various locations on the site.

CALCULATED WASTEWATER FLOWS

The calculated sewer average day wastewater flows (ADF), Peaking Factor, and Peak Design Flows (PDF) for design sanitary sewer manhole/junction locations can be found in Appendix D. The loading is based on a total of 77 dwelling units. Loads on the system are based on an average daily flow of 200 gpd per du.

A. Average Day Wastewater Flows (ADF)

The calculated average ADF for the sewer system is 10.7 gpm.

B. Peaking Factor

The calculated peaking factor is applied in accordance with the Town of Castle Rock published equation being $PF = 3.65 \cdot ADF^{-0.168}$

The overall average peaking factor for the subdivision is 2.5 with localized regions having higher peaking factors applied based on localized flow.

C. Peak Design Flows (PDF)

The calculated average Peak Design Flows for the sewer system is 27.3 gpm.



EXISTING WASTEWATER SYSTEM

A. Existing Collection System

Existing sanitary sewer is provided in an 8" stub at the end of the Brewer Court improved segment. This system drains south and west through the Cooper Hook development to the Town's larger wastewater collection and conveyance system.

PROPOSED WASTEWATER SYSTEM

A. Proposed Collection System

Sewer service for the development will be served with main line collecting effluent from the property in Brewer Court. Grading for the project is such that standard depth can be maintained for the sewer system collecting flows and draining south. The total 77 SFE's represents a sufficiently small flow that the downstream capacity of the existing sewer system will not be adversely affected.

B. Proposed Wastewater Facilities

The proposed sanitary sewer extension will include a single point of connection at Brewer Court and extended within proposed rights of way for single family residential service and the live work product in the southwest corner of the project. Development of the water and sewer infrastructure necessary to serve the project will be the responsibility of the developer/owner

C. Land Dedication Requirements

There are no proposed land dedications specifically associated with the sewer improvements. Pocket parks and open space areas will not include sewer services.

PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING

A. Hydraulic Models

The hydraulic model for the sanitary sewer system was developed using the Bentley SewerCAD software. Sewer flows are based on 77 single family equivalents with an assumed loading of 200 gpd per SFE. For 77 units, this results in an Average Daily flow of 10.7 gpm. The peak factor includes the Town of Castle rock published equation plus an additional 10% of the ADF to account for potential infiltration loads from the development area. Peak flow is calculated at 27.3 gpm including the infiltration adjustment.

There are isolated areas in the system where we will request a variance from the 7.5% maximum grade. This occurs in the southeast corner of the property. Finished refinements will be provided to minimize these areas with the final construction package.

B. Hydraulic Modeling Scenarios

Hydraulic modeling is provided for the Peak Hour event. Mannings equations are assumed to be 0.011 for all pipes in the system. Peak hour maximum velocity in the system is calculated at 3.64 fps.

Maintaining depth to diameter ratios below 50%.



C. Hydraulic Modeling Output and Required Schematics

A summary report is provided in the appendix of this report that includes a summary of flow accumulation, hydraulic results, and physical parameters for the system. These results are generally in compliance with Town of Castle Rock standards. We anticipate minor refinements to the proposed plan and layout that will mitigate potential requested for variance from criteria specifically related to the sanitary sewer system.

POTENTIAL PERMITTING REQUIREMENTS

Permit for the sewer system will be administered through the Town of Castle Rock. There are no anticipated uses on site that would deviate from typical domestic sewage that would be contributed from the property.



REFERENCES



APPENDIX A
Water Demands



Solena
Water Demand Calculations

JUNCTION NO. FROM WATERGEMS	DU	ADD	MDD	PEAK HOUR DEMAND
J-2	12	3.3 gpm	8.3 gpm	18.3 gpm
J-4	5	1.4 gpm	3.5 gpm	7.6 gpm
J-5	6	1.7 gpm	4.2 gpm	9.2 gpm
J-6	3	0.8 gpm	2.1 gpm	4.6 gpm
J-8	6	1.7 gpm	4.2 gpm	9.2 gpm
J-9	4	1.1 gpm	2.8 gpm	6.1 gpm
J-12	8	2.2 gpm	5.6 gpm	12.2 gpm
J-13	6	1.7 gpm	4.2 gpm	9.2 gpm
J-14	13	3.6 gpm	9.0 gpm	19.9 gpm
J-19	7	1.9 gpm	4.9 gpm	10.7 gpm
J-21	7	1.9 gpm	4.9 gpm	10.7 gpm
Total	77	21.4 gpm	53.5 gpm	117.6 gpm

Single Family and Duplex Demand

400 gpd per du

0.278 gpm per du

Average Daily Demand (ADD)

2.5 Peak Factor

Max Daily Demand (MDD)

5.5 Peak Factor

APPENDIX B

Water Storage

Storage Requirement:

The storage requirement for this project is based on the Max Daily Demand (MDD) being

$53.5 \text{ gpm} \times 60 \text{ min/hr} \times 24 \text{ hr} = 77,040 \text{ gallons}$

Plus $1500 \text{ gpm} \times 60 \text{ min/hr} \times 24 \text{ hr} = 180,000 \text{ gallons}$

Total required storage = 257,040 gallons



APPENDIX C

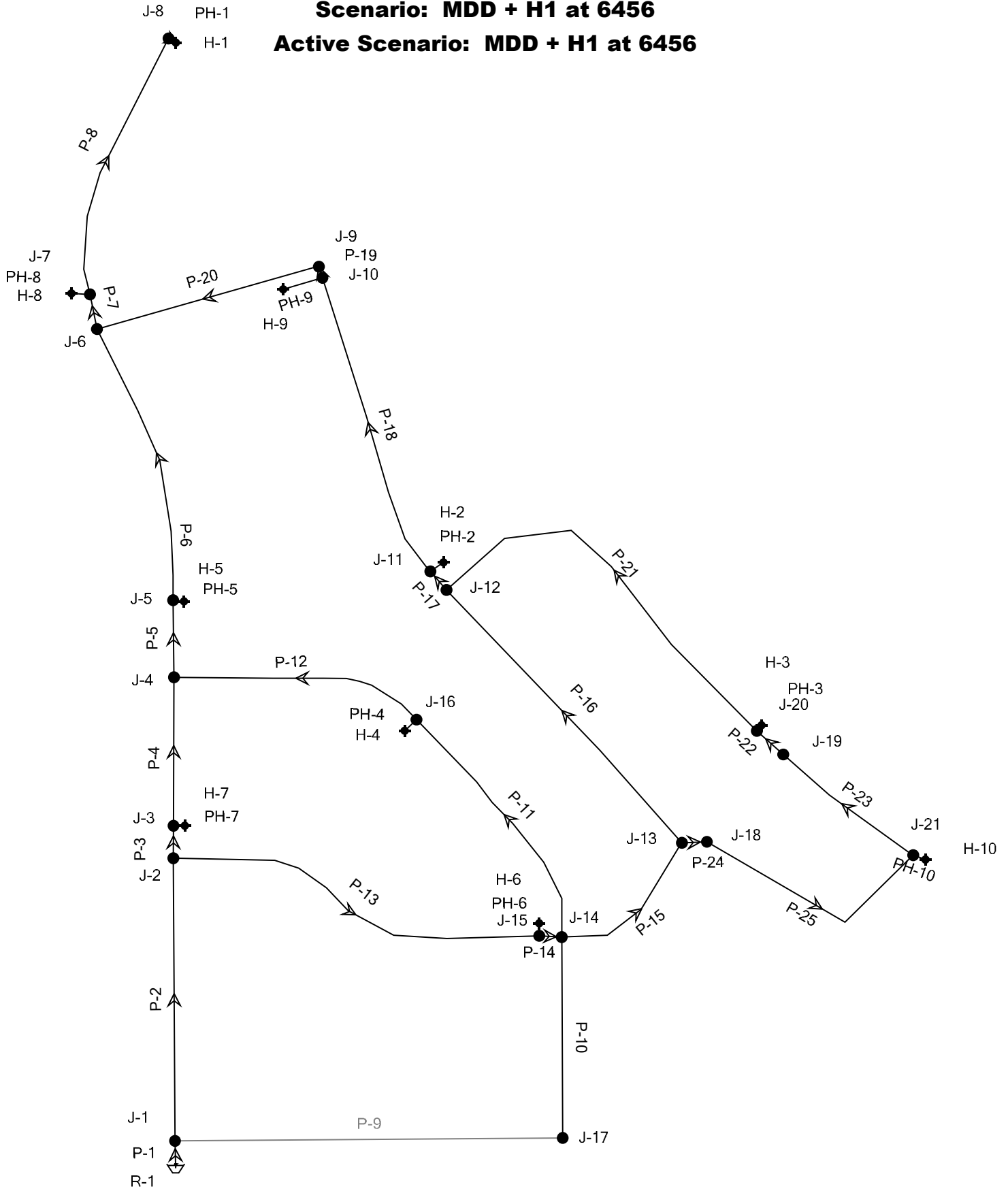
Water Hydraulic Analysis & Modeling



Solena

Scenario: MDD + H1 at 6456

Active Scenario: MDD + H1 at 6456



Solena

FlexTable: Hydrant Table

Active Scenario: MDD + H1 at 6456

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-1	6,317.12	1,500	27	6,379.22
H-2	6,339.86	0	33	6,416.48
H-3	6,352.85	0	28	6,417.80
H-4	6,298.44	0	53	6,421.48
H-5	6,295.99	0	53	6,418.72
H-6	6,280.31	0	61	6,421.83
H-7	6,254.80	0	74	6,426.79
H-8	6,305.60	0	43	6,405.54
H-9	6,354.00	0	25	6,411.99
H-10	6,352.20	0	29	6,418.28

Solena

FlexTable: Junction Table

Active Scenario: MDD + H1 at 6456

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	6,198.61	0	110	6,453.51
J-2	6,247.74	8	78	6,427.95
J-3	6,251.95	0	76	6,426.79
J-4	6,274.90	2	63	6,421.48
J-5	6,295.90	4	53	6,418.72
J-6	6,304.28	4	45	6,408.56
J-7	6,305.25	0	43	6,405.54
J-8	6,316.88	4	28	6,382.12
J-9	6,354.00	3	25	6,411.83
J-10	6,354.00	0	25	6,411.99
J-11	6,339.62	0	33	6,416.48
J-12	6,338.47	6	34	6,416.83
J-13	6,299.91	4	52	6,418.96
J-14	6,281.58	9	61	6,421.48
J-15	6,280.15	0	61	6,421.83
J-16	6,298.29	0	53	6,421.48
J-17	6,265.00	0	68	6,421.48
J-18	6,296.95	0	53	6,418.89
J-19	6,351.85	5	29	6,417.88
J-20	6,352.67	0	28	6,417.80
J-21	6,352.20	5	29	6,418.28

Solena

FlexTable: Pipe Table

Active Scenario: MDD + H1 at 6456

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	52	R-1	J-1	8.0	PVC	120.0	1,554	9.92	0.048
P-2	534	J-1	J-2	8.0	PVC	120.0	1,554	9.92	0.048
P-3	61	J-3	J-2	8.0	PVC	120.0	-942	6.01	0.019
P-4	280	J-4	J-3	8.0	PVC	120.0	-942	6.01	0.019
P-5	145	J-5	J-4	8.0	PVC	120.0	-942	6.01	0.019
P-6	540	J-6	J-5	8.0	PVC	120.0	-938	5.98	0.019
P-7	67	J-7	J-6	8.0	PVC	120.0	-1,504	9.60	0.045
P-8	519	J-8	J-7	8.0	PVC	120.0	-1,504	9.60	0.045
P-9	731	J-17	J-1	8.0	PVC	120.0	(N/A)	(N/A)	(N/A)
P-10	379	J-14	J-17	8.0	PVC	120.0	0	0.00	0.000
P-11	510	J-16	J-14	8.0	PVC	120.0	-2	0.01	0.000
P-12	482	J-4	J-16	8.0	PVC	120.0	-2	0.01	0.000
P-13	735	J-2	J-15	8.0	PVC	120.0	604	3.85	0.008
P-14	43	J-15	J-14	8.0	PVC	120.0	604	3.85	0.008
P-15	314	J-14	J-13	8.0	PVC	120.0	592	3.78	0.008
P-16	652	J-13	J-12	8.0	PVC	120.0	364	2.32	0.003
P-17	46	J-11	J-12	8.0	PVC	120.0	-573	3.66	0.008
P-18	595	J-10	J-11	8.0	PVC	120.0	-573	3.66	0.008
P-19	22	J-9	J-10	8.0	PVC	120.0	-573	3.66	0.008
P-20	437	J-6	J-9	8.0	PVC	120.0	-570	3.64	0.007
P-21	790	J-12	J-20	8.0	PVC	120.0	-215	1.37	0.001
P-22	67	J-20	J-19	8.0	PVC	120.0	-215	1.37	0.001
P-23	311	J-19	J-21	8.0	PVC	120.0	-220	1.40	0.001
P-24	47	J-13	J-18	8.0	PVC	120.0	225	1.43	0.001
P-25	458	J-18	J-21	8.0	PVC	120.0	225	1.43	0.001
PH-1	16	J-8	H-1	6.0	Ductile Iron	120.0	1,500	17.02	0.182
PH-2	30	J-11	H-2	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-3	14	J-20	H-3	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-4	31	J-16	H-4	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-5	21	J-5	H-5	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-6	24	J-15	H-6	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-7	21	J-3	H-7	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-8	35	J-7	H-8	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-9	77	J-10	H-9	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-10	24	J-21	H-10	6.0	Ductile Iron	120.0	0	0.00	0.000

Solena

FlexTable: Hydrant Table

Active Scenario: MDD + H10 at 6456

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-1	6,317.12	0	44	6,418.55
H-2	6,339.86	0	31	6,412.62
H-3	6,352.85	0	23	6,406.18
H-4	6,298.44	0	53	6,421.12
H-5	6,295.99	0	54	6,421.70
H-6	6,280.31	0	60	6,420.05
H-7	6,254.80	0	74	6,426.98
H-8	6,305.60	0	49	6,418.55
H-9	6,354.00	0	27	6,415.95
H-10	6,352.20	1,500	20	6,398.81

Solena

FlexTable: Junction Table

Active Scenario: MDD + H10 at 6456

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	6,198.61	0	110	6,453.51
J-2	6,247.74	8	78	6,427.95
J-3	6,251.95	0	76	6,426.98
J-4	6,274.90	2	64	6,422.57
J-5	6,295.90	4	54	6,421.70
J-6	6,304.28	4	49	6,418.55
J-7	6,305.25	0	49	6,418.55
J-8	6,316.88	4	44	6,418.55
J-9	6,354.00	3	27	6,416.07
J-10	6,354.00	0	27	6,415.95
J-11	6,339.62	0	32	6,412.62
J-12	6,338.47	6	32	6,412.36
J-13	6,299.91	4	49	6,412.55
J-14	6,281.58	9	60	6,419.59
J-15	6,280.15	0	61	6,420.05
J-16	6,298.29	0	53	6,421.12
J-17	6,265.00	0	67	6,419.59
J-18	6,296.95	0	50	6,411.69
J-19	6,351.85	5	23	6,405.66
J-20	6,352.67	0	23	6,406.18
J-21	6,352.20	5	22	6,403.27

Solena

FlexTable: Pipe Table

Active Scenario: MDD + H10 at 6456

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	52	R-1	J-1	8.0	PVC	120.0	1,554	9.92	0.048
P-2	534	J-1	J-2	8.0	PVC	120.0	1,554	9.92	0.048
P-3	61	J-3	J-2	8.0	PVC	120.0	-852	5.44	0.016
P-4	280	J-4	J-3	8.0	PVC	120.0	-852	5.44	0.016
P-5	145	J-5	J-4	8.0	PVC	120.0	-503	3.21	0.006
P-6	540	J-6	J-5	8.0	PVC	120.0	-498	3.18	0.006
P-7	67	J-7	J-6	8.0	PVC	120.0	-4	0.03	0.000
P-8	519	J-8	J-7	8.0	PVC	120.0	-4	0.03	0.000
P-9	731	J-17	J-1	8.0	PVC	120.0	(N/A)	(N/A)	(N/A)
P-10	379	J-14	J-17	8.0	PVC	120.0	0	0.00	0.000
P-11	510	J-16	J-14	8.0	PVC	120.0	348	2.22	0.003
P-12	482	J-4	J-16	8.0	PVC	120.0	348	2.22	0.003
P-13	735	J-2	J-15	8.0	PVC	120.0	693	4.42	0.011
P-14	43	J-15	J-14	8.0	PVC	120.0	693	4.42	0.011
P-15	314	J-14	J-13	8.0	PVC	120.0	1,032	6.59	0.022
P-16	652	J-13	J-12	8.0	PVC	120.0	101	0.65	0.000
P-17	46	J-11	J-12	8.0	PVC	120.0	488	3.11	0.006
P-18	595	J-10	J-11	8.0	PVC	120.0	488	3.11	0.006
P-19	22	J-9	J-10	8.0	PVC	120.0	488	3.11	0.006
P-20	437	J-6	J-9	8.0	PVC	120.0	491	3.13	0.006
P-21	790	J-12	J-20	8.0	PVC	120.0	584	3.73	0.008
P-22	67	J-20	J-19	8.0	PVC	120.0	584	3.73	0.008
P-23	311	J-19	J-21	8.0	PVC	120.0	579	3.69	0.008
P-24	47	J-13	J-18	8.0	PVC	120.0	926	5.91	0.018
P-25	458	J-18	J-21	8.0	PVC	120.0	926	5.91	0.018
PH-1	16	J-8	H-1	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-2	30	J-11	H-2	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-3	14	J-20	H-3	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-4	31	J-16	H-4	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-5	21	J-5	H-5	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-6	24	J-15	H-6	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-7	21	J-3	H-7	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-8	35	J-7	H-8	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-9	77	J-10	H-9	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-10	24	J-21	H-10	6.0	Ductile Iron	120.0	1,500	17.02	0.182

Solena

FlexTable: Junction Table

Active Scenario: PH @ 6456

Current Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	6,198.61	0	111	6,455.98
J-2	6,247.74	18	90	6,455.76
J-3	6,251.95	0	88	6,455.76
J-4	6,274.90	5	78	6,455.73
J-5	6,295.90	9	69	6,455.72
J-6	6,304.28	8	66	6,455.70
J-7	6,305.25	0	65	6,455.70
J-8	6,316.88	9	60	6,455.70
J-9	6,354.00	6	44	6,455.70
J-10	6,354.00	0	44	6,455.70
J-11	6,339.62	0	50	6,455.70
J-12	6,338.47	12	51	6,455.70
J-13	6,299.91	9	67	6,455.70
J-14	6,281.58	20	75	6,455.72
J-15	6,280.15	0	76	6,455.72
J-16	6,298.29	0	68	6,455.72
J-17	6,265.00	0	83	6,455.72
J-18	6,296.95	0	69	6,455.70
J-19	6,351.85	11	45	6,455.70
J-20	6,352.67	0	45	6,455.70
J-21	6,352.20	11	45	6,455.70

Solena
FlexTable: Pipe Table
Active Scenario: PH @ 6456
Current Time: 0.00 hours

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	52	R-1	J-1	8.0	PVC	120.0	118	0.75	0.000
P-2	534	J-1	J-2	8.0	PVC	120.0	118	0.75	0.000
P-3	61	J-3	J-2	8.0	PVC	120.0	-58	0.37	0.000
P-4	280	J-4	J-3	8.0	PVC	120.0	-58	0.37	0.000
P-5	145	J-5	J-4	8.0	PVC	120.0	-38	0.24	0.000
P-6	540	J-6	J-5	8.0	PVC	120.0	-29	0.18	0.000
P-7	67	J-7	J-6	8.0	PVC	120.0	-9	0.06	0.000
P-8	519	J-8	J-7	8.0	PVC	120.0	-9	0.06	0.000
P-9	731	J-17	J-1	8.0	PVC	120.0	(N/A)	(N/A)	(N/A)
P-10	379	J-14	J-17	8.0	PVC	120.0	0	0.00	0.000
P-11	510	J-16	J-14	8.0	PVC	120.0	15	0.10	0.000
P-12	482	J-4	J-16	8.0	PVC	120.0	15	0.10	0.000
P-13	735	J-2	J-15	8.0	PVC	120.0	42	0.27	0.000
P-14	43	J-15	J-14	8.0	PVC	120.0	42	0.27	0.000
P-15	314	J-14	J-13	8.0	PVC	120.0	37	0.23	0.000
P-16	652	J-13	J-12	8.0	PVC	120.0	12	0.08	0.000
P-17	46	J-11	J-12	8.0	PVC	120.0	6	0.04	0.000
P-18	595	J-10	J-11	8.0	PVC	120.0	6	0.04	0.000
P-19	22	J-9	J-10	8.0	PVC	120.0	6	0.04	0.000
P-20	437	J-6	J-9	8.0	PVC	120.0	12	0.08	0.000
P-21	790	J-12	J-20	8.0	PVC	120.0	6	0.04	0.000
P-22	67	J-20	J-19	8.0	PVC	120.0	6	0.04	0.000
P-23	311	J-19	J-21	8.0	PVC	120.0	-5	0.03	0.000
P-24	47	J-13	J-18	8.0	PVC	120.0	16	0.10	0.000
P-25	458	J-18	J-21	8.0	PVC	120.0	16	0.10	0.000
PH-1	16	J-8	H-1	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-2	30	J-11	H-2	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-3	14	J-20	H-3	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-4	31	J-16	H-4	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-5	21	J-5	H-5	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-6	24	J-15	H-6	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-7	21	J-3	H-7	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-8	35	J-7	H-8	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-9	77	J-10	H-9	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-10	24	J-21	H-10	6.0	Ductile Iron	120.0	0	0.00	0.000

Solena

FlexTable: Junction Table

Active Scenario: PH at 6476

Current Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	6,198.61	0	120	6,475.98
J-2	6,247.74	18	99	6,475.76
J-3	6,251.95	0	97	6,475.76
J-4	6,274.90	5	87	6,475.73
J-5	6,295.90	9	78	6,475.72
J-6	6,304.28	8	74	6,475.70
J-7	6,305.25	0	74	6,475.70
J-8	6,316.88	9	69	6,475.70
J-9	6,354.00	6	53	6,475.70
J-10	6,354.00	0	53	6,475.70
J-11	6,339.62	0	59	6,475.70
J-12	6,338.47	12	59	6,475.70
J-13	6,299.91	9	76	6,475.70
J-14	6,281.58	20	84	6,475.72
J-15	6,280.15	0	85	6,475.72
J-16	6,298.29	0	77	6,475.72
J-17	6,265.00	0	91	6,475.72
J-18	6,296.95	0	77	6,475.70
J-19	6,351.85	11	54	6,475.70
J-20	6,352.67	0	53	6,475.70
J-21	6,355.00	11	52	6,475.70

Solena
FlexTable: Pipe Table
Active Scenario: PH at 6476
Current Time: 0.00 hours

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	52	R-1	J-1	8.0	PVC	120.0	118	0.75	0.000
P-2	534	J-1	J-2	8.0	PVC	120.0	118	0.75	0.000
P-3	61	J-3	J-2	8.0	PVC	120.0	-58	0.37	0.000
P-4	280	J-4	J-3	8.0	PVC	120.0	-58	0.37	0.000
P-5	145	J-5	J-4	8.0	PVC	120.0	-38	0.24	0.000
P-6	540	J-6	J-5	8.0	PVC	120.0	-29	0.18	0.000
P-7	67	J-7	J-6	8.0	PVC	120.0	-9	0.06	0.000
P-8	519	J-8	J-7	8.0	PVC	120.0	-9	0.06	0.000
P-9	731	J-17	J-1	8.0	PVC	120.0	(N/A)	(N/A)	(N/A)
P-10	379	J-14	J-17	8.0	PVC	120.0	0	0.00	0.000
P-11	510	J-16	J-14	8.0	PVC	120.0	15	0.10	0.000
P-12	482	J-4	J-16	8.0	PVC	120.0	15	0.10	0.000
P-13	735	J-2	J-15	8.0	PVC	120.0	42	0.27	0.000
P-14	43	J-15	J-14	8.0	PVC	120.0	42	0.27	0.000
P-15	314	J-14	J-13	8.0	PVC	120.0	37	0.23	0.000
P-16	652	J-13	J-12	8.0	PVC	120.0	12	0.08	0.000
P-17	46	J-11	J-12	8.0	PVC	120.0	6	0.04	0.000
P-18	595	J-10	J-11	8.0	PVC	120.0	6	0.04	0.000
P-19	22	J-9	J-10	8.0	PVC	120.0	6	0.04	0.000
P-20	437	J-6	J-9	8.0	PVC	120.0	12	0.08	0.000
P-21	790	J-12	J-20	8.0	PVC	120.0	6	0.04	0.000
P-22	67	J-20	J-19	8.0	PVC	120.0	6	0.04	0.000
P-23	311	J-19	J-21	8.0	PVC	120.0	-5	0.03	0.000
P-24	47	J-13	J-18	8.0	PVC	120.0	16	0.10	0.000
P-25	458	J-18	J-21	8.0	PVC	120.0	16	0.10	0.000
PH-1	16	J-8	H-1	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-2	30	J-11	H-2	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-3	14	J-20	H-3	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-4	31	J-16	H-4	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-5	21	J-5	H-5	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-6	24	J-15	H-6	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-7	21	J-3	H-7	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-8	35	J-7	H-8	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-9	77	J-10	H-9	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-10	24	J-21	H-10	6.0	Ductile Iron	120.0	0	0.00	0.000

Solena
FlexTable: Hydrant Table
Active Scenario: Static Model
Current Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-1	6,317.12	0	60	6,456.00
H-2	6,339.86	0	50	6,456.00
H-3	6,352.85	0	45	6,456.00
H-4	6,298.44	0	68	6,456.00
H-5	6,295.99	0	69	6,456.00
H-6	6,280.31	0	76	6,456.00
H-7	6,254.80	0	87	6,456.00
H-8	6,305.60	0	65	6,456.00
H-9	6,354.00	0	44	6,456.00
H-10	6,355.00	0	44	6,456.00

Solena

FlexTable: Junction Table

Active Scenario: Static Model

Current Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	6,198.61	0	111	6,456.00
J-2	6,247.74	0	90	6,456.00
J-3	6,251.95	0	88	6,456.00
J-4	6,274.90	0	78	6,456.00
J-5	6,295.90	0	69	6,456.00
J-6	6,304.28	0	66	6,456.00
J-7	6,305.25	0	65	6,456.00
J-8	6,316.88	0	60	6,456.00
J-9	6,354.00	0	44	6,456.00
J-10	6,354.00	0	44	6,456.00
J-11	6,339.62	0	50	6,456.00
J-12	6,338.47	0	51	6,456.00
J-13	6,299.91	0	68	6,456.00
J-14	6,281.58	0	75	6,456.00
J-15	6,280.15	0	76	6,456.00
J-16	6,298.29	0	68	6,456.00
J-17	6,265.00	0	83	6,456.00
J-18	6,296.95	0	69	6,456.00
J-19	6,351.85	0	45	6,456.00
J-20	6,352.67	0	45	6,456.00
J-21	6,355.00	0	44	6,456.00

Solena
FlexTable: Pipe Table
Active Scenario: Static Model
Current Time: 0.00 hours

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	52	R-1	J-1	8.0	PVC	120.0	0	0.00	0.000
P-2	534	J-1	J-2	8.0	PVC	120.0	0	0.00	0.000
P-3	61	J-3	J-2	8.0	PVC	120.0	0	0.00	0.000
P-4	280	J-4	J-3	8.0	PVC	120.0	0	0.00	0.000
P-5	145	J-5	J-4	8.0	PVC	120.0	0	0.00	0.000
P-6	540	J-6	J-5	8.0	PVC	120.0	0	0.00	0.000
P-7	67	J-7	J-6	8.0	PVC	120.0	0	0.00	0.000
P-8	519	J-8	J-7	8.0	PVC	120.0	0	0.00	0.000
P-9	731	J-17	J-1	8.0	PVC	120.0	(N/A)	(N/A)	(N/A)
P-10	379	J-14	J-17	8.0	PVC	120.0	0	0.00	0.000
P-11	510	J-16	J-14	8.0	PVC	120.0	0	0.00	0.000
P-12	482	J-4	J-16	8.0	PVC	120.0	0	0.00	0.000
P-13	735	J-2	J-15	8.0	PVC	120.0	0	0.00	0.000
P-14	43	J-15	J-14	8.0	PVC	120.0	0	0.00	0.000
P-15	314	J-14	J-13	8.0	PVC	120.0	0	0.00	0.000
P-16	652	J-13	J-12	8.0	PVC	120.0	0	0.00	0.000
P-17	46	J-11	J-12	8.0	PVC	120.0	0	0.00	0.000
P-18	595	J-10	J-11	8.0	PVC	120.0	0	0.00	0.000
P-19	22	J-9	J-10	8.0	PVC	120.0	0	0.00	0.000
P-20	437	J-6	J-9	8.0	PVC	120.0	0	0.00	0.000
P-21	790	J-12	J-20	8.0	PVC	120.0	0	0.00	0.000
P-22	67	J-20	J-19	8.0	PVC	120.0	0	0.00	0.000
P-23	311	J-19	J-21	8.0	PVC	120.0	0	0.00	0.000
P-24	47	J-13	J-18	8.0	PVC	120.0	0	0.00	0.000
P-25	458	J-18	J-21	8.0	PVC	120.0	0	0.00	0.000
PH-1	16	J-8	H-1	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-2	30	J-11	H-2	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-3	14	J-20	H-3	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-4	31	J-16	H-4	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-5	21	J-5	H-5	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-6	24	J-15	H-6	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-7	21	J-3	H-7	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-8	35	J-7	H-8	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-9	77	J-10	H-9	6.0	Ductile Iron	120.0	0	0.00	0.000
PH-10	24	J-21	H-10	6.0	Ductile Iron	120.0	0	0.00	0.000

APPENDIX D Wastewater Flows



Preliminary Utility Report - Sewer Loading

SEWER DEMAND CALCULATION									
		Basin flow calculation					Cumulative flow calculation		
Design Manhole	Parcels	DU	GPD	ADF (gpm)	PF	Peak Hour (gpm)	ADF (gpm)	PF	Peak Hour (gpm)
SSMH 6-7	39-53	15	200	2.1	3.2	6.9			
SSMH 2-16	24-30, 36-38	10	200	1.4	3.5	4.9			
SSMH 2-11	31-35, 54, 55	7	200	1.0	3.7	3.7	4.4	2.8	13.1
SSMH 5-3	14,15	2	200	0.3	4.5	1.3			
SSMH 2-5	Duplex Units	22	200	3.1	3.0	9.6	7.8	2.6	20.9
SSMH 1-10	1-8, 18-23	14	200	1.9	3.3	6.5			
SSMH 4-1	9,10,16,17	4	200	0.6	4.0	2.3			
SSMH 1-3							2.5	3.1	8.1
SSMH 3-3	11-13	3	200	0.4	4.2	1.8			
SSMH 1-2							2.9	3.0	9.2
SSMH 1-10							10.7	2.45	27.3
		77	200	10.7	2.45	27.3			

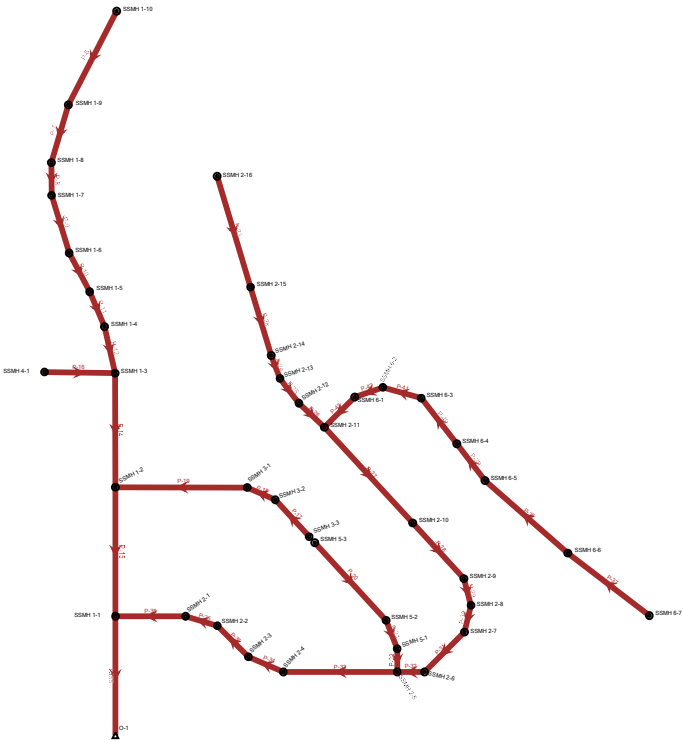
 Indicated location where flow is applied in the model

APPENDIX E

Wastewater Hydraulic Modeling



Scenario: Base



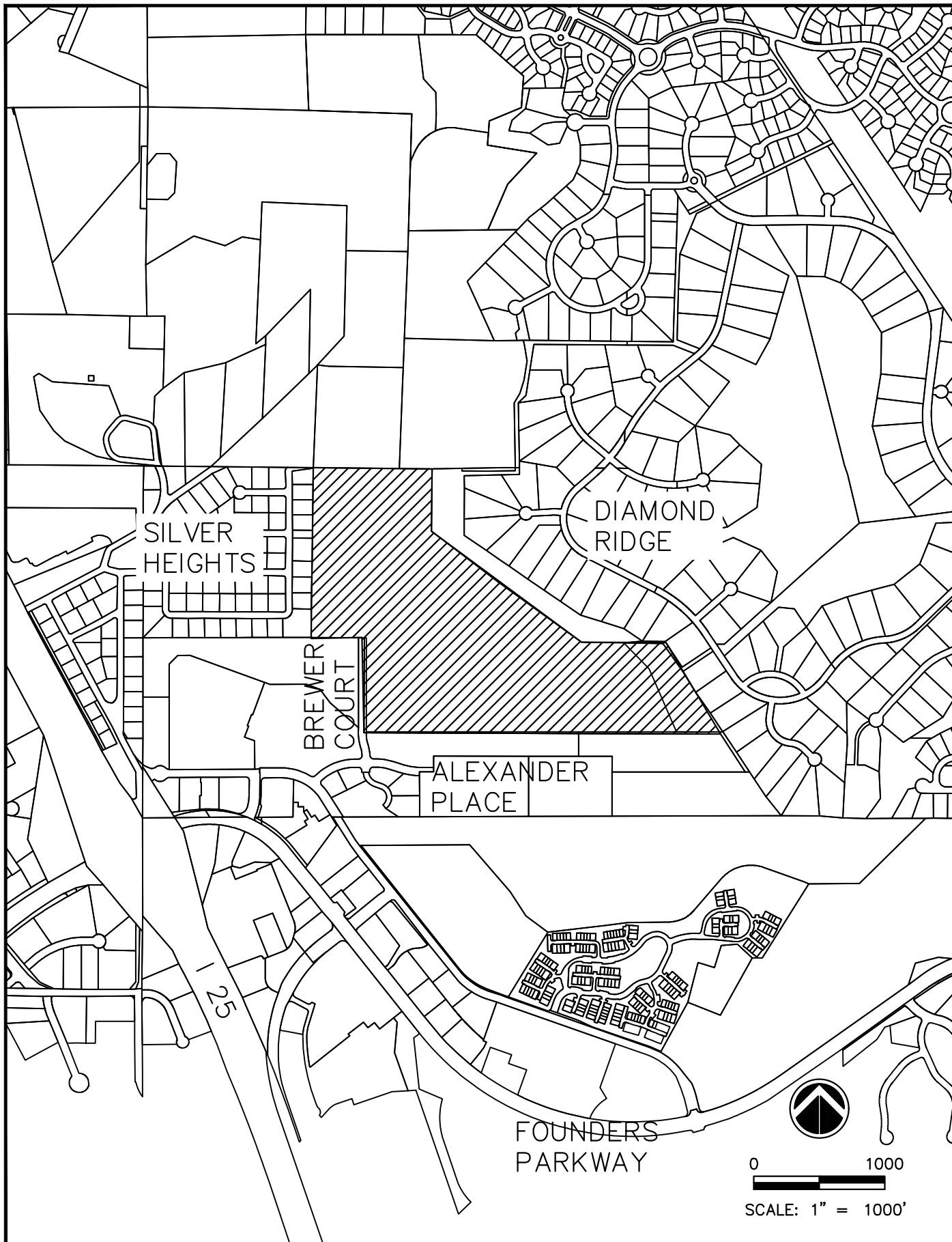
FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (gal/min)	Velocity (ft/s)	Depth (Middle) (ft)	Capacity (Full Flow) (gal/min)	Flow / Capacity (Design) (%)	Depth/Rise (%)
SSP1	SSMH 1-1	6,233.94	O-1	6,214.16	311.2	0.063	8.0	0.012	27.3	3.64	0.09	1,479.8	1.8	13.1
P-36	SSMH 2-1	6,239.41	SSMH 1-1	6,234.14	183.3	0.029	8.0	0.012	20.9	2.55	0.08	995.9	2.1	12.3
P-35	SSMH 2-2	6,244.00	SSMH 2-1	6,239.61	86.4	0.051	8.0	0.012	20.9	3.12	0.08	1,322.4	1.6	11.7
P-35	SSMH 2-3	6,249.35	SSMH 2-2	6,244.20	114.8	0.045	8.0	0.012	20.9	2.99	0.08	1,244.6	1.7	11.8
P-34	SSMH 2-4	6,254.07	SSMH 2-3	6,249.55	99.4	0.045	8.0	0.012	20.9	3.00	0.08	1,252.0	1.7	11.8
P-15	SSMH 1-2	6,260.90	SSMH 1-1	6,234.14	337.0	0.079	8.0	0.012	9.2	2.83	0.05	1,653.1	0.6	7.5
P-33	SSMH 2-5	6,268.60	SSMH 2-4	6,254.27	297.7	0.048	8.0	0.012	20.9	3.06	0.08	1,288.5	1.6	11.7
P-22	SSMH 5-1	6,269.52	SSMH 2-5	6,268.97	60.5	0.009	8.0	0.012	1.3	0.74	0.02	564.1	0.2	3.6
P-32	SSMH 2-6	6,272.52	SSMH 2-5	6,268.80	71.2	0.052	8.0	0.012	13.1	2.71	0.06	1,341.7	1.0	9.3
P-21	SSMH 5-2	6,274.16	SSMH 5-1	6,269.72	79.9	0.055	8.0	0.012	1.3	1.40	0.02	1,383.0	0.1	3.0
P-19	SSMH 3-1	6,276.71	SSMH 1-2	6,261.10	344.8	0.045	8.0	0.012	1.8	1.42	0.02	1,249.6	0.1	3.6
P-31	SSMH 2-7	6,278.07	SSMH 2-6	6,272.72	147.8	0.036	8.0	0.012	13.1	2.39	0.06	1,117.7	1.2	9.6
P-18	SSMH 3-2	6,281.80	SSMH 3-1	6,276.92	79.9	0.061	8.0	0.012	1.8	1.58	0.02	1,451.4	0.1	3.5
P-14	SSMH 1-3	6,283.29	SSMH 1-2	6,261.10	297.9	0.074	8.0	0.012	8.1	2.66	0.05	1,601.5	0.5	7.1
P-12	SSMH 1-4	6,287.47	SSMH 1-3	6,283.49	124.8	0.032	8.0	0.012	6.5	1.85	0.05	1,048.6	0.6	6.9
P-30	SSMH 2-8	6,284.97	SSMH 2-7	6,278.27	72.1	0.093	8.0	0.012	13.1	3.31	0.06	1,787.3	0.7	8.8
P-17	SSMH 3-3	6,287.35	SSMH 3-2	6,281.90	131.0	0.042	8.0	0.012	1.8	1.38	0.02	1,197.7	0.2	3.6
P-20	SSMH 5-3	6,287.51	SSMH 5-2	6,274.35	275.6	0.048	8.0	0.012	1.3	1.32	0.02	1,283.2	0.1	3.0
P-11	SSMH 1-5	6,288.96	SSMH 1-4	6,287.67	99.0	0.013	8.0	0.012	6.5	1.35	0.05	671.5	1.0	7.6
P-10	SSMH 1-6	6,290.74	SSMH 1-5	6,289.16	114.4	0.014	8.0	0.012	6.5	1.38	0.05	690.0	0.9	7.5
P-16	SSMH 4-1	6,294.33	SSMH 1-3	6,283.29	184.9	0.060	8.0	0.012	2.3	1.68	0.05	1,435.5	0.2	7.1
P-29	SSMH 2-9	6,288.53	SSMH 2-8	6,285.18	72.1	0.047	8.0	0.012	13.1	2.61	0.06	1,267.0	1.0	9.4
P-9	SSMH 1-7	6,293.05	SSMH 1-6	6,290.94	157.5	0.013	8.0	0.012	6.5	1.37	0.05	680.8	1.0	7.5
P-8	SSMH 1-8	6,294.38	SSMH 1-7	6,293.25	85.6	0.013	8.0	0.012	6.5	1.36	0.05	674.8	1.0	7.5
P-7	SSMH 1-9	6,297.96	SSMH 1-8	6,294.58	157.0	0.022	8.0	0.012	6.5	1.61	0.05	862.3	0.8	7.2
P-28	SSMH 2-10	6,305.13	SSMH 2-9	6,288.73	197.8	0.083	8.0	0.012	13.1	3.18	0.06	1,688.8	0.8	8.9
P-6	SSMH 1-10	6,304.00	SSMH 1-9	6,298.06	275.6	0.022	8.0	0.012	6.5	1.61	0.05	862.7	0.8	7.2
P-27	SSMH 2-11	6,324.44	SSMH 2-10	6,305.33	340.2	0.056	8.0	0.012	13.1	2.78	0.06	1,391.5	0.9	9.2
P-42	SSMH 6-1	6,326.10	SSMH 2-11	6,324.57	112.0	0.014	8.0	0.012	6.9	1.40	0.05	688.2	1.0	7.7
P-26	SSMH 2-12	6,328.14	SSMH 2-11	6,324.64	91.5	0.038	8.0	0.012	4.9	1.80	0.04	1,148.7	0.4	5.9
P-25	SSMH 2-13	6,331.49	SSMH 2-12	6,328.34	81.7	0.039	8.0	0.012	4.9	1.84	0.04	1,154.3	0.4	5.9
P-42	SSMH 6-2	6,331.54	SSMH 6-1	6,326.30	77.5	0.067	8.0	0.012	6.9	2.45	0.04	1,526.1	0.5	6.6
P-24	SSMH 2-14	6,333.48	SSMH 2-13	6,331.69	64.0	0.028	8.0	0.012	4.9	1.63	0.04	982.9	0.5	6.1
P-39	SSMH 6-5	6,336.50	SSMH 6-4	6,335.97	121.3	0.004	8.0	0.012	6.9	0.94	0.06	388.5	1.8	8.8
P-41	SSMH 6-3	6,334.96	SSMH 6-2	6,331.74	104.4	0.031	8.0	0.012	6.9	1.86	0.05	1,031.7	0.7	7.1
P-40	SSMH 6-4	6,335.77	SSMH 6-3	6,335.06	151.3	0.005	8.0	0.012	6.9	0.97	0.06	402.0	1.7	8.7
P-28	SSMH 2-15	6,339.79	SSMH 2-14	6,333.68	186.6	0.033	8.0	0.012	4.9	1.72	0.04	1,063.0	0.5	6.0
P-38	SSMH 6-6	6,339.68	SSMH 6-5	6,336.70	287.8	0.010	8.0	0.012	6.9	1.27	0.05	597.8	1.2	8.0
P-23	SSMH 2-16	6,347.67	SSMH 2-15	6,339.99	302.6	0.025	8.0	0.012	4.9	1.57	0.04	936.2	0.5	6.1
P-37	SSMH 6-7	6,347.69	SSMH 6-6	6,339.68	268.4	0.030	8.0	0.012	6.9	1.84	0.05	1,015.0	0.7	7.1

Appendix F – Maps and Plans
Vicinity Map
Utility Maps provided by the Utilities Department
Site Development Plan



11/19/21 G:\2020\20002764.00\DESIGN\CIVIL\C3D\EXHIBITCONCEPT\20002764 VIC MAP.DWG



323 N. LEROUX STREET
SUITE 201
FLAGSTAFF, AZ 86001

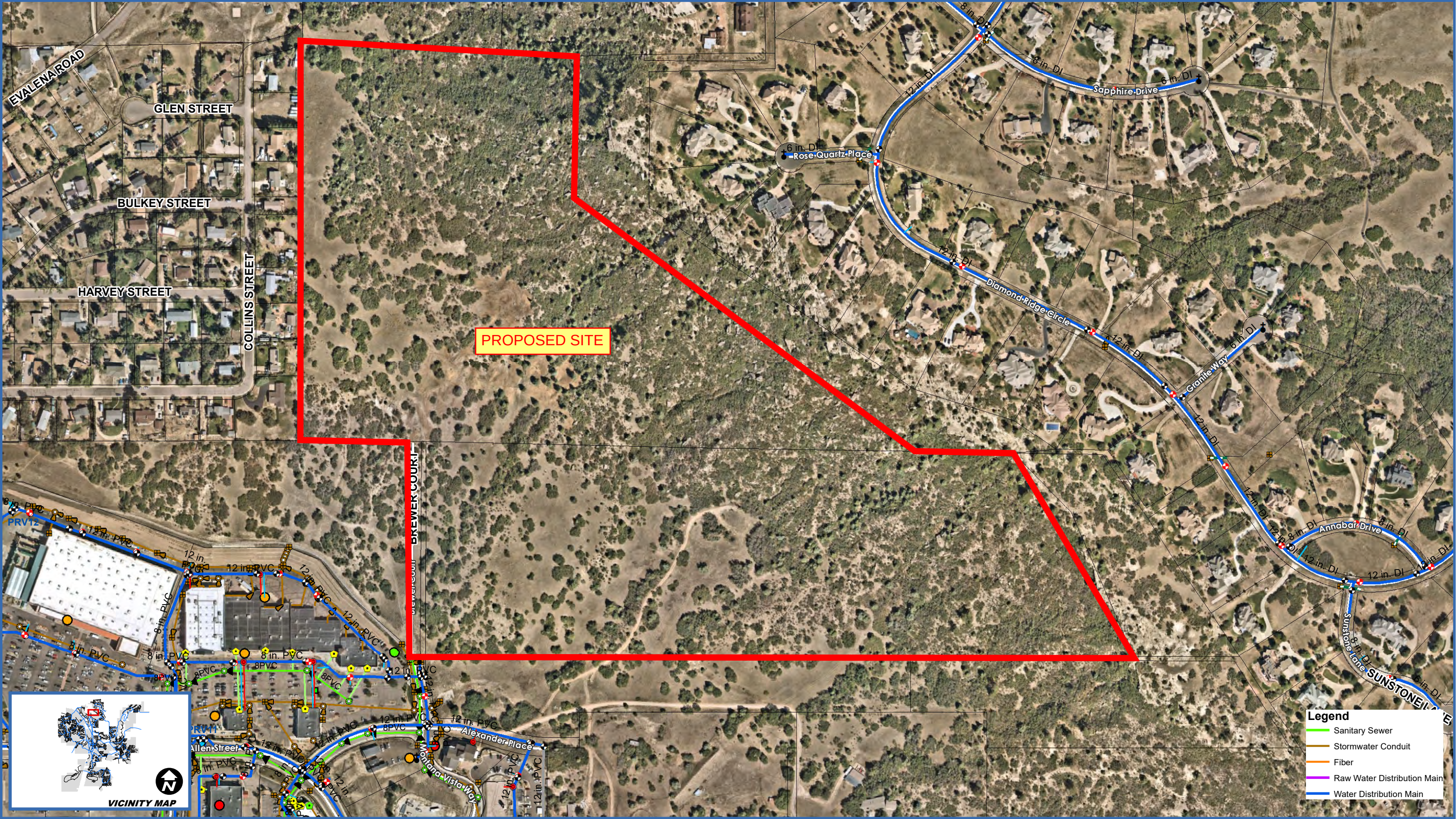
PH: 928.255.0410
www.imegcorp.com

ALEXANDER WAY

CASTLE ROCK, CO

VICINITY MAP

EXHIBIT





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	
		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
		PROJECT LOCATION AND DESCRIPTION
X		A. Site Location
X		B. Description of Property and Land Use
		CALCULATED WATER DEMANDS
X		A. Average Day Demands (ADD)
X		B. Max Day Demands (MDD)
X		C. Peak Hour Demands (PHD)
		EXISTING WATER SYSTEM
X		A. Existing Distribution System
X		B. Existing Supply Facilities
		PROPOSED WATER SYSTEM
X		A. Proposed Distribution System
X		B. Proposed Supply Facilities
	X	C. Land Dedication Requirements
		PROPOSED WATER SYSTEM ANALYSIS AND MODELING
X		A. Hydraulic Models
X		B. Hydraulic Modeling Scenarios
X		C. Hydraulic Modeling Output and Required Schematics
		CALCULATED WASTEWATER FLOWS
X		A. Average Day Wastewater Flows (ADF)
X		B. Peaking Factor
X		C. Peak Design Flows (PDF)
		EXISTING WASTEWATER SYSTEM
X		A. Existing Collection System
		PROPOSED WASTEWATER SYSTEM
X		A. Proposed Collection System
X		B. Proposed Wastewater Facilities
	X	C. Land Dedication Requirements
		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
X		Appendix A — Water Demands
X		Appendix B — Water Storage
X		Appendix C — Water Hydraulic Analysis and Modeling
X		Appendix D — Wastewater Flows
X		Appendix E — Wastewater Hydraulic Modeling
X		Appendix F — Maps and Plans
X		A. Vicinity Map
X		B. Utility Map(s) provided by the Utilities Department
X		C. Site Development Plan
	X	D. Water/Wastewater Utility Plan(s)

Notes/Comments:

Final construction plans are pending determination of Metropolitan District inclusion areas